Intellectual Capital and Financial Performance of Indian Software Industry: A Panel Data Analysis

Dr. Aparna Bhatia
Assistant Professor,
Department of Commerce,
Guru Nanak Dev University, Amritsar.

Khushboo Aggarwal
Research Scholar,
Department of Commerce,
Guru Nanak Dev University, Amritsar

Abstract

Intellectual Capital is an important for running a business successfully. Intellectual Capital is the key for creating and sustaining competitive edge over other businesses. Today the companies need to invest in Intellectual Capital to stand for the gain. Thus, this paper seeks to analyze the relationship between intellectual capital and corporate financial performance of Indian software companies for a period of eleven years from 2001 to 2011. Annual reports, especially the profit and loss accounts and balance sheets of the selected companies for the relevant years have been used to obtain the data. The sample of 51 software companies has been selected from Business Standard (BS) 1000 on the basis of net sales. The Value Added Intellectual CoefficientTM (VAIC) method developed by Public, 1999 is applied for measuring the value based performance of the companies. Data have been analyzed by using Panel Regression. The intellectual capital (human capital and structural capital) and physical capital of the selected companies have been analyzed and their impact on corporate performance has been measured. Results indicate that profitability and intellectual capital are positively associated. However, Physical capital has been found to be the most significant factor affecting the performance of the firms.

Keywords:

Intellectual capital, Software industry, VAIC, Panel Regression, Profitability.

Introduction

The advent of science and technology has transformed the traditional production system, where the main emphasis was on the optimum use of the physical assets. The traditional accounting systems have failed to show a true picture of the companies as they take only tangible assets into consideration for measuring their performance. Consequently, the gaps between market value and book value of the companies widened. This gap may be perhaps due to the absence of intangible assets from our accounting systems. Therefore, intangible assets demand a legitimate justification for their absence from the annual statements.

Present era is the era of Knowledge and information and these are seen as the prime resources in today's "knowledge-economy". Drucker defines knowledge as the only meaningful resource today. Knowledge, information and experience can be collectively termed as intellectual

capital. Intellectual Capital is an important for running a business successfully. Intellectual Capital is the key for creating and sustaining competitive edge over other businesses. Wiig (1997) states that it is due to knowledge and Intellectual Capital, that the companies are creating a competitive edge over others.

Intellectual Capital is an issue that has been defined by various authors but no universal definition has been found till date. Hudson (1993) defines intellectual capital as a personal asset of individuals and a combination of genetic inheritance, education, experience, and attitude about life and business. Brooking (1996) defines intellectual capital as the term given to the "combined intangible assets of market, intellectual property, human-centered and infrastructure – which enables the company to function". According to Roos and Roos (1997) intellectual capital in the broadest sense is human capital (knowledge capital, skill capital, motivation capital, task capital), business process capital (flow of information, flow of products and services, cash flow, co-operation forms, strategic processes), business renewal and development capital (specialization, production processes, new concepts, sales and marketing, new co-operation form), as well as customer relationship capital (customer relationship capital, supplier relationship capital, network partner relationship capital, investor relationship capital). Roos et al. (1997) defines IC as "the sum of knowledge of company's members and practical translation of this knowledge like trademarks, patents and brands". Furthermore, Bontis (1998) argues that "Intellectual capital is elusive, but once it is discovered and exploited, it may provide an organisation with a new resource-base from which to compete and win". Stewart (1999) says Intellectual Capital is "knowledge, information, intellectual property, experience – that can be put to use to create wealth". Similarly, Harrison and Sullivan (2000) describe IC as "knowledge that can be converted into profit". Chartered Institute of Management Accountants (CIMA), 2001 defines intellectual capital as: "possession of knowledge and experience, professional knowledge and skill, good relationship, and technological capacities, which when applied will give organisation competitive advantage". Bouteiller (2002) suggests the following alternate definition: "Intellectual Capital – is a developmental knowledge that is human, structural, and customer-based, and needs to be aligned with the corporate strategy and formalized / packaged in some way." Mouritsen et al. (2004) explains Intellectual Capital as the force that "mobilizes 'things' such as employees, customers, IT, managerial work and knowledge". According to Roos et al. (2005) "Intellectual Capital can be defined as all non monetary and non physical resources that are fully or partly controlled by the organisation and that contribute to the organisation's value creation". Salleh and Selamat (2007) describe IC as the aggregation of human capital, structural capital and customer capital". To conclude Intellectual Capital is a combination of all intangible assets and resources of an organisation, as well as its practices, patents, and the implicit knowledge of its members and their network of partners and contracts (Jacob Ben- Simchon, 2005).

The present study is a modest attempt to examine the relationship between Intellectual Capital and financial performance of Indian software industry. More specifically, the present analysis is based on a sample of 51 software companies.

Literature Review

Intellectual capital is considered as a crucial factor in today's era. Many authors have made an attempt to study the relationship between Intellectual Capital and performance of the companies (Table 1).

Table 1: Review of Literature

Year	Author's	Sample Size	Time	Technique Used	Dependent Variable	Independent Variable	Findings
International Studies							
2003	Firer & Williams (South Africa)	75 publicly listed co's	2001	Correlation Linear multiple regression	ROA ATO MB	VAIC and its variables	Mixed association between Intellectual Capital and performance.
2005	Kujansivu & Lonnqvist (Finland)	11 largest Finnish industries	2001-2003	Averages	Intellectual Capital Efficiency	VAIC	Results indicated no clear

							relationship between value of intellectual capital and its efficiency of different industries.
2005	Chen *et al.*, (Taiwan)	4254 observations from Taiwan	1992-2002	Descriptive Statistics Correlation	ROE ROA Growth in revenue (GR) Employee productivity (EP) Market to Book Value (MB)	VAIC and its components R&D expenditure Advertising expenditure	Positive impact of Intellectual Capital on market value and financial performance. Research and Development expenditure for structural capital showed a positive effect on profitability and firm's value.
2007	Tan *et al* (Singapore)	150 co's listed on Singapore Stock Exchange	2000 & 2002	One way ANOVA Correlation	ROA EPS Annual stock return (ASR)	VAIC and its components	Intellectual Capital and performance are positively related and Intellectual Capital differs by industry
2007	Yalama & Coskun (Turkey)	All the banks listed on Istanbul Stock Exchange (ISE)	1995-2004	DEA Technique	ROA ROE Loan to Deposit ratio (LDR)	VAIC	IC was considered more important factor than physical capital for banks.
2009	Makki & Lodhi (Pakistan)	Co's listed on Lahore Stock Exchange-25	2001-2007	Descriptive statistics Correlation Regression	Return on investment (ROI)	VAIC and its components	Significant and positive relation between Intellectual Capital and ROI
2009	Ting & Lean (Malaysia)	Financial institutions in Malaysia	1997-2007	Correlation Regression	ROA	VAIC and its components	The paper reveals that VAIC and ROA are

							positively related among Malaysia's finance sector.
2009	Muhammad & Ismail (Malaysia)	18 financial companies	2007	Multiple regression analysis	ROA	VAIC and its components	Intellectual capital had significant and positive relationships with company's performance
2010	Zeghal & Maaloul (UK)	300 UK co's	2005	Descriptive statistics Correlation Regression	Operating income/ sales ROA MB	VAIC and its components	Intellectual Capital had positive impact on economic and financial performance
2010	Kehelwalatenna *et al* (Colombo)	All co's listed on Colombian stock exchange	2002-06	Regression Correlation	Internal performance (ROE) External performance (HPR) Investor response	VAIC and its variables	Intellectual Capital had positive association with performance and investor response
2010	Calisir *et al* (Turkey)	All quoted information technology and communication (ITC) companies on the Istanbul Stock Exchange (ISE)	2005-2007	Multiple regression analysis	Market Valuation Profitability Productivity Return on Equity	VAIC and its components	Human capital efficiency had the highest impact.
2011	Wang (Taiwan)	All co.'s listed on Taiwan stock Exchange	2001-2007	Panel data	ROA Market price to BV(MB) Total productivity	Customer capital Human resource capital Structural capital	Intellectual Capital and performance are positively related
2012	Azad & Mohajeri (Tehran) Iran	All co.'s traded on TSE	2007-2010	ANOVA Correlation	ROA ROE EPS	VAIC	Positive relation between Intellectual Capital and equity growth but no relation between IA and net earnings

2012	Azad *et al* (Tehran) Iran	38 co's	2007-09	Regression	ROE Investment Earnings per share (EPS)	Intellectual Capital and its variable	Positive relation between Intellectual Capital and performance
Indian Studies							
2008	Kamath (India)	25 firms listed on BSE	1996-2006	Correlation Regression	ROA ATO MB	VAIC and its variables	Human capital was the major component having impact on firms productivity and profitability
2009	Ghosh & Mondal (India)	50 Software and 30 Pharmaceutical Co's.	2002-2006	Multiple regression analysis	Return on assets (ROA) Assets turnover ratio (ATO). Market to book value ratio (MB).	VAIC and its components VAIC and its components	VAIC had significant positive influence over profitability.

Measurement of Intellectual Capital

Measuring Intellectual Capital is essential and very important in order to compare different companies, to estimate their real value and even to control their improvement year by year. Also to improve the way in which companies manage its intellectual resources that generate value and give back some benefits in consequences maximizing advantages for the company (Jurczak, 2008). But to measure Intellectual Capital is necessary to determine exactly what the Measurement Methods are, which are the best and which the company should choose to evaluate its assets in proper way. Properly using Intellectual Capital Measurement Methods can cause the creation of competitive advantage and in consequence create development of the whole company at the present day.

The most popular and widely used non financial measurement methods are The Balanced Scorecard, VAIC™, Skandia's IC Navigator, Intellectual Capital Navigator IC-Index™, The Technology Broker's IC Audit, Sveiby's The Intangible Asset Monitor (IAM). The financial methods use financial criteria to evaluate the intangible assets and they give only a global value. The most commons are: Economic Value Added (EVA™), Market to Book ratio, Calculated Intangible Value, Market Value Added (MVA), Tobin's Q Ratio. But VAIC™ developed by Pulic is different and more detailed method. This method uses the links between the activities of the company, the resources used and the financial outcome.

Ante Pulic (1998, 2000) developed the "Value Added Intellectual Coefficient" (VAIC™) to measure the IC of companies. The VAIC™ method is designed to provide information about the value creation efficiency of tangible and intangible assets within a company. However, Value Added Intellectual Coefficient (VAIC™) may be a better indicator and method of reflecting the market value of business (Young et al. 2009). VAIC™ is used to measure the value creation efficiency of a company using accounting-based figures. VAIC™ is considered as a "universal indicator showing abilities of a company in value creation and representing a measure for business efficiency in a knowledge-based economy" (Pulic, 1998). Kamath (2007) also confirmed that VAIC™ is a management and control tool that is "designated to monitor and measure the IC performance and potential of the firm". This measuring tool has been used in many studies (Firer and Williams, 2003; Mavridis, 2004, 2005; Goh, 2005; Mohiuddin et al. 2006; Tan et al. 2007; Yalama and Coskun, 2007; Kamath, 2008; Zeghal and Maaloul, 2010)

Firer and Williams (2003) identified several advantages of using VAIC™. Firstly, VAIC™ provides a standardized and consistent basis for measurement, thereby, enabling the effective conduct of an international comparative analysis using a large sample size across various industrial sectors. Secondly, all data used in the VAIC™ calculation is based on audited information and therefore, calculations are objective and verifiable. Finally, VAIC™ is a straightforward

technique that enhances cognitive understanding and enables ease of calculation by various internal and external stakeholders. Due to ease of calculation feature VAIC™ has enhanced the universal acceptance of many traditional measures of corporate performance such as return on assets (ROA), market-to-book value (MB). Additionally, issues have also been raised about difficulties in verifying information used in calculating the indicators of other IC measures. Other IC measures like (Skandia Navigator, Economic Value Added (EVA™), market value added (MVA™)are limited as only internal parties can calculate them or rely upon sophisticated models, analysis and principals. But, IC measures are limited in that they: (a) utilize information associated with a select group of firms (for example stock data) (b) involve unique financial and non-financial indicators that can be readily combined into a single comprehensive measure; and/or (c) are customized to fit the profile of individual firm (Roos and Roos, 1997; Edvinsson, 1997; Sullivan, 2000). Consequently, the ability to apply alternative IC measures consistently across a large and diversified sample for comparative analysis is diminished.

Research methodology

Research objectives

The main objective of this paper is to examine the impact of Intellectual Capital (IC) on the performance of Indian software Industry.

Sample and time period

The sample for the above study is taken from Business Standard (BS) 1000 on the basis of net sales. 51 software companies have been selected for the above study. The time period for the study is eleven years i.e. 2001-2011. The span of more than a decade would be helpful to establish the consistency and predictability for research conclusions.

Data Source

The data is collected through secondary sources. The relevant data required for present research is collected from Electronic database 'PROWESS' of Centre for Monitor Indian Economy (CMIE). This database was chosen because all the information required for the above study was readily available in this.

Methodology

Dependent variables

Return on Assets (ROA) and Return on Net Worth (RONW) have been taken as the dependent variables.

The return on assets (ROA) is used as a dependent variable in this study, because it reflects the profitability of firms. Therefore, it is an indicator to measure whether the firm has been performing profitably as compared to the previous year or not. It is measured as the ratio of operating income to total assets of the firm.

Return on Equity (RONW) is the ratio of the net profits after taxes divided by net worth as disclosed in the respective annual reports of the firm. The ratio is useful as a measure of how well a company is utilizing the shareholder investment to create returns for them, and can be used for comparison purposes with competitors in the same industry.

Independent Variables

In the present study for measuring the value of IC, Pulic, (1998) model has been applied. IC has been defined variedly, but the most commonly accepted definition classifies it into human, structural and customer capital (Pulic, 1998). The first measure is that which is used to measure the efficiency of the capital employed (VACA). This is the ratio of the VA to the total CE by the firm, the total capital is taken as the book value of the firms net assets during a given period:

VACA= VA / CA

where VACA, value added capital coefficient for firm ;VA, value added for the firm ; CA, book value of the net assets for firm .

The VA is measured by using:

VA= I+DP+D+T+M+R

where VA, value added for firm computed as sum of I, interest expense; DP, depreciation expenses; D, dividends; T, corporate taxes; M , equity of minority shareholders in net income of subsidiaries; R, profits retained for the year.

The next step is to determine the efficiency of the human CE on the value creation of the firm. This is obtained by estimating the ratio of human capital coefficient for the firm VAHU; this is the ratio of VA of the firm to the expenditure made by the firm on its human capital. These expenses are reflected in the salaries and wage cost of the firm in their annual reports:

VAHU= VA / HC

where VAHU, human capital coefficient for the firm; VA, value added for the firm;

HC, total salary and wage costs for the firm.

The next measure captures the efficiency of the structural capital on the VA by the firm. This is the ratio of SC and VA of the firm represented as STVA. The SC is calculated as follows:

SC= VA-HC

where SC, structural capital for the firm; VA, value added for the firm; HC, total salary and wage costs for the firm.

Then the relationship is shown as:

SCVA=SC/VA

where SCVA, structural capital VA for the firm; SC, structural capital for the firm; VA, value added for the firm.

Therefore,

$VAIC^{TM}$= VACA+VAHU+SCVA

where VAICTM, value added intellectual coefficient for the firm; VACA, value added capital coefficient for firm; VAHU, human capital coefficient for the firm; STVA, structural capital value added for the firm.

The $VAIC^{TM}$ is measured using three important components, namely value added capital coefficient (VACA), human capital coefficient (VAHU) and structural capital value added (SCVA), which comprehensively measures the value added (VA) of the firm by using its important resources such as human resources, customer capital and structural capital.

VAIC model is not free from limitations. Andriessen (2004) has drawn attention towards the limitations of VAIC regarding the basic assumptions and validity of the model. Calculation of VAIC shortened the data by removing negative book value of equity or firms with negative human and structural capital (Firer and Williams, 2003).

Control Variables

Four control variables are included in the analysis. Size of the firm (SIZE) is determined through natural logarithm of firm's book value of total assets (Firer and Williams, 2003; Ghosh and Mondal, 2009; Zeghal and Maaloul, 2010; Chu et al. 2011; Wang, 20011). Age of the firm (AGE) is calculated as the difference between 2011 and the founding year of the organisation (Taliyang, 2011). Leverage (LEV) is calculated as ratio of the total debt to book value of assets of the firm (Kamath, 2008; Ghosh and Mondal, 2009; Zeghal and Maaloul, 2010; Ahangar, 2011; Chu, et al. 2011) and Physical Capital intensity (PC) is measured by the ratio of a company's fixed assets to its total assets (Firer and Williams, 2003; Ghosh and Mondal, 2009; Ahangar, 2011; Pal and Soriya, 2012).

Regression models

Since the data is of panel nature consisting of both time series and cross sectional data, hence the Panel Data regressions are used for the purpose of analysis. For conducting the empirical research above mentioned four models have been run

$ROA=\alpha+\beta1VAIC^{TM}+\beta2VACA+\beta3VAHU+\beta4SCVA+\beta5PC+\beta6Lev+\beta7Age+\beta8Size+\mu$…(model 1)

$RONW=\alpha+\beta1VAIC^{TM}+\beta2VACA+\beta3VAHU+\beta4SCVA+\beta5PC+\beta6Lev+\beta7Age+\beta8Size+\mu$…(model 2)

Where,

ROA= Return on Assets
RONW = Return on Net Worth
$VAIC^{TM}$= Value Added Intellectual Coefficient
VACA= Value Added Capital Coefficient
VAHU= Value Added Human Capital
SCVA= Structural Capital Value Added
PC= Physical Capital
Lev= Leverage
μ= Error Term

V. Discussion of Results

Results of Panel Data regression Unit root test

Levin, Lin and Chu unit root test was applied before running the Panel Data regression, to check the stationarity of the data. It is applicable on panel and pooled data (Levin et al., 2002). Results of the test lead to reject the hypothesis of the unit root. To have better results both fixed and random effect models are applied on the panel data. Results of both the models are checked through applying Hausman Specification Test (Hausman, 1978). In case where both models are found significant then Random Effect Model

Table 2: Showing the results where ROA is the dependent variable

Dependent/Independent Variables	Coefficients	Robust S.E.	P>|z|
Constant	7.904816	3.138219 (2.52)**	0.012
VAIC	.1933189	.0726899 (2.66)***	0.008
VACA	8.553119	3.390854 (2.52)**	0.012

VAHU	.1805099	.091447 (1.97)**	0.048
SCVA	.1931525	.0115218 (16.76)***	0.000
PC	-1.634572	4.219054 (-0.39)	0.698
Lev	-4.81356	1.0948 (-4.40)***	0.000
Age	-.0018359	.035854 (-0.05)	0.959
Size	.3517873	.4466515 (0.79)	0.431
Adjusted R^2	**24.09**		
Wald Chi2(8)	**565.46*** **		

***1% level, **5% level and *10%level of significance

Table 2 presents the results of GLS regression where ROA is the dependent variable. Assessment of the table reveals that adjusted R2 software industry is 24.09 percent. It indicates that the model does have good explanatory power. VAIC and components of VAIC (Physical Capital, Human Capital and Structural Capital) all are found to be positively and significantly related with ROA at 1% level of significance. But, physical capital is the major factor affecting the software industry with highest coefficient (8.55). This indicates that capital employed (physical and financial) still remains important for stockholders and stakeholders. Amongst the control variables, Physical capital intensity and age are found to be negative and insignificantly related with ROA. It seems that the old firms have still not realised the importance and need of intellectual capital and hence is found insignificant with the performance. Moreover, they have established themselves over time and may be are able to retain their employees. But to survive in such a competitive era one has survive and hence for survival investment in intellectual capital is necessary. Furthermore, Leverage is negatively but significantly related with ROA. But, size has positive but insignificant affect on ROA. The results further indicate that the big firms no doubt enjoy the benefits of large scale but still they are not paying much attention towards intellectual capital.

The results of the present study are in confirmation with the other studies by Chen et al. (2005), Tan et al. (2007), Razafindrambinina and Anggreni (2008), Gan and Saleh (2008) Ting and Lean (2009), Sharabati et al. (2010) and Uadiale and Uwuigbe (2011) in which it is clearly revealed that there was a significant positive relationship between VAIC and ROA at 1% level of significance. But the results are contradictory with the findings of Firer & Williams (2003) who found a mixed association between IC and performance. Similarly, Kujansivu & Lonnqvist (2005) also found no clear relation between intellectual capital and performance. But the majority of the studies reviewed found a significant and positive relation between IC and performance. Hence, this shows that intellectual capital has attained universal acceptance.

Table 3: Showing the results where RONW as the dependent variable

Dependent/Independent Variables	Coefficients	Robust S.E.	P>|z|
Constant	14.77513	4.009623 (3.68)***	0.000
VAIC	.283022	1572343 (1.80)*	0.072
VACA	21.54935	7.873847 (2.74)***	0.006
VAHU	.1191018	.0422998 (2.82)**	0.005
SCVA	.2828089	.0488101 (5.79)***	0.000
PC	4.190918	6.166026 (0.68)	0.497
Lev	-4.565474	2.299624 (-1.99)**	0.047
Age	-.1237384	.0789005 (-1.57)	0.117
Size	-.4595972	.7449128 (-0.62)	0.537
Adjusted R^2	16.14%		
Wald Chi2(8)	296.29***		

***1% level, **5% level and *10%level of significance

Table 3 presents the results of panel regression where RONW is the dependent variable. Assessment of the table reveals that adjusted R2 is 16.14 percent indicating that the model does not have good explanatory power. VAIC and variables of VAIC (physical, human and structural) are found to have positive and significant impact on RONW. Amongst the control variable physical capital intensity is found to be positive but insignificantly related with RONW. But, leverage is negative but significant. Age and size both are found to be negatively and insignificantly related with the dependent variable. The results are similar with the results of ROA.

The findings of the present study correspond with the results of Sharabati et al. (2010) who reported that the intellectual capital variables and sub-variables had a substantive and significant relationship with business performance. Similarly, Firer and Williams (2003) and Razafindrambinina and Anggreni (2008) also claimed that physical capital was the most influencing components to increase the future performance of the organisations. Additionally, Gan and Saleh (2008) also claimed that physical capital efficiency was the most significant variable related to profitability among all the components.

But the results are contradictory with the findings of Ahangar (2011) who suggested that human capital was very efficient than structural capital and physical capital in terms value creation efficiency. This inconsistency may be due to geographical biasness as the present study is conducted in India and the former was conducted in Iran. Moreover, Ahangar (2011) draws analysis on the data from a single company but the present study uses a data of 51 companies.

On the basis of adjusted R2 it can be concluded that model 1 is a better fit model. Though the number of significant variables are same in both the models but on the basis of R2 this conclusion can be drawn.

From the empirical findings reported in the above tables shows that Intellectual capital and profitability are positively related. The results are supported by various studies. Hence, a significant positive association between the intellectual capital performance measured by the VAIC and the financial performance is empirically established.

Conclusion

The principal purpose of the present study is to investigate the relationship between performance of intellectual capital and three dimensions of financial performance measured by Return on Assets (ROA) and Return on Net Worth (RONW). Intellectual capital performance of a company has been measured by using VAIC methodology. Present analysis has been conducted on a sample of 51 knowledge intensive Indian software companies. Overall empirical findings, which are based on Panel Regression analysis between intellectual capital performance and corporate financial performance measures, clearly indicate that intellectual capital is the positive predictor of profitability. India being a developing country and second largest populated country has a wide prospective for growth. As such the Indian managers should understand the importance of intellectual capital and should try to disclose more information on intangible assets. Moreover this study signals the need intellectual capital and suggests that management of IC should be improved for enhancing the market value of companies. These findings allow the present researchers to conclude that the companies should invest in intellectual capital to stand for the gain.

References

Ahangar, R.G. (2011), "The Relationship between Intellectual Capital and Financial Performance: An Empirical Investigation in an Iranian Company", African Journal of Business Management, Vol. 5, No. 1, pp. 88-95.

Ahmed Riahi-Belkaoui, (2003), "Intellectual capital and firm performance of US multinational firms: A study of the resource-based and stakeholder views", Journal of Intellectual Capital, Vol. 4, No. 2, pp.215 – 226.

Andriessen, D. (2004), "Making Sense of Intellectual Capital: Designing a Method for the valuation of Intangibles", Elsevier Butterworth-Heinemann, Oxford.

Azad, N., Fard, D. J., Talab, M. B. T. (2012), 4th International Business and Social Science Research Conference, Dubai, UAE.

Ben-Simchon, J. (2005), Reporting Intellectual Capital in Research Intensive SME's, IN HOLLAND University, The Netherlands.

Bontis, N. (1998), "Intellectual Capital: An Exploratory study that develops measures and models", Journal of Management Decisions, Vol.36, No. 2, pp. 63-76.

Bouteiller Ch. (2002), "The Evaluation of Intangibles: Advocating for an Option Based Approach", VIth Alternative Perspectives on Finance Conference, Hamburg, August.

Brooking, A. (1996), "Intellectual capital: core asset for the third millennium enterprise", New York, Thomas Business Press.

Calisir, F., Gumussoy, C. A., Bayraktaroglu, A. E., Deniz, E. (2010), "Intellectual capital in the quoted Turkish ITC sector", Journal of Intellectual Capital, Vol. 11, No.4, pp.538 – 554.

Chen, M.C., S.J. Chang & Y. Hwang (2005), "An Empirical Investigation of the Relationship between Intellectual Capital and Firm's Market Value and Financial Performance," Journal of Intellectual Capital, Vol.6, No. 2, pp.159-176.

Chu, S.K.W., K.H. Chan & W.W.Y. Wu (2011), "Charting Intellectual Capital Performance of the Gateway to China", Journal of Intellectual Capital, Vo. 12 No. 2, pp. 249-76.

CIMA (2001) Understanding corporate value: managing and reporting intellectual capital, Cranfield University, Publisher: Chartered Institute of Management Accountants (CIMA), pp. 1-28.

Dahmash F.N., Durand R.B., Watson J.(2009), "The value relevance and reliability of reported goodwill and identifiable intangible assets", British Accounting Review, Vol. 41, No. 2, pp. 120-137.

Edvinsson, L. and Malone, M.S. (1997), Intellectual Capital: The Proven Way to Establish Your Company's Real Value by Measuring its Hidden Brainpower, Judy Piatkus, London.

Firer, S. & S.M. Williams (2003), "Intellectual Capital and Traditional Measures of Corporate Performance," Journal of Intellectual Capital, Vol. 45, No. 3, pp.348-360.

G. Roos, S. Pike, L. Fernstrom (2005), Managing Intellectual Capital in Practice, Butterworth-Heinemann, New York, pp. 19.

Gan, K. & Z. Saleh (2008), "Intellectual Capital and Corporate Performance of Technology-Intensive Companies: Malaysia Evidence", Asian Journal of Business and Accounting, Vol.1, No. 1, pp. 113-30.

Ghosh, S. & A. Mondal (2009), "Indian Software and Pharmaceutical Sector Intellectual Capital and Financial Performance", Journal of Intellectual Capital, Vol. 10 No. 3, pp. 1469-930.

Goh, P.C. (2005) "Intellectual Capital Performance of Commercial Banks in Malaysia", Journal of Intellectual Capital, Vol. 6, No. 3, pp. 385-96.

Harrison, S. & Sullivan Sr, P., (2000),"Profiting from intellectual capital: Learning from leading companies", Journal of Intellectual Capital, Vol. 1, No. 1, pp. 33-46.

Hausman, J.A. (1978) "Specification Tests in Econometrics", Econometrica, Vol. 46, No. 6, pp.

1251-71.

Hudson, W., (1993), "Intellectual Capital: How to Build it, Enhance it, Use it", John Wiley and Sons, New York.

Jurczak, J. (2008), Intellectual Capital Measurement Methods, Vol. 1 No. 1, pp. 37–45.

Kamath, G.B. (2007) "The Intellectual Capital Performance of Indian Banking Sector", Journal of Intellectual Capital, Vol. 8, No. 1, pp. 96-123.

Kamath, G.B. (2008), "Intellectual Capital and Corporate Performance in Indian Pharmaceutical Industry," Journal of Intellectual Capital, Vol. 9, No. 4, pp. 684-704.

Pal, K. & Soriya, S. (2012),"IC performance of Indian pharmaceutical and textile industry", Journal of Intellectual Capital, Vol. 13, No.1, pp. 120 – 137.

Levin, A., Lin, C. and Chu, J. (2002), "Unit root tests in panel data: asymptotic and finite-sample properties", Journal of Econometrics, Vol. 108, No. 1, pp. 1-24.

Makki ,M. A. M., Lodhi, S. A. & Rahman, R.(2008), "Intellectual Capital Performance of Pakistani Listed Corporate Sector, International Journal of Business and Management, Vol. 3, No. 10, pp. 45-51.

Mavridis, D. (2004, 2005), "Intellectual Capital Drivers in the Greek Banking Sector," Management Research News, Vol. 28, No. 5, pp. 43-62.

Mouritsen, J., Bukh, P.N. & Marr, B. (2004), "Reporting on Intellectual Capital: why, what and how. Measuring Business Excellence, Vol. 8, No. 1, pp. 46-54.

Muhammad, N.M.N. and Ismail, M.K.A. (2009), "Intellectual capital efficiency and firms' performance: study on Malaysian financial sectors", International Journal of Economics and Finance, Vol. 1, No. 2, pp. 206-12.

Pulic, A. (1998, 2000) "VAIC– An Accounting Tool for IC Management", International Journal of Technology Management, Vol. 20, No. 5-8, pp. 702-14.

Razafindrambinina, D. & T. Anggreni (2008) An Empirical Research on the Relationship between Intellectual Capital and Corporate Financial Performance on Indonesian Listed Companies (www.lby100.com/ly/200806/p020080627326310290656.pdf).

Roos , G . , Pike , S . & Fernstorm , L . (2005), "Managing intellectual capital in practice", Elsevier , Oxford.

Roos, J., Roos, G., Dragonetti, N.C., & Edvinsson, L. (1997), "Intellectual capital: navigating the new business landscape", London, Macmillan Press.

Salleh, A.L. and Selamat, F. (2007). "Intellectual Capital Management in Malaysian Public Listed Companies", International Review of Business Research Paper, Vol. 3, No. 1, pp. 266-278.

Sharabati, A.A., S.N. Jawad & N. Bontis (2010) "Intellectual Capital and Business Performance in the Pharmaceutical Sector of Jordan", Management Decision, Vol. 48, No. 1, pp. 105-31.

Stewart, T. A. (1997, 1999), "Intellectual Capital: The New Wealth of Organisations", Doubleday/Currency, New York, NY.

Sullivan, P. (2000) "Value-Driven Intellectual Capital - How to Convert Intangible Corporate Assets into Market Value, New York. John Wiley and Sons.

Taliyang, S.M. (2011) "Determinants of Intellectual Capital Disclosure among Malaysian Listed Companies", Unpublished master's thesis, UUM, Malaysia.

Tan, H.P., D. Plowman & P. Hancock (2007), "Intellectual Capital and Financial Returns of Companies," Journal of Intellectual Capital, Vol. 8, No.1, pp. 76-95.

Ting, W.K.I. & H.H. Lean (2009), "Intellectual Capital Performance of Financial Institutions in Malaysia", Journal of Intellectual Capital, Vol. 10, No. 4, pp. 588-99.

Uadiale, O. M. & U. Uwuigbe (2011), "Intellectual Capital and Business Performance: Evidence from Nigeria", Interdisciplinary Journal of Research in Business, Vol. 1, No. 10, pp. 49- 56.

Wang, M.S. (2011), "Measuring the Intellectual Capital and Their Effect on Financial Performance: Evidence from Capital Market in Taiwan," CIBMP annual conference on Innovations in Business and Management, London, UK.

Wiig, M.K. (1997), "Integrating intellectual capital and knowledge management", Long Range Planning, Vol. 30, No. 5, pp. 399-405.

Yalama, A. & M. Coskun (2007) "Intellectual Capital Performance of Quoted Banks on the Istanbul Stock Exchange Market", Journal of Intellectual Capital, Vol. 8, No. 2, pp. 256-271.

Young, C.S., H.Y. Su, S.C. Fang & S.R. Fang (2009) "Cross-Country Comparison of Intellectual Capital Performance of Commercial Banks in Asian Economies", The Service Industries Journal, Vol. 29, No. 11, pp. 1565-79.

Zeghal, D. & A. Maaloul (2010) "Analyzing Value Added as an Indicator of Intellectual Capital and its Consequences on Company Performance," Journal of Intellectual Capital, Vol. 11, No. 1, pp. 39-60.