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Evaluating the performance of company risk information disclosure on improving the decision-making power of investors using hierarchical analysis technique (AHP)

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Abstract

Researchers have traditionally focused more on the quantity of company information disclosures, but in recent years, the quality of the information disclosed is more important than their quantity. On the other hand, the primary purpose of financial reporting is to provide useful information to stakeholders in relation to the conditions of the company to help investors' economic decisions, which is a function of the quality of information provided by companies. Therefore, in the present study, by examining the opinions of experts and using the process of hierarchical analysis technique, the weight and importance of risk information disclosure criteria at three different levels (general, company specific and industry specific) were extracted in comparison, then by prioritizing them, Compatibility rate was calculated. Using statistical methods of two-way analysis of variance within the subject, it was concluded that there is no significant difference between the effects of risk information disclosure criteria on corporate investors' decision making.

Keywords: Risk information disclosure, Hierarchical analysis, Investor decision-making power
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1. Introduction

The growth and prosperity of any country depends on proper investment and planning. Investment growth in any country will lead to the proper diversion of cash flows and stray funds to productive jobs, economic growth, increased GDP, job creation, increased per capita income, and ultimately public welfare. Increasing business complexity Business complexity in different areas and the multiplicity of factors affecting operations, companies face various risks and as a result, investing in them will also have risks. One of the effective factors in the growth of investment in capital markets is helping investors in the decision-making process and reducing investment risk. The goal of investors is to maximize their wealth and in order to achieve this goal, they try to invest in securities that have a higher rate of return and a relatively lower risk.

Investors need to understand the risks and uncertainties in order to manage their investment risk. But traditional financial statements contain little information in this regard and as a result there is a great demand for risk disclosure. Accounting now plays an important role in the economic system. According to the financial literature, empirical studies on the relationship between information disclosure and risk reporting are very small [2]. In addition, according to research findings, the relationship between disclosure of risk information and company value is still unclear. These ambiguities have provided the basis for various studies, including the relationship between corporate disclosure and risk reporting. Some of these studies, for example, El Zahar and Hussainey [6] believe that the relationship between disclosure and company value depends on the proxy or variable used in the research on company value and identifying and measuring risk disclosure factors. It is an issue that is less addressed in the experimental literature. A review of research and experimental literature in the field of disclosure shows that disclosure has the potential to affect and reduce information asymmetry; therefore, there is a demand from stakeholders, especially stakeholders, for its disclosure and reporting [10]. Studies such as [13] and [14] also show that risk disclosure is one of the most important information disclosed in the capital market and is useful for investors in decision making and estimating risk and return by investors; therefore, there is a demand for its disclosure. Information asymmetry is one of the main issues in the issue of agency and leads to an increase in the importance of financial reporting and disclosure of more information of companies [7]. Disclosure of risk information is one of the most important needs of investors for their investment decisions. For example, the Institute of Chartered Accountants in the United Kingdom (1997) stated that limiting earnings forecasts based on historical data and encouraging companies to disclose risk information allows users to influence factors that may affect future results or cash flow [9]. And this helps to accurately predict profits. Investors consider risk observation as an important factor in determining equity costs in choosing an investment, so risk disclosure can help reduce investor uncertainty and lead to a reduction in the risk required by the company. Since there is no action in Iran to improve voluntary or mandatory risk reporting in annual reports, the lack of rules and regulations for this issue is an obstacle to improving risk reporting in Iran. Considering the evidence related to the usefulness of risk disclosure, the variety in the method of risk disclosure and the shortcomings of disclosed risks, the study of the dimensions and components of risk disclosure in Iran is of great importance; Because the use of existing theories and methods, as well as theorizing, requires information, especially information produced in the accounting system, which is undoubtedly difficult to study in the developing capital market. Therefore, this review can provide decision makers with information about the aspects and components of disclosed risks. This is important in many ways. First, risk disclosure is an emerging issue in the world that is considered by institutions, legislators and researchers, but in Iran, risk disclosure is less discussed. Also, no research has been done to identify the dimensions and components of risk disclosure and their role in improving investors' decision-making power; There-

fore, the main question that is always considered important for shareholders has been the situation of companies listed on the Tehran Stock Exchange in terms of explaining the disclosure of risk information? In response to this question, we will try to rank these criteria according to the criteria for disclosing companies' risk information and using the hierarchical analysis technique. Accordingly, the purpose of this study is to evaluate the performance of company information disclosure on improving the decision-making power of investors, which is introduced for the first time. The findings of the present study as a scientific achievement can provide useful information to investors, capital market regulators, developers of accounting standards and other users of accounting information. In the continuation of the article, after stating the theoretical foundations, the research background will be discussed and then the research method and findings will be presented.

2. Theoretical foundations and review of existing literature

There is no comprehensive theory on information disclosure that determines the factors involved in disclosure. It seems that the choice of a comprehensive theory depends on the field of corporate information disclosure in countries [4]. According to the existing theories in this field, the theory of representation is very important. There are several reasons for choosing this theory, first of all, it provides a way to explain the current state of understanding of the problems associated with corporate risk reporting. Second; this theory can consider various aspects of corporate risk reporting. Third; Existing theories can help to understand business processes, which also leads to limited and public disclosure that has nothing to do with the organization's risk identification and management processes. Finally, agency theory may be very useful in predicting existing solutions to the inherent limitations of risk reporting [4]. Organizational proprietary theory reflects the company's current risk disclosure practice, which is less important to users of financial information. This theory includes the costs and benefits of disclosing information. It is possible that company managers do not have sufficient confidence in disclosing risk information. Most companies, however, have precise risk management systems and are reluctant to disclose information that is felt to be politically or commercially sensitive [12]. Managers always have problems with information disclosure in companies; if they keep information too much out of the public domain, their risk management systems become weak and inefficient, and investors feel frustrated with the shares of these companies; Thus, according to agency theory, information costs determine important decisions of disclosure of companies' financial information [1]. Therefore, the accounting information disclosed by companies does not fully meet the needs of decision makers and there is a need for risk information. According to obtained results, financial reporting provides very useful information to stakeholders about the conditions of the company. According to the existing studies on the usefulness of risk disclosure, diversity in the method of risk disclosure and its shortcomings, less enrichment of Iran's disclosure environment compared to US and UK stock exchanges and low effort of researchers to analyze risk disclosure, study different dimensions of risk disclosure including features Disclosed risks and factors affecting the disclosure of risk information in Iran are of great importance; This is because this review can provide decision makers with information on the aspects of disclosed risks.

2.1. External background

Polizzi and Scannella in [17] examined market risk exposure in Italian banks for the 1996 to 2010 financial period. The results showed that banks do not use the potentials of interpreting management information and information disclosure reports and in different areas between different reports, intensifies the overall understanding and relevance of bank risk reports. Alshirah et al. [3] examined the characteristics of the board of directors and the disclosure of risk information with

a moderating role in family ownership. Using 376 annual reports from Jordanian non-financial corporations from 2014 to 2017, they concluded that the characteristics of the board, the duality of the CEO, the size and number of board meetings were positively, negatively and positively related to the level of risk disclosure, respectively. Family ownership also moderates the relationship between board characteristics and disclosure of risk information. Nahar et al. [15] in their study examined the disclosure of risk information and risk characteristics of banks using 300 observations in a developing economy. They showed that there is a positive and significant relationship between disclosure of risk information and risk characteristics of banks, including various risk committees and risk management. Salem et al. [18] covered corporate governance and the quality of information risk disclosure using a sample of 152 Tunisian companies from 2008 to 2013. Their findings showed that the quality of risk disclosure has a significant relationship with institutional ownership, board independence, presence of women in the board and family ownership.

2.2. Internal background

In Iran, there has not been much research on risk information disclosure, some of which are mentioned below. Taheri et al. [19] in a study entitled "Study of the value relationship between disclosure and risk reporting in member banks of the Tehran Stock Exchange during the years 1390 to 1395". Their findings showed that risk disclosure has a positive and significant relationship with the bank's price and value and has a negative and significant relationship with the bank's return. Fassihi et al. (2015) in a study investigated the effect of risk disclosure on the efficiency of the company's investment using a sample of 60 companies listed on the Tehran Stock Exchange from 2009 to 2016. The results showed that risk disclosure has a positive and significant effect on the investment efficiency of companies, ie with the increase of risk disclosure, the investment efficiency of companies increases. Hassanzadeh and Mahromi [8] in a study investigated the effect of risk disclosure on stock price forecasts by companies' profits and value during the years 2009 to 2014. Findings showed that there is no significant relationship between the level of corporate risk disclosure and the information content of profit changes. Namazi and Ebrahimi Meymand [16] in a study examined how to disclose risk in the annual report of companies and the factors affecting it using a sample of 275 companies listed on the Tehran Stock Exchange during the years 2009 to 2013. The results show that companies have a significant tendency to provide retrospective information compared to prospective, qualitative compared to few and disclose risk sources compared to risk management.

3. Research questions

According to the theoretical foundations of the research, in the present study we will try to answer the following questions.

1) What are the components of risk disclosure in companies listed on the stock exchange?
2) What is the risk disclosure status of companies listed on the stock exchange?

4. Research method, population and statistical sample

The present research is of applied purpose type and method of research, survey and descriptive-analytical. To collect the materials in the research literature section, the library method and in the criteria weighting section, experts have been surveyed. In this regard, the field method is used to collect the desired information and a questionnaire is used to discover the components of the model. Cochran's formula was used to determine the sample size. According to this formula, the statistical sample size was estimated to be 77, but to ensure 80 questionnaires were distributed and

60 questionnaires were completed and extracted. After studying the research literature and defining the problem, as well as based on experiences and questionnaires distributed among experts and people who are fully acquainted with risk disclosure, research questions were developed and then the collected information was tested using MATLAB software. The statistical population of the present study includes all public joint stock companies listed on the Tehran Stock Exchange and the time domain of the research is 13 years during the period 2007 to 2019 and the statistical samples are selected based on the following conditions:

1. Have been listed on the Tehran Stock Exchange until the end of March 2007.
2. In order to increase comparability, their fiscal year should end at the end of March and they have not changed their activity or fiscal year during the desired periods.
3. The information needed to calculate the research variables is available during the study periods.
4. Not be part of investment companies and financial intermediaries.

The final sample of the research after applying the above conditions included 60 companies.

4.1. content analysis

In this study, content analysis method has been used to investigate the components of risk disclosure in companies' reports. In this study, the levels of risk disclosure of companies are as follows:

Risk.

General: not under the control of management. At the macro level of the country (industries)

Specific: is under the control of management (at the company level) and not under the control of management (at the industry level)

Step 2: Investigate the effect of risk disclosure components on improving investors' decision-making power:

If we consider investment as resource allocation, the investor's goal is to increase the return on investment

$$\text{Ret} = \frac{p_t(1 + ca + \beta) + \text{Div} - (p_t - _1 + ca)}{ca + p_t - _1}.$$

Cost of capital-Gordon valuation model

$$k_e = \frac{D_1}{P_0} + g.$$

Stock returns: A function of the economic conditions and performance of the company

Decision Model: Actions + Conditions: Output (Decision Result)

If the decision model includes a set of actions, conditions, and outputs, the uncertainty of the output and the outcome of the decision to the occurrence of the condition is limited, so the information provided in the risk report predicts the probability of occurrence of the condition as well as the probability of outputs.

Measurement technique: Multi-objective mathematical model to optimize decision power in different risk disclosure situations if a variable or index such as x is a function of time to take different values and has does not affect its previous indicators using. It can be measured by multi-stage decision making techniques.

First we produce the general model MSMADM. Then we solve the model by quoting real values. The generated model must be solved in very large quantities over and over again, and when convergence occurs, the choice is declared high power decision.

Table 1: Demographic Research

Persentage	Number	sub variable	variable
80%	48	Male	Gender
20%	12	Female	
5%	3	Less than 30 years	Age
92%	55	Between 31 and 40 years	
3%	2	Between 41 and 50 years	
0%	0	More than 51 years	
30%	18	Less than 10 years	Work experience
63%	38	Between 10 and 20 years	
7%	4	More than 20 years	
13%	8	PhD student and instructor	Graduation
43%	26	PhD and Assistant Professor	
33%	20	PhD and Associate Professor	
10%	6	PhD and full Professor	

Table 2: Number of questions and reliability of the questionnaire

Main components	Number of questions	Sample size	Cronbach s alpha
General risks	18	60	92.2 %
Company specific risks	13	60	86.4 %
Industry specific risks	6	60	89.3 %

5. Research findings

5.1. Demographic characteristics

In this section, demographic information of experts is described to identify the components of risk disclosure to improve the decision-making power of investors and in order to get acquainted with the characteristics of the statistical sample, demographic information of the research is presented in Table 1. The results show that the number of male professors in the sample is more than the number of female professors. According to the results obtained from age, it can be said that most of the interviewed professors are between 31 and 40 years old. Regarding the amount of work experience in the university, about 30 percent of the professors are less than 10 years old and 63 percent of them have more than 10 years of experience.

5.2. Validity and reliability of the Expert Questionnaire

In the present study, using the opinions of experts, the components of risk information disclosure were designed at three levels of risk (general, company specific, industry specific), which confirms the validity of the questionnaire. Cronbach's alpha method was also used to evaluate the reliability of the questionnaires (reliability), the results of which are shown in the table below.

5.3. Determine the compatibility rate

Disclosure of risk information is a decision option. According to the three components that are presented (general risk, company specific risk and industry specific risk), the weight below the criteria of each of the general components are added together and the result of the said sum is determined as the weight of that general criterion. To prioritize comparative tables, we divide the sum of each

row after normalization by the number of options, which here are 37 components of risk information disclosure. Then, using the ability to combine group opinions and obtain group weight of criteria in Expert Choice software, the group weight of criteria for companies listed on the Tehran Stock Exchange was calculated. According to the comparisons made and using the quantitative advantages of these comparisons, the group comparison matrix of the components was also specified in Table 3.

5.4. Classification of risk information disclosure components

The ranking of companies in this section is the same as the ranking in the combined technique using the TOPSIS technique and the same procedure. With the difference that due to the use of weights calculated using hierarchical analysis, the weights and consequently the final decision matrix of the principal components will change, as a result of the resulting ranking will also change, but the principles and methods are the same; Therefore; After weighting the components using hierarchical analysis and also according to the obtained decision matrices, the weighted normal matrix is calculated. For this purpose, first the mentioned decision matrices are normalized using Euclidean soft and by multiplying each of the values of the normal matrix in the weights obtained from the hierarchical analysis, the weighted normal matrix is obtained. By adding the weighted values of the sub-criteria of each main criterion, the value of that main criterion is obtained. The values of the main criteria are also multiplied by the weight of each of the main criteria and a normal weighted decision matrix is formed. This matrix is shown in Tables 4-10.

Positive and negative solutions are calculated according to the maximum and minimum value of each principal component. By inverting the negative indices, all the indices are considered positive, so these solutions are calculated using the following equations, which represent the highest value of criteria for a positive ideal solution and the lowest value of criteria for a negative ideal solution:

$$A^+ = \{\max_{v_{ij}} | j \in J\} = \{V_1^+, V_2^+, V_3^+\}$$

and

$$A^- = \{\min_{v_{ij}} | j \in J\} = \{V_1^-, V_2^-, V_3^-\}.$$

Therefore, positive and negative solutions are defined as follows:

Main components	C 1	C 2	C 3
A^+	0.0456	0.0325	0.1914
A^-	0.0113	0.0122	0.005

The distance of each option (company) from the positive and negative solutions is calculated using the proposed relationships, the proximity coefficient of each firm is calculated from these solutions. Then the companies are ranked using the obtained scores. The distance of each option (company) to the solutions, scores and rankings obtained from the decision-making technique mentioned in Table 4 is shown.

5.5. Final model for measuring risk disclosure index

According to the above description, the final model for measuring the risk disclosure index is as follows:

$$RISK - Index_{it} = 0.022P_1 + 0.013P_2 + 0.020P_3 + 0.012P_4 + 0.011P_5 + 0.008P_6 + 0.012P_7 + 0.033P_8 + 0.024P_9 + 0.018P_{10} + 0.184P_{11},$$

where P_1 is Company size; P_2 is Market risk; P_3 is financial leverage; P_4 is liquidity; P_5 is profitability; P_6 is company growth; P_7 is Board size; P_8 is Independence of the Board of Directors; P_9 is Veganism of the CEO; P_{10} is Center of ownership and P_{11} is Institutional controllers.

Table 3: Group comparison matrix of components of risk information disclosure

Alternative	$D * W^3$	W^2	Landa max[1]
Risk of interest rate fluctuations	1.07368	0.056	19.171504
Risk of exchange rate fluctuation	0.85772	0.045	19.050514
Risk related to international factors	1.01625	0.053	19.179085
Risk of sanctions	1.07891	0.054	19.029325
Political- economic risk	1.01723	0.056	19.266408
Risk of recession	1.13351	0.058	19.192861
Energy carrier price risk	1.22563	0.059	19.217151
Market risk	1.17025	0.064	19.144303
Credit risk	0.9651	0.062	19.186253
Risk of natural resource constraints	0.8545	0.05	19.302057
Inflation risk	1.0385	0.046	19.422269
Risk of declining demand	0.74515	0.051	19.237444
Risk of competitors entering	1.23681	0.068	19.106408
Risk of effects of targeted subsidy schemes	1.14201	0.042	19.324690
Technology risk	1.02472	0.041	19.106408
Risk of financial, economic and political considerations	0.80345	0.038	19.233005
Risk of unhealthy competition	0.98402	0.055	19.324690
Product sales risk	0.78641	0.044	19.339251
Product quality risk	0.52271	0.061	19.129302
Business risk	0.60384	0.073	19.295528
Liquidity risk	1.41580	0.042	19.181834
Financial risk	1.93611	0.039	19.230241
Risk of receivables	0.77153	0.037	19.147520
Risk of default of installment sales checks	1.51422	0.041	19.205106
Risk related to corporate governance and financial structure	1.90844	0.033	19.550981
Process risk	0.74412	0.048	19.330668
Strategic risk	0.80533	0.037	19.710551
Environmental risk	1.46331	0.039	19.882056
Fraud risk	0.70025	0.052	19.366021
Profitability risk	0.10238	0.041	19.140258
Bankruptcy risk	0.90310	0.052	19.490521
Price risk of manufacturing institutions	1.40021	0.038	19.887521
Risk of falling product prices	1.85770	0.044	19.056328
Risk of customers interest in alternative products	1.96682	0.063	19.066710
Risk of raw material supply	1.33620	0.051	19.157051
Price risk of other production inputs	1.71221	0.047	19.360204
Risk of new products	1.66315	0.039	19.553611
			Compatibility rate
			0.0137921

Table 4: Distance of options to the ideal solution of positive and negative and ranking

Rank				Company	Rank				Company
42	0.164	0.0408	0.2075	Dasht morghab	27	0.176	0.0377	0.2075	Alborzdaro
54	0.473	0.1589	0.1767	Dore sanatipard	2	0.525	0.1324	0.1767	Electric Car East
36	0.407	0.1029	0.1497	Radiator Iran	4	0.392	0.0771	0.1497	Iran khodro dizel
55	0.271	0.0688	0.1851	Teraktor	15	0.309	0.0615	0.1572	Iran daro
40	0.178	0.0451	0.2073	Mashhad ring making	25	0.211	0.047	0.1198	Iran khodro
50	0.195	0.0491	0.2028	Saze poyesh	23	0.219	0.0421	0.1376	Irka part sanat
48	0.261	0.0648	0.1845	Salmin	18	0.266	0.0507	0.1523	Alomtak
31	0.282	0.0722	0.1786	Saipa	13	0.278	0.0523	0.1496	Alomrad
46	0.241	0.0615	0.1941	Saipa Azin	21	0.275	0.5470	0.1395	Ahangari
57	0.267	0.0686	0.1883	Saipa Dizel	17	0.299	0.0586	0.1378	Behsaram
34	0.163	0.0411	0.2155	Siman Urumieh	28	0.181	0.0352	0.1442	Behnosh
60	0.351	0.0897	0.1736	Siman Isfahan	6	0.355	0.0694	0.1376	Georgian Biscuits
37	0.168	0.0437	0.1651	Siman Behbahan	26	0.206	0.0412	0.1595	Pars Pamchal
33	0.304	0.0759	0.1803	Siman Tehran	11	0.315	0.0607	0.1263	Pars Khodro
38	0.337	0.0841	0.1495	Siman Khash	8	0.349	0.0674	0.1578	Pars Daro
47	0.289	0.0733	0.1735	Siman Darab	12	0.309	0.0622	0.1324	Pars Minoo
35	0.406	0.1023	0.1865	Siman Sepahan	5	0.386	0.0753	0.1257	Shazand Petrochemical
32	0.307	0.0769	0.0671	Siman sfidni riz	10	0.324	0.0623	0.1343	Iranian glass wool
39	0.257	0.0623	0.1682	Siman Shahrod	20	0.257	0.0492	0.1195	Pegah Isfahan
41	0.764	0.2166	0.1521	Siman Shomal	1	0.657	0.0148	0.1338	Pegah of west Azarbaijan
52	0.341	0.0869	0.1913	Siman Sofian	7	0.404	0.1485	0.0774	Pegah Khorasan
44	0.411	0.1062	0.2013	Siman Fars	3	0.408	0.0819	0.1254	Car axle production
59	0.256	0.0659	0.1724	Siman Ghaen	14	0.287	0.0835	0.1207	Iran brake pads
53	0.192	0.0479	0.1826	Siman Mazandaran	24	0.245	0.0556	0.1383	Mahram
45	0.307	0.0764	0.2439	Sina Daro	9	0.305	0.0475	0.1462	Rotary
58	0.276	0.0686	0.1886	Shahd Iran	14	0.289	0.0581	0.1322	Medicine Osweh
51	0.093	0.0256	0.1983	Shishe Daroi Razi	30	0.338	0.5523	0.1366	Medicine Jaberbn Hayan
56	0.264	0.0677	0.2146	Shimi Daro pakhsh	16	0.641	0.0605	0.1257	Amin Pharmacy
43	0.211	0.0531	0.3652	Shimiai Sina	22	0.452	0.0922	0.1343	Zahravi Pharmacy
49	0.149	0.377	0.4058	Iranian refractory products	29	0.904	0.0478	0.2365	Sepahan Industrial

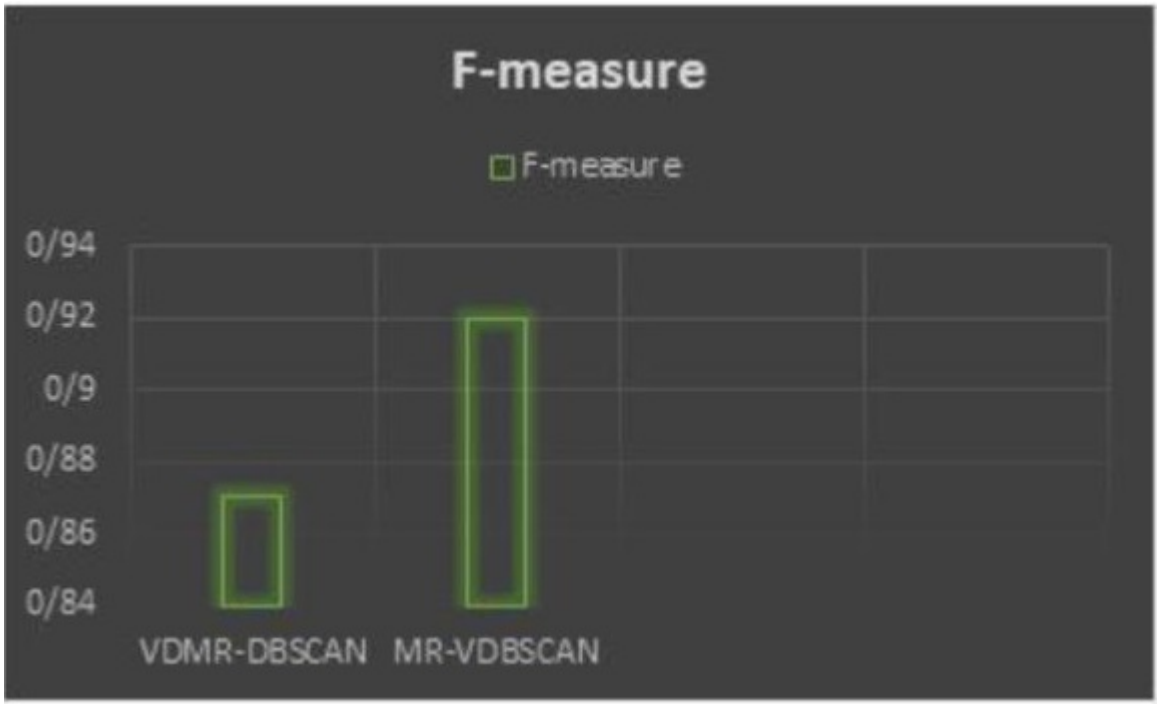
Table 5: The degree of entropy base on the factors affecting the disclosure of risk information

Institutional shareholders	Concentration of ownership	The duality of the CEO s duty	Independence of the Board of Directors	Board size	Company s growth	Profitability	Liquidity	Financial Leverage	Market risk	Size of the company	Influencing factors
0.909	0.893	0.991	0.952	0.943	0.946	0.908	0.935	0.987	0.966	0.951	Ej
0.091	0.107	0.009	0.048	0.057	0.057	0.092	0.065	0.022	0.034	0.049	dj=1-Ej
0.241	0.168	0.141	0.163	0.135	0.135	0.159	0.118	0.18	0.139	0.128	Wj

5.6. Measurement model validation

After determining the conceptual model of research and data collection, the most important stage of modeling is the validation of the measurement model. The validity of a model is examined using the goodness-of-fit criteria. Figure (1) and Table 6 show the modified model for measuring risk information disclosure and its related fit indicators, respectively.

Figure 1: Modified risk disclosure measurement model



5.7. Results of the proposed model of disclosure of risk information

After examining the validity of the model in the previous section, according to the collected data for each of the components affecting the disclosure of risk information and the calculated weight of each of these components using entropy technique, Table 7 results of measuring risk disclosure of some accepted companies in The Tehran Stock Exchange is shown as an example using the model presented in this study.

6. Conclusions and Research Suggestions

In this study, the evaluation performance of company information disclosure on improving the decision-making power of investors using hierarchical analysis technique (AHP) in companies listed on the Tehran Stock Exchange during the years 2006 to 2018 has been investigated. To determine the criteria for disclosing information, risk was measured using the opinions of experts into three components (general risk, company-specific risk and industry-specific risk). According to the questions of the present study, using content analysis method and expert opinions to identify and classify each of the components of risk disclosure in companies listed on the Tehran Stock Exchange was identified and at three levels (general risk, company specific risk and industry specific risk).

Classification and then classification of each of the main sub-components was also identified and examined. Then, using the opinions of experts, we identified and ranked each of the examined companies listed on the Tehran Stock Exchange. The obtained results show that Pegah Company

Table 6: Good fit criteria for a model for measuring risk information disclosure

Criteria for fitting goodness	Index name	Abbreviation	Modified model	Acceptable fit
Absolute fit indicators	Fit Goodness Index	GFI	0/981	Greater than 90%
	Modified fit goodness index	AGFI	0/96	Greater than 90%
Comparative fit indices	Unnormal fit index	NNFI	1/021	Greater than 90%
	Normalized fit index	NFI	0/9	Greater than 90%
	Adaptive Fit Index	CFI	0/905	Greater than 90%
	Incremental fit index	IFI	0/907	Greater than 90%
Economic fitting characteristics	Normalized fitting index	PNFI	0/529	Greater than 90%
	The root of the mean squares of the estimation error	RMSEA	0/052	Less than 10%
	Chi-square normalized to a degree of freedom	CMIN/df	4/226	Less than 5
Other fit indicators	Barbell index (0.05)	Hoelter	419	More than 200

Table 7: Descriptive statistics of risk information disclosure index

Views	skewness	deviation	The least	The most	Average	A symbol	Variable
780	0.391	0.066	0.397	0.756	0.520	RISK-Index	Disclosure of information

of West Azerbaijan, Electric Khodro Shargh, Production of Khodro Axis, Iran-Khodro Diesel are ranked first to fourth, respectively, and Shahd Iran Company, Cement Ghaen, has the last ranks. Finally, to answer the question of how much risk disclosure can affect the decision-making power of investors, identify the factors that affect the company's risk disclosure using content analysis, document mining and expert opinions, and then through weighting. In each of the factors and criteria considered, we dealt with a local model that had not been done in Iran before. The results obtained from the native model show that the disclosure of risk information is very important for investors. Risk information, although limited, is provided in the notes to the financial statements and activity reports of the board of directors, which can be used to determine part of the risk on their investments and ultimately to form a more appropriate portfolio. It also shows company executives how much risk information they provide so that they, at least in order to create a good reputation and image, can disclose information similar to other companies. According to the results of the research, Tehran Stock Exchange, capital companies, brokerage companies, rating agencies, investment companies, shareholders, futures holders, analysts and other Iranian capital market participants are suggested to make optimal decision-making in relation to the activity. Help your specialist. The findings of this study are important for investors and financial analysts. They can adjust their offers and decisions regarding stock trading, depending on how corporate governance mechanisms affect managers' risk-taking behavior, because companies with high ownership focus, dual CEO and independent board of directors are less likely to take action. They disclose information and this shows a higher information asymmetry in these companies and ultimately a higher information risk; therefore, analysts and investors are advised to take a risk in this regard for their investments.

References

[1] S. Abraham and P. Shrives, *Improving the relevance of risk factor disclosure in corporate annual reports*, British Account. Rev. 46(1) (2014) 91–107.

[2] A. Al-Hadi, K. Al-Yahyaee, M. Hussain and G. Taylor, *Market risk disclosures and corporate governance structure: Evidencefrom GCC financial firms*, Quart. Rev. Econ. Finan. 73 (2019) 136–150.
[3] M. Alshirah, A. Abdul Rahman and I. Mustapa, *Board of directors' characteristics and corporate risk disclosure: the moderating role of family ownership*, EuroMed J. Business 15(2) (2020) 219–252.
[4] D. Cormier, M. Magnan and B. Velthoven, *Environmental disclosure quality in large German companies: economic incentives, public pressures or institutional conditions?* European Account. Rev. 14(1) (2005) 3—39.
[5] M. Eloquent, A. Hosseini, S. Shaykhs, Investigating the effect of risk disclosure on the investment efficiency of companies listed on the Tehran Stock Exchange. Investment Knowledge, (2019), Volume 8, Number 31, pp. 372-355.
[6] H. El Zahar and K. Hussainey, *Determinants of narrative risk disclosures in UK interim reports*, J. Risk Finan. 13(2) (2012) 133–147.
[7] A. Fallahzadeh, A. Taftian and F. Hirani, *Investigating the relationship between voluntary disclosure of information and concurrency and the risk of stock price falls*, Finan. Account. 9(36) (2017) 75–53.
[8] R. Hassanzadeh Baradaran and R. Moharrami, *The effect of risk disclosure on stock price forecasting by corporate earnings and value*, Finan. Manag. Strategy 5(4) (2017) 209–189.
[9] ICAEW, *Reporting Business Risks: Meeting Expectations London*, Institute of Chartered Accountants in England and Wales, 2011.
[10] S.P. Kothari, X. Li and J.E. Short, *The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis*, Accoun. Rev. 84(5) (2009) 1639—1670.
[11] A. Maghzom, D. Khaled Hussainey, Value Relevance of Voluntary Risk Disclosure Levels: Evidence from Saudi Banks, Accounting & Taxation, (2016), Vol. 8, No. 1, Pp. 1-25.
[12] A. P. Marshall and P. Weetman, *Modelling transparency in disclosure: the case of foreign exchange risk management*, J. Business Finan. Account. 34(5-6) (2007) 705—739.
[13] A. Miihkinen, *The usefulness of firm risk disclosures under different firm riskiness, investor-interest, and market conditions? New evidence from Finland*, Adv. Account. incorporating Adv. Int. Account. 29(2) (2013) 312–331.
[14] E.S. Mokhtar and H. Mellett, *Competition, corporate governance, ownership structure and risk reporting*, Manag. Audit. J. 28(9) (2013) 838–865.
[15] S. Nahar, M. Azim and M. Hossain, *Risk disclosure and risk governance characteristics: evidence from a developing economy*, Int. J. Account. Inf. Manag. 28(4) (2020) 577–605.
[16] M. Namazi and M. Ebrahimi Meymand, *Examining how risk disclosure in companies' annual reports and the factors affecting it*, Knowledge Financ. Account. 3(2) (2016) 1–29.
[17] S. Polizzi and E. Scannella, *An empirical investigation into market risk disclosure: is there room to improve for Italian banks?*, J. Financ. Regul. Compl. 28(3) (2020).
[18] I. Salem, S. Ayadi and K. Hussainey, *Corporate governance and risk disclosure quality: Tunisian evidence*, J. Account. Emerg. Econ. 9(4) (2019) 567–602.
[19] M. Taheri, A. Rahmani and G. Soleimani, *The value relationship of disclosure and risk reporting in member banks of the Tehran Stock Exchange*, Financ. Account. Res. 11(1) (2019) 1–22.
[20] Y. Tana, Z. Cheng Colin and E. Tamer, *Risk disclosures, international orientation, and share price informativeness: Evidence from China*, J. Int. Account. Audit. Tax. 29 (2017) 81–102.