Investigating Relationship between Intellectual Capital and Financial Variables of Companies Listed in Tehran Stock Exchange

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ABSTRACT: The objective of this study is to investigate the relationship between intellectual capital and financial variables of companies listed in Tehran Stock Exchange. Data were obtained from a sample of 65 firms from 2001 to 2010. 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. For the purpose of the this study, financial variables used are earning per share (EPS), gross profit ratio (GPR) and operating profit ratio (OPR) of the financial variables are used. The panel data regression model has been used for hypotheses test. Finding from the empirical analysis indicate that the weakly relationship between IC and financial variable in surveyed companies.

Keyword: Intellectual Capital, Financial Variables, Firm’s Performance, Gross profit ratio, Operating profit ratio, Earning per share

INTRODUCTION

In a post-industry economy, knowledge plays a critical role in the process of creating business value (Drucker, 1993; Sullivan and Sullivan, 2000). Only knowledge provides the opportunity to improve the wealth of nations, the growth of organizations and the value of individuals (Bounfour and Edvinsson, 2005; O'Donnel et al, 2006).

In this competitive economic environment, more firms are creating value based on knowledge and investing more in soft factors such as human resources, research and development, organizational development and relationships rather than in tangible physical assets (Juma & Payne, 2004; Bornemann & Leitner, 2002).

In the era of global competitiveness, intellectual capital has emerged as a strategic tool that adds value to the organizations and gives a realistic picture to the potential investors about performance of the firms (Bhanawate, 2011).

Literature Review

Definitions of intellectual capital

Edvinsson and Sullivan (1996) defined intellectual capital as knowledge that can be converted into value. Stewart (1991) argued that intellectual capital is the existing knowledge in an organization that can be used to create competitive advantage. He defined intellectual capital material as the aggregate of an organization's patents, processes, employees’ skills, technologies, information about customers and suppliers, and old-fashioned experience. For Bontis (2000), intellectual capital means individual workers and organizational knowledge than contributed to sustainable competitive advantage.

Generally, researchers in the field of intellectual capital have divided the concept of intellectual capital into three main constructs (Bontis, Chua & Richardson, 2000).
**Human capital**

Human capital is the sum of components such as; employees’ knowledge, skills, capabilities, experience, attitude, wisdom, creativities, commitment etc. Human capital is not owned by the enterprise and can therefore be lost when employees have the company (Chen, Lin & Chang, 2006)

Bontis, Crosson and Hulland (2002) stated that human capital shows the individual knowledge stock of an organization represented by its employees. Bontis (1999) also argued that human capital is important since it is the source of innovation for organizations.

**Structural capital**

Structural capital deals with the organizational structure and the information systems of an organization can lead to organizational business and intellect. Human capital is the primary factor for structural capital. Structural capital is dependent on human capital, since human capital is a determinative factor of the organizational form. However, even though influenced by human capital, structural capital exists independent of human capital (Chen, Zhu, & Xie, 2004). For example, patent are created by human capital, but after creation they belong to the company.

**Relationship capital**

The third main element of intellectual capital is relational capital. It is defined as the ability of an organization to interact positively with business community members to motivate the potential for wealth creation by enhancing human and structural capital (Marti, 2001).

Relationship capital comprises the knowledge embedded in all the relationships an organization develops, whether it is with customers, competitors, suppliers, trade associations or government bodies (Bontis, 1999).

**Research Methodology**

**Research hypotheses**

The hypotheses of this research can be stated as follow:

- \( H_1 \): There is a significant relationship between the intellectual capital and EPS.
- \( H_2 \): There is a significant relationship between the intellectual capital and GPR.
- \( H_3 \): There is a significant relationship between the intellectual capital and OPR.

**Research Variables**

Variables used in this test have three different type:

**Independent Variable IC**

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

\[
IC_t = \frac{MV_t - BV_t}{1 + I_{inf}}
\]

In the following formulas:

- \( IC_t \) = Intellectual Capital
- \( MV_t \) = Market value of company
- \( BV_t \) = Book value of company
- \( I_{inf} \) = The average inflation rate during the (t) period.

**Dependent variable**

Earnings per share (EPS):

\[
EPS = \frac{\text{Net profit}}{\text{Number of share}}
\]

Gross Profit Ratio (GPR):

\[
GPR = \frac{\text{Gross Profit}}{\text{Sale}}
\]

Operating Profit Ratio (OPR):

\[
OPR = \frac{\text{Operating Profit}}{\text{Sale}}
\]
Control Variable

Company Size = Natural logarithm of total assets

Total assets: This item represents current assets plus net property, plant, and equipment plus other noncurrent assets.

Leverage = \frac{\text{total debts}}{\text{total assets}}

Financial leverage (LEV) as measured by total debt divided by book value of total assets is used to control for the impact of debt servicing on corporate performance and wealth creation (Riahi-Belkacem, 2003).

The conceptual model of this research is as follows:

Data collection

Data was gathered through the 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 surveyed companies and annual reports of stock market.

Statistical Population and Sample

The statistical population of this research includes all companies listed in Tehran Stock Exchange from 2001 to 2010 and a sample of 65 companies was randomly selected.

EMPIRICAL RESULTS

Descriptive Statistics

Table 1 represents descriptive statistics of all variable relating to the study.

<table>
<thead>
<tr>
<th>statistic</th>
<th>n</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std.Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>650</td>
<td>1578603.26</td>
<td>-262241.63</td>
<td>163588.40</td>
<td>268101.64</td>
</tr>
<tr>
<td>EPS</td>
<td>650</td>
<td>2700</td>
<td>-1372</td>
<td>707.44</td>
<td>650.03</td>
</tr>
<tr>
<td>GPR</td>
<td>650</td>
<td>0.67</td>
<td>-0.02</td>
<td>0.26</td>
<td>0.12</td>
</tr>
<tr>
<td>OPR</td>
<td>650</td>
<td>0.74</td>
<td>-0.20</td>
<td>0.19</td>
<td>0.13</td>
</tr>
<tr>
<td>SIZE</td>
<td>650</td>
<td>17.85</td>
<td>9.80</td>
<td>12.29</td>
<td>1.44</td>
</tr>
<tr>
<td>LEV</td>
<td>650</td>
<td>1.34</td>
<td>0.23</td>
<td>0.67</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Regression Results

Tables 2 and 3 represent the results of testing regression model.

<table>
<thead>
<tr>
<th>Dependent Independent</th>
<th>EPS</th>
<th>GPR</th>
<th>OPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>18.06</td>
<td>-0.43</td>
<td>-0.82</td>
</tr>
<tr>
<td>IC</td>
<td>2.35</td>
<td>5.85</td>
<td>1.26</td>
</tr>
<tr>
<td>SIZE</td>
<td>66.28</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>LEV</td>
<td>151.35</td>
<td>0.32</td>
<td>0.32</td>
</tr>
<tr>
<td>R2</td>
<td>0.99</td>
<td>0.99</td>
<td>0.99</td>
</tr>
<tr>
<td>Adj.R2</td>
<td>0.99</td>
<td>0.99</td>
<td>0.99</td>
</tr>
<tr>
<td>t-statistic</td>
<td>-4.39</td>
<td>18.80</td>
<td></td>
</tr>
<tr>
<td>Prob.</td>
<td>0.93</td>
<td>0.00</td>
<td>0.15</td>
</tr>
</tbody>
</table>
The results of testing hypotheses 1 indicate any significant relationship between IC and EPS. Thus the first hypothesis is rejected. This is consistent with Deljoo (1388), Frozanfar et al (2011).

The results of testing hypotheses 2 show a significant and negative relationship between IC and GPR. Thus this hypothesis is accepted. To make a comparison, no other similar research has been found in this area of research.

Based on results of testing hypotheses 3 there isn’t any significant relationship between IC and OPR. Thus this hypothesis is rejected. Like hypotheses 2, to make a comparison no other similar research has been found.

**CONCLUSION**

The results show that there is a weekly relationship between IC and financial variable in surveyed companies. One of the main reasons, dividend payments can be searched. According to the perform survey, the most firms through the payment of a share dividend or bonus shares to act, instead of cash dividends. This increases the number of shares at the end, resulting in lower earnings per share are computed to. Among the reasons of this policy to maintain liquidity, raising the price, condition of sanction. And so on. For reasons mentioned companies don’t tend assets lose, their cash want their money instead of paying dividends to buy assets as they, spent so little impact on firm performance inflationary safety value must be entered. Inflation as a result of macro-economic policies can affect company profits and some performance evaluation criteria are effective.

**REFERENCES**


Stewart TA. 1991. Brainpower: Intellectual capital is becoming corporate America’s most valuable asset and can be its sharpest competitive weapon; the challenge is to find what you have – and use it. Fortune, 123(11), 44-60.