The Investigation of Relationship between Ownership Structure and Board Characteristics with Intellectual Capital in the Firms listed on TSE

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ABSTRACT

Background: Many of the current accounting systems are unaware of the growing importance of intellectual property rights and knowledge in modern organizations and can not evaluate the real value of assets. In other words, financial statements have many limitations in explaining the real value of firms. In the current knowledge-based communities, the applied intellectual capital is much more than financial investment return. This means that in the future, compared with intellectual capital, financial capital role is decreased considerably in determining the importance of sustainable profitability. This creates a gap between the real value of companies and organizations with that of traditional accounting measures. In other words, the results of various researches show that corporate governance is a key factor to attract intellectual capital. Indeed, good corporate governance in companies will increase their ability to attract more intellectual capital. Hence, based on the importance of intellectual capital, the current study examines the relationship between ownership structure and characteristics of the Board with intellectual capital. The hypotheses test is performed by pooled data during 2007 to 2012 by the data of 140 selected firms by systematic elimination sampling method. The results showed that the number of managerial ownership, institutional ownership, board size and board independence had positive and significant association with intellectual capital and there was no significant association between ownership concentration and CEO duality with intellectual capital.

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INTRODUCTION

In the current knowledge-based economy, intellectual capital is one of the most important capitals of each organization can be effective on the performance of an organization from all aspects. Although the traditional accounting methods have considerable role in measurement process and reporting of tangible assets, but in a knowledge-based organization in which knowledge has major share of assets, traditional accounting methods can not measure and report the existing knowledge in organization and they should be changed considerably. In accounting, intellectual capital is the asset without physical property but these assets have great benefits for future cash flow of firm. Inability in reporting intellectual capital indicates weakness of common or traditional accounting. Their valuation in commercial trading is difficult and is not possible by existing methods. There is no real economic model or theory for intellectual capitals [26].

Although traditional accounting methods help the perception of business value considerably, in a knowledge-based organization in which knowledge is a big part of value of a product and wealth of an organization, traditional accounting methods based on tangible assets and past operation information of organization are inadequate for valuation of intellectual capital as the largest and valuable asset for many organizations. The intellectual capital measuring view refers to the creation of new measurement mechanisms for reporting non-financial or qualitative variables of intellectual capital beside traditional, quantitative or financial data. Compared to traditional financial accounting, measuring intellectual capital includes non-financial important issues as human capital, customer satisfaction and innovation. Thus, intellectual capital approach is comprehensive for the organizations try to be aware of their performance value well. The differences between these two approaches are significant: As financial accounting is retrospective, measuring...
intellectual capital is futuristic. Measuring intellectual capital includes soft realities while financial accounting measures hard realities. Measuring intellectual capital focuses in value creation but financial accounting reflects the return of past operation and liquidity flow. Gradually, it is shown that traditional financial measuring is inadequate in directing strategic decisions and it should be replaced by measuring intellectual capital. Thus, managers can be aware of the existing condition of their intellectual capital management. Definitely, measuring intellectual capital is useful to support the ability of organization to fulfill strategic goals research and development, providing support information for improving projects and supporting the importance of educational programs. Measuring intellectual capital as an important method of marketing management and strategic business more than being communicative tool with shareholders or investors is useful as an internal organization management tool. As identification of intellectual capital is a key strategic issue, regular report of its condition to board is necessary. It can be said that measuring intellectual capital is important for management of intellectual capital, it means that effective management of intellectual capital depends upon its effective measurement. Based on the reports, some of the firms try following, valuation and creation of the tools to support their intellectual capital. The firms measuring their intellectual capital providing intellectual capital report based on the results of measurements. No unified guidance is presented regarding intellectual capital reporting at national and international levels. Some of the pioneer firms issued these reports. Most of them with percentage of error by creating new indices measured their intellectual capital. These firms provide their intellectual capital reports based on their experience in knowledge management and intellectual capital measurement or others experience. European countries are pioneers in measurement and reporting intellectual capital and this trend was started in Sweden and Denmark firms and then was developed to the south of Europe. The idea of measurement and reporting of intellectual capital was emerged from management world and accounting had no role. This issue motivated accounting associations and Universities.

On one hand, the asymmetrical information and benefits conflict between the managers and users of financial statements as a potential factor of good corporate governance can increase financial statements quality and creating internal governance process is necessary to support the validity of financial statements of firm and safety against earnings manipulation [21]. The firms truly know that intellectual capitals are their only competitive advantage. But financial reports don’t have relevant information with intellectual capital. one of the main challenges of researchers and academic theorists in accounting procedures is how to reflect corporate governance mechanisms in intellectual capital and how is its effect measured and identified by a method or model [2].

As it was said, the main problem of present study is the evaluation of the role and importance of intellectual capital and the impact of ownership structure and board properties on it, this problem has important position in success or failure of firms. On the other hand, due to the increasing attention of important firms to the concept of intellectual capital, this study attempts to respect this concept in the country.

Statement of problem and theoretical basics:

The current world had passed the industrial economy and entered knowledge-based economy. Knowledge-based economy is the one in which knowledge production and application play important role in wealth creation process [4]. A great feature of knowledge-based economy is great investment in human capital and ICT.

New knowledge-based economy presents unlimited sources potentially as human capacity is unlimited to create knowledge. Intangible assets are replaced rapidly with physical assets and the rules regarding the capital based –economy are not true regarding knowledge-based economy. The entrance of knowledge to the products and services and emphasis on quality instead of quantity, considering different position for labor force as thinking workers not physical workers and changing the expenditure structure and low importance of production costs compared to other costs are the factors changing competition business rules [16].

Based on knowledge-based economy and the created changes in the nature of the activity of firms at global trading level, intellectual capital is considered as one of the main principles to create return of firms. The limitation of financial statements provided by traditional accounting in explanation of firms value focus on the fact that economic value and resources are not only having goods production and inventory or high cash flow and at the worst condition of production, intellectual capitals should be considered [4]. Intellectual capital can lead to competitive advantage in market and better performance of firm via directing intellectual capital management, organizational techniques, professional skills, customers and experiences relations [22]. Based on the lack of recognition, measuring and understanding of value of intellectual capital components, this leads to inefficient decisions of investment in decision making process. On the other hand, the concept of corporate governance refers to existing control procedures in firm to be sure of consistency of activities and management benefits with shareholders benefits. Important indices to evaluate effectiveness of corporate governance include: combination and other board features as number of board members, experience of board members, the number of non-executive board members, the number of people with financial education and gender of board members, the number of independent board members, percentage of ownership of board members and institutional investors, the audit committee of company, audit institution and auditor opinion, the rewards and authority
factors, some signs of shareholders dissatisfaction and some signs of internal control weakness. The results of various researches show that corporate governance is a main factor to attract intellectual capital. Indeed, a good corporate governance system in firms can increase their capability to absorb much intellectual capital. Corporate governance is for the benefit of all investors, creditors, board members, management and employees and various industries and various economic sectors. Good corporate governance plays important role in improving efficiency and economic growth and increasing trust of investors. Increasing the trust of investors plays important role in economy of country and the firms can have a correct governance system. If the firm is profitable, there is much motivation to apply corporate governance and its benefits can be directly (via easy access to financial sources and low cost of capital) and indirectly (achieving fame and better commercial opportunities) can be achieved. In other words, the lack of a good corporate governance in firms leads to the inability to keep intellectual capital [19].

The present study aimed to evaluate the effect of corporate governance structure on board characteristics and efficiency and productivity of intellectual capital of the firms listed on TSE. As corporate governance can affect great cases of firm, the significance of the study is determining the efficiency of intellectual components in various corporate governance types.

Review of Literature:
Nicholson, G.J. and Kiel [15] created a model of board effectiveness and applied intellectual capital to uniform the theories in corporate governance (agency theory, sources dependence theory and executive theory). Also, they stated that board members need the review of intellectual capital to modify their performance.

Wu and Wang [25] investigated the active firms in electric industry in Taiwan and found that there was a positive significant association between firm value and intellectual capital and corporate governance.

Gan et al., [8] showed that there was a significant association between ownership structure, corporate governance and disclosure of intellectual capital in Malaysian firms and this association was different in the firms with dispersed family, state structures.

Safyedin et al., [19] tested the relationship between intellectual capital and corporate governance in an American University in Beirut and evaluated the full time faculty members. The results showed that the lack of a good system of corporate governance leads to the inability of University to absorb and keep strong intellectual capital. Also, faculty members consider corporate governance as a major factor to absorb intellectual capital.

Chung K. H. Zhang [5]: The results of the study showed that institutional investors are intended to the share of the firms with good governance structure to fulfill the executive responsibility of management.

Leszek and Grzegorz [11] investigated the impact of ownership structure on value added productivity of intellectual capital in stock companies of Poland, Varsho during 2003 to 2012. The features of their ownership structure included management ownership, foreign ownership, institutional ownership and ownership concentration. The results of the study showed that management ownership, foreign ownership, institutional ownership and ownership concentration had positive impact on intellectual capital productivity and capital return namely structural capital. In addition, the study result showed that interaction between ownership structure and intellectual capital productivity is different in the industries with high technology and low technology. These findings of study show that ownership structure plays important role in intellectual capital and productivity.

Dianati and Ramezani [7] in their study investigated the impact of intellectual capital on financial information quality of the firms listed on TSE. The data of intellectual capital and financial information quality variables are collected regarding 94 stock companies during 2001-2010 and are analyzed by structural equations method. The results show that among the components of intellectual capital, structural capital has the highest correlation and human capital and physical capital are in next ranks. Intellectual capital components determine about 50% of changes in information quality and to present high quality information leading to suitable decision making and capital market prosperity, the organizations should mostly think about intellectual capital as a strong source to improve business performance.

Study Hypotheses:
This study is based on the studies of Pulic [16] and Leszek et al., [11] regarding intellectual capital and productivity of its components. The study hypotheses include:
Main hypothesis: There is a significant association between ownership structure and intellectual capital.
First hypothesis: There is a significant association between management ownership and intellectual capital.
Second hypothesis: There is a significant association between institutional ownership and intellectual capital.
Third hypothesis: There is a significant association between ownership concentration and intellectual capital.
Fourth hypothesis: There is a significant association between board size and intellectual capital.
Fifth hypothesis: There is a significant association between board independence and intellectual capital.
Sixth hypothesis: There is a significant association between CEO duality and intellectual capital.
Study population and study period:
This study is applied and in positive accounting fields as performed by multi-variate regression method and econometric models. The study population is the firms listed on TSE during 2007 to 2012 for 6 years keeping their membership in TSE. In addition, the study population is adjusted by the following conditions:
1- The firm should be listed on TSE before 2007 and at the beginning of 2007, its share is traded in stock market.
2- The end of fiscal year of firm is the end of Esfand and has no fiscal year change in the study period.
3- The firm shouldn’t have trading pause in TSE more than 1 month during the study period as 2007 to 2012. After applying these limitations, 130 firms are included in the study. 130 firms are selected as study population and no other sampling is applied. The final analysis of data is done by econometric software Eviews 8 software.

Study variables:
Dependent variable: Intellectual capital (value added of intellectual capital )
In the present knowledge-based communities, return of intellectual capitals is much important than financial capital return. It means that compared to intellectual capitals, the role and importance of financial capitals in determining the sustainability profitability is reduced considerably. In other words, we can say there is a direct association between the intangible assets of firms and knowledge on one hand and real value of their intellectual capital (finally market value of firms share). The value-added coefficient model of intellectual capital is developed by Pulic [16] and is an analytic tool to measure firm performance. Instead of direct measuring of intellectual capitals, he proposed a criterion for efficiency of value added by intellectual ability of firms. Main components of value added of intellectual capital (Vaic) can be defined based on the firm sources regarding physical capital, human capital and structural capital. This model emphasizes on creating firm value based on the effectiveness of firm sources management. The calculation method of value added of intellectual capital is as: Equation

\[
V_{Ai} = \frac{VA_{i}}{HC_{i}} \quad (1)
\]

To determine human capital, value added is divided by employees wage and human capital coefficient of firm is achieved by the following equation:

\[
HCE_{i} = \frac{VA_{i}}{HC_{i}} \quad (2)
\]

The applied capital coefficient of firm is calculated by following equation:

\[
CEE_{i} = \frac{VA_{i}}{CE_{i}} \quad (3)
\]

Structural capital coefficient is calculated via following equation:

\[
SCE_{i} = \frac{SC_{i}}{VA_{i}} \quad (4)
\]

To achieve value added the following equation is used:

\[
VA_{i} = P_{i} + I_{i} + C_{i} + D_{i} + DIV_{i} + T_{i} \quad (5)
\]

Structural capital is obtained of following equation:

\[
SC_{i} = VA - HC_{i} \quad (6)
\]

Where,

Independent variables:
Institutional ownership Instown:
According to the definition in the studies of Rubin [18] and Queto (2009) to calculate the institutional ownership, the sum of share of banks, insurance, holding, investment firms, pension fund, funding firms and investment fund, organizations and state institutions and state firms are divided on total issued share of firm and percentage or institutional ownership is achieved.

Management ownership (manown):
It indicates the percent of share kept by board members. This variable is used with the same definition in the studies of Kumar (2003) and Namazi and Kermani [14]. Generally, there are two views about the impact of management ownership on dividend policy. In the first view, it is said the increase of dividend reduce agency problems and benefits conflict of free cash flow. In the second view, it is said that management ownership can be effective on convergence of the benefits between manager and shareholders and reduction of free cash flow problems. Thus, management ownership leads to much dividend.
Ownership concentration consown:
Ownership concentration is referred to the state the considerable share of firm belongs to blockholders and it shows which percentage of firm share belongs to limited number of people. To calculate ownership concentration based on the data in notes of financial statements, two parameters are used: 1- Percentage of the share of the first blockholder of firm, 2- Percentage of share of final owner of firm. The share percent parameter is used by final owner of firm as due to the crossing ownership in stock companies, be defining the final owners of real shareholders of each firm, it is observed that finally a real firm directly and indirectly can own considerable share of a firm. Thus, for exact measurement of ownership concentration, share percentage parameter of final owner of firm is used.

Board size BSIZE:
The number of managers as board members. Board size is one of corporate governance mechanisms as investigated in various studies. Most researchers know that board size improves firm performance by two methods: a: The more need of the firm to creating relationship with the outside environment of firm, b: much executive responsibility in firms.

Duality of CEO:
According to agency theory, if CEO and board chief are the same (CEO duality), supervision item is encountered with serious problems. One method to separate decision management and control is separating CEO and board chief duties.
CEO duality is a dummy variable zero and one and if the CEO is the chief or deputy of board, it is zero , otherwise it is one.

Board independence BIND:
The percent of non-executive board members is obtained by dividing the number of non-executive board members to total board members. Non-executive members have no executive position in firm.

Control variables:
Firm size:
Firm size is calculated by total assets of firm at the end of fiscal year. To increase the power of this variable in model, natural logarithm of total assets is used. This ratio is considered as firm size has direct relation with firm age and the higher the firm age, the higher its size.

\[
Y = \beta_0 + \beta_1 \log(SIZE) + \beta_2 RE / TE + \beta_3 ROA + \beta_4 \Delta TA / TA + \varepsilon
\]
Equation (7)

Return on assets ROA:
The ratio of return on assets is the criterion indicating the firm which benefits of the assets or how much is the return of invested sources. As the comparison of earnings between various firms with big and small sizes can not be useful due to the difference of applied capital volume and we should use the criterion showing earnings consistent with the applied capital for achieving it. On the other hand, if increasing investment is not with increasing profit, it can not lead to maximization of investor’s benefits. The return on assets is the ratio that we can find the efficiency of firm sources and how much the management can use the limited sources better. The higher this ratio, the better the performance of firm.

\[
ROA = \frac{\text{earning}}{\text{Assets}}
\]
Equation (8)

The main hypothesis model:

\[
VAIC_{it} = \alpha + \beta_1 \text{BIND} + \beta_2 \text{CEO} + \beta_3 \text{BSIZE} + \beta_4 \text{Instown} + \beta_5 \text{Manown} + \beta_6 \text{Consown} + \beta_7 \text{ROA} + \beta_8 \text{Size} + \varepsilon
\]

Where, vaic= value added coefficient of intellectual capital (dependent variable), instown: institutional ownership (independent variable), conown: ownership concentration (independent variable), manown: management ownership (independent variable), bind: board independence (independent variable), dual:CEO duty (independent variable), bsize: Board size (independent variable) and ROA: Return on assets (control variable) and size: Firm size (control variable).
Data analysis:
Before analysis and hypothesizes test, the reliability of study variables is investigated. Reliability of study variables means that mean and variance of study variables are fixed during various years. Thus, using these variables in model doesn’t lead to spurious regression. Unit root test is performed by Leven, Lin and Chow test (2002), Fisher unit root test, adjusted dickey fuller and Philips Peru unit root test (2001). The results of reliability test of variables show that p.v of all variables is less than 5% and study variables are stationary. Thus, H0 regarding unit root of variables is rejected and a regression is used.

Table 1: Unit root test for variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Leven, Lin and Chow</th>
<th>Fisher, Adjusted dickey fuller</th>
<th>Fisher, Philips/Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAIC</td>
<td>-21.13</td>
<td>0.000</td>
<td>248.2</td>
</tr>
<tr>
<td>MANOWN</td>
<td>-2.89</td>
<td>0.000</td>
<td>145.46</td>
</tr>
<tr>
<td>INST</td>
<td>-101.14</td>
<td>0.00</td>
<td>169.9</td>
</tr>
<tr>
<td>CONSOWN</td>
<td>-9.6</td>
<td>0.00</td>
<td>43.9</td>
</tr>
<tr>
<td>BSIZE</td>
<td>-4.43</td>
<td>0.000</td>
<td>130.9</td>
</tr>
<tr>
<td>BIND</td>
<td>-8.3</td>
<td>0.00</td>
<td>162.7</td>
</tr>
</tbody>
</table>

Before testing the study hypotheses, at first we estimate the models. To estimate the study models, pooled data technique is used. This technique combines time series and cross section data due to the increase of degree of freedom, reduction of variance inconsistency and reduction of co-linearity among the variables. To select among pooled and panel data, F limer test (chow) is used. In F limer test, H0 is similarity of intercepts (pooled data) against H1, inconsistency of intercepts (panel data method). The results of constrained F show that the required method to estimate the study model is pooled data method.

Table 2: The results of F limer test (consistency of cross section intercepts).

<table>
<thead>
<tr>
<th>H0 (o) Null hypothesis</th>
<th>F statistics</th>
<th>Critical quantity</th>
<th>p-value</th>
<th>Test result</th>
<th>Test type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercepts of all cross sections are similar to each other</td>
<td>Study model</td>
<td>0.94</td>
<td>5.82</td>
<td>.21</td>
<td>is not rejected</td>
</tr>
</tbody>
</table>

The results of significance test investigating the relationship between ownership structure and board characteristics with intellectual capital are shown as pooled analysis data in Table 3.

Table 3: The results of study model in pooled data level.

<table>
<thead>
<tr>
<th>Study variables</th>
<th>β Coefficient</th>
<th>Statistics t</th>
<th>p.v</th>
<th>R2</th>
<th>DW</th>
<th>(p-v) F-static</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSOWN</td>
<td>0.03</td>
<td>1.88</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSTOWN</td>
<td>0.022</td>
<td>3.26</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANOWN</td>
<td>0.025</td>
<td>2.91</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSIZE</td>
<td>0.016</td>
<td>2.38</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIND</td>
<td>0.10</td>
<td>3.31</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO</td>
<td>0.17</td>
<td>1.61</td>
<td>.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.06</td>
<td>4.59</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.07</td>
<td>3.02</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown, F statistics with confidence interval 99% is significant. Thus, the study model is significant and independent and control variable can explain dependent variable. In addition, the adjusted coefficient of determination of study model is 0.44. This value shows that about 0.44 of the dependent variable changes, intellectual capital of independent and control variables are in model and 0.56 of other changes are about other factors.

The Durbin-Watson values show that there is no auto-correlation between model disturbance terms as these values are in distance 1.5 to 2.5.

Main hypothesis test: There is a significant association between ownership structure and intellectual capital.

First sub-hypothesis: There is a significant association between management ownership and intellectual capital:

Based on the results of Table (3), t-statistics of independent variable of management ownership (manown) and its significance level (p-value) is 2.91 and 0.00, respectively. As the error level for the study is 0.05, we can say in this study management ownership with error level 5% has significant association with intellectual capital. Variable coefficient (manown) is positive. Thus, the type of relation between management ownership and intellectual capital is positive and direct. In other words, by increasing management ownership, intellectual capital is also increased. The results of the hypothesis are in line with the study of Nicholson and Kiel [15], Wu
and Wung [25], Gun et al., [8] and Safioldin et al., [19], Chong and Zhang (2011) and Leszek and Grzegorz [11].

Second hypothesis: There is a significant association between institutional ownership and intellectual capital:

Based on the results of Table (3), t-statistics of independent variable of institutional ownership (instown) and its significance level (p-value) is 3.26 and 0.00, respectively. As the error level for the study is 0.05, we can say in this study institutional ownership with error level 5% has significant association with intellectual capital. Variable coefficient (instown) is positive. Thus, the type of relation between institutional ownership and intellectual capital is positive and direct. In other words, by increasing institutional ownership, intellectual capital is also increased. The results of the hypothesis are in line with the study of Nicholson and Kiel [15], Wu and Wung [25], Gun et al., [8] and Safioldin et al., [19], Chong and Zhang (2011) and Leszek and Grzegorz [11].

Third hypothesis: There is a significant association between ownership concentration and intellectual capital:

Based on the results of Table (3), t-statistics of independent variable of ownership concentration (consown) and its significance level (p-value) is 1.88 and 0.07, respectively. As the error level for the study is 0.05, we can say in this study ownership concentration with error level 5% has no significant association with intellectual capital. The results show the rejection of above hypothesis.

Fourth hypothesis: There is a significant association between board size and intellectual capital:

The results of Table 3 show that p-value statistics for fourth hypothesis, board size is 0.000 and based on error level for this study is 0.05 and board size variable is supported at confidence interval 95% and this variable has significant effect on intellectual capital.

The fourth independent variable coefficient , board size is positive. Thus, the relationship between board size and intellectual capital has direct relation. In other words, by increasing board size, intellectual capital is increased. Normally, the people entering board of firms is famous, empowerment managers or blockholders. Thus, they can improve intellectual capital of firm and increase it by these factors. The higher the board size, the more the intellectual capital of firm. The results of this hypothesis are consistent with the findings of Nicholson, G.J. and Kiel [15] and Wu and Wang [25].

Fifth hypothesis: There is a significant association between board independence and intellectual capital:

The results of Table 3 show that p-value statistics for fifth hypothesis, board indolence is 0.000 and based on error level for this study is 0.05 and board indolence variable is supported at confidence interval 95% and this variable has significant effect on intellectual capital.

The results of this hypothesis are consistent with the findings of Nicholson, G.J. and Kiel [15] and Wu and Wang [25].

Sixth hypothesis: There is a significant association between CEO duality and board chief and intellectual capital:

The results of Table 3 show that p-value statistics value for sixth hypothesis, CEO duality of board chief is 0.10. Based on the error level for this study as 0.05, duality of CEO variable and board chief is not supported at confidence interval 95% and this variable has not significant impact on intellectual capital at confidence interval. The results of this hypothesis are consistent with the findings of Lee, Puic and Hanifa [12].

Discussion and Conclusion:

During the industrial revolution, the created value in business is achieved via effective use of physical sources. Today, value in organizations is obtained increasingly via using technical knowledge of human factor and other factors as information systems. Value creation of these new sources is called knowledge. The emphasis on this knowledge as called intellectual capital indicates our basic differences between the firms active in new and old economy. The emergence of knowledge economy led to the end of relative importance of tangible assets and a new flow in which much attention is given to intellectual and knowledge capital is created. Based on the importance of intellectual capital in the present study, we investigated the relationship between ownership structure and board characteristics with intellectual capital. The results of study show that among ownership structure, institutional ownership and management variables have positive and significant association with intellectual capital. One of the characteristics of board is its positive relation with size and independence with intellectual capital. The results of testing this hypothesis are consistent with the studies by Lee, Puic and Hanifa [12] and Kinen and Ajestamez (2001). They found that the higher the number of non-executive board members, the higher the effectiveness of board and lower the agency costs and information asymmetry among the managers and owners and it leads to better performance of intellectual capital.
The recommendations of further studies:
   By each study, a new path is found and continuing this requires conducting other studies. Thus, the following studies can be conducted:

1- It is proposed that in future studies, the impact of other governance mechanisms of firm as independent auditors, internal control and etc. on intellectual capital of firms can be evaluated.

2- It is proposed to investigate the relationship of other board characteristics as age, education, specialization in work and number of board sessions on intellectual capital.

3- Developing the intellectual capital model in accordance to accounting standards and for financial reporting as useful both for external stakeholders and internal managers.

Applied recommendations:

1- The emphasis on importance of some of board characteristics as board size, CEO duality as effective factors on intellectual capital of firms by TSE.

2- Creating required grounds for the presence of non-executive members in board of firms as effective and independent.

3- Regarding the evaluation of board composition, only the presence of non-executive members in board composition is considered. Non-executive manager without the required experience and knowledge for strategic decisions of firm is not only a control criterion, also it doesn’t lead to board effectiveness and intellectual capital of firm is not improved. Thus, it is proposed in defined mechanisms in governance system regulation of the firms, we consider the characteristics of non-executive managers (age, education, experience).

4- Reduction of agency problems, maximizing benefits of shareholders, considering stakeholders benefits, increasing efficiency and effectiveness and sources consumption by optimal method are the main goals of economy of each country. Today, in most countries, by improving governance, the firms try to achieve this goal. Thus, it is proposed to achieve the above goals and improve intellectual capital of firms and provide the creation of good governance in firms by encouraging and even obliging the application of corporate governance mechanisms by TSE.

REFERENCES


