

The Relevance of Intellectual Capital Valuation: Indian Evidence

Amitava Mondal*, Santanu Kumar Ghosh**

Abstract

Intellectual capital (IC) shows a significantly growing acceptance as a worthy topic of academic investigation and practical implication. The main objective of this study is to determine the monetary value of intellectual capital and to examine whether the joint explanatory power of intellectual capital (IC), book value (BV) and earnings (residual income based on GAAP) for stock price is superior to that of earnings and book value of Indian companies. Additionally, the study aims to investigate the impact of intellectual capital on corporate value creation. This study is conducted on 110 leading knowledge companies operating in India during the period 2007 to 2011. An appropriate method is to be applied for measuring the intellectual capital performance of the company. In our study we extend the Ohlson's (1995) discounted residual income method to rationally measure firm's value by considering intellectual capital (IC). Regression models are examined in order to test the hypotheses included in the proposed conceptual framework. The empirical findings suggest that the efficient management of company's intellectual capital, in addition to earnings and tangible assets, can explain corporate value. Results proved that, in the Indian business context, the development of Intellectual resources seems to be one of the most significant factors of success. This study extends the understanding of the role of intellectual capital in creating corporate value and building sustainable competitive advantages for companies in emerging economies like India and may bring implications for valuation and reporting of intellectual capital.

Keywords: Intellectual Capital, Valuation, Efficiency, Market Value, Indian Companies.

1. Introduction

Technological advancement in data processing, communication system moves the economy into information age where knowledge is the vital asset. In this new economy, tangible assets are fast becoming secondary

assets as companies rely primarily on intangible assets like employee capability and competency, management philosophy, culture, innovative process, and customer loyalty etc. to create value. All invisible assets which are employed in the business are collectively called as intellectual assets or intellectual capital. Intellectual capital is associated with the main source of individual, organizational as well as national competitiveness in today's knowledge economy (Wiig, 1997). Several empirical studies show the significance of intellectual capital at corporate level. Canadian Institute of Chartered Accountants' survey concludes that intellectual assets are crucial for firm's success (Ghosh and Wu, 2007). Abernethy et al., (2003) estimate that investment in intellectual capital creates twice fruits as compared to the same amount of investment in physical assets.

However, benefits of intangibles are difficult to define, measure and quantify. This suggests that traditional measures of a company's performance, which are based on conventional accounting principles, may be unsuitable in the new economy in which competitive advantage is driven by intellectual capital (Edvinsson and Malone 1997). The use of traditional performance measurement techniques may lead investors and other stakeholders to make inappropriate decisions when companies have a large proportion of their investment in intangible assets (S. Firer and L. Stainbank, 2003). According to Roos, Edvinsson, and Dragonetti (1998) firm's value is determined by traditional physical, financial capital and intangible intellectual capital. Lev (2001) suggests that the physical and financial assets of firm can only generate normal earnings; abnormal earnings are created through the development of intangible assets. Therefore, in the knowledge economy intellectual capital plays a vital role to enhance business performance as well as market value.

* Assistant Professor, Department of Commerce, Kalna College, The University of Burdwan, West Bengal, India.
E-mail: a_mkolkata@yahoo.co.in

** Professor, Department of Commerce, The University of Burdwan, West Bengal, India.
E-mail: shantanu.kaizen@gmail.com

1.1 Objective of the Study

The purpose of the present study is twofold. Firstly the study examines whether corporate value creation is determined by intellectual capital efficiency or not. Secondly the study also attempts to empirically investigate the role of intellectual capital to provide incremental information for valuation of stocks. Value creation efficiency of intellectual capital and monetary value of intellectual capital are determined in this study. The analysis is based on a sample of 110 software, pharmaceutical, finance, and hotel companies operating in India.

2. Literature Review and Hypothesis Development

Intellectual capital is the summation of intangible assets employed in the business to create value. Thomas Stewart (1997) describes intellectual capital as “something that cannot be touched, although it slowly makes you rich”. He defines it as the sum of its human capital (talent), structural capital (intellectual property, methodologies, software, documents and other knowledge artifacts) and customer capital (client relationship).

IC experts try to segregate all components of intellectual capital into different similar groups like human, organizational/structural and customer or relation resources. Human capital is considered as the most significant intangible asset in an organization. It refers to the individual's knowledge such as qualifications, skills, efficiencies, values, and experiences within an organization, which goes home with employees after work (Guthrie et al., 1999). Structural capital refers to the knowledge embedded in the organizational structure, processes, databases, procedures, routines, systems and culture, which is created by employees or brought in, but which stays in the organization when employees go home after work (Guthrie et al., 1999; Wong and Gardner, 2005). Relationship capital refers to the knowledge embedded in the relationships external to the organization, such as suppliers, customers, business partners, etc. (Wong and Gardner, 2005). Value is derived from the combinatorial use of these three categories of resources with the physical and monetary resources.

Large number of empirical research reveals that IC is a key component that enhances corporate performance. Riahi-Belkaoui (2003) mentioned that intellectual capital

is the only resource that satisfies the characteristic of strategic assets like valuable, rare, imperfectly imitable, and hardly substitutable and capable of generating sustainable competitive advantage. In the last few years, several empirical studies are conducted to find out the strategic importance of intellectual capital on corporate financial performance. One of such studies has been conducted by K.H Samuel et al. (2011) to investigate whether intellectual capital (IC) has an impact on the financial aspects of organizational performance or not of all the constituent companies of the Hang Seng Index of Hong Kong Stock Exchange for the years 2001-2009. Empirical results suggest that IC, as measured by VAIC, was positively associated with profitability of businesses. Another very recent study by Komnenic and Pokrajcic (2012) is to examine whether intellectual capital (IC) has an impact on organizational performance as well as to identify the IC components that may be the drivers of the traditional indicators of business success. Their study is based on data from 37 multinational companies which established their business in Serbia from 2006 to 2008. Value creation efficiency is measured by VAIC methodology. The results of their study reveal that human capital positively affect corporate performance measures. The empirical findings of Cheng et al. (2010) suggest a significant and positive relationship between intellectual capital and company performance of sample companies. The study result of Hitt et al. (2001) proved the role of intangible capital more dominant compare with tangible capital. In an another study conducted by Iswari and Anshori (2007) to investigate the influence of intellectual capital on Indonesian insurance company's financial performance and empirical results prove that intellectual capital influences corporate financial performance. Ismail and Karem (2011) examine whether intellectual capital influenced the financial performance of banks in Bahrain during the period 2005 to 2007. The results support the hypothesis that intellectual capital has a positive impact on the financial performance of banks in Bahrain. Another study in Malaysian context by Gan and Saleh (2008), examines the association between intellectual capital (IC) and corporate performance of technology-intensive companies (MESDAQ) listed on Bursa Malaysia. The findings from this study have shown that technology-intensive companies still depend very much on physical capital. However, human capital of sample companies has great importance in enhancing the productivity of companies. But VAIC fails to explain market valuation of Malaysian technology-intensive companies.

Based on above literature review, we hypothesize that;

Hypothesis 1: Intellectual Capital has influence to corporate financial performance and shareholders value creation of Indian companies

In knowledge-based economy, the growing gap between firms' market and book value has been ascribed to the invisible value creation of intellectual capital which can't be accurately measured and reported under current financial accounting system. Intellectual capital is different from the tangible physical capital, it's intangible and complicated, and there hasn't been a method to systematically and fully measure intellectual capital. To some extent, these restrict the empirical research on the relationship between intellectual capital and corporate value. But some researchers empirically analyzed the said relationship using several measurement techniques of intellectual capital and corporate value creation.

Pulic (2000) finds positive relation between market value added (MVA) and intellectual capital of 30 'FTSE 250' companies. Lev and Radhakrishnan (2003) finds that organizational capital has some explanations to the firm's market value. Baruch Lev (2003) states that in efficient capital market investors can reasonably price the listed companies using the information about intellectual capital. Firer and Williams (2003) empirically investigated the association between intellectual capital and market value of firms using data from 75 publicly traded companies in South Africa. Their result showed that physical capital is an important determinant of firms' market value, but not intangible or intellectual capital. Chen et al. (2005) also analyzed the relationship between intellectual capital and corporate value, but they used a sample of listed companies from Taiwan during 1992-2002. They found that although physical capital and intellectual capital both have significant positive effects on corporate value, but the effect of physical capital is much larger than that of intellectual capital. Tseng et al. (2005) measured four types of intellectual capital (i.e. human capital, organizational capital, innovative capital and relational capital), and investigated the influence of intellectual capital on corporate value. They found that innovative capital and relational capital positively affect corporate value directly; human capital and organizational capital affect corporate value indirectly. And the roles of these types of intellectual capital on corporate value vary with different industries.

The studies mentioned above have shown mixed evidence about intellectual capital and corporate value and this motivates the present researchers to undertake an empirical study to re-examine such relationship in the Indian context. Therefore, our second hypothesis will be as follows:

Hypothesis 2: The information about intellectual capital in addition to other accounting information like earnings and book value of Indian knowledge companies will increase the explanatory ability of firm's value.

3. Sample

The data used in this empirical study are collected from published annual reports of respective company and from Capitaline Database. Market related data are collected from annual reports and respective stock exchange at which the company is listed. The study confined to 110 Indian knowledge companies (45 software, 32 pharmaceuticals, 22 finance, and 11 hotel companies) for the period 2007 to 2011. The companies selected in this study are listed in BSE and/or NSE and having good financial performance over the study period.

4. Research Methodology

This section of the study is divided into two parts, one part deals with the empirical analysis relating to 1st hypothesis and other part of this section covers the second hypothesis.

4.1 Part 1: Regression Models

Model 1 and Model 2 are regression equations for the first hypothesis (i.e, sample companies are intellectual efficient or not). Following regression equations are used to examine the relationships between Return on assets and Tobin's Q and the measure of intellectual capital i.e., VAICTM. The regression equations are as follows:

Model 1:

$$ROA = \alpha + \beta_1 (VAIC^{TM}) + \beta_2 (DER) + \beta_3 (PC) + \beta_4 (SIZE) + \beta_5 (AGE) + \varepsilon$$

Model 2:

$$TOBIN = \alpha + \beta_1 (VAIC^{TM}) + \beta_2 (DER) + \beta_3 (PC) + \beta_4 (SIZE) + \beta_5 (AGE) + \varepsilon$$

Variable definitions

1. Measurement of Dependent variables:

For the purpose of conducting the empirical analysis in the present study Return on assets (ROA), is used to measure corporate profitability. Tobin's Q is very popular measure in terms of shareholders value creation. Each dependent variable is defined as follows:

(1) Return on assets (ROA): Return on assets measured as the ratio of the net income (less preference dividends) divided by the book value of total assets, shows the degree to which a firm's revenues exceed over cost (Chen, Cheng and Hwang, 2005).

2) Tobin's Q (TOBIN): This measure is used as a measure of shareholders' value creation. It is calculated as the ratio of market value of assets to replacement cost of those assets. For our research purpose, we used a general measure of Tobin's Q ratio (TOBIN) defined as {market value of equity + book value of preferred stock + book value of debt} / book value of assets. Here, market value of equity is calculated by multiplying average market price of the share with total number of outstanding shares. The theory behind the q-ratio is that if q-ratio is greater than 1 and greater than competitors' q, then the company has the ability to create value than other similar companies.

2. Measurement of Value Creation Efficiency of Intellectual Capital (VAIC™)

VAIC™ is a measure for corporate intellectual ability (Pulic, 2000), providing an easy-to-calculate, standardized, and consistent basis of measure, enabling effective comparative analyses across firms (Mondal and Ghosh, 2012). Data used in the calculation of VAIC are based on financial statements. The procedures calculating VAIC are as follows:

$VAIC^{TM} = CEE_i + ICE_i$; $ICE_i = HCE_i + SCE_i$, where

$VAIC^{TM} = VA$ intellectual coefficient for firm i;

$CEE_i = VA_i / CE_i$, indicator of VA efficiency of capital employed for firm i.

$HCE_i = VA_i / HC_i$; refers to indicator of VA efficiency of human capital for firm i;

$SCE_i = SC_i / VA_i$; refers to indicator of VA efficiency of structural capital VA for firm i;

$VA_i = \text{Output} - \text{Input}$ (Total Income - Operating Expenses excluding Salaries and employee benefits)

$CE_i =$ book value of the net assets for firm i

$HC_i =$ Salaries and employee benefits for firm i;

$SC_i = VA_i - HC_i$ structural capital for firm i.

3. Control variables

In conducting the liner multiple regressions analyses following control variables are have been included to segregate the influence of intellectual capital.

1. Size of the Firm: Size of the firm as measured by the natural log of total assets is used to control for the impact of size on wealth creation through economies of scale, monopoly and bargaining power (Riahi-Belkaoui, 2003).
2. Leverage (DER): Debt structure of sample companies, measured by debt-equity ratio calculated as 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-Belkaoui, 2003).
3. Physical capital intensity (PC): Physical capital intensity as measured by a ratio of a company's fixed assets to its total assets (Firer and Stainbank, 2003) is used to control for the impact of fixed assets on corporate performance. The assumption is that company's fixed assets have significant impact on company's financial performance.
4. Age : This control variable is included to measure the stable degree of the organization and is calculated by differentiating year of incorporation from the study year. Finally natural log of values are taken to achieve the equivalence in value.

4.2 Part 2: Ohlson Model

Ohlson (1995) derives the following valuation model based on the standard assumptions underlying the dividend discount model, the clean surplus valuation (CSR) and stochastic process for abnormal returns:

$$P_t = bv_t + \alpha_1 x_t^a + \alpha_2 v_t \quad (1)$$

Where P_t is the stock price at time t, bv_t is end of year book value of equity and x_t^a is abnormal earnings for the period t, and v_t is other non-accounting value relevant

information, which is assumed to be independent of net income and book value of equity.

The above appraisal model combines accounting figures and equity's value at current term with the assumption of perfect market and unbiased information. But in practice most-accounting information are either partially biased with GAAP or based on conservative accounting practices. Therefore, the book value of net assets in the intercept term of regression model of Ohlson (1995) does not correspond to economic essence (Chen 2004). In our appraisal model the book value of equity is considered as separate independent variable and we put into the intercept term in order to catch other information in statistical analysis.

Substituting the abnormal earnings (X_t^a) in the Ohlson model (1995) with current period earnings we get

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + e \quad (2)$$

where P_t is the stock price of i th firm at time t , bv_{it} is end of year book value of equity of i th firm at time t and NI_{it} is the net income of i th firm for the period t . Here, we deleted the unspecified other information variable (V_t) and replace it with an error term. Above equation is popularly known as BBL valuation model as it is first developed by Barth, Beaver & Landsmen (1998). Large numbers of empirical research show the relevance of intangible in equity valuation and they opined that current investments in intangibles are associated with higher future earnings and stock returns Gold finger (1997); Lev, Sarat & Sougiannis (1999). Therefore, we define V_t as the research variable for intellectual capital and analyze the value relevance of intellectual capital, then the model will be as follows

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 IC_{it} + e \quad (3)$$

where P_t is the stock price of i th firm at time t , bv_{it} is end of year book value of equity of i th firm at time t , NI_{it} is the net income of i th firm for the period t and IC is the value of intellectual capital of i th firm at time t . This study uses the natural log of P_t , BV , NI and IC to achieve equivalence in value.

1. Measurement of Monetary Value of Intellectual Capital (IC)

We followed the procedure prescribed in 'Calculated Intangible Value' (CIV) method to calculate the monetary value of intellectual capital. This method allows us to

calculate the fair value of the intangible assets. Steward (1995, 1997) provides a seven step process to calculate the value which is illustrated below.

Step-1: Calculate the average pretax earnings for the past three years.

Step-2: Get the average year-end tangible assets for the same three years.

Step-3: Divide average earnings by average assets to get the return on assets.

Step-4: Find the industry's average return on assets for the same three years.

Step-5: Calculate excess return. Excess return = pre tax earnings - [company's average tangible assets * industry average ROA].

Step-6: Calculate the three-year-average income tax rate and multiply this by the excess return. Subtract the result from the excess return to get an after-tax number or premium. This premium is attributable to intangible assets.

Step-7: Calculate the present value of the premium. That can be done by dividing the premium by an appropriate discount rate, such as the company's cost of capital.

5. Discussion of Results

Tables 1 and 2 contain the empirical results relating to the first hypothesis. Table 1 shows multiple regression results of profitability as measured by ROA of Sample companies for the period 2007 to 2011. Research results show that beta values of VAIC are significant in all study periods except the year 2009. Age and size of the sample companies significantly and positively influence the profitability also. However, the association between profitability and debt structure of sample companies is negative. Independent and control variables are collectively explain 12% to 25% variance in return on assets which are statistically significant. Therefore, intellectual capital efficiency, firm age and size are important factors for value creation than utilization of debt capital and physical assets of Indian knowledge companies.

Table 2 presents multiple regression result of Tobin's Q, measure of shareholders value creation. From the results it is seen that VAIC and age of the sample companies

Table 1: Multiple Regression Results of Profitability

$$ROA = \alpha + \beta_1 (VAIC^{TM}) + \beta_2 (DER) + \beta_3 (PC) + \beta_4 (SIZE) + \beta_5 (AGE) + \varepsilon$$

Year	α	VAIC	DER	PC	AGE	SIZE	e	Model Summary	
								Adj. R ²	F-Value
2007	0.058	0.267** (1.1008)	0.112 (1.015)	0.011 (1.009)	0.147 (1.261)	0.125*** (1.0058)	0.019	0.127	1.541**
2008	-0.112*	0.208** (1.578)	-.496* (1.546)	-0.100 (1.303)	.293* (1.130)	0.245* (1.605)	0.083	0.275	9.278*
2009	0.016	0.129** (1.642)	-.336* (1.638)	0.180*** (1.312)	0.115*** (1.162)	0.074 (1.540)	0.129	0.142	4.644*
2010	-0.131	0.121 (1.507)	-.112 (1.479)	-0.163 (1.310)	0.166*** (1.115)	0.102** (1.604)	0.857	0.144	1.944*
2011	-0.008	0.222** (1.091)	-.446* (1.030)	-0.046 (1.074)	0.265** (1.112)	0.173** (1.108)	0.0961	0.250	6.077*

Here *, **, ***, represent 1%, 5% & 10% significance level respectively and numbers in parenthesis indicate VIF value.

Table 2: Multiple Regression Results of Shareholders Value

$$TOBIN = \alpha + \beta_1 (VAIC^{TM}) + \beta_2 (DER) + \beta_3 (PC) + \beta_4 (SIZE) + \beta_5 (AGE) + \varepsilon$$

Year	α	VAIC	DER	PC	AGE	SIZE	e	Model Summary	
								Adj. R ²	F-Value
2007	1.834	0.144** (1.108)	-0.212** (1.015)	-0.085 (1.009)	0.105** (1.261)	0.420* (1.09)	2.063	0.178	5.162*
2008	-1.049	0.123 (1.578)	0.132 (1.546)	0.066 (1.303)	0.039 (1.130)	0.026 (1.60)	2.271	0.124	0.351**
2009	-0.668	0.108 (1.642)	-.202*** (.638)	0.152** (1.31)	0.031 (1.162)	0.257* (1.54)	2.358	0.187	2.338**
2010	-1.479	0.113* (1.507)	-.288 (1.479)	0.072 (1.31)	0.119*** (1.115)	2.548* (1.65)	1.856	0.193	3.187*
2011	-2.821*	0.117** (1.091)	-.312* (1.030)	0.083 (1.074)	0.255*** (1.112)	0.368* (1.10)	1.037	0.145	4.603*

Here *, **, ***, represent 1%, 5% & 10% significance level respectively and numbers in parenthesis indicate VIF value.

significantly influence Q ratio in three years (2007, 2010, and 2011) out of five study periods. Debt – equity ratio has significant negative association with Q ratio. Size of the companies as measured by natural log of total assets has significant positive association in four (2007, 2009, 2010, 2011) out of five study periods. VAIC, which indicates the extent of corporate intellectual ability affects profitability in all study periods and that of Q ratio three

study periods out of five study periods. Therefore, it can say that hypothesis one is accepted.

Tables 3 and 4 show the empirical results relating to second hypothesis. The relevance of intellectual capital in firm valuation is examined here. Table 3 contains the empirical results of equation 2 where effects of book value (BV) and earnings on stock price is examined whereas the

study results of equation (3), where IC value incorporated additionally in the model, are presented in Table 4.

From Table 3 it is found that earnings significantly and positively influence stock price in all study period where as book value of sample companies significantly associated in two (2010 & 2011) out of five years. From Table 4 we find that intellectual capital is significantly and positively related with stock price in the year 2009, 2010, and 2011. Here we find that the addition of intellectual capital in model do not change the association between earnings and stock price. From Tables 3 and 4 it is shown that R^2 of Table 4 is higher than the R^2 of Table 3 over the study periods. Therefore, the research results establishes that

the proxy variable of intellectual capital have incremental explanatory power in stock price of sample companies. So the results support the hypothesis 2.

In all cases variation inflation factor (VIF) within 5, so there is no multi-coliniarity within variables.

6. Significance of Study

This empirical study is conducted to know the extent to which Indian knowledge companies are intellectually efficient, and the importance of intellectual capital for determining the firm value. To know the intellectual efficiency of sample companies we firstly investigate

Table 3: Empirical Results of Equation - 2

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + e$$

Year	α	BV	NI	e	Model Summary	
					Adjusted R ²	F- Value
2007	Data Not available					
2008	1.902*	0.102 (1.078)	0.478** (1.078)	1.12	0.146	5.717*
2009	3.826*	0.091 (2.577)	0.625** (2.577)	0.927	0.27	5.717*
2010	0.766	0.929* (2.524)	0.247*** (2.524)	1.083	0.520	33.059*
2011	3.068*	0.689** (1.945)	1.109* (1.945)	0.9395	0.285	11.951*

Here *, **, ***, represent 1%, 5% & 10% significance level respectively and numbers in parenthesis indicate VIF value.

Table 4: Empirical Results of Equation - 3

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 IC_{it} + e$$

Year	α	BV	NI	IC	e	Model Summary	
						Adjusted R ²	F- Value
2007	Data Not available						
2008	1.732*	0.861	0.668**	0.183	1.08	0.18	3.804**
2009	3.214*	-0.270 (4.418)	0.903* (4.503)	0.379** (1.921)	0.9304	0.295	8.689*
2010	0.439	1.022* (1.813)	0.571** (2.060)	0.304** (1.107)	1.0575	0.543	24.763*
2011	3.960*	0.656*** (2.711)	1.038** (3.470)	0.246*** (1.392)	0.9483	0.301	7.825*

Here *, **, ***, represent 1%, 5% & 10% significance level respectively and numbers in parenthesis indicate VIF value.

the relationship between value creation efficiency of intellectual capital (VAIC) and return on assets (ROA) and Tobin's Q. From the empirical results we find that VAIC significantly impacts on ROA as compared to Tobin's Q. Next we try to examine, is value of IC is relevant for the determination of firm value. From the study results we find that in addition to book value and earnings intellectual capital provide incremental information in valuation of firms. But empirical results show that the value of intellectual capital is value relevance but its value relevance is not greater than the residual earnings based on current accounting practices (GAAP). These results indicate that intellectual capital is important to enhance financial performance and market value of knowledge companies. This result also establishes the Edvinson and Malone (1997)'s theory that is firm value should determine by considering financial capital and intellectual capital also.

7. Conclusions

Intellectual capital is an important strategic asset for sustainable competitive advantages for knowledge intensive companies. The primary objective of this study is to determine the monetary value of intellectual capital and to examine the value relevance of IC on firm value. The intellectual performance of Indian knowledge companies to enhance corporate financial performance also examined. Our study results show that better intellectual capital efficiency of 110 Indian knowledge companies yield greater profitability and investors place higher value on firms having better intellectual capital efficiency. The empirical results also established that the joint explanatory power of book value (BV), earnings (NI), and intellectual capital (IC) for share price/firm value is superior to that of book value (BV) and earnings (NI). Though most of the intangible assets are not reported in the financial statement as per current accounting practices but investors still consider the invisible value of intellectual capital in valuating the companies. However, in determining the monetary value of IC we find that not every Indian company has positive value of IC. Some companies have negative IC value probably of having intellectual liabilities.

This study is conducted on the basis of data of Indian knowledge companies and being India a developing country therefore, our findings have important implications for emerging economies.

References

- Abernethy, M., Bianchi, P., Del Bello, A., Labory, S., Lev, B., Wyatt, A. Zambon, S. (2003). Study on the measurement of intangible assets and associated reporting
- Practices. Commission of the European Communities Enterprise Directorate General. Retrieved from ec.europa.eu/internal_market/.../2003-study-intangassets-full_en.pdf
- Abeysekera, I. & Guthrie, J. (2005). An empirical investigation of annual reporting trends of intellectual capital in Sri Lanka. *Critical Perspectives on Accounting*, 16(3), 151-163.
- Barth, M. E., Beaver, W. H. & Landsman, W. R. (1998). Relative valuation roles of equity book value and net income as a functional of financial health. *Journal of Accounting & Economics*, 25(1), 1-34.
- Brooking, A. (1996). Intellectual Capital- Core Asset for the Third Millennium Enterprise. London: International Thomson Business Press.
- Chen, M. C., Cheng, S. J. & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital*, 6(2), 159-176.
- Cheng, M., Lin, J., Hsiao, T. & Thomas, W. L. (2010). Invested resource, competitive intellectual capital, and corporate performance. *Journal of Intellectual Capital*, 11(4), 433-450.
- Chu, S. K. W., Chan, K. H. C. & Wendy, W. Y. W. (2011). Charting intellectual capital performance of the gateway to China. *Journal of Intellectual Capital*, 12(2), 249-276.
- Edvinsson, L. & Malone, M. S. (1997). *Intellectual Capital: The Proven Way to Establish your Company's Real Value by Measuring its Hidden Brainpower*. London: Judy Piatkus.
- Firer, S. & Stainbank, L. (2003). Testing the relationship between intellectual capital and a company's performance: Evidence from South Africa. *Meditari Accountancy Research*, 11(1), 25-44.
- Gan, K. & Saleh, Z. (2008). Intellectual capital and corporate performance of technology-intensive companies: Malaysia evidence. *Asian Journal of Business and Accounting*, 1(1), 113-130.
- Ghosh, D. & Wu, A. (2007). Intellectual capital and capital market: Additional Evidence. *Journal of Intellectual Capital*, 8(2), 216-238.

- Goldfinger, C. (1997). Understanding and Measuring the Intangible Economy: Current Status and Suggestions for Future Research. Helsinki: CIRET Seminar.
- Guthrie, J., Petty, R., Ferrier, F. & Wells, R. (1999). There is No Accounting for Intellectual Capital in Australia: A Review of Annual Reporting Practices and Internal Measurement of Intangibles. Paper presented at the OECD Symposium on Measuring and Reporting of Intellectual Capital, Amsterdam.
- Hitt, M. A., Bierman, L., Shimizu, K. & Kochhar, P. (2001). Direct and moderating Effects of human Capital on Strategy and Performance in Professional Service Firms: A Resource-Based Perspective. *Academy of Management Journal*, 44(1), 13-28.
- Ismail. & Karem. (2011). Intellectual capital and the financial performance of banks in Bahrain. *Journal of Business Management and Accounting*, 1(1), 63-77.
- Iswari. & Anshori. (2007). *The Influence of Intellectual Capital to Financial Performance at Insurance Companies in Jakarta Stock Exchanges*. Proceedings of the 13th Asia Pacific Management Conference, Australia.
- Komnencic, B. & Pokrajcic, D. (2012). Intellectual capital and corporate performance of MNCs in SERBIA. *Journal of Intellectual Capital*, 13(1), 106-119.
- Lev, B. (2001). *Intangibles: Management, Measurement and Reporting*. Washington, DC: Brookings Institution Press
- Lev, B. & Radhakrishnam, S. (2003). The measurement of firm-specific organization capital, *NEBR Working Paper Series*. Retrieved from <http://www.nber.org/papers/w9581>.
- Lev, B., Sarat, B. & Sougiannis, T. (2005). R&D-related reporting biases and their consequences. *Contemporary Accounting Research*, 22(4), 977-1026.
- Mondal, A. & Ghosh, S. K. (2012). Intellectual capital and financial performance of Indian Banks. *Journal of Intellectual Capital*, 13(4), 515-530.
- Ohlson, J. A. (1995). Earnings, book values, and dividends in security valuation. *Contemporary Accounting Research*, 11(2), 661-87.
- Pulic, A. (2000). VAICTM- An accounting tool for IC management. *International Journal of Technology Management*, 20(5/6/7/8), 702-714.
- Riahi-Belkaoui, A. (2003). Intellectual capital and firm performance of US multinational firms: a study of the resource-based and stakeholder views. *Journal of Intellectual Capital*, 4(2), 215-226.
- Roos, J., Edvinsson, L. & Dragonetti, N. (1998). *Intellectual Capital: Navigating in the New Business Landscape*. New York: University Press.
- Sveiby, K. E. (1997). *The New Organizational Wealth: Managing & Measuring Knowledge-Based Assets*. San Francisco: Berrett-Koehler Publishers, Inc.
- Stewart. T. A. (1997), *Intellectual Capital-The New Wealth of Organizations*. New York: Doubleday Dell Publishing Group.
- Wiig, K. M. (1997). Integrating intellectual capital and knowledge management. *Long Range Planning*, 30(3), 399-405.
- Wong, M. & Gardner, C. T. (2005). Intellectual capital disclosure: New Zealand evidence. Paper presented at 2005 AFAANZ Conference, Melbourne. Retrieved from www.afaanz.org/web2005.pdf