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TO STUDY THE EFFECT OF INTELLECTUAL CAPITAL ON COMPANY VALUE AND INVESTOR'S REACTION: EVIDENCE ON IRAN STOCK EXCHANGE

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Abstract: *In today knowledge – oriented economy, intellectual capital has been known as very important factor to create value and obtain competitive advantage. The goal of the research is to study the relationship the components of added value intellectual capital efficiency such as structural capital efficiency, relational capital efficiency and human capital efficiency with company value and investor's reaction. Hence, 105 companies were selected among the companies operating in Tehran Stock Exchange from 2009 to 2013. The components of intellectual capital were estimated using Pulic model, company value and QTobin's and investor's reaction was assessed using equity B/M ratio. The results of the research indicated that there is negative significant relationship between the efficiency of human capital and investor's reaction.*

Keywords: *structural capital efficiency, relational capital efficiency, human capital efficiency, company value, investor's reaction*

1. INTRODUCTION

The growth, development and utilization of technologies are perhaps the most obvious sample of human progress. Attention to intellectual knowledge and capital is ever increasingly as main factor of the new economy. Therefore, the understanding of deficiencies of mere technology view (especially IT) will be more attention daily the role of human resources and human intelligence (Pahlevanian, 2012: 64-67). Knowledge is regarded as one of the most important components of intangible assets. If in the past, most of the assets of the organizations had been tangible, but today the majority of organizational assets are intangible (1552-1562: Sullivan, P. F., Neale, M. C., & Kendler, K. S. 2000). In a world with ungovernable developments and power transition period (quoted to Tafler), the issue of intellectual capital management and intangible assets of the organization, as

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important phenomenon in 1990s, has affected the horizons of management development as a whole after reengineering and TQM issues in 1980s. The new paradigm in the management of organizations covered by the above discussion is intellectual capital management discussion. In fact, intellectual capital consists of all staff, organizational knowledge and its ability to create added value and it leads to permanent competitive benefits (Ghelich Lee & Moshabbaki, 2004: 125-147). Therefore, intellectual capital tries intellectual assets; knowledge, experience and organizational learning are paid attention in organizations to achieve a comprehensive development. On the other side, independent auditor's opinion seeks to increase investor confidence in financial reporting system. Intellectual capital and its three components (human capital, relational capital and structural capital) can be grounds for greater transparency in the company' financial information and on the other hand, it leads to increased company's performance and value (Namazi & Ebrahimi, 2009). What auditing is added to financial reporting process is related to reported data quality and it is needed for users to evaluate data quality before use. Financial information is regarded as a benchmark for users' economic decisions which finally impacts on organizational benefits. The valuation of companies is essential for managers and investors to plan, because, nowadays ranking companies in terms of credit and value depends largely on their intellectual capital. In fact, the base of production and service delivery is related to how to supply and spend funding (Pour Zamani *et al.*, 2012: 17-30).

The main objective of most companies creates value for shareholders and maximizes their wealth. In order to maximize the value of the company, management needs to invest its assets in order to generate cash flow. These assets include tangible and intangible assets, which is referred to as intellectual capital. The end result is maximizing shareholders' wealth, and consequently the value of the company (Brigham, E.F. & Daves, P.R. 2004)

2. THEORETICAL FRAMEWORK

2.1. Intellectual Capital

Today, everyone knows that internet and World Wide Web is emerging a new era called the era of knowledge and the farewell of industrial era. In the industrial era which began in the 1890s, the emphasis was on production and mass distribution. But in the age of knowledge, what leads to the success of trade and industry is human knowledge. This intangible asset is known as intellectual capital and the development of intellectual capital is a critical area for making profit (Mojtahed Zadeh, 2003, 7-9). Knowledge – oriented business environment needs a new approach that new intangible assets such as knowledge and competencies of human resources, innovation, relation to customer, organizational culture and organizational structure and systems are included.

Among this, intellectual capital theory has been attracted ever- increasingly attention academic researchers and organizational practitioners (Ghelich Lee & Moshabbaki, 2006: 125-147).

2.2. Investor's Reaction Definition

Information flow with high volume is continued regularly in efficient capital market and investors react logically to new information. The logical reaction of investors leads to adjust the price of the securities to achieve real value (intrinsic). Due to competitive conditions, market practitioners cannot rely on past information or personal skills to earn higher yields than the market return. Since information is entered randomly into market, then the prediction of price of securities is impossible even in the near future. Hence investment cannot increase its investment return through using certain investment strategies including investment strategies with reverse and relative power. In such market, to apply certain investment strategies for identifying profitable investment leads to fail (Mohammad Reza Nikbakht, Mehdi Moradi; summer 2005: 97 – 122). Generally, limited computing power, complexity of the issues and some systematic errors in judgment and decision making, sometimes people don't react perfectly rationally (Demori, Sayeda & Fallah Zadeh Abar Ghoee, 2008: 62-47). In this regard, the psychological factors are one of the most important issues which affect the behavior of investors and their reactions affect the data. The analyses indicate that the securities often experience the cycles, less and more, in result of investors' information processing. The reaction depends that investors how to understand the basic principles. If these principles are easily understood by many people, both reactions (less or over) will decrease (Sasani & Nonahal Nahr, 2008: 47 62).

In connection with the causes of the phenomenon of overreaction by investors, different researchers have described a series of psychological factors and this has been put in the field of behavioral finance. In interpretation of over – reaction, they refer to two psychological biases of investors during making investment decisions: over – confidence and success attributable to self. Over – confidence means that people are interested in trusting too much their skills, abilities and knowledge. Over – confidence becomes stronger about the stock that is difficult to determine its value. In result of psychological bias of success attributable to self, investors attribute desirable results to their skills and bad results to chance and investors have full confidence in their skills in selecting stocks (Daniel K, Hirshleifer D, Subrahmayam AM, 1998: 1839 - 1885).

The researchers who studied shareholders' over – reaction have concluded that investors show over – reaction to previous financial performance of companies. It means that investors valuate stocks with previous good financial performance more than intrinsic value and stocks with previous weak financial performance lower than intrinsic value. So, after a while, when investors realize that their

previous expectations had not been right and return stock price to their real and intrinsic value (Mehrani & Nonahal Nahr, 2007: 25-46).

2.3. Research Background

Chang and Hsieh (2011) studied intellectual capital components and three performance (operational, financial and market) of Taiwan Stock Exchange in electronic industry. Adjusted intellectual added value coefficient model has been used to measure intellectual capital. The results indicate there is a positive relationship between operational performance and applied capital and there is not a relationship between human and structural capitals. Also, there is a negative relationship between components of intellectual capital with financial performance and market performance. R&D expenditures has a positive relationship with three performances (operational, financial and market), but there is only a positive relationship between operational performance and intellectual properties.

Maditinos *et al.* (2011) studied the relationship between intellectual capital with market and financial performances in Greece Stock Exchange. Intellectual added value coefficient model has been used to calculate intellectual capital. The results of the research indicated that there is not a significant relationship between intellectual capital with the performance of stock market and financial performance and it has been approved only a relationship between human capital and return on equity.

Cooper *et al.* (2008) believe that the irrational reaction of investors to the changes of accrual items is due to the aspect of the investment of these items. Since calculated accrual items via changes in non – cash working capital is regarded as investment / growth criterion. Therefore increased investment in accrual items is considered as a positive indicator in company and company' profitability is predicted optimistically and vice versa.

Dianati and Deylami (2013) studied the effect of intellectual capital on the quality of financial information of the companies listed on Tehran Stock Exchange from 2001 to 2010. The analysis was conducted using structural equation method. The results indicate that among intellectual capital components, structural capital, human capital and physical capital have the maximum correlation, respectively. Totally, intellectual capital components can explain about 50 percent of the changes in information quality. Accordingly, providing high quality data leads to make appropriately decision and consequently it cause to improve capital market. Organizations should pay great attention to the intellectual capital as a strong source to improve their business performance.

Namazi and Ebrahimi (209) studied the effect of intellectual capital on future and current financial performance of the companies listed on Tehran Stock Exchange. Regardless of firm size, debt structure and previous financial

performance, the results indicate that there is a positive significant relationship between intellectual capital and future and current financial performance, both company level and industry level.

Demori et al (2008) studied investors' over – reaction to the patterns of previous performance. The results indicated that the shareholders in Tehran Stock Exchange show extreme reaction to some variables including profit before extraordinary items, sale and stock return and show less reaction to the variable of cash flow.

Mehrani *et al.* (2008) evaluated investors' less – expected reaction in Tehran Stock Exchange. In the research, they assessed the theory of investors' less – expected reaction using short term return. Unlike many foreign researches, the research indicated there is not less – expected reaction among investors in Tehran Stock Exchange.

3. RESEARCH METHOD

The research is an applied research in terms of goal and additionally, based on type of research, the research is quasi – experimental and descriptive research. Since the research uses past information to calculate the variables, then the research is a post – event research. Some criteria were used to describe the variables including central indicators (mean & average) and scattering criteria (standard deviation). After inferential statistics, correlation tests and regression analysis were used to study the relationship between independent and dependent variables. It is noteworthy that Eviews was used to analyze statistically the data.

3.1. Research Hypotheses

3.1.1. The hypotheses related to the relationship between intellectual capital components with company value

1. There is a significant relationship between communicative capital and company value.
2. There is a significant relationship between human capital and company value.
3. There is a significant relationship between structural capital and company value.

3.1.2 The hypotheses related to the relationship between intellectual capital components with investor's reaction

4. There is a significant relationship between communicative capital and investor's reaction.
5. There is a significant relationship between human capital and investor's reaction.

6. There is a significant relationship between structural capital and investor's reaction.

3.2. Research Variables

3.2.1 Independent Variable

3.2.1.1. Intellectual Capital: Pulic introduced VAIC (value added intellectual capital) in 1979; developed it in same year and completed it in 2000 year. Pulic used VAIC to measure intellectual capital in Australian Stock Exchange. The elements of intellectual capital were measured and calculated using following model (Pulic Model):

Formulating the elements of intellectual capital consists of algebraic expressions as follows:

$VAIC_i = CEE_i + HCE_i + SCE_i$

Where:

$VAIC_i$: intellectual capital coefficient for company i

CEE_i: communicative capital coefficient for company i

HCE_i: human capital coefficient for company i

SCE_i: structural capital coefficient for company i

In his model, added value is calculated from the difference of outputs and inputs.

Value added = outputs – inputs

Output means the income obtained from the sale of goods and services and inputs means all used costs to produce goods and services, except staff salary costs and depreciation. Because cost payments is a type of investment in human resources and consequently it contributes to make intellectual and structural added value owing to modifying processes and regulations. Depreciation cost is considered as non – cash costs of companies.

Added value = operational cost + salary cost + depreciation cost

Intellectual capital value added coefficient has following components as follows:

- **Structural Capital**

Following formula is used to calculate structural capital.

$$SCE_i = \frac{SCi}{VAi}$$

Where:

SCE_i: structural capital efficiency coefficient for company i

VA_i: total value added of company i

SC_i: structural capital of company i

Following Formula is used to calculate SC_i (structural capital) in above formula.

$SC_i = VA_i - HC_i$

Where:

SCi: structural capital of company i

VAi: total value added of company i

HCi: total invested amount for wage for company i

- **Human Capital**

Following formula is used to calculate human capital.

Human Capital Efficiency Coefficient (VAHU): the coefficient represents made added value by employees and it is calculated dividing added value by salary cost. It means that if one Rial is added to salary, how much Rial added value will be obtained. Human capital efficiency coefficient is calculated using following relation:

$$HCE_i = \frac{VAi}{HCi}$$

Where:

HCEi: human capital efficiency coefficient of company i

VAi: total value added of company i

HCi: total invested amount for wage for company i

- **Communicative Capital**

$$CEE_i = \frac{VAi}{CEi}$$

Where:

CEEi: communicative capital efficiency coefficient of company i

VAi: total value added of company i

HCi: book value of net assets of company i

3.2.2. Dependent Variable

In this research, there criteria of Qtobin's, book value to market value ratio have been used to study the effect of company value on independent auditor's opinion and investor's reaction.

3.2.2.1. Company Value: Qtobin's was used to calculate company value. There are several methods and formulas to estimate Qtobin's criterion. In this research, the formula developed by Jin, Y.B. and P., Jorion, 2006) has been used.

$$QTobin's = \frac{BV\ total\ Assetes - BV\ common\ Equity + MV\ common}{BV\ total\ Assetes}$$

Where:

BV total assets: book value of total assets

BV common equity: book value of common equity

MV common: market value of common equity

If Qtobin's of a company is bigger than unit and also bigger than competitive Qtobin's amount, the company is able to gain profit more than the same companies.

3.2.2.2. Investor's reaction: Investor's reaction reflects the market value of the company. According to Ghosh & Wu (2007), M/B ratio (market value to book value ratio) has been used as a criterion to measure investor's reaction.

$$M/B = \frac{Market\ value\ of\ common}{Book\ value\ of\ common}$$

4. EMPIRICAL RESULTS

4.1. The results related to the relationship of intellectual capital components with company value

4.2. The results of testing first sub – hypothesis

There is a significant relationship between communicative capital and company value

At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 1 provides the results.

Table 1
The results of diagnostic tests

Type of test	*Error level*	*Statistics*	*Accepted method*
Limer F- test	0.000	2.063	Panel data
Hausman test	0.000	51.089	Panel data with constant effect

According to table 1, it can be concluded that using panel data with fixed effects is more appropriate in first sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 2
The results of testing first sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + εit

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	0.889	0.639	1.391	0.165
Communicative capital efficiency	0.021	0.057	0.374	0.708
Return on assets	0.202	0.256	0.788	0.431
Leverage	1.31	0.135	8.336	0.000
M/B logarithm	2.106	0.127	16.574	0.000
Company size	0.028	0.104	0.273	0.784
F-statistics	16.775		Significance level (P-Value)	0.000
Adjusted determination coefficient (Adj-R^2)	7664%		Watson – Durbin statistics	1.69

The hypothesis studies the effect of communicative capital efficiency on company value. According to the results, the coefficient of communicative capital efficiency (0.021) and its significance level (0.708), it can be claimed that communicative capital efficiency variable has a positive effect on company value, but this relationship is statistically not significant. Also, according to the results of table 4-6, F-test (16.775) and error level (0.000), it can be claimed that generally the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 76 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.69, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern. The results indicate that there is not a significant relationship between communicative capital efficiency and company value.

4.3.1.2. The results of Testing Second Sub – Hypothesis: There is a significant relationship between human capital and company value

At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 1 provides the results.

Table 3
The results of diagnostic tests

Type of test	*Statistics*	*Error level*	*Accepted method*
Limer F- test	0.000	2.092	Panel data
Hausman test	0.000	54.551	Panel data with constant effect

According to table 3, it can be concluded that using panel data with fixed effects is more appropriate in second sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 4
The results of testing second sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + eit

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	0.717	0.645	1.111	0.267
human capital efficiency	-0.002	0.001	-1.688	0.092
Return on assets	-0.002	0.001	-1.688	0.092
Leverage	0.356	0.242	0.469	0.142
M/B logarithm	2.079	0.127	16.279	0.000
Company size	0.059	0.105	0.569	0.569
F-statistics	16.91	Significance level (P-Value)		0.000
Adjusted determination coefficient (Adj-R^2)	%76.79	Watson – Durbin statistics		1.72

The hypothesis studies the effect of human capital efficiency on company value. According to the results of table 4, the coefficient of human capital efficiency (-0.002) and its significance level (0.092), it can be claimed that human capital efficiency variable has a negative effect on company value, but this relationship is statistically not significant. Also, according to the results of table 4, F-test (16.911) and error level (0.000), it can be claimed that generally the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 76 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.72, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern. The results indicate that there is not a significant relationship between human capital efficiency and company value.

4.3.1.3. The results of Testing Third Sub – Hypothesis: There is a significant relationship between structural capital and company value

At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 5 provides the results.

Table 5
The results of diagnostic tests

Type of test	*Statistics*	*Error level*	*Accepted method*
Limer F- test	0.000	2.072	Panel data
Hausman test	0.000	54.839	Panel data with constant effect

According to table 5, it can be concluded that using panel data with fixed effects is more appropriate in second sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 6
The results of testing third sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + eit

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	0.906	0.639	1.417	0.157
structural capital efficiency	-0.004	0.005	-0.849	0.359
Return on assets	0.251	0.233	1.072	0.284
Leverage	0.125	0.135	8.321	0.000
M/B logarithm	2.117	0.127	16.657	0.000
Company size	0.027	0.104	0.264	0.792
F-statistics	16.803	Significance level (P-Value)		0.000
Adjusted determination coefficient (Adj-R^2)	%76.67	Watson – Durbin statistics		1.68

The hypothesis studies the effect of structural capital efficiency on company value. According to the results of table 6, the coefficient of structural capital efficiency (-0.004) and its significance level (0.359), it can be claimed that structural capital efficiency variable has a negative effect on company value, but this relationship is statistically not significant. Also, according to the results of table 6, F-test (16.803) and error level (0.000), it can be claimed that generally the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 76 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.68, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern. The results indicate that there is a significant relationship between structural capital efficiency and company value.

4.3.2. *The Results Related to the relationship of intellectual capital components with investor's reaction*

4.3.2.1. The Results of first sub – hypothesis: There is a significant relationship between communicative capital and investor's reaction

At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 15-4 provides the results.

Table 7
The results of diagnostic tests

Type of test	*Statistics*	*Error level*	*Accepted method*
Limer F- test	0.000	6.821	Panel data
Hausman test	0.000	314.346	Panel data with constant effect

According to table 7, it can be concluded that using panel data with fixed effects is more appropriate in second sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 8
The results of testing first sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + e it

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	-7.767	0.271	-28.736	0.000
communicative capital efficiency	0.007	0.026	0.271	0.786
Return on assets	-0.173	0.154	-1.116	0.264
Leverage	0.359	0.072	4.987	0.000
M/B logarithm	0.754	0.071	10.775	0.000
Company size	1.432	0.045	31.931	0.000
F-statistics	39.298		Significance level (P-Value)	0.000
Adjusted determination coefficient (Adj-R^2)	%88.84		Watson – Durbin statistics	1.58

The hypothesis studies the effect of communicative capital efficiency on investor's reaction. According to the results of table 8, the coefficient of intellectual capital efficiency variable (-0.007) and its significance level (0.876), it can be claimed that intellectual capital efficiency variable has a positive effect on investor's reaction at 5% error level, but this relationship is statistically not significant. Also, according to the results of table 8, F-test (39.298) and error level (0.000), it can be claimed that in general, the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 88 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.58, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern.

4.3.3.2. The Results of Testing Second Sub – Hypothesis: At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 9 provides the results.

Table 9
The results of diagnostic tests

Type of test	*Statistics*	*Error level*	*Accepted method*
Limer F- test	0.000	7.182	Panel data
Hausman test	0.000	337.904	Panel data with constant effect

According to table 10, it can be concluded that using panel data with fixed effects is more appropriate in second sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 10
The results of testing second sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + e it

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	-7.835	0.284	-27.577	0.000
human capital efficiency	-0.002	0.001	-3.585	0.000
Return on assets	0.023	0.145	0.159	0.873
Leverage	0.342	0.068	4.971	0.000
M/B logarithm	0.757	0.071	10.635	0.000
Company size	1.448	0.047	30.578	0.000
F-statistics	34.47		Significance level (P-Value)	0.000
Adjusted determination coefficient (Adj-R^2)	%87.44		Watson – Durbin statistics	1.62

The hypothesis studies the effect of human capital efficiency on investor's reaction. According to the results of table 10, the coefficient of intellectual capital efficiency variable (-0.002) and its significance level (0.000), it can be claimed that intellectual capital efficiency variable has a negative effect on investor's reaction at 5% error level. Also, it can be claimed that in general, the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 87 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.62, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern.

4.3.3.3. The Results of Testing Third Sub – Hypothesis: There is a significant relationship between structural capital and investor's reaction.

At first, for testing the hypotheses, it is necessary to be used diagnostic tests of Limer F-test and Hausman test, if necessary, to determine the type of pattern estimation method. Table 11 provides the results.

Table 11
The results of diagnostic tests

Type of test	*Statistics*	*Error level*	*Accepted method*
Limer F- test	6.912	0.000	Panel data
Hausman test	328.804	0.000	Panel data with constant effect

According to table 11, it can be concluded that using panel data with fixed effects is more appropriate in second sub – hypothesis and based on significance level of limmer F- test and Hausman – test.

Table 11
The results of testing third sub – hypothesis

QTobin = β0 + β1 CEE it + β2 ROA it + β3 LEV it + β4 MVEBVE it + β5 SIZE it + e it

Variable	*β coefficient*	*Standard error*	*t-statistics*	*Significance level*
Intercept	-7.709	0.266	-28.954	0.000
structural capital efficiency	0.003	0.004	0.556	0.578
Return on assets	-0.161	0.139	-1.153	0.249
Leverage	0.353	0.072	4.919	0.000
M/B logarithm	0.757	0.071	10.798	0.000
Company size	1.423	0.044	32.279	0.000
F-statistics	40.845	Significance level (P-Value)		0.000
Adjusted determination coefficient (Adj-R^2)	%89.23	Watson – Durbin statistics		1.60

The hypothesis studies the effect of structural capital efficiency on investor's reaction. According to the results of table 11, the coefficient of intellectual capital efficiency variable (0.003) and its significance level (0.578), it can be claimed that intellectual capital efficiency variable has a positive effect on investor's reaction at 5% error level, but the relationship is not statistically significant. Also, according to the results of table 12, F-test (40.845) and error level (0.000), it can be claimed that in general, the research pattern is significantly desirable. The adjusted determination coefficient of the pattern indicates that more than 89 percent of changes are explainable through independent variable and control variables. Additionally, since Watson – Durbin test was 1.60, then it can be concluded that there is not first order auto – correlation among the remaining of the pattern.

5. CONCLUSION

According to its components, intellectual capital can create social responsibility. Since similar researches have not been done on this subject and this research is a new one in terms of concept and base, this research will be the ground maker of other more innovative research in this field. In fact, the research studies the effect

on intellectual capital on company value and investor's reaction. Results resulting from this research and statistical analysis are presented in the following order:

There is a significant relationship between communicative capital and company value

The goal of testing first sub – hypothesis is to study the relationship between communicative capital and company value of the companies listed on Tehran Stock Exchange. Hence Pulic's model has been used to measure intellectual capital. Qtobin's criterion, as one of the best criteria for measuring and valuating companies, was used to calculate company value. The results of first sub – hypothesis indicate that there is a positive relationship between communicative capital efficiency and company value, but this relationship is not statistically significant. Because there is positive and non – significant relationship between_communicative capital efficiency and company value, it can be concluded that if the coefficient of communicative capital efficiency is increased, because of positive effect on company's market value, company value will be increased. These results is not compatible with the results of the researches done by Malekiani and Ramazani (2014) and is compatible with the results of the research conducted by Rezaee (2014) about the effect of intellectual capital efficiency on Qtobin's criterion as an indicator for calculating company value. Generally, the results of the hypothesis indicate that communicative capital (customer) which leads to make relationship with environment, customers, shareholders, suppliers, competitors and government, has increasingly effect on market value of companies. Although, the most important part of communicative capital is customer relations, but it should not be only considered in this regard. Because the proper usage of assets to produce products and provide services is another important sector for achieving to competitive advantage that resulting to maximum value creation for the company.

There is a significant relationship between human capital and company value

The goal of testing second sub – hypothesis is to study the relationship between human capital and company value of the companies listed on Tehran Stock Exchange. Hence Pulic's model has been used to measure intellectual capital. Qtobin's criterion, as one of the best criteria for measuring and valuating companies, was used to calculate company value. The results of second sub – hypothesis indicate that there is a negative relationship between human capital efficiency and company value, but this relationship is not statistically significant. Because there is negative and non – significant relationship between_human capital efficiency and company value, it can be concluded that if the coefficient of human capital efficiency is increased, company value will be decreased and vice versa. These results are compatible with the results of the conducted researches by Rezaee (2014) and are not compatible with the results of Malekiani and Ramazani's researches (2014) about the effect of human capital efficiency on QTobin's as a

criterion for measuring company value. According to theoretical foundations, it was expected that human capital efficiency (knowledge, skill, experience, specialization) plays significant role in making difference between book and market values, generally increased share price, through improving in different systems of production, distribution, marketing, sale and service after sale. But the results of the hypothesis were not compatible with the expectations based on under – studied sample.

There is a significant relationship between structural capital and company value

The goal of testing third sub – hypothesis is to study the relationship between structural capital and company value of the companies listed on Tehran Stock Exchange. Hence Pulic's model has been used to measure intellectual capital. Qtobin's criterion, as one of the best criteria for measuring and valuating companies, was used to calculate company value. The results of third sub – hypothesis indicate that there is a negative relationship between structural capital efficiency and company value, but this relationship is not statistically significant. It is needed to be studied in other long term period and or another group of companies. These results are compatible with the results of Rezaee's researches (2014) and are not compatible with the results of Malekiani and Ramazani (2014) about the effect of intellectual capital efficiency on Qtobin's index as a criterion for measuring company value.

There is a significant relationship between communicative capital efficiency and investor's reaction

The goal of testing first sub – hypothesis is to study the relationship between communicative capital and to investor's reaction of the companies listed on Tehran Stock Exchange. Hence Pulic's model has been used to measure intellectual capital, market value of equity to book value of equity ratio as one of the best criteria for measuring and valuating companies, was used to investor's reaction. The results of first sub – hypothesis indicate that there is a positive relationship between intellectual capital efficiency and to investor's reaction, but this relationship is not statistically significant. It is needed to be studied in other long term periods and or another group of companies. According to the results, it can be concluded that capital market does not include done efforts in stock price in the field of communicative capital. In other words, it can be concluded that shareholders in pricing share focus on the factors other than communicative capital and attribute success factors of the company to investment in stock.

There is a significant relationship between human capital and investor's reaction

The goal of testing second sub – hypothesis is study the relationship between human capital and investors' reaction in the companies listed on Tehran Stock

exchange. Hence, Pulic's model has been used to measure intellectual capital. Also, equity market value to equity book value, as a criterion, has been used to calculated investor's reaction. The results of second sub – hypothesis indicated that there is a negative significant relationship between human capital and B/M value as the criterion of investor's reaction. It means that if human capital level (existing knowledge, skill, experience and expertise) is increased, shareholders would lose their trusts to the company, because of increasing information asymmetry, and consequently it leads to create an increasingly between B/M value and decreased stock price. These results are not compatible with the results of Chang's researches (2007) and Mozafari Shamsi (2010). They found that there is a positive significant relationship between human capital efficiency and B/M value.

There is a significant relationship between structural capital efficiency and investor's reaction

The goal of testing third sub – hypothesis is to study the relationship between structural capital efficiency and investor's reaction the companies listed on Tehran Stock Exchange. Hence, Pulic' model has been used to measure intellectual capital. Also, equity market value to equity book value ratio has been used to calculate investor's reaction. The results of third sub – hypothesis indicated that there is a positive significant relationship between structural capital efficiency and investor's reaction, but the relationship is not statistically significant. It seems that it is needed to be studied in a long – term period and or another group of companies. These results are not compatible with the results of conducted researches by Chang (2007) and Mozaffari Shamsi (2010).

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