Moderating Effect of Intellectual Capital on Relevance of Earnings and Cost of Equity Relationship: Review of Contemporary Literature

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Abstract: This paper reviews the effect of intellectual capital on relationship amid relevance of earnings and cost of equity. Review of literature demonstrates that enhancement and improvement in quality of information pertinent to relevance of earnings through recognition of intellectual capital lead to the reduction of information asymmetry (information risk), and concurrently increases the investor’s willingness to invest by eventually leading to reduction in cost of equity. Based on the findings of literature review, this paper posits a framework that links the moderating effects of intellectual capital on the relationship between relevance of earnings and cost of equity for future empirification.

Key words: Intellectual Capital, Relevance of Earnings, Information Asymmetry, Cost of Equity

INTRODUCTION

Information asymmetry has become a real concern in capital market for both business organizations and investors. Contemporary researchers started positing that information asymmetry could be reduced through disclosure of information related to earnings quality and recognition of intellectual capital \((IC)\) as an asset. Earning is recognized as significant accounting information for investors, which guide them in making rationale and profitable decision. Accounting researches have demonstrated empirically that poor quality of earnings leads to increase in information asymmetry (risk), which results in higher cost of equity \((CofE)\), whereas, reduction in information asymmetry results in decreased \(CofE\). Parallel to this debate, accounting researchers have argued that reduction in disclosure and non-recognition of \(IC\) increase the gap between market and book value (Amir and Lev, 1996; Brennan, 2001; Holland, 2003), and consequently, diminishes the value relevance of earnings (Collins et al., 1997; Francis and Schipper, 1999; Baruch et al., 1999). Thus, enhancement and improvement in the quality of accounting information through the disclosure of information related to earnings quality and recognition of \(IC\) as an asset lead to the reduction of information asymmetry, which in return decreases \(CofE\). Correspondingly, this paper proposes a framework based on the review of contemporary accounting literature, which establishes relationship amid \(IC\) as moderator of the relationship amid relevance of earnings and \(CofE\).

2. Literature Review:

Financial statement is a major source of information, which is considered valuable by the investors when evaluating the firm stock. FASB No. 2 discusses relevance and reliability as two primary criteria, which makes accounting information useful for decisions. Relevance of accounting information has the ability to making a difference in a decision (FASB No. 2 pare. 47). Financial statement information is relevant if it is able to confirm or change investors’ expectations regarding the value of stock (Lubberink, 2000). Empirical researches have demonstrated the usefulness of accounting information particularly about earnings, which have decreased over the years as economies became knowledge intensive (Brown et al., 1996; Chang, 1998; Collins et al., 1997; Francis and Schipper, 1999; Lev and Zarowin, 1999). Similarly, Francis and Schipper (1999), and Lev and Zarowin (1999) illustrated in their studies based on the U.S. data that value relevance of earnings has declined over the years and that recognition of R&D cost as expense has led to the decreasing trend of relevance of earnings. On the other hand, contemporary literature reveals that capitalization of \(IC\) increases the value relevance of earnings instead of recognizing it as immediate expense (Aboody and Lev, 1998; Ahmed and Falk, 2006; Lev and Sougiannis, 1996). Brooking Research institute (1996) pointed out that 62% value of the company used to be represented by its physical capital and 38% by \(IC\). But recently, physical capital decreased

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to 38% and IC increased to 62%. This indicates that IC has substantial impact on financial information with respect to firm’s earnings.

Parallel to this discussion, last two centuries have witnessed the transformation of traditional economic system to knowledge intensive economy. Knowledge-based economy recognizes IC as a pivotal component of firm overall growth and has become the major source of firm competitive advantage (Holland, 2003). Though, traditional accounting practices have failed to fully recognize this knowledge element (IC) as an asset and consequently, its non-recognition has resulted in the increase of information asymmetries between companies and the users of financial reports (Byrnes and Derhovaniesian, 2002; McNamee, 2001; Reed et al., 2002). To reduce the information asymmetry, several empirical studies (Arvidsson, 2011; Holland, 2006; ICAEW, 2003; Lev, 2001; OECD, 2006) have suggested the disclosure of IC information in financial statements, as disclosure and recognition of IC advocated reducing the information asymmetry amid firms and users of financial statement. The benefits of disclosure and recognition of IC as an asset as advocated by Kristandl and Bontis (2007):

- It deals with shortcomings of capital-market oriented traditional financial reporting (better share pricing);
- It provides less volatility, less insider trading, and decreases the CofE (Andriessen, 2004; Botosan, 1997; Botosan and Plumlee, 2002; Leadbeater, 2000; Riegler and Kristandl, 2004).

Thus, in disclosure and recognition of IC as an asset lead to reduction in information asymmetry (information risk) and concurrently increases the willingness of investors to invest and in order to reduce the CofE (Diamond and Verrecchia, 1991; Easley and O’Hara, 2004; Glosten and Milgrom, 1985).

The growing interest among the accounting researchers to examine the impact of IC on CofE produced handful researchers recently. Singh and Van der Zahn (2007) investigated the relationship amid IC disclosure and degree of under-pricing. The results of the study revealed that IC disclosure is positively related to under-pricing. Kristandl and Bontis (2007) revealed that CofE is negatively related to forward-looking information (IC) and positively associated to financial information. They examined the impact of voluntary information disclosure (forward looking- IC- and historical-financial-information) on CofE. Tokmakcioglu et al. (2007) likewise examined the association between intangible assets and cost of capital. They employed CAPM model to estimate cost of capital and concluded that the association amid cost of capital and intangible asset is not clear and difficult to evaluate. Orens et al. (2009) recently investigated the effect of web-based IC disclosure on cost of capital (CofE and cost of debt) and also on firm’s value. They utilized the price-earnings-growth (PEG) ratio to estimate the CofE. The result of their study revealed that disclosure of IC is positively related to firm’s value and negatively associated with information asymmetry and consequently diminishes the cost of capital (CofE and cost of debt). Mangena et al. (2010) correspondingly investigated the effect of IC disclosure on CofE on a sample of 126 UK firms covering period from 2004 to 2005. They employed PEG ratio model to estimate CofE. They found that IC disclosure negatively relates to CofE; this means firms with high disclosure of IC have low CofE. Cultivating from discussion in literature, it is established that disclosure of IC information in general has a negative effect on CofE.

3. Proposed Framework: Moderating Effect of IC on Relevance of Earnings and CofE:

This paper proposes a framework, which links recognition of IC as moderator on the relationship between relevance of earnings and CofE. The reported shift in literature from traditional economic system to knowledge-intensive economic system makes it controversial on how to report the value of new knowledge-intensive system in financial reports. Indeed, traditional financial reports do not include the provision of value of new knowledge (IC). Due to non-recognition of IC in financial reports, the value relevance of accounting information particularly earnings has diminished (Brown et al., 1996; Chang, 1998; Collins et al., 1997; Francis and Schipper, 1999; Lev and Zarowin, 1999). Thus, non-recognition of IC increases the information asymmetry between firms and external users of financial reports (Byrnes and Derhovaniesian, 2002; McNamee, 2001; Reed et al., 2002). Empirical studies on the subject area of accounting have pointed this problem pertaining to the reporting of knowledge information in financial reports and proposed patterns to overcome the deficiencies of traditional financial reporting systems by disclosing enough accounting information (Blair and Wallman, 2000; Bose and Oh, 2004; Gelb, 2002; Lev, 2001). One major justification of this proposed framework suggest that decrease in information asymmetry consequently diminishes the CofE (Coller and Yohn, 1997; Diamond and Verrecchia, 1991; Healy and Wahlen, 1999; Kim and Verrecchia, 1994; Leuz and Verrecchia, 2000; McNichols and Trueman, 1994; Welker, 1995; Zambon, 2003). Thus, by disclosure and recognition of IC, the information asymmetry between firms and external users of financial statement is reduced. Due to the decrease in information asymmetry, investors become reluctant and results in reduction the level of CofE (Diamond and Verrecchia, 1991; Easley and O’Hara, 2004; Glosten and Milgrom, 1985). Thus, to elaborate the pivotal role of IC on information asymmetry and CofE, this paper proposes a framework that suggests that moderating role of IC theoretically establishes a positive link amid relevance of earnings and CofE (reduced). Next is the discussion on relevance of earnings, IC and CofE and the issues related to their measurement.
3.1 Relevance of Earnings:
Relevance of earnings is classified as independent variable in the proposed framework, in line with Collins et al. (1997), Francis and Schipper (1999), and Francis et al. (2004), it is suggested that $R^2$ to be computed based on the following model to measure value relevance:

$$R_{t,s} = \beta_{0,s} + \beta_{1,s} EARN_{t,s} + \beta_{2,s} \Delta EARN_{t,s} + \epsilon_{t,s}$$

Where:
- $R_{t,s}$ = the cumulative market - adjusted return on security $i$ over the 15 months ending 3 months following the end of fiscal year $t$,
- $\Delta EARN_{t,s}$ = firm $i$'s earnings before extraordinary items in year $t$ minus its annual earnings in year $t-1$, deflated by the market value of equity at the end of fiscal year $t-1$,
- $EARN_{t,s}$ = firm $i$'s earnings before extraordinary items in year $t$ deflated by the market value of equity at the end of fiscal year $t-1$, and
- $\epsilon_{t,s}$ = other valu - relevant information of firm $i$ for year $t$ to earnings.

3.2 Intellectual Capital:
$IC$ in the proposed framework is refereed as moderator, which may be evaluated based on the “value added IC” (VAIC) method. VAIC model was advocated by Pulic (1998) and marked as ROA group method. Pulic (1998) defined $IC$ as “how much and how efficiently $IC$ and capital employed create values in the firm”. Pulic (1998) categorized $IC$ into three main components: Human Capital (HC), Structural Capital (SC), and Capital Employed (CE). To remain consistent with the literature findings, it is suggested that VAIC to be utilized to measure $IC$, the process to calculate VAIC entails seven steps procedure (Table 1), as advocated by Chan (2009); Chen, Cheng, and Hwang (2005); Ghosh and Mondal (2009); Goh (2005); Kamath (2007); Kujansivu and Lonnqvist (2007); Pulic (2004); Shiu (2006); Ting and Lean (2009); Yalam and Coskun (2007); Ze’ghal and Maaloul (2010).

<table>
<thead>
<tr>
<th>Steps</th>
<th>Label</th>
<th>Formula</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Value Added (VA)</td>
<td>VA = OUT – IN</td>
<td>OUT= revenues and include all products and services sold in the market. IN = all expenses for operating a company (exclusive of employee costs which are not regarded as costs).</td>
</tr>
<tr>
<td>2</td>
<td>Human Capital Coefficient (VAHU)</td>
<td>VAHU = VA/HC</td>
<td>HC= total investment in terms of salaries and wages of the staff.</td>
</tr>
<tr>
<td>3</td>
<td>Structural Capital Coefficient (STVA)</td>
<td>STVA = SC/VA</td>
<td>SC=VA-HC</td>
</tr>
<tr>
<td>4</td>
<td>Intellectual Capital Coefficient (VAIN)</td>
<td>VAIN=VAHU+STVA</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Capital Employed Efficiency</td>
<td>VACA= VA/CA</td>
<td>CA= Book-value of net assets</td>
</tr>
<tr>
<td>6</td>
<td>Value Added Intellectual Coefficient</td>
<td>VAIC=VAIN +VACA</td>
<td></td>
</tr>
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3.3 CofE:
The dependent variable of the proposed framework is $CofE$, to remain consistent with the leading accounting researches, it is suggested that PEG model to be employed to measure the $CofE$ (Botosan and Plumlee, 2005; Chen et al., 2004; Easton, 2004; Easton and Monahan, 2005; Francis et al., 2004; Francis et al., 2008; Lee et al., 2006; Mangena et al., 2010):

$$r_{PEG} = \sqrt{\frac{eps_{2} - eps_{1}}{p_{0}}}$$
3.4 Proposed Framework:

The objective of the paper is concerned about determining the effect of recognition of IC as moderator on the relationship between relevance of earnings and CoFE. The reported shift in literature from traditional economic system to knowledge-intensive economic system makes it controversial on how to report the value of new knowledge-intensive system in financial reports. Indeed, traditional financial reports do not include the provision of value of new knowledge (IC). Due to non-recognition of IC in financial reports, the value relevance of accounting information particularly earnings has diminished (Brown et al., 1996; Chang, 1998; Collins et al., 1997; Francis and Schipper, 1999; Lev and Zarowin, 1999). Thus, non-recognition of IC increases the information asymmetry between firms and external users of financial reports (Byrnes and Derhovanesian, 2002; McNamee, 2001; Reed et al., 2002). Empirical studies on the subject area of accounting have pointed this problem pertaining to the reporting of knowledge information in financial reports and proposed patterns to overcome the deficiencies of traditional financial reporting systems by disclosing enough accounting information (Blair and Wallman, 2000; Bose and Oh, 2004; Gelb, 2002; Lev, 2001). One major justification of this proposal is a decrease in information asymmetry consequently diminishes the CoFE (Coller and Yohn, 1997; Diamond and Verrecchia, 1991; Healy and Wahlen, 1999; Kim and Verrecchia, 1994; Leuz and Verrecchia, 2000; McNichols and Trueman, 1994; Welker, 1995; Zambon, 2003). Thus, by disclosure and recognition of IC, the information asymmetry between firms and external users of financial statement is reduced. Due to the decrease in information asymmetry, investors become reluctant and results in reduction the level of CoFE (Diamond and Verrecchia, 1991; Easley and O’Hara, 2004; Glosten and Milgrom, 1985). Therefore, to assess the pivotal role of IC on information asymmetry and CoFE, this paper intends to investigate the effect of non-conservatism of IC on the relationship between relevance of earnings and CoFE. The proposed framework suggests variety of hypotheses, which require measurement criteria to be carefully employed. Based on the proposed relationship, the hypotheses and the measurement suggestions are discussed:

\[ H_1 = \text{recognition of IC decreases the relationship between relevance of earnings and CoFE.} \]

\[
\text{CoFE}_{i,t} = \alpha_{0,i} + \beta_{1,i} \text{Beta}_{i,t} + \beta_{2,i} \text{Size}_{i,t} + \beta_{3,i} \text{BM}_{i,t} + \beta_{4,i} \text{Relevance of Earnings}_{i,t} + \\
\beta_{5,i} \text{IC}_{i,t} + \beta_{6,i}(\text{IC}_{i,t} \times \text{Relevance of Earnings}_{i,t}) + \epsilon_{i,t}
\]
To test the effect of IC on the relationship between relevance of earnings and CoFE, it is suggested that the hypothesis is to be further broken in three sub-hypotheses:

- \( H_{1a} \): Recognition of human capital decreases the relationship between relevance of earnings and CoFE.

\[
CoFE_{i,t} = \alpha + \beta_1 \eta_i + \beta_2 \text{Size}_{i,t} + \beta_3 \text{BM}_{i,t} + \beta_4 \text{Relevance of Earnings}_{i,t} + \beta_5 \text{HCE}_{i,t} + \beta_6 (\text{Relevance of Earnings}_{i,t} \times \text{HCE}_{i,t}) + \epsilon_{i,t}
\]

- \( H_{1b} \): Recognition of structural capital decreases the relationship between relevance of earnings and CoFE.

\[
CoFE_{i,t} = \alpha + \beta_1 \eta_i + \beta_2 \text{Size}_{i,t} + \beta_3 \text{BM}_{i,t} + \beta_4 \text{Relevance of Earnings}_{i,t} + \beta_5 \text{SCE}_{i,t} + \beta_6 (\text{Relevance of Earnings}_{i,t} \times \text{SCE}_{i,t}) + \epsilon_{i,t}
\]

- \( H_{1c} \): Recognition of capital employed decreases the relationship between relevance of earnings and CoFE.

\[
CoFE_{i,t} = \alpha + \beta_1 \eta_i + \beta_2 \text{Size}_{i,t} + \beta_3 \text{BM}_{i,t} + \beta_4 \text{Relevance of Earnings}_{i,t} + \beta_5 \text{CEE}_{i,t} + \beta_6 (\text{Relevance of Earnings}_{i,t} \times \text{CEE}_{i,t}) + \epsilon_{i,t}
\]

4. Conclusion:

Many researchers document that the non-recognition of IC lead to reduction in relevance of earnings over time, as the world economy has transformed into a knowledge intensive economy (Brown et al., 1996; Chang, 1998; Collins et al., 1997; Francis and Schipper, 1999; Lev and Zarowin, 1999). Thus, enhancement and improvement of quality of information pertaining to relevance of earnings through recognition of IC results in reduction of information asymmetry (information risk), and concurrently increase the investor’s willingness to invest and consequently reduces CoFE (Diamond and Verrecchia, 1991; Easley and O’Hara, 2004; Glosten and Milgrom, 1985). We conclude hereby based on the proposed framework that inclusion of IC as the moderator of the relationship amid relevance of earnings and CoFE would minimize the CoFE. It is strongly suggested that researchers, practitioners, and accountants should extend the horizon of research, which measures IC.

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REFERENCES


