

The efficiency of intellectual capital on the relevance of accounting information of listed companies in Tehran Stock Exchange

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Abstract

In today's knowledge-based world, knowledge assets and intellectual capital is the main factor of profitability and maintaining competitive advantage of enterprises. The fact is indicative of the importance of intellectual capital, the gap between book value and market value of companies, particularly from the eighties onwards which, according to most financial analysts is related to increasing the company's investment in intellectual capital. Therefore, The main research question is, whether intellectual capital efficiency affects the relevance of accounting information of listed companies in Tehran Stock Exchange? The sample includes 138 companies listed on Tehran Stock Exchange. The results of this research using panel data regression (least squares method), suggested that the efficiency of intellectual capital has a significant positive impact on the relevance of accounting information. And the efficiency of human capital has a significant positive impact on the relevance of accounting information. As well as physical capital efficiency has a significant positive impact on the relevance of accounting information. Finally, structural capital efficiency has a significant positive impact on the relevance of accounting information.

Keywords: Intellectual capital, human capital, structural capital, the relevance of accounting information.

Introduction

In 1979, a Swedish accountant named Caral Eric Sveiby who later was introduced as one of the founders of the science of knowledge management was faced with a big question. Accounting Offices (book value) of one of the famous branches of an organization where he worked only showed the value of a Krone, while the real value of the organization was far more than this. At this time, Sveiby found that his company's financial balance sheet only shows the value of its physical assets, including several desks and typewriters and the actual

value of the organization depends on the competence of staff and what the employees of organization formed as a collective office and brain. Soyoob and others introduced this finding in the name of intellectual property and intangible assets and placed it on the side of tangible assets. So the number of Writings, seminars and ... grew up in this area and the issue seriously placed on the agenda of scientists of management science and managers of large organizations. In the new economy the exchange of knowledge and information more than products and services has been promoted organizations, So that by investigating the companies with rapid growth, we find that 50% of them have traded the knowledge of their employees. So with such a process, determine a criteria and principle for valuation as a key asset is of great importance. In the third millennium, business organizations have seen the transformation of traditional economic system to knowledge-based economy. In general, knowledge-based economy has recognized intellectual capital as a central element of the company's growth turning it into a major source of corporate competitive advantage (Holland, 2003).

In the ultra-competitive era of organizations we face with an environment which is characterized by increasing complexity and globalization and dynamics. Thus, organizations face with new challenges for its continuity and deployment that exit from these challenges requires more attention to developing and strengthening skills and capabilities within the organization; this is done through the basics of organizational knowledge and intellectual capital that organizations use them to achieve better performance in the business world. Knowledge and intellectual capital has been recognized as sustainable strategies for achieving and maintaining competitive advantage of organizations (Barney, 1991; Grant, 1991).

The concept of intellectual capital is vague and different definitions are used for the interpretation of this concept. For example Bontis (1998) defines intellectual capital as a collection of intangible assets (resources, capabilities and competitiveness) which are obtained from organizational performance and value creation. Also, Edvinsson and Malone (1997), define intellectual capital as intangible resources available to an organization, and all the knowledge that an organization is able to gain competitive advantage.

From the perspective of Gupta and Roos (2001), intellectual capital is a unique set of tangible and intangible resources of company. Marr (2004) also knows the intellectual capital as a set of knowledge-based assets that are specific to an organization and are considered among the features of an organization, and by adding value to key stakeholders of the organization leads considerably to improve the competitive situation of organizations.

Bontis (1998), Edvinsson and Malone (1997) in their classification consider intellectual capital with three components: human capital, structural capital and relational capital or customer. The concept of relevance is in compliance with conceptual statement of the relevance of accounting information, which has come in the theoretical framework of accounting and financial reporting. Relevance of the figures can be examined from two major perspectives; First, from the perspective of signaling and second, from the perspective of measurement. The aspect signaling measures the amount of response to the notification and accounting profits report. The perspective measurement of the relevance assesses the relationship between the indexes of the company's market value and accounting variables.

According to the above, the purpose of the present study is to investigate the efficiency of intellectual capital on the relevance of accounting information of listed companies on the Tehran Stock Exchange.

The literature

Rezai et al in their research investigated the role of intellectual capital and knowledge management in improving the quality of services. The results of their study showed that there is a direct and significant correlation between knowledge management, intellectual capital and its dimensions with the quality of services from the customer perspective.

Hemmati et al "investigated the relationship between intellectual capital with the market value of companies listed in Tehran Stock Exchange" The results of this research using panel data regression (least squares method), showed that there is a significant correlation between intellectual capital and company's market value.

Valipoor et al studied the effect of voluntary disclosure level on the relevance of accounting information value in listed companies in Tehran Stock Exchange. Their results showed that by increasing the level of voluntary disclosure, the relevance and informational content of book value per share has increased.

Areghty et al (2014) have been discussed and investigated the role of companies' heterogeneity in determining the amount of companies' investment in intangible assets. In general, the results of their study showed that the heterogeneity of companies plays an important role in the company's investment in intangible assets. More precisely, according to the results willingness to invest in intangible assets is more in larger firms and firms with better human capital.

Nkunda banyanga et al (2014) in their study, using data from 128 companies investigated the mediating role of intellectual capital on the relationship between the board characteristics and Company's performance. The results of their study showed that there is a significant relationship between board characteristics and firm performance. In addition, the results of Nkunda banyanga et al showed that intellectual capital plays a mediating role on the relationship between board characteristics and corporate performance.

The research hypotheses

- Intellectual capital efficiency has a significant impact on the relevance of accounting information.
- Human capital efficiency has a significant impact on the relevance of accounting information.
- Physical capital efficiency has a significant impact on the relevance of accounting information.
- Structural capital efficiency has a significant impact on the relevance of accounting information.

Research methodology

The research method in terms of nature and content is correlational and objectively is an applied research. Research conducted within the framework of deductive-inductive arguments. This means that the Theoretical Foundations and literature through library studies and circulation in sites and articles as deductive and data collection to confirm or reject the hypothesis is in the form of inductive. This study has used post-facto data. The estimation method is correlational and econometrics panel data model and EVIEWS software is used for analyzing.

The studied variables in the form of a conceptual model and description of how to check and measure variables

$$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 IC + \beta_4 EPS_{it} * VACA_1 + \beta_5 EPS_{it} * VAHU_2 + \beta_6 EPS_{it} * STVA_3 + \beta_7 BVS_{it} * VACA_1 + \beta_8 BVS_{it} * VAHU_2 + \beta_8 BVS_{it} * STVA_3 + \beta_9 LEV_{it} + \beta_{10} SIZE_{it} + \varepsilon_{it}$$

In which:

IC: intellectual capital

VACA: physical capital efficiency coefficient

VAHU: human capital efficiency coefficient

STVA: structural capital efficiency coefficient

LEV: Financial Leverage

SIZE: Company size

EPS: earnings per share at the end of period

BVS: Book value per share

Intellectual Capital is the independent variable that is calculated using physical capital, human capital and structural capital and the relevance of accounting information value is the dependent variable. And firm size and financial leverage are control variable.

Independent variables:

In this research, intellectual capital is measured based on Pulic model. Indicators used in the Pulic model to measure intellectual capital are: physical capital efficiency, human capital efficiency and structural capital efficiency that are calculated based on the intellectual value added coefficient. The method of calculating intellectual capital based on Pulic model is as follows:

Pulic model raised measurement of intellectual capital in 1997 and developed it in 1998 and finally completed it in 2000. According to this model, the added value resulting from resources of current year is calculated based on the following equation:

$$VA = OP + EC + D + A \quad (1)$$

In which:

OP = Operating profit in the current year

EC = Labor costs in the current year

D = Depreciation cost of fixed assets in the current year

A = Depreciation cost of intangible assets in the current year

Pulic introduced intellectual capital measurement criteria under three criteria of value added coefficient of physical capital, value added coefficient of human capital and value added coefficient of structural capital.

Physical capital efficiency coefficient: This equation demonstrates the added value created by physical capital unit. That is, for each rial tangible physical assets how many rials added value is achieved.

$$VACA = VA / CA = \text{value added} / \text{physical capital} \quad (2)$$

Human capital efficiency coefficient: which is related to the relationship between value added and human capital, and indicates that for every rial spent for staff how many rials added value is achieved.

$$VAHU = VA / HU = \text{value added} / \text{Human capital} \quad (3)$$

That in the equation above, human capital includes direct labor, indirect labor, and salary of sales, marketing and administrative sectors.

Structural capital efficiency coefficient: this coefficient indicates structural capital share in creating added value. This means, what percentage of company's added value is resulting from the structural capital. In the Pulic model structural capital is calculated from the difference of added value minus human capital. Structural capital efficiency coefficient in the Pulic model is calculated as follows.

$$STVA = 1 - (HU / VA) = 1 - (\text{human capital} / \text{Value Added}) \quad (4)$$

Whatever human capital share to create value is lower, the structural capital share is more. Value added coefficient of structural capital calculates the amount of structural capital needed to create a Rial value added and is as an indicator of structural capital success in the process of value creation.

Value added coefficient of intellectual capital: this coefficient is used as a measuring tool of intellectual capital in Pulic model, which is obtained from the sum of the mentioned coefficients and calculates the company's intellectual capital. In other words, intellectual capital (VAIC) is calculated by the following formula:

$$VAIC = VACA + VAHU + STVA \quad (5)$$

Dependent variable:

Relevance of accounting information:

Relevance of accounting information means that information of interest is effective on economic decisions of users in assessing events from the past and present, as well as confirming or correcting their past evaluations. The feature relevance of information is based on useful concepts in predicting and selecting specific measurement. That two replacement variables are used to measure it, as follows: price model and return model.

A. return model -based benchmark

In return model, the relationship of stock returns and accounting profit is described. A specific type of annual return model is presented as below, which includes the profit in the current year and profit change compared to last year.

$$R_{it} = \beta_0 + \beta_1 \left(\frac{EPS_{it}}{P_{it-1}} \right) + \beta_2 \left(\frac{\Delta EPS_{it}}{P_{it-1}} \right) + \varepsilon_{it}$$

In which:

R_{it} : is annual return per share, which is calculated as follows: price per share at the end of the fiscal year plus the net profit per share and minus last year's price per share and dividing by the last year's price per share.

(B) The market value per share is of shareholders' equity. And it is calculated by dividing shareholders' equity on the number of shares for each company.

EPS: earnings per share

P: market value per share

In the price model, the relationship between stock price and accounting information is described. And the relationship between stock price and earnings and book value of shareholders' equity is described in it.

$$P_{i,t} = \beta_0 + \beta_1 BVS_{i,t} + \beta_2 EPS_{i,t} + \varepsilon_{i,t}$$

In which:

P: market value per share

BVS: Book value per share

EPS: earnings per share

The control variables:

Company size:

To measure the size of the company we will use the natural logarithm of total assets at the end of the course. According to research of Izadi Nia et al (1392)

$$(\text{COMPANY SIZE}) = \text{Log}(\text{Total Asset})$$

Financial Leverage:

According to research Izadi Nia et al (1392), the following formula is used.

Financial Leverage

The statistical population and sample

The study period is a seven-year period of time based on the financial. Companies listed on the Tehran Stock Exchange constitute the study population. In this study, statistical sampling is not used, but the following conditions were placed for sample selection:

1. Company's fiscal year is finished at the end of March each year.
2. Company has not changed the fiscal year.
3. The required financial information is available in order to extract the required data.
4. Is not among the banks and financial institutions (investment companies, financial intermediation, holding companies and leasing); because disclosure of financial information and corporate governance structures is different in them.
5. Is listed in the Tehran Stock Exchange by the end of fiscal year.

According to these, 138 companies have the above conditions.

Data analysis:

Investigate descriptive statistics of variables in all companies

In order to better understanding of the nature of the studied society and learn more about the research variables, before analysis of statistical data, it is needed to describe these data. Also the statistical description of data is a step in order to detect dominant pattern in them and a basis for explaining the relationships between variables that are used in research.

Central and dispersion indices are shown in Table 1. The mean is the most widely used central index. The domain of changes is the simplest dispersion index which is the difference between the largest and smallest amounts of data. The most widely used diffusion index is the standard deviation, which is obtained by the square root of the variance.

Table 1- descriptive statistics of variables in all companies

Maximum	Minimum	Standard deviation	Median	Mean	Variable
0/230	0/947	0/126	0/011	0/026	Intellectual Capital
0/952	0/142	0/161	0/656	0/641	Physical capital efficiency coefficient
4/136	0/490	0/556	1/222	01/379	Human capital efficiency coefficient
0/314	0/002	0/045	/025	0/040	Structural capital efficiency coefficient
15/980	10/020	1/003	13/135	13/114	Financial Leverage
1/570	0/100	0/194	0/640	0/624	Company size
5/580	0/00	0/772	0/224	0/464	Earnings per share at the end of period
3/780	0/050	0/758	0/500	0/788	Book value per share

Source: The authors find

In descriptive statistics, data analysis has been done using central indexes such as mean, median and dispersion indices such as standard deviation, skewness and kurtosis.

The statistical quantity of variables indicates that the difference between minimum and maximum of data indicates the proper scope for use of the variables.

Testing hypotheses

To investigate the hypothesis of this study, we use the following regression model:

$$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 IC + \beta_4 EPS_{it} * VACA_1 + \beta_5 EPS_{it} * VAHU_2 + \beta_6 EPS_{it} * STVA_3 + \beta_7 BVS_{it} * VACA_1 + \beta_8 BVS_{it} * VAHU_2 + \beta_9 BVS_{it} * STVA_3 + \beta_9 LEV_{it} + \beta_{10} SIZE_{it} + \varepsilon_{it}$$

Before testing the above hypothesis the regression model has been selected. First, using the F-Limer test Data Integration Model is selected against the panel data model. F Limer test result is presented in Table 2. The probability of the test statistic was less than 0/05, thus to test this hypothesis Data Integration Model is not used and panel data method should be used.

Table 2- F Limer test results at 5% level

$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 IC + \beta_4 EPS_{it} * VACA_1 + \beta_5 EPS_{it} * VAHU_2 + \beta_6 EPS_{it} * STVA_3 + \beta_7 BVS_{it} * VACA_1 + \beta_8 BVS_{it} * VAHU_2 + \beta_9 BVS_{it} * STVA_3 + \beta_9 LEV_{it} + \beta_{10} SIZE_{it} + \varepsilon_{it}$		Model Hypothesis 1	
The probability of test statistic	Degrees of freedom	Test statistics	Type of test
0/00	(965 and 138)	1/916	F Limer

Source: The author's findings

After it became clear, our data are in the form of panel data, then it should be determined which fixed effects method or random effects method is used for estimation? So Hausman test is used to diagnose the issue. By doing this test we can obtain the proper way of estimation between the fixed effects method and random effects method. In this way, the null hypothesis implies that the random effects method is used to estimate the model and opposite hypothesis states that the fixed effects method is used to estimate. The test result is provided in Table 3.

Table 3 Hausman test results at 5% level

$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 IC + \beta_4 EPS_{it} * VACA_1 + \beta_5 EPS_{it} * VAHU_2 + \beta_6 EPS_{it} * STVA_3 + \beta_7 BVS_{it} * VACA_1 + \beta_8 BVS_{it} * VAHU_2 + \beta_9 BVS_{it} * STVA_3 + \beta_9 LEV_{it} + \beta_{10} SIZE_{it} + \varepsilon_{it}$	Hypothesis Model
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The probability of test statistic	Degrees of freedom	Chi-square statistic	Type of test
0/000	7	26/330	Hausman

Source: The author's findings

Hausman test and the probability of accepting the null hypothesis is given in the table above. Since the significance level of test is obtained less than 0/05 it can be concluded that the appropriate method to estimate the model is fixed effects model.

The results of estimating the model

Table 4 The results of estimating Regression model

$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 IC + \beta_4 EPS_{it} * VACA_1 + \beta_5 EPS_{it} * VAHU_2 + \beta_6 EPS_{it} * STVA_3 + \beta_7 BVS_{it} * VACA_1 + \beta_8 BVS_{it} * VAHU_2 + \beta_9 BVS_{it} * STVA_3 + \beta_9 LEV_{it} + \beta_{10} SIZE_{it} + \varepsilon_{it}$			research model
Significance level	T-statistic	Coefficients	variables
0/000	3/969	0/487	Constant coefficient
0/000	3/972	0/0137	Physical capital efficiency coefficient
0/000	1/579	0/015	Human capital efficiency coefficient
0/000	4/427	0/0309	Structural capital efficiency coefficient
0/000	1/089	0/019	Financial Leverage
0/000	10/963	0/024	Company size
0/000	2/043	0/018	Earnings per share at end of period
0/000	1/502	0/014	Book value per share
6/735			F statistic Adjusted coefficient of determination 0/443 0/404

0/000	Probability of F statistic
1/853	Durbin-Watson statistic
0/560	The coefficient of determination
0/511	Adjusted coefficient of determination

Source: The author's findings

According to F test results for the first hypothesis model, which can be seen in the table, the probability level is equal to zero and less than the desired significance level of α study, therefore, the null hypothesis of F test is rejected at the 95% confidence level, so, the model is significant, and there is a linear relationship between the dependent and independent variables.

The coefficient of determination is also equal to 0/560, meaning that independent variables explain 56% of changes in the dependent variable. The higher level of the coefficient of determination represents the high explanatory power of the model in explaining the dependent variable changes by the independent variable.

The next important issue is the independence of error components in the model fitted. To check this, Durbin-Watson statistics is used, and since this value is between 1.5 and 2.5, it can be concluded that the error components in the model have no significant correlation with each other and have a behavior independent of each other. Durbin-Watson value is equal to 1/85 and is located at an acceptable level (between 1/5 and 2/5).

The first hypothesis test results

According to the results presented in Table 1-4 human capital efficiency coefficient is positive (0/015) and according to the significance level of t-test (0/0) is significant, thereby human capital efficiency has a positive and significant impact on the relevance of accounting information. The first hypothesis is confirmed at the significant level of 95%.

The second hypothesis test results

According to the results presented in Table 4 physical capital efficiency coefficient is positive (0/0137) and according to the significance level of t-test (0/0) is significant, thereby physical capital efficiency has a positive and significant impact on the relevance of accounting information. The second hypothesis is confirmed at the significant level of 95%.

The third hypothesis test results

According to the results presented in Table 4 structural capital efficiency coefficient is positive (0/0309) and according to the significance level of t-test (0/0) is significant, thereby structural capital efficiency has a positive and significant impact on the relevance of accounting information. The third hypothesis is confirmed at the significant level of 95%.

Summary and Conclusion

Nowadays, many sensing systems have been designed to measure intellectual capital, but yet there is no comprehensive approach to measure. Despite many recent attempts to qualitative and in some cases quantitative assessment of intangible assets, a comprehensive system that covers all aspects of the assessment is not designed yet. In this part evolution and methods for measuring intellectual capital are shown briefly and in comparison with each other.

Table 5 Comparison of concepts and models of intellectual capital (different classifications of intellectual capital measurement)

Modeling capability		Having the past approach or the future approach	Being quantitative or qualitative	Title of classification: Components and factors		
no		Costs located in the past	Relative	Tangible individual capital	Balance capital,	Sheet: structural
no		both	Qualitative	Supervisor of external perspective, intangible assets	perspective, individual merits,	internal
no		both	Qualitative	The balanced evaluation: financial perspective, customer perspective, process perspective, learning and innovation perspective		
Only internal wards	in	Costs located in the past	Quantitative	Economic Value Added: financial planning, budgeting, goal setting, payments		
Limited		Consider the value creation potential	Relative	Intellectual capital Index: strategy, financial and non-financial criteria		
Limited		Both (income / market / cost attitude)	Is directed from qualitative values to quantitative values.	Intermediary technology: market assets, human assets, intellectual property, infrastructure assets.		

Modeling capability	Having the past approach or the future approach	Being quantitative or qualitative	Title of classification: Components and factors
Yes	Costs located in the past	Quantitative	Return on assets: ratio of total income to assets
Yes	Costs located in the past	Quantitative	Market capitalization method: distinction between market value and book value
Yes	Concepts of market assets	Quantitative	Direct Intellectual Capital method: market, intellectual property, technology, structural and human assets
no	both	Relative	Scandia Navigator business: financial, customer, process, human, development of KPI
Yes	Market value	Quantitative	FIMIAM: human capital, customer capital, structural capital and their common parts
Yes	Retrospective	Quantitative	Intellectual value added coefficient: structural capital, human capital, physical capital

The classification shown in the table above is provided by Rodof and Llyart and has been investigated available methods to identify and the quantitative and qualitative measurements of intellectual capital from three dimensions of being quantitative or qualitative of measurements method, the approach to the future or the past as well as the ease of usability of the method in other cases.

This thesis addresses the efficiency of intellectual capital on the relevance of accounting information of listed companies in Tehran Stock Exchange. The following conclusions have been achieved from estimating regression models proposed in the fourth chapter:

During the Industrial Revolution and, until recently, the value created in the businesses has been mainly achieved through the efficient use of physical resources. Today, the value in

organizations is increasingly achieved through the use of technical knowledge of human factors and other factors such as information systems. The production of value from these new resources is called the general knowledge. Attention and emphasis on the knowledge which has been named as intellectual capital, shows our fundamental differences between companies that are active in the new and old economy. The emergence of the knowledge economy has led to end the era of the relative importance of tangible assets and following that a new trend, in which an increased focus on intellectual capital and knowledge can be seen, was emerged.

The thesis assumptions are also summarized in the following table.

Table 6 investigate the Thesis assumptions

Results	Hypothesis	Row
Confirmed	Intellectual capital efficiency has a positive and significant impact on the relevance of accounting information.	1
Confirmed	Human capital efficiency has a positive and significant impact on the relevance of accounting information.	2
Confirmed	Physical capital efficiency has a positive and significant impact on the relevance of accounting information.	3
Confirmed	Structural capital efficiency has a positive and significant impact on the relevance of accounting information.	4

Propose hypotheses based on the results

1) According to the first hypothesis results it is suggested that greater attention and emphasis on intellectual capital in organizations and understand the importance and impact of this factor in overall performance of organizations and its positive effect in the process of value creation in organizations can be recommended as an effective factor in improving financial performance of organizations. Since in research paradigm, human capital as a key factor in the calculation of intellectual capital plays a role, providing a competitive environment in order to determine the level of employee salary greatly increases the efficiency of research paradigm.

2) According to the second hypothesis results it is suggested that human capital, "real life", is the heart and brain of the organization and all the issues in the organization depends on them. When revenue of each employee increases, this means that his contribution in the organization increases and he has a greater ability to create more value in the company. In addition, they also considered education level in the organization as one of the critical factors of human capital and have always considered it at their research.

3) According to the third hypothesis results it is suggested that, structural capital has been defined as databases, organizational structures and processes that here the results of studies have shown that, indeed, primarily companies with higher efficiency of these types of resources provide more relevant information.

4) According to the results of the fourth hypothesis it is suggested that, intellectual capital is born from science. Human factor, which is essential in knowledge management process and knowledge-based organizations and is the most important competitive advantage of the organization and the rarest resource in today's knowledge-based economy, will be taken into consideration. And the following suggestions are made to shareholders and investors:

- Shareholders and investors: information will provide a very strong role in better and more accurate decision-making for each investment.

Tehran Stock Exchange: Stock Exchange is financial and economic institution of any country which provides financial resources for economic activities. Thus, awareness of new and updated researches of their findings can help the stock in its role.

- Universities and research institutes: Can use others' research findings and perform new studies and in this way produce modern sciences.

- Managers: Managers can use the results in correct decision making to improve the company's performance.

Suggestions for future researches

1. Expansion of intellectual capital model in compliance with accounting standards and for financial reporting so that is useful both for external stakeholders and internal managers.

2. The intellectual capital efficiency on the market value of companies listed on the Tehran Stock Exchange

3. The intellectual capital efficiency on the performance of companies listed on the Tehran Stock Exchange

4. The intellectual capital efficiency on corporate governance of listed companies on Tehran Stock Exchange

Research limitations

The main limitations of this study are:

This study like other descriptive studies has time and space limitations. The time of the research is a period of 6 years; and its location is the Tehran Stock Exchange. So, one must be careful in generalizing its results to other times and other statistical societies.

✦ Since the mentioned characteristics are the basis to select samples from the companies of statistical population; so generalizing the findings to a group of firms listed in the Tehran Stock Exchange, which have characteristics different from the desired sample, should be done with caution.

✦ Due to the nature of variables and the limited number of companies with the conditions of research, sampling is done as elimination not randomly and this can be a limitation of the study to generalize the results.

✦ Lack of control of some factors affecting the research results, including the impact of variables such as economic factors, political conditions, corporate life, laws and regulations and type of industry and ... that are out of reach of the researcher, may affect investigating the relations.

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