Full Length Research Paper

The relationship between intellectual capital and financial performance: An empirical investigation in an Iranian company

Reza Gharoie Ahangar

Department of Management and Economics, Islamic Azad University, Science and Research Branch, Iran.
E-mail: reza_gh578@yahoo.com. Tel: 989111161810.

In the Intellectual Capital (IC) literature, only a few studies have analyzed the relationships among the components of IC and organizational success. This study provides further insight into the role of IC in organizational performance, especially financial performance. In this order, Value Added Intellectual Coefficient (VAICTM) method has been used for measuring the value based performance of the company. Corporate performance measures used in this analysis are profitability, Employee productivity, and Growth in sales. The intellectual capital (human capital and structural capital) and physical capital of the company have been analyzed and their impact on corporate performance has been measured using multiple regression technique. Findings from the empirical analysis indicate that the relationships between the performance of a company's intellectual capital and profitability, Employee productivity, and Growth in sales are informative. The empirical findings suggest that the performance of a company's intellectual capital can explain profitability and productivity.

Key words: Intellectual capital, financial performance, productivity, Iranian company.

INTRODUCTION

Traditionally land, labor and capital were considered to be the most valuable assets in economics. Since time conventional physical assets were considered to be the main determinants of the performance of any economic activity. But the fast expansion of science, technology and finally the globalization altered the pattern and structure of the production system. The new production system is mainly driven by technology, knowledge, expertise and relations with stakeholders etc which may collectively be described as Intellectual Capital. In the new economic system, which is popularly known as the knowledge economy, intangible or intellectual assets have eventually recognized as the prominent resources. Companies like software, finance, pharmaceutical; banking, hotel etc. depend to a considerable extent on the intellectual capital for earning revenues. Production or Manufacturing companies use Intellectual Capital with its physical assets to sharpen their competitive edge. Bornemann et al. (1999) found that enterprises, which have managed their intellectual capital better, had achieved stronger competitive advantage than the general enterprises. Also they reported that companies which had strengthened their own intellectual capital

management compared to the others had performed better. Brennan and Connell (2000) claimed that intellectual capital management played an important role on the long-term business performance of an enterprise. In this present study researcher try to find whether the Intellectual Capital or Physical Capital can significantly influence on financial performance of company or not.

The objective of the paper is to define Intellectual Capital and to highlight different methods of measuring Intellectual Capital. After that, an investigation is made to find out the relationship between Intellectual Capital performance and financial performance. The remainder of this paper contains a brief summary of the relevant lite-ratures. It then describes the development of hypothesis and research method before analyzing and discussing results.

LITERATURE REVIEW

Definition of intellectual capital

The term intellectual capital includes inventions, ideas,

general knowledge, design approaches, computer programs and publications. An ex-editor of the business magazine "Fortune", Thomas Stewart describes intellectual capital as "something that cannot be touched, although it slowly makes you rich". Jacob Ben- Simchon, (2005) the term 'intellectual capital' uses to enclose all of the non- tangible or non-physical assets and resources of an organization, as well as its practices, patents and the implicit knowledge of its members and their network of partners and contracts. Stewart (1997) defines it as 'packaged useful knowledge', Sullivan (2000) as 'knowledge that can be converted into profit', Roos et al (1997) as the 'sum of knowledge' of its members and practical translation of this knowledge into brands, trademarks and processes.

Edvinsson and Malone (1997) define it as the possession of knowledge, applied experience, organizational technology, customer relations and professional skills that provide a company with a competitive edge in the market. One of the most popular models for classifying intellectual capital(IC) is the Saint-Onge, H. (1996) model developed in the early 1990s. It divides intellectual capital into three parts: Human capital, Structural capital; and Customer capital. A slight variant of this model developed by Dr. Nick Bontis re-states customer capital as relational capital to include relationships with suppliers.

Human capital is recognized as the largest and the most important intangible asset in an organization. Ultimately it provides the goods or services that customers require or the solutions to their problems. It includes the collective knowledge, competency, experience, skills and talents of people within an organization. It also includes an organization's creative capacity and its ability to be innovative. Although investment in human capital is growing, there is still no standard measure of its effectiveness in companies' balance sheets. Structural capital is the supportive infrastructure for human capital—it is the capital which remains in the factory or office when the employees leave at the end of the day. It includes organizational ability, processes, data and patents. Unlike human capital, it is company's' property and can be traded, reproduced and shared by, and within, the organization. Relational capital is a company's relationship with its customers and with its network of suppliers, strategic partners and shareholders. The value of these assets is determined by the company's reputation or image (MERITUM guidelines). These elements of IC are summed up in the definition of CIMA (2001) "IC is the possession of knowledge and experience, professional knowledge and skill, good relationships, and technological capacities, which when applied will give organizations competitive advantage.

Measurement of intellectual capital

The Scandinavian insurance company, Skandia AFS, is the pioneer in measuring and reporting Intellectual Capital. The company has been providing intellectual capital information in a supplementary statement to its Annual Reports since 1994. The supplementary statement has been developed to bring out the company's human focus, current customer focus and its structural process focus. In addition, the future development related information is provided in addition to the historical financial data. However the various approaches for measuring Intellectual Capital are categorised into four measurement approaches by E.E.Sveiby (2007). The categories are an extension of the classifications suggested by Luthy (1998) and Williams (2000). These are;

(i) Direct Intellectual Capital methods (DIC): Estimate the Rupee-value of intangible assets by identifying its various components. Once these components are identified, they can be directly evaluated, either individually or as an aggregated. This method includes The Value Explorer, Intellectual Asset Valuation, Total Value Creation (TVC), Accounting for the future (AFTF) etc.

(ii) Market Capitalization Methods (MCM): Calculate the difference between a company's market capitalization and its book value as the value of its intellectual capital or intangible assets. Markets to Book Value, Tobin's Q are examples of this method.

(iii) Return on Assets methods (ROA). It is the capitalisation of industry above-average earnings by the company's average cost of capital. Industry above-average earnings is the multiplication of company's excess ROA over industry ROA with its average tangible assets. This method includes Knowledge Capital Earnings, Economic Value Added (EVA^{TM}), Calculated Intangible Value (CIV), Value Added Intellectual Coefficient (VAIC^{TM}) etc.

(iv) Scorecard Methods (SC). The various components of intangible assets or intellectual capital are identified and indicators and indices are generated and reported in scorecards or as graphs. Examples of this method are National Intellectual Capital Index (NICI), IC Rating^{TM}, IC-dVAL^{TM}, Value Chain Scoreboard etc.

Influence of intellectual capital on corporate performance

Davenport and Prusak (1998) note that technological advances in data processing, Communication and transportation, as well as customer demand and strategists' planning have made the world economy to change very fast. Teese (2000) states that intangible assets of the firm and its IC are the keys to achieving sustainable competitive advantage and drives economic growth (Drew, 1999). Reed (2000) finds that intellectual capital is a strong predictor of a company's performance.

Bontis et al (2000) investigated three elements of intellectual capital, namely the human, structural and customer elements, as well as their interrelationships. The

The main conclusions that could be drawn from the study are that human and customer capital are significant factors in the way in which businesses are run and that structural capital has a positive influence on business performance.

Riahi-Belkaoui (2003) has tested the relationship between intellectual capital and the performance of selected multi-national companies of USA. The result suggests that intellectual capital is positively associated with financial performance.

Saudah Sofia (2005) examines the impact of the degree and form of IC on management accounting practices, specifically, performance measurement and corporate performance. Results suggest that IC has influence on the corporate performance.

Ming-Chin Chen et al., (2005) have tried to examine the relationship between the value creation efficiency and firm's market valuation and financial performance. They have found that the intellectual capital has a positive influence on the market value and the financial performance. Paula Kujansivu and Antti Lönnqvist (2005) try to find the relation between monetary value of Intellectual Capital and value creation efficiency of Intellectual Capital of Finnish companies. The study results show value of IC and efficiency of IC are somehow related. Maria do Rosário Cabrita and Jorge Landeiro Vaz (2005) examine the inter relationships and the interaction effects among intellectual capital components and organizational performance, in the Portuguese banking context. The study results indicate the significant relationship between intellectual capital and organizational performance. Syed Najibullah (2005) investigates empirically the value creation efficiency of Intellectual Capital and market valuation and financial performance of 22 Bangladesian Banks listed on Dhaka Stock Exchange. The study results support the positive role of intellectual Capital in creating corporate value.

Norma Juma (2006) tries to find the relationship between intellectual Capital and New Venture Performance in high tech ventures of U.S.A. The findings of this study suggest that human capital is the most critical component of IC when predicting operating performance of high-tech ventures, while intellectual property is the crucial component when predicting market-based performance. Hong Pew Tan et al., (2007) have reported a positive association between intellectual capital of firm and their financial performance. G Barathi Kamath (2007), after analyzing the human capital and the physical capital of 98 scheduled commercial banks of India, has studied their impact on the value based performance during a period of five years from 2000 to 2004. His study confirms that the observed vast differences in performance of different segments of Indian banks are mainly due to the underlying differences in HC. Flavio L. Richieri (2007) makes a study with IC stock (CIA) and IC efficiency (ICE) and corporate financial performance as measured by ROA, ROE and ROS of 1000 biggest Brazilian companies. The study results suggest the existence of a positive relation between both CIV and ICE and the dependent variables ROE, ROA and ROS. B.A Ranjith Appuhami (2007) investigates the impact of value creation efficiency of Intellectual Capital on investors' capital gain on shares of listed companies in Thailand Stock Exchange. The empirical research found that firms' intellectual capital has a significant positive relationship with its investors' capital gain on shares.

The studies mentioned above clearly indicate the usefulness of intellectual capital and this motivates the present researchers to undertake an empirical study on the impact of the intellectual capital on the corporate financial performance in the Indian context. Makki and Lodhi (2009) examine the relationship between intellectual capital and return on investment (ROI) using the VAIC developed by Ante Pulic (1998). The study results indicate, IC efficiency can be used as a benchmark and strategic indicator to direct financial and intellectual resources towards the right direction to enhance the firm's ultimate corpora t e value. G. Bharathi Kamath (2010) measures the performance of banks in Pakistan on a new dimension of intellectual capital. The study estimates the value added intellectual capital (VAIC) of the banks in Pakistan for a 2 year period. The study concludes that the private sector banks were doing much better than all other banks in Pakistan on intellectual capital efficiency levels. The good performance is attributed to efficient usage and management of human resources.

DEVELOPMENT OF HYPOTHESES

According to the resourced based view, firms may gain competitive advantage and superior financial performance through the acquisition, holding and subsequent use of strategic assets (Wernerfelt, 1984; Lev, 1987). Both tangible and intangible assets are perceived as potential strategic assets (Riahi and Belkaoui, 2003 ;). Among the invisible assets, Intellectual Capital is generally considered to be a vital strategic asset. According to Riahi and Belkaoui (2003), Intellectual capital it is meant the specific and valuable knowledge that belongs to the organization This qualification of intellectual capital as a strategic asset rests on a potential link between intellectual capital on the one hand and the firm performance on the other (Seethamraju, 2000). Further, many scholars now argue that in comparison with the tangible resources the intellectual capital or intangible resources are more likely to be the key resources for many enterprises which help them in acquiring the required competitive advantage or to, ensure market dominance (Brernan and Connell, 2000; Marr, 2004).

According to Patton (2007), the productivity of a firm lies more on its IC and system capabilities than on its hard assets. Bontis (2001) argues that leveraging

knowledge assets is the key to a firm's prosperity. Based on these studies, therefore, it may be argued that a firm with higher intellectual capital performance is expected to have higher rate of profitability and also it may be experience higher productivity and growth in revenues.

Thus, researcher predicts a positive relationship between financial performance as measured by profitability, productivity and growth in revenues and the intellectual capital performance. Therefore, hypothesize are:

H_1: The greater the performance of a company's human capital, the greater will be the company's financial performance.

H_2: The greater the performance of a company's structural capital, the greater will be the company's financial performance.

H_3: The greater the performance of a company's physical capital, the greater will be the company's financial performance.

METHODOLOGY

The first part of this section describes the proxies used to measure dependable variables, independent variables and control variables. The multiple regression equations are outlined in the last part of this section.

Using purposive procedure, annual reports, especially the Profit & Loss account and Balance Sheet of one famous business company of Iran for 30years, (1980-2009) have selected in this research.

Measure of dependent variables

For the purpose of conducting the analysis in the present study, three dependent variables are taken into account, namely profitability, productivity, and growth in revenues. Presently, there is no specific theoretical perspective or adequate empirical evidence that supports the superiority of any specific proxy measure over the others. It is, therefore, decided that for the purposes of the present study, the commonly used proxy measures will be applied. Consequently, the proxy measures for each dependent variable are defined as follows:

(1) Profitability (ROA): - Profitability shows the degree to which a firm's revenues exceed over cost. It is the ratio of the net income (less preference dividends) divided by book value of total assets as reported in the annual reports; (Williams and Firer, 2003; Chen, Cheng and Hwang ,2005)

(2) Employee productivity (EP): Employee productivity is a measure for the net sales per employee, which reflects employees' productive capability (Chen, Cheng and Hwang, 2005; S Najibullah, 2005). It is calculated as follows:

EP = net sales for the period/ number of employees. In my regression analysis I use natural log of EP (LEP).

(3) Growth in sales (GR): Growth in sales measures the changes in firm's current year's sales over last year's sales. Increase in sales signals the firm's growth prospect (Chen, Cheng and Hwang, 2005; S Najibullah, 2005).

GR= (current year's sales – last year's sales)/ last year's sales *100

Measurement of independent variables

The Value Added Intellectual Coefficient™ (VA*IC*™) methodology developed by Ante Pulic (1998) forms the underlying measurement basis for the independent variable in the present study. In his words VAIC™ is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of VA by a firm's total resources and each major resource component. VAIC™ is a composite sum of two indicators these are: (1) Capital Employed Efficiency (CEE) – indicator of VA efficiency of capital employed; (2) Intellectual Capital Efficiency (ICE) – indicator of VA efficiency of company's Intellectual Capital base. Intellectual Capital Efficiency is composed of (a) Human Capital Efficiency (HCE) – indicator of VA efficiency of human capital; and (b) Structural Capital Efficiency (SCE) – indicator of VA efficiency of structural capital. The two sub-components of VAIC™ form the independent variables in the present study.

Equation (1) formalizes the VAIC™ relationship algebraically:

$$VAIC™i = CEEi + HCEi + SCEi \quad [Equation (1)]$$

Where:
VAIC™*i* = VA intellectual coefficient for company *I*, CEEi = capital employed efficiency coefficient for company *I*, HCEi = human capital efficiency coefficient for company *i* and SCEi = structural capital efficiency for company *i*.

Pulic (1998) states the higher the VAIC™ coefficient, the better the efficiency of VA by a firm's total resources. The first step in calculating CEE, HCE and SCE is to determine a firm's total VA. This calculation is defined by the following algebraic equation:

$$VAi = Ii + DPi + Di + Ti + Mi + Ri + WSi \quad [Equation (2)]$$

Where**:** VA for firm *i* computed as the sum of interest expenses (Ii); depreciation expenses (DPi); dividends (Di); corporate taxes (Ti); equity of minority shareholders in net income of subsidiaries (Mi); and profits retained for the year (Ri) wages and salaries.

Alternatively VA can be calculated by deducting operating expenses (materials, maintenance , other external costs) from operating revenues.(Pulic 1998).

Pulic (1998) stated CEE is the ratio of total VA divided by the total amount of capital Employed (CE) where capital employed is defined as the book value of a firm's net assets. Equation (3) presents the CEE relationship algebraically:

$$CEEi = VAi/CEi \quad\quad Equation (3)$$

Where: CEEi = capital employed efficiency coefficient for company *I*, VAi = VA for firm *i*; and CEi = book value of the net assets for firm *i*.

Consistent with views of other leading IC researchers (for example, Edvinsson, 1997; Sveiby, 2001), Pulic (1998) argues total salary and wage costs are an indicator of a firm's human capital (HC). HCE, therefore, is calculated as the ratio of total VA divided by the total salary and wages spent by the firm on it employees. Equation (4) shows this relationship algebraically:

$$HCEi = VAi/HCi \quad\quad Equation (4)$$

Where: HCEi = human capital efficiency coefficient for company *I*, VAi = VA for firm *i*. and HCi = total salary and wage costs for firm *i*.

In order to calculate SCE, it is first necessary to determine the value of a firm's structural capital (SC). Pulic (1998) proposes a firm's total VA less its human capital is an appropriate proxy of a firm's *SC*. That is:

$$SCi = VAi – HCi \qquad \text{[Equation (5)]}$$

Where: SCi = Structural capital for company *I*, VAi = VA for firm *i* and HCi = total salary and wage expenditure for firm *i*.

Based on prior empirical research findings, Pulic (1998) argues there is a proportionate inverse relationship between HC and SC in the value creation process attributable to the entire IC base, the less Human Capital participates in value creation; the more Structural Capital is involved. Consequently, Pulic (1998) argues the formula for calculating SCE differed to that for CEE and HCE respectively. Specifically, Pulic (1998) stated SCE is the ratio of a firm's SC divided by the total VA. This relationship is shown in Equation (6):

$$SCEi = SCi / VAi \qquad \text{[Equation (6)]}$$

Where: SCEi = structural capital efficiency coefficient VA for company *i*, SCi = Structural capital for company *i*; and VAi = VA for firm i.

Recently, VAIC ^{TM} method gain popularity among researchers to measure intellectual ability of companies. Schneider (1999) supports the adoption of this technique as an effective method of measuring intellectual capital efficiency because:

(a) VAIC™ places an emphasis on the value of employees, a key component of intellectual capital;
(b) VAIC™ enabled the collection of evidence of intellectual capital leverage to key success processes;
(c) VAIC™ was easy to calculate using information already accounted for by a firm and reported in annual reports thus minimizing any additional costs to the preparer and stakeholder;
(d) The methodology used in the calculation of VAIC™ is relative straightforward that enable greater understanding.

Control variables

For the purpose of empirical analysis this study uses correlation and multiple regressions as the underlying statistical tests. In conducting the liner multiple regression analysis following control variables are generally included.

1. Leverage (Lev): -Financial leverage and debt structure 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 and Belkaoui, 2003).
2. 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; Firer and Williams, 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.
3. Assets turnover ratio (ATO): It is the ratio of total turnover to total assets. This ratio is used to control for the impact of total assets on corporate performance.

Linear multiple regression

To analyze the respective relationships defined in prior sections linear multiple regressions analysis is performed based on the following general models:

$$ROA = \alpha + \beta_1 (HCE) + \beta_2 (SCE) + \beta_3 (CEE) + \beta_4 (PC) + \beta_5 (DER) + \beta_6 (ATO) + \varepsilon \qquad \text{Equation (1)}$$

$$EP = \alpha + \beta_1 (HCE) + \beta_2 (SCE) + \beta_3 (CEE) + \beta_4 (PC) + \beta_5 (DER) + \beta_6 (ATO) + \varepsilon \qquad \text{Equation (2)}$$

$$SG = \alpha + \beta_1 (HCE) + \beta_2 (SCE) + \beta_3 (CEE) + \beta_4 (PC) + \beta_5 (DER) + \beta_6 (ATO) + \varepsilon \qquad \text{Equation (3)}$$

Where; HCE = Human capital performance as measured by the ratio of the value added to intellectual capital, CEE = Capital employed performance as measured by the ratio of the value added to capital employed, PC = Physical capital intensity as measured by fixed assets divided by total assets, ATO = Company productivity as measured by the asset-turn over ratio, DER = The risk profile of the company as measured by the debt-equity ratio, ROA = Company profitability as measured by the company's return on assets, SG = Growth in sales as measured by the ratio of the current year's excess sales to last year's sales, EP = Employee productivity as measured by per employee of sales.

Descriptive statistics

Table 1 represents descriptive statistics of all variables relating to the study. Descriptive statistics include minimum value, maximum value. The overall profitability of the company is sound as it earns profit at 19% averagely during the study periods. The company's sales grow 31% approximately during the periods. The mean value of HCE indicates that company human capital is more effective in creating value than SCE and CEE during the study periods. The risk level of the company is very high as reflected in the very high value of debt-equity ratio. Finally, asset turnover ratio of the company indicates the efficient utilization of total assets.

DISCUSSION OF RESULTS

Tables 2, 3 and 4 show the results of three regression models of the company performance. Table 2 presents the liner multiple regression results of profitability with HCE, SCE and CEE and other control variables, in this table Adj. R^2=0.373 and Sig=0.008<0.01) Empirical results show that only HCE is significantly related with company's profitability as measured by the Return on Assets.

(Because Sig (HCE) =0.091<0.1)

Other two types of assets (structural and physical) are found not to be significantly related with the dependable variable.

(Because Sig (SCE) =0.894>0.1 and Sig (CEE) =0.696>0.1)

However, Assets turnover ratio, use of debt capital and use of physical capital in total assets are also significantly influence the profitability of the company. (Because (Sig) ATO=0.000<0.01)

From the empirical results of the Table 3 it is shown that

Table 1. Descriptive statistics.

Statistic	N	Minimum	Maximum	Mean	Std. Deviation
ROA	30	0.043535	0.461447	0.18582059	0.100913653
SG	30	-0.292890	1.036083	0.3112148	0.248841116
EP	30	119846.707400	64761826.160000	11740255.07547097	18376774.869361620
HCE	30	2.342255	29.785650	8.96580387	5.388925140
SCE	30	0.573061	0.966427	0.84326117	0.102225825
CEE	30	0.051554	1.183588	0.21874645	0.189324572
ATO	30	0.451493	2.091788	0.90658289	0.388132638
DER	30	0.149594	2.710895	0.99413941	0.807943029
PC	30	0.352061	0.744732	0.59779283	0.106971669
Valid N (list wise)	30				

Table 2. Linear multiple regression results of profitability.

Variable	Standard error	β	t - statistic	Significance
Constant	0.009	0.001	0.145	0.886
HCE	0.005	0.264	1.765	0.091***
SCE	0.150	-0.001	-0.135	0.894***
CEE	0.109	-0.043	-0.395	0.696***
ATO	0.055	0.228	4.151	0.000*
DER	0.027	0.083	3.059	0.006*
PC	0.121	0.359	2.954	0.007*

Profitability; Adj. R^2 = 0.373; F Statistic = 3.871; Significance = 0.008*. * and *** represent 1 and 10% significant (Sig) level respectively.

Table 3. Linear multiple regression results of growth in sales

Variable	Standard error	β	t - statistic	Significance
Constant	0.057	0.006	0.112	0.912
HCE	0.030	0.064	2.125	0.045**
SCE	0.998	1.349	1.351	0.190
CEE	0.729	-1.985	-2.724	0.012**
ATO	0.366	1.012	2.765	0.011**
DER	0.182	0.061	0.336	0.740
PC	0.809	-0.598	-0.739	0.467

Growth in sales; Adj. R2 = 0.349; F Statistic = 3.586; Significance=0.012**. ** represent 5% significant level.

Table 4. Linear multiple regression results of employee productivity

Variables	Standard error	β	t - statistic	Significance
Constant	4.497	11.526	2.563	0.017**
HCE	0.096	0.390	4.065	0.000*
SCE	3.973	0.985	0.248	0.806
CEE	2.228	-9.790	-4.395	0.000*
ATO	0.768	1.059	1.378	0.181
DER	0.463	-0.503	-1.087	0.288
PC	3.049	1.230	0.404	0.690

Employee productivity; Adj. R2 = 0.696; F Statistic = 20.501; Significance = 0.000**; ** represent 1% and 5% significant level respectively.

Human Capital Efficiency (HCE), Physical Capital Efficiency (CEE) and Assets Turnover Ratio (ATO) significantly influence the company performance as measured by growth in sales.

Because Sig (HCE) =0.045<0.05 and Sig (CEE) =0.012<0.05 and Sig (ATO) =0.011<0.05)

But physical capital efficiency negatively influences the company performance.

(Because β= -1.985).

In this Table 3, Adj. R^2=0.349 and sig=0.012<0.05).

From the empirical results of Table 4 it is evident that employee productivity (EP) and human capital efficiency (HCE) is significantly and positively related.

(Because Sig (HCE) =0.000<0.01 and β (HCE) =0.390>0).

But the value creation efficiency of the company's physical capital is significantly but negatively related with the dependent variable.

(Because Sig (CEE) =0.000<0.01 and β (CEE) = -9.790<0).

In this Table 4, Adj. R^2=0.696 and Sig=0.000<0.01).

Therefore variable of employee productively have stronger correlation than Profitability and Growth in Sales. Empirical findings find strong association between the efficiency of value added by the company's Human capital and company performance but fail to find any strong association between the efficiency of value added by other two major components of the company's resource base (i.e., Structural Capital and Physical Capital) and company performance. Therefore, regression results hold only first hypothesis only. The findings from the regression analysis imply that future profitability. Sales growth and per employee productivity can be enhanced by efficient management of human capital. Another conclusion can be drawn from the empirical analysis that company's investment in human capital gives satisfactory financial performance. The study results fail to find strong association between structural capital and company performance. Structural capital of a company constitutes company's legally protected intangible assets like brand, trade mark, patents etc.

Conclusions

The principal purpose of the present study is to investigate the association between the efficiency of value added base (physical capital, human capital and structural capital) and the three dimensions of corporate financial performance. The three dimensions of corporate financial performance are Return on Assets, Growth in Sales and Employee Productivity. Value added efficiency are measured using VAIC™ methodology. Empirical findings, based on linear multiple regression analysis, indicates the association between the association between the efficiency of value added of major resource components and the three dimensions of corporate performance are mixed. In general empirical findings suggest that human capital is very efficient than other two types of capital (structural and physical) in terms value creation efficiency.

The findings from the present study indicate avenues for further investigation. Present study can be undertaken by employing another method of measuring intellectual capital performance. Also, analysis in the present study draws on data from a single company, so further research can be conducted by using data from different business sectors. Besides possible limitations of single company data, relatively focused sample and a single domestic location, the present study provide valuable insights into the association between intellectual capital and corporate performance .

REFERENCES

Bontis N, Chua W, Richardson S (2000), "Intellectual capital and the nature of business in Malaysia". J. Intellect. Capital, 1(1): 85-100.

Bornemann, M (1999): Empirical analysis of the intellectual potential of value systems in Austria according to the VAIC.

Davenport TH, Prusak L (1998), Working Knowledge: How Organizations Manage What They Know, Harv. Bus. Sch. Press, Boston, MA.

Edvinsson L, Malone MS (1997). Intellectual capital: The proven way to establish your company's real value by measuring its hidden brainpower. London: Judy Piatkus.

Flavio LR (2007), Intellectual Capital and the Creation of Values in the Brazilian Companies. Available Online.

Jacob ben-simchon (2005). 'Reporting of intellectual capital in research intensive SME's final Dissertation', The University of Inholland.

Kamath GB (2010).The Intellectual Capital Performance of Banking Sector in Pakistan. "Pak. J. Com. Soc. Sci., 4(1): 84-99.

Kamath GB (2007). The Intellectual Capital Performance of the Indian Banking Sector'. J. Intellect. Capital, 8(1): 96-123.

Luthy DH (1998). Intellectual capital and its measurement. Available Online:http://www3.bus.osakacu.ac.jp/apira98/archives/htmls/25.htm.

Makki MAM, Lodhi SA (2009). Impact of Intellectual Capital on Return on Investment in Pakistani Corporate Sector. "Austr. J. Basic Appl. Sci.", 3 (3): 2959-2007.

Maria does Rosário C, Jorge LV (2005). Intellectual Capital and Value Creation: Evidence from the Por-tuguese Banking Industry. Available Online.

Marr B (2004). Measuring and benchmarking intellectual capital. J. Intellect. Capital, 11 (6): 559-570

Ming CC, Shu JC, Yuhchang H (2005). An empirical investigation of the

relationship between intellectual capital and firm's market value and financial performance. J. Intellect. Capital. (6)2: 159-570.

Norma J (2006). The Relationship between Intellectual Capital and New Venture Performance: An empirical investigation of the moderating role of the environment. Available online.

Patton JR (2007). 'Metrics for knowledge-based project organizations', Acad. Manage. J., 72(1): 33-43.

Paula K, Antti L (2005). The Value and Efficiency of Intellectual Capital in Finnish Companies. Available Online.

Ranjith BAA (2007). The Impact of Intellectual Capital on Investors' Capital Gain on Shares: An Empirical Investigation in Thai Banking, Finance and Insurance Sector. J. Internet Bank. Com.

Reeds K (2000). The dynamics of intellectual capital, Ph.D. Dissertation, The University of Connecticut.

Riahi-Belkaoui A (2003). Intellectual Capital and Firm Performance of U.S. Multinational Firms', J. Intellect. Capital, 4(2): 215-226.

Saint-Onge H (1996). "Tacit knowledge: the key to the strategic alignment of intellectual capital". Strateg. Leadersh., 24(2): 10-14.

Saudah S, Mike T, Richard P (2005). 'The implications of intellectual capital on performance measurement and corporate performance'. Available online.

Seethamraju C (2000). The value-relevance of trademarks. Working paper. New York City.

Seiby EE (2001, 2007). Methods for Measuring Intangible Assets. Available online.

Sullivan PH (2000). Value-driven Intellectual Capital: How to convert Intangible Corporate Assets into Market Value, Toronto, Canada: John Wiley and Sons.

Syed N (2005). An Empirical Investigation of the Relationship between Intellectual Capital and Firms' Market Value and Financial Performance in Context of Commercial Banks of Bangladesh. Available Online.

Teece DJ (2000), Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions, Oxford University Press, Oxford.

Wernerfelt B (1984). A resource-based view of the firm. Strateg. Manage. J., 5(2)171-180.