J. Basic. Appl. Sci. Res., 1(12)2605-2619, 2011

ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com

Evaluating the Effect of Relationship between Intellectual Capital and Traditional and Financial Evaluating Criteria of Companies Accepted in Tehran Stock Exchange

Iman Frozanfar[1,*] , Habib Allah Rasoli[2], Karim Rezvani Raz[2]

[1]Islamic Azad University, Persian Gulf International Educational Center, Khoramshahr, Iran
[2]Abadan Branch, Islamic Azad University, Abadan, Iran

ABSTRACT

In this study, the relationship between intellectual capital (as an independent variable) and financial performance (as a dependent variable) of companies listed on the Stock Exchange is examined. Measuring method of intellectual capital is calculated through the difference between the market value and book value of surveyed companies in which the annual inflation rate is involved. Financial performance is limited to the Q Tobin, earning per share, the market value to book value, and earnings growth ratio. Time and place field of researches related to the companies listed in Tehran Stock Exchange during the years 84 – 88; and 54 companies have been chosen of this community as the research sample. The linear regression model has been used for the hypotheses test; first, the correlation between the intellectual capital and each of the criteria of mentioned financial performance are determined separately during each year and then the average five-year correlation of intellectual capital with a five-year average of each of performance criteria was evaluated at two stages.

KEY WORDS: Intellectual capital; stock exchange; Tehran; traditional and financial evaluating criteria.

INTRODUCTION

Nev proved that the ratio of market to book value in 500 American companies has increased from two to five times in past five years. This indicates that about 80% of market value in companies is not reflected in the current year financial reports. Limitations of financial reports in providing the market value of company are based on this fact that the source of economic value of company is not only the financial assets, but is also the intangible assets such as intellectual assets. In addition, the intellectual capital is a valuable source in terms of competitive advantage of company; therefore, it will impact the financial performance of company.

According to the growing difference between the book and market value of companies, the extensive studies have been done in this field. Seeking the cause of this difference, researchers have concluded that the intellectual capital is one of its reasons. Moreover, the researchers have found that the intellectual capital affects the performance of companies, particularly their financial performance. The intellectual capital includes the portion of total capital or asset of company which is based on the knowledge and the company is considered as its owner. According to this definition, the intellectual capital can also include the knowledge itself (it has become the intellectual property or intellectual ownership of a company) as well as the final result of the transfer process. In the Skandia model, the intellectual capital is divided to four level including the human capital, innovation capital, customer capital, and structural capital.

The historical development of application and advancement of intellectual capital is summarized as follows:

Before 1980s: Mr. John Kenneth Galbraith was the first one who applied the term "intellectual capital".

Early 1980s: Publishing the book "Equipping the intangible assets" by Hiroyuki Itami (1980). Establishing a company by Brian Hall in order to study the commercial surveys about the value of manpower (1981);

Mid-1980s: Moving from the industrial era to the information one and creating a gap between the book and market value of companies as well as publishing the book "Extracting value from innovation" by Nick Bontis. Publishing the article "Asset management, the knowledge in the twenty-first century" by Debra Amidon, as well as publishing the book "Relevance Lost, growth and decline of Management Accounting" by Thomas Johnson and Robert Kaplan (1987);

Late 1980s: First efforts to develop bills which measure the intellectual capital (Souybi, 1988). Also, publication of book "Intangible balance sheet and starting researches on the commercialization of innovation" by Souybi (1989);

Early 1990s: The first time in which the role of intellectual capitals management was legitimized with allocation of an official post, and Mr. Leif Edison was introduced as a director of intellectual capitals of Skandia. In addition, the publication of book "Knowledge Management" by Carl Souybi (1990);

- Introducing the concept and approach of balanced scorecard by Kaplan and David Norton;

***Corresponding Author:** Iman Frozanfar, Islamic Azad University, Persian Gulf International Educational Center, Khoramshahr, Iran. Email: forouzanfar1390@yahoo.co.uk

Mid-1990s: Providing the stock of intellectual capital in Skandia Company in the form of an attachment for financial statements;
- Applying the knowledge audit for comprehensive assessment of the status of intellectual capital by Salmi;
- Publishing books by scholars of intellectual capital movement

Late 1990s: The intellectual capital became the most popular topic for researchers, conferences, and papers.
Early 2000s:

1. Publishing the first reliable scientific journal called the "Intellectual capital";
2. Publishing the first accounting standards of intellectual capital by Danish government;
3. Publishing the first intellectual capital report by the European Union;
4. Publishing the book "Measuring management, and reporting the intangible assets by Lev;
5. Various projects about the management and measuring the intellectual capital is defining and investigating.

According to the efforts and studies which have has been done in past and current decades, it seems that this final years of this decade and the next decade will be the crucial years for the intellectual capital and the future of intellectual capital will be clear somewhat because the concepts of intellectual capital have passed the initial and experimental stages and changed to a necessity for achieving the organizational goals of company. On the other hand, by a little careful scrutiny you can found that financial and investment markets have oriented to the intellectual capital and most of the regulators of these markets emphasize on the necessity to create a framework for reporting the intellectual capital of companies as well as the financial attitudes. Managing and measuring the intellectual capital is an undeniable necessity either at the national macro level or organizational micro-level. It is not far-fetched that providing the intellectual capital of companies will be considered as a necessity for acceptance in the international markets and as a precondition for entering to the financial and investment markets in coming years.

The current study is about the relationship between the intellectual capital and financial performance of companies accepted in Tehran Stock Exchange during the years 84 to 88. This study investigates the relationship between intellectual capital and multiple performance evaluation criteria of companies listed in Tehran Stock Exchange. It is anticipated that the intellectual capital of company affects its performance. Discussed evaluation criteria in this study include the Q Tobin ratio, earnings per share (EPS), The ratio of value (market value) to book value (M/B), The ratio of the market price of per share to earnings per share (P/E), and the income growth rate (GR) .

Based on the provided model in this research, first the intellectual capital value of each accepted company on the Stock Exchange is calculated for the 5-year period from 1384 to 1388. Then, at the next stage, the research hypotheses are evaluated using the statistical tests. It is anticipated in the hypotheses that the value of intellectual capital of companies has a significant relationship with the Tobin's Q ratio, earnings per share (EPS) ratio, the ratio of market to book value (M/B), the ratio of market price to earnings per share (P/E), and the income growth rate (GR).

RESEARCH METHODOLOGY

Research Hypotheses

First hypothesis:

$H_{\circ}$: There is no significant relationship between the intellectual capital and the ratio of company market to book value (Q Tobin).

H_1: There is a significant relationship between the intellectual capital and the ratio of company market to book value (Q Tobin).

Second hypothesis:

$H_{\circ}$: There is no significant relationship between the intellectual capital and earnings per share (EPS) of company.

H_1: There is a significant relationship between the intellectual capital and earnings per share (EPS) of company.

Third hypothesis:

$H_{\circ}$: There is no significant relationship between the intellectual capital and the ratio of market price to earnings per share (P/E).

H_1: There is a significant relationship between the intellectual capital and the ratio of market price to earnings per share (P/E).

Fourth hypothesis:

$H_\circ$: There is no significant relationship between the intellectual capital and the ratio of stock market to book value (M/B).

H_1: There is a significant relationship between the intellectual capital and the ratio of stock market to book value (M/B).

Fifth hypothesis:

$H_\circ$: There is no significant relationship between the intellectual capital and the income growth rate (GR) of company.

H_1: There is a significant relationship between the intellectual capital and the income growth rate (GR) of company.

Research variables

The independent variable of research is calculated based on the following model:

$$IC = \frac{(MV_t - BV)_t}{(1 + I._{I\,nft})}$$

In the following formulas, IC = Intellectual capital; MV_t = Market value of company, BV_t = Book value of company which is calculated by dividing the total salary of Shareholders by the common stock number, and I_{nft} = the average inflation rate during the (t) period.

Dependent studied variables are:

(Q Tobin):

Q Tobin= $\frac{MV_t}{\text{(RAV) Replacement value of assets}}$

In this formula, the book value of debts and book value of assets are used.

Earnings per share (EPS):

EPS= $\frac{\text{(NP) Net profit}}{\text{Number of shares}}$

The ratio of Market value to book value (M/B):

M/B= $\frac{\text{Stock market Value (SMV)}}{\text{Stock Book Value (SBV)}}$

The ratio of Price per share to earnings per share (P/E):

P/E= $\frac{\text{Final price of per share}}{\text{Profit per share}}$

Income growth rate (GR):

GR= $\frac{\text{Income of current year}}{\text{Income of last year}}$ -1

The current study follows the one-variable regression $y = ax + b$. The conceptual model of research is as follows:

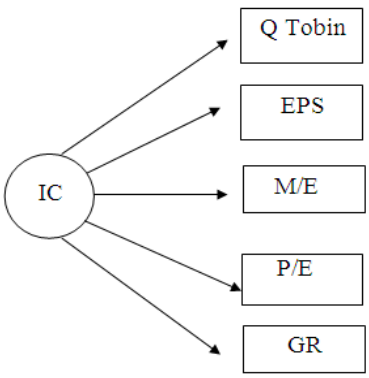

Figure 1 - Conceptual model of research

In addition, the size of companies (SIZE) variable in this study is used as the control variable.

Collecting data Method

In order to access the required information and implement the research, available databases and software such as Tadbir Pardaz, Latin articles, all related Web Sites such as stock exchange Web site and sites related to the investment companies, studying the research papers, books and documents, and annual and quarterly reports of stock market are used.

Research Zone

The time period of current study covers five-year period from 1384 to 1388 in the company accepted in the stock market.

The spatial zone of current study is the accepted companies in Tehran Stock Exchange.

Due to the large number of companies in the research community, the Cochran's formula is used for selecting the statistical sample in this study.

According to the statistical population and using the Cochran's formula, the sample size is as follows:

$$n = \frac{Nz^2 \times p \times q}{Ne^2 + z^2 \times p \times q}$$

In this formula:

N = population size

n = sample size

P = amount of success, and q = amount of failures, and the value of each one is considered p=q = 1 / 2.

Z = standard variable of normal distribution (1.96)

e = Accuracy of estimation is considered e = 0.10. The error rate is 5%.

Thus, according to the above formula, the number of sample will be equal to:

$$n = \frac{146 \times (1.96)^2 \times 0.5 \times 0.5}{146 \times (0.10)^2 + (1.96)^2 \times 0.5 \times 0.5} = 54$$

According to the conducted calculations, the number of statistical sample companies is 60. According to this process, these numbers of company are selected based on the ratio of each industry to the entire community, and then a sample is selected from each industry based on the simple random sampling. The following table indicates the industries which 54 selected companies of statistical sample belong to and the percentage which each industry is allocated for the sample.

Table 1 – The frequency of statistical sample members in different types of industry

Code	Industry Name	Total	Percent
01	Machinery and equipment	6	10.17
02	Textiles	2	3.38
03	Other non-metallic minerals	4	8.47
04	Cement and lime	2	3.38
05	Chemical Products	7	13.59
06	Printing and Publication	1	1.69
07	Vehicle and parts manufacturing	7	13.59
08	Medicine	5	10.17
09	Basic metals	3	5.08
10	Sugar	3	5.08
11	Ceramic and tile	3	5.08
12	Metallic minerals	4	6.78
13	Foods, except sugar	5	10.17
14	Plastic	2	3.38
	Sum	54	100

Statistical method and hypotheses test

Since the purpose of this research is to study the correlation level, estimate the studied coefficients of variables, and finally provide the model, the correlation of two variables is calculated according to the type of variables.

Variables used in this test have three different types:

1) Independent variable IC

2) Dependent variables

GR, P/E, M/B, EPS, Q Tobin

3) Control variable (size)

If the variable is continuous and normal, the Pearson correlation coefficient, and if variables are continuous and abnormal the Spearman correlation coefficient can be used.

Another point that should be considered is the control variable (size) which its effects should be controlled. To do this important case, the partial correlation coefficient is calculated, after the Pearson or Spearman correlation is calculated, using the following equation.

Suppose that the variables x_1 and x_2 are the target variables and x_3 is the control variable, in this case:

$$r_{12.3}=\frac{r_{12}-r_{13}r_{23}}{\sqrt{(1-r_{13}^2)}\sqrt{(1-r_{23}^2)}}$$

Then we examine that whether two variables are correlated or not. In the other words, whether the correlation coefficient is zero (ρ =0) or not ($\rho \neq 0$). Statistic used to test that the correlation coefficient is zero, is as follows:

$$t=\frac{r-\rho}{\sqrt{\frac{1-r^2}{n-2}}}$$

It has the student's t distribution with degrees of freedom n-2.

In order to examine the Linear regression relationship between the independent variable of intellectual capital and the evaluation criteria of financial performance (Q Tobin, EPS, P/E, M/B, and GR), the linear regression model $y=\beta\chi+\alpha$ are used, and the regression coefficients β , a are calculated by the of least squares error method as follows:

$$\sum e^2=\sum(y-\hat{y})^2 \Rightarrow \sum[y-(a+bx)]^2 \Rightarrow \sum(y-a-bx)^2$$

To find the amount of b , a , the above formula is derived partially once in terms of a and again in terms of b , that is:

$$b=\frac{\sum xy-n\,\bar{x}\,\bar{y}}{\sum x^2-n\,\bar{x}^2} \quad , \quad a=\bar{y}-b\bar{x}$$

And in order to evaluate the regression coefficients in the linear model significantly, the hypothesis $H_\circ\ (\alpha=\circ)$ is equalized to $H_1\ (\alpha\neq\circ)$ and the following model is used:

$$S_a=\frac{S_e}{\sqrt{\frac{1}{n}+\frac{\bar{x}^2}{\sum x^2-n\bar{x}^2}}}$$

And the statistic $\frac{a-\alpha}{S_a}$ has the T-distribution with degree of freedom n-2. In addition, in order to study the hypothesis $H_\circ\ (\beta=\circ)$ against the $H_1\ (\beta\neq\circ)$, the T-statistic which is in the form

$$t=\frac{b-\beta}{S_b}$$

is used in which S_e is equal to:

$$S_b=\frac{S_e}{\sum x^2-n\bar{x}^2}$$

And it has t with degrees of freedom n-2. Also, in order to examine the hypothesis of normal residuals, the non-parametric Kolmogorov Smirnov test is used. In fact, this hypothesis "distributing the residuals of regression model $H_\circ$ which is normal against H_1 which uses the other distribution" is examined, and its statistic is as follows:

$$D_n=Maximum\left|F_e-F_o\right|$$

In which F_o , F_e are the theoretical cumulative relative frequency and the observed cumulative relative frequency, respectively which are based on the normal distribution. The Normal Probability Plot can also been used for identifying the normality of residuals and for examining the independency of residuals from the non-parametric Runtest which indicates that whether the distribution of residuals uses a specific trend or not. In addition, the standardized residual plot can be used against the predicted plot and if they are randomly scattered around zero and do not follow any specific trend, it indicates the status of independent data and residuals.

RESULTS

The statistical method for testing the hypotheses is done by the linear regression model and using the Excel 2007 and SPSS 18 softwares.
Its results are illustrated in the table of descriptive statistics.

Table 2 – characters of descriptive statistics after eliminating the outlier data. The outlier data number of average standard deviation in minimum and maximum Skewness and Kurtosis coefficients

	EPS	GR	PE	MB	QTobin	IC	SIZE
Out Data No.	3	3	2	1	2	2	2
Average	7.0873E2	.1346	5.2580	1.9491	1.2981	1.4983E5	5.5245E5
Ave	5.9577E2	.1143	4.2706	1.7904	1.2900	6.7432E4	1.6742E5
Standard deviation	6.34911E2	.13176	6.75675	1.33014	.31498	4.48773E5	9.93325E5
Chulegi coefficient	.594	.759	2.008	.203	.361	0.174	2.775
Da strain coefficient	-.054	.931	5.684	.905	-.857	0.671	6.947
Min	-617.30	-.08	-6.11	-.23	.84	-1.46E6	1.16E4
Max	2202.66	.57	30.41	6.34	2.01	2.00E6	4.25E6

The Skewness coefficient: is a criterion to measure the difference between the shape of observations frequency plot and the normal bell curve. If its absolute value is smaller than 1, the deviation can be ignored, otherwise this deviation is significant and probably the normal test of variable can be denied.

Kurtosis coefficient: is a criterion to measure the difference between the height of observations frequency plot and the normal bell curve. If the absolute value is smaller than 1, the deviation can be ignored, otherwise this deviation is significant and probably the normal test of variable can be denied.

According to the above table it can be concluded that the Skewness and Kurtosis amounts of all variables can be ignored except the dependent variable P/E and the control variable SIZE.
Deviations level can be detected according to the histogram plots of variables which are presented in the appendix.
In order to perform this test, the Kolmogorov - Smirnov statistic is used. The hypothesis test is as follows:

$$\begin{cases} H_0: X \sim N(\mu, \sigma^2) \\ H_1: \text{other wise} \end{cases}$$

According to the significant level (p-value) and its comparison with the amount of acceptable error (α), we can debate about the test result.
If p-value ≤ α, we can reject the zero hypothesis and accept the opposite hypothesis, otherwise if p-value> α, the zero hypothesis is accepted.
After the Kolmogorov – Smirnov test, the following results are obtained.

Table 3 - Results of Kolmogorov - Smirnov Test

Variable	EPS	GR	P/E	M/B	Qtobin	IC	Size
Clomogroof and Smirnoof Data	1.029	.843	1.7	.798	.793	1.012	2.458
p-value	.240	.476	.004	.547	.556	.255	.000

α=.05 usually is selected for the amount of acceptable error. By supposing α=.05, it can be deduced that:
The significant level for variables EPS, GR, Q Tobin, IC, and M/B is higher than 0.05, so the hypothesis of these variables normality is accepted.

The significant level for variables P/E and Size is less than 0.05, so the hypothesis of these variables normality is rejected.

Therefore, the EPS, GR, Q Tobin, IC, and M/B variables are normal and the P / E and Size variables are not normal.

Because the EPS, GR, Q Tobin, IC, and M/B variables are normal, the correlation coefficients of these variables with the IC variable can be calculated by the Pearson correlation method; and the spearmen correlation method can be used for the SIZE, and P/E variables. Then the coefficients of partial correlation can be calculated by the above method.
The result of these calculations is as follows:

Table 4 - Partial correlation coefficients of variables and size compared with the independent variable IC during a 5-year period

Variables	EPS	GR	P/E	M/B	QTobin
Partial coherence coefficient	.056	-.082	.033	.315	**.532**
P-value	.730	.610	.840	.042	**.000**

In order to check the correlation coefficients significantly, the T-test can be used with the following hypothesis:

$$\begin{cases} H_0: r = 0 \\ H_1: r \neq 0 \end{cases} \begin{cases} H_0: r = 0 \\ H_1: r \neq 0 \end{cases}$$

If the hypothesis zero is accepted, it indicates the lack of correlation among the variables.
If the hypothesis zero is rejected but the hypothesis 1 is accepted, it indicates the significant correlation among the variables, and its type is indicated considering the sign of correlation coefficient.
Supposing α=.05 and comparing with the p-value in the table above, we understand that the relationship among EPS, P/E, GR variables and IC variable is not significant. But the relationship among the M/B, Qtobin variables and IC variable is significant, and because the correlation coefficients are positive, their relationship is significant and direct.

The correlation and determination coefficients are calculated in the next section. The coefficient of determination is the square of correlation coefficient and indicates the percentage of dependent variable which is described by the independent variable.
Significant level of correlation coefficient is the same between two variables and the significant level of their linear regression, so it can be concluded that no-significant correlation of two equivalent variables means no-significant regression equation between those variables.
There are three conditions for using the simple regression model:

1. Dependent variable should be normal.
2. There should be a significant correlation between dependent and independent variables.
3. Residuals should be independent. (Durbin Watson test)

The aim of this section is calculating and analyzing the regression model for independent variable IC and each of dependent variables (EPS, GR, Q Tobin, P/E, and M/B) considering the control variable SIZE. Because the relationship among the variables such as EPS, P/E, GR and IC variable is not significant, it is not necessary to analyze the regression of these variables, but we perform this operation in order to provide statistics. According to the normality test which was performed previously, it became clear that the M/B, Qtobin, and IC variables were normal. Thus, the first condition is confirmed.

In addition, the correlation relationship among the dependent variables such as M/B, Qtobin, and IC is significant. Thus, the second condition is confirmed.

In order to examine the independency of residuals, Durbin Watson test is used. The residuals come from the subtraction of predicted value from the actual value of dependent variable ($e = Y \quad \hat{Y}$). The independency of residuals is one of the basic conditions. The value of this statistic is from 0 to 4. Values including 1.5 to 2.5 indicate the independency of errors. We have calculated the value of this statistic in the following table.

Table 5 – Values which indicate the independency of errors

Depended	Control variable	Independent variable	Watson camera data
M/B	SIZE	IC	**2.021**
Qtobin	SIZE	IC	**1.624**
		P/E SIZE IC	**2.881**
		GR SIZE IC	**2.141**
		EPS SIZE IC	**1.568**

According to the table above, the calculated value of DW statistic for all variables ranges from 1.5 to 2.5, and indicates that the errors are independent. Thus, the third condition is confirmed. But this is not true for P/E variable. We can do more calculations after checking the triple conditions.

In order to perform the regression analysis, the backward method is used. In this method, first the dependent variable is analyzed against the independent and control variable (as an independent variable), and in each next phase the variables which are not significant will be eliminated until the variables which are significant would remain at the final stage.

Analyses and results of first hypothesis: there is a relationship between the intellectual capital and the ratio of market to book value of company (Q Tobin).

The analysis of Q TOBIN backward regression based on the independent variable "IC" and control variable "SIZE" of studied companies during the 5-year period: The results are written in the table below, after the data analysis.

Table 6 - The analysis of Q Tobin backward regression coefficients in an average 5-year period (84 - 88) in terms of variable "IC" and control variable "SIZE"

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.294	.049		26.459	.000
	IC	3.940E-7	.000	.509	3.839	.000
	SIZE	-5.064E-8	.000	-.145	-1.092	.280
2	(Constant)	1.272	.044		28.623	.000
	IC	3.508E-7	.000	.453	3.698	.000

Table 7 – The correlation and determination coefficient of variable Q Tobin in an average 5-year period from 84 to 88

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.535	.286	.258	.31444
2	.532	.283	.254	.31501

Table 8 – ANOVA (Analysis of Variance) of variable Q Tobin in an average 5-year period from 84 to 88

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.475	2	.737	7.457	.001[a]
	Residual	5.141	52	.099		
	Total	6.616	54			
2	Regression	1.357	1	1.357	13.673	.000[b]
	Residual	5.259	53	.099		
	Total	6.616	54			

In addition, the Regression and ANOVA (Q Tobin) tables based on the independent variables IC and Size in an average five-year period mentioned in the above tables, together with the regression model are as follows:

Table 9 - ANOVA of Q Tobin Regression based on the independent variable IC (intellectual capital) and the organization size as an average 5-year period

Relationship between the variables	Source of Changes	Total square	Degrees of freedom	Mean Square	F	Sig	R	R^2
IC M and Q Tobin M By removing the outlier companies and with the control variable "size"	Regression	1.475	2	0.737	7.457	0.001	0.535	0.286
	Residual	5.141	52	0.099				
	Total	6.616	54					
IC M and Q Tobin M By removing the outlier companies	Regression	1.357	1	1.357	13.673	0.000	0.532	0.283
	Residual	5.259	53	0.099				
	Total	6.616	54					

Conclusion: Due to the software output it can be concluded:
In the second phase, without the control variable which its results have shown in the table below;

Table 10 - ANOVA of Q Tobin in the second model

Significance level of model	Significance level β	IC coefficient (β)	Significance level (α)	Constant coefficient (α)	Coefficient of determination r^2	Correlation coefficient r
0.000	0.000	3.5E-7	0.000	1.272	0.283	0.532

According to the ANOVA table, the whole second model is significant because P-value =0.000 is less than the level error 0.05, therefore the model would be significant. In addition, according to the significance level, it can be concluded that the regression coefficients and their values (less than 0.05) are significant.

Finally, the equation of regression line will be as follows:
Qtobin=00000035 IC + 1.272

Because the coefficient of determination has been equal to 0.283, it can be concluded that almost 28% of Qtobin variable is described by the IC.

In the first phase, the model includes two variables "IC" and "Size". According to the ANOVA table, the whole first model is significant because the P-value =0.001 and is less than the error level 0.05, so in the first hypothesis, $H_{\circ}$ or the lack of significant relationship between the intellectual capital and the Q Tobin ratio of accepted companies in the stock market, is not confirmed.

Analyses and results of second hypothesis: there is a relationship between the intellectual capital and earnings per share (EPS) of company.

The Backward regression analysis (EPS) based on the independent variable "IC" and control variable "SIZE" of studied companies during a 5-year period: The results are written in the table below, after the data analysis.

Table 11 – Analysis of backward regression coefficients of EPS in an average 5-year period from 84 to 88 based on the variable "IC" and control variable "SIZE"

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	666.461	104.694		6.366	.000
	IC	.000	.000	.116	.754	.454
	SIZE	1.354E-5	.000	.021	.140	.890
2	(Constant)	672.785	93.455		7.199	.000
	IC	.000	.000	.124	.886	.380

Table 12 - ANOVA of EPS variable in an average 5-year period from 84 to 88

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	337346.195	2	168673.097	.395	.676[a]
	Residual	2.093E7	49	427129.827		
	Total	2.127E7	51			
2	Regression	329023.014	1	329023.014	.786	.380[b]
	Residual	2.094E7	50	418753.694		
	Total	2.127E7	51			

Table 13 - correlation and determination coefficient of variable EPS in an average 5-year period from 84 to 88

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.126	.016	-.024	653.55170
2	0.056	.003	-.004	647.11181

In addition, the regression and ANOVA tables (EPS) based on the independent variables IC and Size and according to the average five-year period mentioned in the tables above together with the regression model are as follows.

Table 14 – ANOVA of regression of Earning per Share (EPS) based on the independent variables IC (Intellectual capital) and Size (Size of organization) in an average five-year period

Relationship between the variables	Source of Changes	Total square	Degrees of freedom	Mean Square	F	Sig	R	R^2
IC M and EPS M By removing the outlier companies and with the control variable "size"	Regression	337346.195	2	168673.097	0.395	0.676	0.126	0.016
	Residual	97E2.093	49	427129.827				
	Total	7E2.127	51					
IC M and EPS M By removing the outlier companies	Regression	329023.014	1	329023.014	0.786	0.380	0.056	0.003
	Residual	7E2.094	50	418753.694				
	Total	7E2.127	51					

Conclusion: Due to the software output, it can be concluded:

According to the ANOVA table, the whole second model is not significant because P-value =0.380, therefore it can be concluded that in the regression model the independent variable "IC" and control variable "Size" are not significant based on the EPS.

In the first phase, the model includes two variables "IC" and "Size", but the variable "size" is not significant. According to the ANOVA table, the whole first model is not significant because the P-value =0.676

and is more than the error level 0.05, so in the second hypothesis, $H_{\circ}$ or the lack of significant relationship between the intellectual capital and the EPS ratio of accepted companies in the stock market, is confirmed.
Analyses and results of third hypothesis: there is a relationship between the intellectual capital and the ratio of market price to earnings per share (P/E) of company.

The Backward regression analysis (P/E) based on the independent variable "IC" and control variable "SIZE" of studied companies during a 5-year period: The results are written in the table below, after the data analysis.

Table 15- Analysis of backward regression coefficients of P/E in an average 5-year period from 84 to 88 based on the variable "IC" and control variable "SIZE"

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.469	1.544		4.191	.000
	IC	4.548E-7	.000	.021	.142	.887
	SIZE	-4.807E-7	.000	-.049	-.331	.742
2	(Constant)	6.493	1.521		4.269	.000
	SIZE	-4.037E-7	.000	-.041	-.302	.764

Table 16 – correlation and determination coefficient of variable P/E in an average 5-year period from 84 to 88

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.046[a]	.002	-.036	9.91535
2	.041[b]	.002	-.017	9.82328

Table 17 - ANOVA of E/P variable in an average 5-year period from 84 to 88

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.810	2	5.405	.055	.947
	Residual	5112.339	52	98.314		
	Total	5123.149	54			
2	Regression	8.818	1	8.818	.091	.764
	Residual	5114.331	53	96.497		
	Total	5123.149	54			

In addition, the regression and ANOVA tables (P/E) based on the independent variables IC and Size and according to the average five-year period mentioned in the tables above together with the regression model are as follows.

Table 18 – ANOVA of regression of P/E based on the independent variables IC (Intellectual capital) and Size (Size of organization) in an average five-year period

Relationship between the variables	Source of Changes	Total square	Degrees of freedom	Mean Square	F	Sig	R	R^2
IC M and P/E M By removing the outlier companies and with the control variable "size"	Regression	10.810	2	5.405	0.055	0.947	0.046	0.002
	Residual	5112.339	52	98.314				
	Total	5123.149	54					
IC M and P/E M By removing the outlier companies	Regression	8.818	1	8.818	0.091	0.764	0.041	0.002
	Residual	5114.331	53	96.497				
	Total	5123.149	54					

Conclusion: Due to the software output, it can be concluded:

According to the ANOVA table, the whole second model is not significant because P-value=0.764, therefore it can be concluded that in the regression model the independent variable "IC" and control variable "Size" are not significant based on the dependent variable P/E.

In the first phase, the model includes two variables "IC" and "Size", but the variable "IC" is not significant. According to the ANOVA table, the whole first model is not significant because the P-value =0.947 and is more than the error level 0.05, so in the third hypothesis, $H_{\circ}$ or the lack of significant relationship between the intellectual capital and the P/E ratio of accepted companies in the stock market, is confirmed.
Analyses and results of Forth hypothesis: there is a relationship between the intellectual capital and the ratio of Stock market value to book value (M/B) of company.

The Backward regression analysis (M/B) based on the independent variable "IC" and control variable "SIZE" of studied companies during a 5-year period: The results are written in the table below, after the data analysis.

Table 19- Analysis of backward regression coefficients of M/B in an average 5-year period from 84 to 88 based on the variable "IC" and control variable "SIZE"

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.624	.304		5.340	.000
	IC	.00052	.001	.161	1.090	.081
	SIZE	-4.051E-8	.000	-.021	-.142	.888
2	(Constant)	1.607	.274		5.859	.000
	IC	.0006	.005	.153	1.128	.042

Table 20 – correlation and determination coefficient of variable M/B in an average 5-year period from 84 to 88

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.342	.117	-.101	1.95222
2	0.315	.010	.009	1.93409

Table 21 - ANOVA of M/B variable in an average 5-year period from 84 to 88

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.839	2	2.419	.635	.134[a]
	Residual	198.180	52	3.811		
	Total	203.019	54			
2	Regression	4.763	1	4.763	1.273	.042.
	Residual	198.257	53	3.741		
	Total	203.019	54			

In addition, the regression and ANOVA tables (M/B) based on the independent variables IC and Size and according to the average five-year period mentioned in the tables above together with the regression model are as follows.

Table 22 – ANOVA of regression of M/B based on the independent variables IC (Intellectual capital) and Size (Size of organization) in an average five-year period

Relationship between the variables	Source of Changes	Total square	Degrees of freedom	Mean Square	F	Sig	R	R^2
IC M and M/B M By removing the outlier companies and with the control variable "size"	Regression	4.839	2	2.419	0.635	0.134	0.342	0.117
	Residual	198.180	52	3.811				
	Total	203.019	54					
IC M and M/B M By removing the outlier companies	Regression	4.763	1	4.763	1.273	0.420	0.315	0.010
	Residual	198.257	53	3.741				
	Total	203.019	54					

Conclusion: Due to the software output it can be concluded:
In the second phase, without the control variable which its results have shown in the table below;

Table 23 - ANOVA of M/B in the second model

Significance level of model	Significance level β	IC coefficient (β)	Significance level (α)	Constant coefficient (α)	Coefficient of determination r^2	Correlation coefficient r
0.042	0.042	0.0006	0.000	1.607	0.010	0.315

According to the ANOVA table, the whole second model is significant because P-value =0.042 is less than the level error 0.05, therefore the model would be significant. In addition, according to the significance level, it can be concluded that the regression coefficients and their values (less than 0.05) are significant.
Finally, the equation of regression line will be as follows:
M/B = 0.0006 IC + 1.607

Because the coefficient of determination has been equal to 0.010, it can be concluded that almost 10% of M/B variable is described by the IC.
In the first phase, the model includes two variables "IC" and "Size". According to the ANOVA table, the whole first model is not significant because the P-value =0.134 and is less than the error level 0.05, so in the forth hypothesis, $H_{\circ}$ or the lack of significant relationship between the intellectual capital and the M/B ratio of accepted companies in the stock market, is confirmed.

Analyses and results of fifth hypothesis: there is a relationship between the intellectual capital and Income growth rate (GR) of company.

The Backward regression analysis (EPS) based on the independent variable "IC" and control variable "SIZE" of studied companies during a 5-year period: The results are written in the table below, after the data analysis.

Table 24 – Analysis of backward regression coefficients of GR in an average 5-year period from 84 to 88 based on the variable "IC" and control variable "SIZE"

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.199	.054		3.694	.001
	IC	1.675E-8	.000	.018	.080	.937
	SIZE	-2.182E-8	.000	-.052	-.232	.818
2	(Constant)	.199	.053		3.730	.000
	SIZE	-1.598E-8	.000	-.038	-.274	.785

Table 25 - ANOVA of GR variable in an average 5-year period from 84 to 88

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.009	2	.005	.040	.961
	Residual	5.886	50	.118		
	Total	5.896	52			
2	Regression	.009	1	.009	.075	.785
	Residual	5.887	51	.115		
	Total	5.896	52			

Table 26 - correlation and determination coefficient of variable GR in an average 5-year period from 84 to 88

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.040	.002	-.038	.34311
2	.038	.001	-.018	.33975

In addition, the regression and ANOVA tables (GR) based on the independent variables IC and Size and according to the average five-year period mentioned in the tables above together with the regression model are as follows.

Table 27 – ANOVA of regression of GR (Income Growth Rate) based on the independent variables IC (Intellectual capital) and Size (Size of organization) in an average five-year period

Relationship between variables	Source of Changes	Total square	Degrees of freedom	Mean Square	F	Sig	R	R^2
IC M and GR M By removing the outlier companies and with the control variable "size"	Regression	0.009	2	0.005	0.040	0.961	0.040	0.002
	Residual	5.886	50	0.118				
	Total	5.896	52					
IC M and GR M By removing the outlier companies	Regression	0.009	1	0.009	0.075	0.785	0.038	0.001
	Residual	5.887	51	0.115				
	Total	5.896	52					

Conclusion: Due to the software output it can be concluded:

According to the ANOVA table, the whole second model is not significant because P-value =0.785, therefore it can be concluded that in the regression model the independent variable "IC" and control variable "Size" are not significant based on the dependent variable "GR" .

In the first phase, the model includes two variables "IC" and "Size", but the IC variable is not significant and according to the ANOVA table, the whole first model is not significant because the P-value =0.961 and more than the error level 0.05, so the model is not significant.

In the first phase, the model includes two variables "IC" and "Size", but the IC variable is not significant and according to the ANOVA table, the whole first model is not significant because the P-value =0.151 and more than the error level 0.05, so in the fifth hypothesis, $H_{\circ}$ or the lack of significant relationship between the intellectual capital and the GR ratio of accepted companies in the stock market, is confirmed.

Conclusion

The results show that there is a significant direct (positive) correlation between the annual average of intellectual capital and the size of companies in the 5-year average of research except for the P/E, GR, and EPS, and it is significant at the significance level 5%. Therefore, we examine the research findings below.

A) First hypothesis; evaluates the relationship between the intellectual capital and Q Tobin ratio of studied companies. According to the results of fourth chapter, there is a significant relationship between the intellectual capital variable and the ratio of Q Tobin regardless of the control variable; in addition, there is a correlation in a 5-year period between 84 to 88 based on the control variable "size of company", and it is significant in a significance level 5%.

Thus, according to the obtained results, the hypothesis $H_{\circ}$ is rejected and it can be concluded that there is a significant relationship between the intellectual capital and Q Tobin ratio.

B) Second hypothesis; evaluates the relationship between the intellectual capital and Profit per share of studied companies. According to the results of fourth chapter, there is not a correlation and significant relationship between the intellectual capital variable and Profit per share based on the control variable "size of company"; in addition, there is not a correlation in a 5-year period from 84 to 88 and it is not significant in a significance level 5%.

Thus, according to the obtained results, the hypothesis $H_{\circ}$ is not rejected and it can be concluded that there is not a significant relationship between the intellectual capital and Profit per share.

B) Third hypothesis; evaluates the relationship between the intellectual capital and the ratio of market price to earnings per share of studied companies. According to the results of fourth chapter, there is not a correlation and significant relationship between the intellectual capital variable and the ratio of market price to earnings per share regardless of the control variable "size of company"; in addition, based on the control variable "size of company, there is not a correlation in a 5-year period from 84 to 88 and it is not significant in a significance level 5%.

Thus, according to the obtained results, the hypothesis $H_{\circ}$ is not rejected and it can be concluded that there is not a significant relationship between the intellectual capital and the ratio of market price to earnings per share.

C) Fourth hypothesis; evaluates the relationship between the intellectual capital and the ratio of market to book value of studied companies. According to the results of fourth chapter, there is a correlation and significant relationship between the intellectual capital variable and the ratio of market to book value regardless of the control variable "size of company"; but, based on the control variable "size of company, there is not a correlation in a 5-year period from 84 to 88 and it is not significant in a significance level 5%.

Thus, according to the obtained results, the hypothesis $H_{\circ}$ is not rejected and it can be concluded that there is not a significant relationship between the intellectual capital and the ratio of market to book value.

D) Fifth hypothesis; evaluates the relationship between the intellectual capital and the Income growth rate of studied companies. According to the results of fourth chapter, there is not a correlation and significant relationship between the intellectual capital variable and the Income growth rate regardless of the control variable "size of company"; in addition, based on the control variable "size of company, there is not a correlation in a 5-year period from 84 to 88 and it is not significant in a significance level 5%.

Thus, according to the obtained results, the hypothesis $H_{\circ}$ is not rejected and it can be concluded that there is not a significant relationship between the intellectual capital and Income growth rate.

The results of study indicate that there is not a strong and descriptive relationship between the intellectual capital and corporate performance criteria. The reasons for this issue are outlined in the following cases.

Tehran Stock Exchange had a favorable economic condition in mid 82 to 83 which led to increased average income growth rate of companies in this period. However, after this golden era, the stock exchange was faced with some problems in terms of economic, political, and social conditions of society and these problems decreased the income of accepted companies in the stock exchange, and the income growth rate fell to its lowest level in 1387 and partly in 1388. Domestic and foreign policies and strategies in this era sparked dysfunctional issue on the stock exchange so that investors reconsidered their decision and tried to attract the rival markets (including the property) for investing. In addition, due to the increased bad economic conditions, the capital of markets was dispatched to outside the national borders, so the economy was disabled in other parts including the stock exchange. Since 1386, due to the economic downturn not only the companies have had poor performances in making money, but also in the efficiency and effectiveness. Despite the fact that the results of this research indicate a decrease in all performance evaluation criteria in this period, they have been decreased as a changing process and this decline has not been in line with the reduction way of intellectual capital. Probably, the reason of this issue is the policies of government in devolving the state enterprises to the private sector in the downturn in the stock market. During these years, the shares of major companies including the National Iranian Copper,

Esfahan's Mobarakeh Steel, and Khuzestan Steel and ... was introduced to market and this case attracts market to these shares . Therefore, based on the findings of this research, to researcher's surprise, there has not found any important and significant relationship between the intellectual capital in companies and performance evaluating criteria, except the ratio of Q Tobin. Hence, the investors and traders are offered not to be limited to the traditional criteria of financial performance, but consider the other variables confounding the future performance of companies, such as the political environment, in their own decisions.

According to the results of this study and compared with the results of other similar foreign studies, we can find that regardless of how the intellectual capital is measured in the conducted researches, there is a direct relationship between the intellectual capital and corporate performance evaluation criteria in the advanced economies. However, due to the lack of competitive labor market, competitive economy, excessive government intervention, and misguided economic and political decisions in Iran, this balance has been lost.

In addition, by other factors in applying modern techniques and methods such as using the techniques of management accounting, activity based costing, and finally the cost reduction and cost management we can consider differences in size of companies as a control variable in gaining necessary profits and benefits compared with other countries.

The requirements of Stock Exchange rules about non-financial reporting such as social and environmental responsibilities reports will increase the attraction of investment by the public and shareholders and affect the share value of companies in the stock market. To express the existence of competitive markets in the developed countries is the other case for following the above tips and affecting the profit and interests of companies.

REFERENCES

1- Amir, E. & Lev, B. (1996), 'Value-relevance of nonfinancial information: The wireless communications industry', Journal of Accounting and Economics 22, 3–30.

2- Andriessen, D. (2004). IC valuation and measurement: classifying the state of the art. Journal of Intellectual Capital, 5, 230-242.

3- Barney, J.B. and Clark, D. (2007), Resource-Based Theory. Creating and sustaining competitive advantage, Oxford University Press, Oxford.

4- Bansal, B. (2005), "Evolving sustainability: a longitudinal study of corporate sustainable development", Strategic Management Journal, Vol. 26 No. 3, pp. 197-218.

5- Barsky, N.P., Catanach Jr., A.H., Rhoades-Catanach, S.C. and Thibodeau, J.C. (2003،("Enron: Did the financial reporting model really fail?", Commercial Lending Review, Vol. 18, No. 2, pp. 5-9.

6- Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. Management Decision, 36, 63-76.

7- Bontis, N. (2002). Managing organizational knowledge by diagnosing intellectual capital: Framing and advancing the state of the field. In Nick Bontis (Ed.), World Congress on Intellectual Capital readings (13-56). Woburn, MA: Butterworth-Heinemann.

8- Bontis, N., Dragonetti, N.C., Jacobsen, K. & Roos, G. (1999). The knowledge toolbox: A review of the tools available to measure and manage intangible Resources. European Management Journal, 17, 391-402.

9- Boyle, J. (2003), "It's time for more disclosure", Australian Financial Review, April 17-April 20, p. 8.

10- Brennan, N. and Connell, B. (2000), "Intellectual capital: Current issues and policy implications", Journal of Intellectual Capital, Vol. 1, No. 3, pp. 206-240.

11- Brammer, S., Millington, A. and Rayton, B. (2007), "The contribution of corporate social responsibility to organisational commitment", The International Journal of Human Resource Management, Vol. 18,No. 10, pp. 1701-1718.

12- Bhattacharya, C.B. and Sen, S. (2004), "Doing better at doing good: when, why and how consumers respond to corporate social initiative", California Management Review, Vol. 47 No. 1, pp. 9-25.

13- Carlin, T. (2003), "Accrual Output Based Budgeting Systems in Australia: A Great Leap Backwards?", Australian Accounting Review, Vol.13, No. 2, pp. 41-47.

14- Dawson, P.M., Dobson, S.M. & Gerrard, B (2001). Estimating coaching efficiency in professional team sports: evidence from English association football. Scottish Journal of Political Economy, 47, 399-421.

15- Gray, R. (2006b), "Social, environmental and sustainability reporting and organisational value creation?Whose value? Whose creation?", Accounting, Auditing and Accountability Journal, Vol. 19 No. 6,pp. 793-819.

16- Greening, D.W. and Turban, D.B. (2000), "Corporate social performance as a competitive advantage in attracting a quality workforce", Business & Society, Vol. 39 No. 3, pp. 254-280.

17- Jamali, D., Safieddine A.M. and Rabbath, M. (2008), "Corporate governance and corporate socialresponsibility: synergies and interrelationship", Corporate Governance: An International Review,Vol. 16 No. 5, pp. 443-459.
18- Scott, J.T. (2005), "Corporate social responsibility and environmental research and development", Structural Change and Economic Dynamics, Vol. 16 No. 3, pp. 313-331.
19- Secchi, D. (2007), "Utilitarian, managerial and relational theories of corporate social responsibility", International Journal of Management Reviews, Vol. 9 No.4, pp.347-373.