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EFFECT OF INTELLECTUAL CAPITAL ON FIRM FINANCIAL PERFORMANCE: A STUDY ON WIPRO LIMITED

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ABSTRACT

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 financial performance of Wipro Limited for a period of five years from 2012 to 2016. Annual reports, especially the profit and loss accounts and balance sheets of the selected company for the relevant years have been used to obtain the data. The Value Added Intellectual Coefficient™ (VAIC™) method developed by Pulic, 1999 is applied for measuring the value based performance of the companies. Data have been analyzed by using Regression analysis. The three components of VAIC™ Model-Human capital efficiency, structural capital efficiency and capital employed efficiency are used to study the effect of Intellectual Capital on Firm financial Performance. The hypotheses (H1, H1a, H1c) shows positive relationship between intellectual capital and firm financial performance while hypothesis (H1b) shows negative relationship between intellectual capital and firm financial performance. Overall empirical findings, which are based on Regression analysis between intellectual capital performance and firm financial performance measures, clearly indicate that intellectual capital is the positive predictor of profitability.

Key words*: Intellectual capital, VAIC, financial performance, profitability.*

Introduction

Today, the use of intangible assets has a significant impact on the success and survival of the organizations, so that it creates a new field of study and research in the management. One of the most important intangible assets that have been studied is intellectual capital and its derivatives. Productivity and business performance of many organizations depends on effective management of intellectual capital, create value by investing in intellectual capital and focus on intellectual capital as a source of competitive advantage (Costa, 2012). So, the identification, measurement and management of intellectual capital have particular importance. Intellectual capital is all non-monetary and non-communication resources that are fully or partially controlled by the company and will create value for the company (Ross et. al, 2005).

Intellectual capital has grown in the field of science and knowledge. The term intellectual capital was first introduced by John Kenneth Galbraith in 1969. Before that, Peter Drucker used the term knowledge worker instead of it. Yet there is no consensus on the definition of intellectual capital؛ accordingly, intellectual capital is processes and assets which are usually not reflected in the balance sheet. Intellectual capital in the organizations is recognized as an intangible asset based on knowledge (Min lu, 2012).

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".Stewart (1999) says

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Intellectual Capital is "knowledge, information, intellectual property, experience – that can be put to use to create wealth". 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 organization competitive advantage".

Measurement and management of intellectual capital has two important respects. First, inside the organization that it's goal is better allocation resource in order to efficiency and minimize costs of the organization. Second, outside the organization that its goal is the access to information of existing and potential funding organizations to anticipated future growth and long-term planning. As long as intellectual capital is known as a potential source to create economic value, it has been shown that Intellectual capital can be effective in predicting the company's performance (Abeysekera, 2011).

In the knowledge-based economy, intellectual capital is used to create value for the organization and in today's world; the success of any organization depends on the ability to manage these assets. Intellectual capital measurement is essential to compare different companies, determine their true value and even improve their controls. In some of today's organization, intellectual capital is used in order to evaluating innovation, creativity, efficiency, organizational performance and creating value. Advantages that intellectual capital makes them, such as knowledge, expertise, financial resources, operational strategy and report for investors are potential resource to improve organizational performance (Abdullah and Sofian, 2012).

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.Some of the researchers have applied VAIC^{TM} model to identify the linkage between intellectual capital and financial performance of the companies but the results were not similar in all the studies.

Firer & Williams(2003)had conducted a study on 75 South African publicly listed firms and found that human capital efficiency had a negative impact on profitability, productivity and market valuation but the Structural capital efficiency had a positive impact on profitability and physical capital had positively connected with market valuation.

Shiu (2006) conducted a study in Taiwan and also found the similar results as human capital had negative impact on productivity and market valuation.

Chan(2009) had also conducted a study in Hong Kong Stock Exchange and found that human capital has a negative relationship with productivity, profitability and market valuation while physical capital had a significant relationship with all these factors.

Bollen, Vergauwen, & Schnieders (2005) all the components of intellectual capital had an indirect relationship with the financial performance measures.

Kamath (2008) examined the relationship between IC and corporate performance by VAIC methodology in an empirical study and found a positive relationship between the profitability and productivity of the firms and human capital.

Sharabati et al. (2010) conducted an empirical study to determine the relationship between IC and business performance of pharmaceutical sector in Jordan. They concluded that there is strong and positive evidence so that pharmaceutical firms in Jordan are managing intellectual capital effectively and that, in turn, is influencing business performance positively.

Hung et al.(2005) concluded that the following seven factors were addressed to be critical; a benchmarking strategy and knowledge structure, the organizational culture, information technology, employee involvement and training, the leadership and the commitment of senior management, a learning environment and resource control and finally, evaluation of professional training and teamwork

Bollen et al. (2005) conducted an empirical study to investigate the linkage between intellectual capital and intellectual property (IP) to company performance. They concluded that there is a link between company performance and IP in pharmaceutical industry, and IC as a whole, including IP. They also suggested that IP does not solely have a positive impact on company performance.

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

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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.

The VAIC™ model was proposed by Pulic in 1993 (Pulic, 2004). It measures the efficiency of Intellectual Capital and its components by using accounting data of a firm. In VAIC™, two components of IC have been envisioned– Human Capital (HC) and Structural Capital (SC). In addition, efficiency of physical and financial capital of a firm has also been estimated through the inclusion of Capital Employed (CE) in the model. In VAIC™, 'Value Added' (VA) has been used as a benchmark of success of a business entity. This indicator has been estimated as follows:

$$VA = OP + EC + D + A$$

Where, OP = Operating Profit; EC = Employee Cost; D = Depreciation; and, A = Amortization

Pulic (2004) derives the values of these variables in following manner:-

HCE = Value Added (VA) / Human Capital (HC)

SCE = Structural Capital (SC) / Value Added (VA)

CEE = Value Added (VA) / Capital Employed (CE)

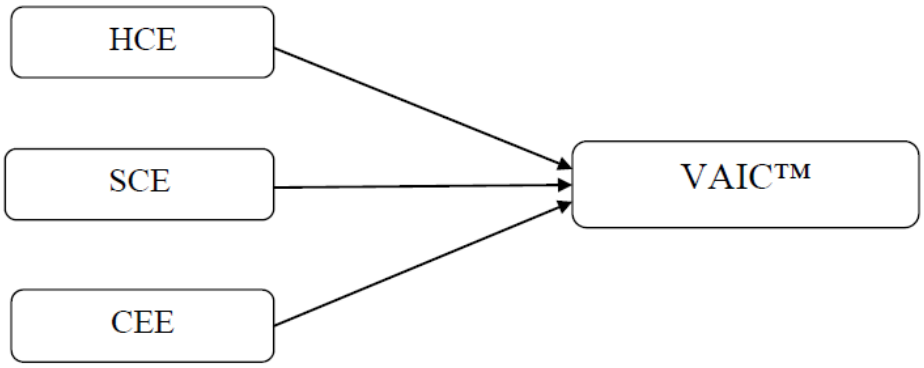

Figure 1 – VAIC™ model of Ante Pulic (2004)

Research Hypotheses

To study the effect of Intellectual Capital , the following hypotheses have been proposed:

H1: Intellectual Capital of a firm has a positive impact on financial performance.
H1a: Human Capital efficiency of a firm has a positive impact on financial performance.
H1b: Structural Capital efficiency of a firm has a positive impact on financial performance.
H1c: capital employed efficiency of a firm has a positive impact on financial performance.

Research methodology

The study is based on the secondary sources of data collected from Wipro company annual reports. In this research the sample of five years data from (2012 to 2016) National Stock Exchange has been taken. The variables used in this research are Return on Assets (ROA) , Return on Equity (ROE), Human Capital efficiency(HCE), Structural Capital efficiency(SCE), capital employed efficiency(CCE)and Value added intellectual coefficient(VAIC) extracted from annual reports of the Wipro Limited. Return on Assets and Return on Equity are taken as Dependent variables while Human Capital efficiency, Structural Capital efficiency, capital employed efficiency and Value added intellectual coefficient are taken as Independent variables.

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Making the Variables Operational:-

For empirical investigation of the hypotheses, regression equation has been applied on the proposed model (VAIC™ model).The equations used for testing the hypotheses H1a, H1b and H1c are:

Performance (ROA; ROE) = $\alpha_i + \beta_i$ (Human Capital Efficiency) + ε_i

Performance (ROA; ROE) = $\alpha_i + \beta_i$ (structural Capital Efficiency) + ε_i

Performance (ROA; ROE) = $\alpha_i + \beta_i$ (Capital Employed Efficiency) + ε_i

(i = 1, 2) Where, 'i' stands for performance parameter

Results and Discussions

Data representation and the empirical findings of regression equations are present in Tables-1 to 5. Table-1 shows the descriptive statistics of the data. Owing to high variability in the values, variables such as ROA,ROE and VAIC have high mean and standard deviation values.

Table - 1: Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std.deviation
HCE	1.4192	1.4257	1.3940	1.4369	0.019304
SCE	0.090801	0.089089	0.086695	0.096588	0.0042697
CEE	0.83815	0.84320	0.73023	0.94123	0.084396
VAIC	2.3482	2.3678	2.2281	2.4318	0.085124
ROA	13.662	14.080	10.750	15.990	2.0275
ROE	21.538	23.150	16.430	24.730	3.3306

The hypothesis(H1a) predicts a positive relationship between Human Capital Efficiency and financial performance. The results have been shown in Table-2. The predictor variable, HCE, has positive and statistically significant t-values for all the two predicted variables: ROA and ROE. This finding is in conformation to the results reported by Pal and Soriya (2012) who have found positive linkage of VAIC™ with ROA and ROE. Since the data and the results are supporting the hypothesized relationship, H1a have not been rejected.

Table - 2: Regression results on Human Capital Efficiency and financial Performance of Wipro Ltd

Dependent Variable	R^2	F-value	p-value	Coefficients	t-value	Significance
ROA	0.302	1.300	0.000*	Constant	−0.9501	0.000*
				HCE	1.140	0.000*
ROE	0.188	0.696	0.000*	Constant	−0.6656	0.000*
				HCE	0.8348	0.000*

Note: Here *p<0.05

The hypothesis (H1b) predict a negative relationship between structural Capital Efficiency (SCE) and financial performance. The results can be seen in Table-3. The data not supports this hypothesis and hence, H1b are rejected. The t-values are negative and not significant for all the two performance variables.

Table - 3: Regression results on Structural Capital Efficiency and financial Performance of Wipro Ltd

Dependent Variable	R^2	F-value	p-value	Coefficients	t-value	Significance
ROA	0.277	1.151	0.000*	Constant	1.717	0.000*
				SCE	−1.073	0.000*
ROE	0.162	0.581	0.000*	Constant	1.337	0.000*
				SCE	−0.762	0.000*

Note: Here *p<0.05

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The Hypothesis (H1c) predict positive linkages between capital employed efficiency (CEE) and performance variables – ROA and ROE, respectively. The regression results have been tabulated under Table-4. This hypothesis find support from the fact that all the relevant t-values are significant and positive. Therefore, H1c are not rejected.

Table - 4: Regression results on Capital Employed Efficiency and financial Performance of Wipro Ltd

Dependent Variable	R^2	F-value	p-value	Coefficients	t-value	Significance
ROA	0.641	5.379	0.000*	Constant	−0.3538	0.000*
				CEE	2.319	0.000*
ROE	0.771	10.106	0.000*	Constant	−0.8184	0.000*
				CEE	3.179	0.000*

Note: Here *p<0.05

The Hypothesis (H1) predict positive linkages between value added intellectual coefficient and performance variables – ROA and ROE, respectively. The regression results have been tabulated under Table-5. This hypothesis find support from the fact that all the relevant t-values are significant and positive. Therefore, H1 are not rejected.

Table - 5: Regression results on value added intellectual coefficient and financial Performance of Wipro Ltd

Dependent Variable	R^2	F-value	p-value	Coefficients	t-value	Significance
ROA	0.796	11.768	0.000*	Constant	−2.491	0.000*
				VAIC	3.431	0.000*
ROE	0.900	27.111	0.000*	Constant	−3.918	0.000*
				VAIC	5.207	0.000*

Note: Here *p<0.05

Conclusion

The purpose of this study was to analyse the impact of intellectual capital on firm financial performance with reference to Wipro limited. Intellectual capital performance of a company has been measured by using VAIC™ methodology. The regression results indicate that VAIC™ model has been able to predict the strength of relationship between Intellectual capital and firm performance in a better way. The hypotheses(H1,H1a,H1c) shows positive relationship between intellectual capital and firm financial performance while hypothesis(H1b) shows negative relationship between intellectual capital and firm financial performance. Overall empirical findings, which are based on Regression analysis between intellectual capital performance and firm 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.

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