

Impact of Intellectual capital on the financial performance of Indian Private Sector Banks

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Abstract

The purpose of this paper is to empirically investigate the intellectual capital (IC) and its impact on the financial performance of private sector banks in India for the period of six years from 2006 to 2011. Value Added Intellectual Coefficient (VAIC) model (Ante Pulic 2000) is adopted as a prime methodology to measure the Intellectual Capital in terms of three dimensions like Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE). The empirical evidence suggests that intellectual capital has a positive association with financial performance of private sector banks. Subsequently, when the VAIC is segregated into its three major components, we found that financial performance is positively associated with capital employed efficiency and structural capital efficiency, but negatively with human capital efficiency.

Keywords: Intellectual capital, financial performance, and VAIC.

JEL Classification: D83, J24

Introduction

Economic growth has changed dramatically with the emergence of new aspects of capital and rapid growth of knowledge. With the rapid development of the global economy, intellectual capital (IC), which can represent the principal assets of many corporations, has become a critical driver for a business's sustainability (Bontis, 2001). Knowledge as the main assets of organization has made the role of monetary assets status, land and building, machinery and equipment, supply of material and goods more ordinary (especially in the service sectors). It has become one of the great clichés in the recent years.

While intellectual capital is being considered as the firm's wealth driver, there are also many unsettled issues. Apart from the issue of the development of measurement models that are generally responsible for explaining the hidden firm's value, timely efforts have made by a considerable number of companies and countries to develop an intellectual capital disclosure framework so as to reflect the values that are missing in the traditional accounting disclosure. However, it is still not known clearly whether firms that consider intellectual capital view it as a critical asset. (Usoff, Thibodeau, and Burnaby, 2002). Therefore there is need to recognize the impact of intellectual capital on the performance of companies so as to find a necessity to manage its intellectual capital. We have selected Banking companies as the subject of our study because banking sector in general provides a rich environment for conducting Intellectual Capital research and because of the availability of reliable data in

the form of published accounts (balance sheets, profit & loss accounts). It is believed that this sector is “intellectually” intensive or knowledge-intensive and its staff is (intellectually) more homogeneous than in other sectors. This study is using the VAIC for measuring the Capital Intelligent efficiency of Indian private sector banks and attempts to analyze whether the intellectual capital has an impact on the financial performance of Indian private sector banks.

The remaining part of this paper discusses the definition of intellectual capital and its components in section II, a brief summary of the relevant literature are discussed in the section III, a description of the development of hypotheses in section IV, section V covers the research methods used, section VI presents the empirical results, and section VII provides the conclusion.

Intellectual Capital

Intellectual Capital (IC) is one of vital strategic asset in knowledge base economy. There are number of definitions of IC since its origin in fact both knowledge based and economic based approaches exists. The knowledge economic is that where production and its distribution with the use of knowledge is a main force for creating growth and wealth defined by the Organization for Economic Co-operation and Development (OECD 1996). In the words of Itami (1987) IC is an intangible asset that comprises of technology, customer loyalty, brand name, goodwill and copy rights etc. Stewart (1997) contributed to the IC definition by defining Intellectual Capital (IC) as a knowledge and information that create the value added efficiency to generate wealth of corporations. Pulic (2000a, b), argued that the value creation efficiency of organization can be measured as tangible (Capital Employed) and intangible (Human and Structural Capital). IC is an intangible asset with the potential to generate value for the organization and the society itself Mavridis (2005).

Many practitioners and scholars have studied the concept of IC and categorized IC into three basic components that is human capital, structural capital and relational capital (Mavridis and Kyrmozoglou, 2005; Holton and Yamkovenko, 2008; Tayles et al., 2007; Yang and Lin, 2009). Human capital which includes knowledge, professional skill and experience, and creativity of employees. Structural capital consists of networks, systems, culture, policies, distribution channels, and other organizational capabilities developed to meet up market requirements as well as intellectual property. Relational capital includes the knowledge of market channels, supplier and customer relationships, and governmental or business networks.

Review of Literature

Measurement of Intellectual Capital

Several studies have adopted the VAIC model as the primary measurement of IC these includes Bornemann, 1999; Cabrita and Vaz, 2006; Chen et al., 2005; Firer and Williams, 2003; Goh, 2005; Kujansivu, 2005; Kujansivu and Lonnqvist, 2007; Mavridis, 2004, 2005; Mavridis and Kyrmozoglou, 2005; Shiu, 2006; Tseng and Goo, 2005 to study different aspects of IC efficiency. The present study is based on the banking sector and the studied related to the banking sector include Kamath (2007) studied the Indian banking sector and Mavridis (2004) conducted the study on the Japanese banking sector. Yalama and Coskun (2007) conducted a study on

the effects of IC on the profitability of the Turkish banking sector. They claimed that the use of the results of VAIC method can be successfully applied by banks as a bench mark against level of IC efficiency. The strength of VAIC technique is its ability to assess the financial performance of IC among organizations (Kujansivu and Lonnqvist, 2007). The VAIC method uses financial statement of a firm, audited by the professional accountant to calculate the efficiency coefficient.

Studies on Intellectual Capital

The first person to study the impact of intellectual capital on the banking industry was Ante Pulic (2004) with the VAIC model he measured Australian banks' intellectual capital performance (1993 to 1995) and Croatian banks' capital performance (1996 to 2000) and concluded that, performance rank and classic accounting rank give banks considerably total different positions. Mavridis (2004) conducted a study on Japanese banks by using the same method and concluded that performance of intellectual capital among different banks shows significant discrepancies.

In India, Kamath, (2007) measured the value-based performance of the Indian banking sector during the period 2000 to 2004 by using VAIC model and confirmed the existence of vast differences in the performance of Indian banks and at the same time an improvement in the overall performance over the study period has also been found. Yamala and Coskun (2007) measured the intellectual capital and its effect on the profitability performance of listed banks in the Istanbul Stock Exchange for the period of 1995 to 2004. They concluded that IC is more important than physical capital for banks.

Ismail and Karem (2011) examined the influence of intellectual capital on financial performance of Banks in Bahrain (2005 to 2007), by using a sample of 18 banks listed on the Bahrain Stock Exchange and concluded that intellectual capital has a positive association with financial performance of banks in Bahrain.

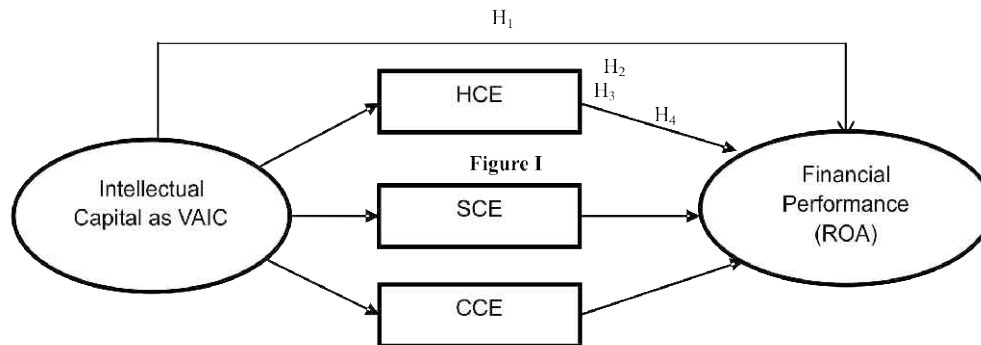
On the other hand, Firer and Williams (2003) measured the relationship between intellectual capital and corporate performance through traditional measures of corporate performance i.e. profitability (ROA), productivity (ATO) and market value (M/B ratio) in South Africa. The results supported only to the relationship of capital employed efficiency with market value of firms but failed to find any association between other value added efficiency components and different measures of corporate performance.

The findings of previous studies are mixed. Most of these studies present evidence that there is a relationship between intellectual capital and firms' financial performance whereas some studies like that of Firer and Williams (2003) did not find any robust association between intellectual capital and profitability. Therefore, there is a need to study further the relationship between intellectual capital and financial performance of banks in other countries since empirical evidence of the understanding and development of intellectual capital (IC) concepts in emerging economies is still in its infant stage (Firer and Williams, 2003). In this backdrop the present study attempts to analyze whether the intellectual capital has an impact on the financial performance of Indian private sector banks.

Proposed model and Hypothesis

Based on the literature revision, the major objective of this study framed is to measure the intellectual capital by using VAIC Model

developed by Ante Pulic and the relationship between Intellectual capital and the financial performance of Indian private sector banks. The model framed based on the objective of the study is depicted in figure I.



This study proposes the following hypothesis based on the objectives of the study:

H₁: Value added intellectual coefficient (VAIC) and financial performance of private sector banks is positively associated.

H₂: Human capital efficiency and financial performance of private sector banks is positively associated

H₃: Structural capital efficiency and financial performance of private sector banks is positively associated.

H₄: Capital employed efficiency and financial performance of private sector banks is positively associated.

Methodology

Data sources

The study is based on the secondary data collected from the annual reports of private sector banks compiled and published by the Reserve Bank of India (RBI) in a consolidated manner in its annual statistics on Indian banking available on the official website of RBI. The data covers the period from 1st April 2005 to 31st March 2011 i.e. six years. From among the commercial banks in India only private sector banks has taken for the study, as on the late day of the study period 21 private sector banks are operating but due to the discrepancy in the data set a final sample of 18 private sector banks are selected.

VAIC Method

The Value Added Intellectual Coefficient (VAIC) method is characterized as a financial valuation method. It was created by the Austrian Intellectual Capital Research Centre (AICRS) under Professor Pulic (2000). This method measures the efficiency of firms' three types of input: physical/financial capital, human capital, and structural capital, and the summation of these three VA efficiency indicators form VAIC, firms having higher VAIC value indicates better management and utilization of companies' strategic resources.

The different variables used in the model are as follows:

$$VAIC = HCE + CEE + SCE$$

Output (OUT) = The total of all income/revenue generated during the fiscal year by an organization by selling its goods or services.

Input (IN) = Costs incurred towards purchase of inputs for operating and continuing the business. The employees' compensation and other costs incurred on them for training and development would be deducted from total expenses for the simple reason that they would be treated as investment and not expenditure.

$$\text{Value Added (VA)} = \text{Output} - \text{Input.}$$

Capital Employed (CE) – All the physical and material assets of the organization.

$$\text{Capital Employed Efficiency (CEE)} = \text{Value Added (VA)} / \text{Capital employed (CE)},$$

Human Capital (HC) = HC of the business, i.e. employee costs considered as an investment,

$$\text{Human Capital Efficiency (HCE)} = \text{Value Added (VA)} / \text{Human Capital (HC)},$$

Structural Capital (SC) = SC of the company is calculated by subtracting the value of HC from VA (VA-HC),

$$\text{Structural Capital Efficiency (SCE)} = \text{Structural Capital (SC)} / \text{Value Added (VA)}.$$

Although there are several ways of measuring financial performance such as return on equity (ROE), those of market-based and economic value added, we measure performance by return on assets (ROA). The ROA is used in this study because it provides a measure for assessing the overall efficiency with which firm assets are used to produce net income from operations (Miller et al., 2001). The ROA, compared to other measures such as ROE, is appropriate for the banking industry because the latter does not take into consideration the financial risk of banks' activities whereas the former does.

This study applies two regression models. Model 1 examines the

relationship between financial performance measured by ROA and the aggregate measure of value added, VAIC. Model 2 examines the association between financial performance measured by ROA and VAIC components i.e. CEE, HCE, and SCE. Regression models framed for the study are:

$$\text{Financial performance (ROA)} = \alpha + \beta_1 \text{VAIC} + \varepsilon \tag{1}$$

$$\text{Financial performance (ROA)} = \alpha + \beta_1 \text{CEE} + \beta_2 \text{HCE} + \beta_3 \text{SCE} + \varepsilon \tag{2}$$

Results

Table I presents the descriptive statistics of the variables. The ROA ranges from 0.020 to 2.130, with a mean of 1.105 and a standard

deviation of 0.501. The mean value of VAIC is 4.021 which indicate that VAIC is not high because the minimum value is 1.144 and the maximum is 10.660, and also the low standard deviation of 1.506 shows that the values are not widely spread. The mean value of capital employed efficiency (CEE) is 0.030 which means that the CEE is low because the minimum value is 0.013 and the maximum is 0.090. Besides, there are small differences between values of CEE because the standard deviation is low 0.010. The mean value of human capital efficiency (HCE) is 3.345 it is low as the minimum and maximum values are 1.066 and 9.680 respectively and the standard deviation is 1.359. The structural capital efficiency (SCE) ranges from 0.062 to 0.897, with a mean score of 0.646, and a standard deviation of 0.164.

Table I
Descriptive Statistics

	ROA	VAIC	CEE	HCE	SCE
Mean	1.105	4.021	0.030	3.345	0.646
Standard Deviation	0.501	1.506	0.010	1.359	0.164
Minimum	0.020	1.144	0.013	1.066	0.062
Maximum	2.130	10.660	0.090	9.680	0.897

Table II
Regression Results of financial performance and VAIC
Model 1 ROA = $\alpha + \beta_1$ VAIC + ε

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.340	0.114	2.987	0.004**
VAIC	0.190	0.027	7.161	0.000**

Notes: **Significant at $\alpha = 0.01$ level; Adjusted $R^2 = 0.320$; F-value = 51.285

Table III
Regression results of financial performance and components of VAIC
Model 2 ROA = $\alpha + \beta_1$ CEE + β_2 HCE + β_3 SCE + ε

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.853	0.160	-5.344	0.000**
CEE	18.340	4.076	4.499	0.000**
HCE	-0.225	0.051	-4.447	0.000**
SCE	3.332	0.355	9.388	0.000**

Notes: **Significant at $\alpha = 0.01$ level; Adjusted $R^2 = 0.614$; F-value = 57.627

Tables II present the results of the Regression of Model 1 (ROA and VAIC). The results reveal that VAIC is significantly and positively associated with financial performance as measured by ROA. The result suggests that banks with greater value added perform better in terms of return on assets.

Table III shows that ROA is positively correlated with CEE and SCE, suggesting that the banks' financial performance is positively associated with capital employed as well as structural capital efficiency (SCE). However, HCE has significant association but negative with financial performance. It may be because banks fail

to fully employ their human capital. Banks are usually very large organizations because of the number of branches, necessary to serve consumer across India's geographical span. Thus the institution is typically too large to make best use of employee talents. The major contribution on ROA is from capital employed efficiency (CEE). Except for H_3 , all the other three hypotheses are supported.

However, Table II shows that the value added intellectual capital coefficient (VAIC) can only explain 32 percent of the variability in banks' financial performance whereas in Table III, it is found that

the value of the adjusted R^2 remarkably increases to 61.4 percent. This suggests that the three components of VAIC are better in explaining the financial performance of banks compared to the aggregate measure of VAIC. This is consistent with some of the previous studies that found R^2 in Model 2 is greater than R^2 in Model 1. For example, Chen et al. (2005) showed that the adjusted R^2 increased from 0.4684 to 0.8423.

Conclusion

Present study has been conducted to empirically evaluate the impact of intellectual capital on the financial performance of private sector banks in India. The study is based wholly on the domestic private sector banks in India for the period of six years from 2006 to 2011. Value Added Intellectual Coefficient (VAIC) model developed by Ante Pulic is used to measure the intellectual capital performance while return on assets (ROA) is used as a financial performance indicator to measure the financial performance of private sector banks in India. This study provides evidence that intellectual capital has a significant positive association with financial performance of private sector banks. Subsequently, when the VAIC is segregated into its three major components, we found that financial performance is positively significant association with capital employed efficiency and structural capital efficiency and significant but negative with human capital efficiency. The findings from this study have implications for numerous parties such as policy makers, regulators, shareholders and managers of banks.

Although the sample size for the study was not very large and the focus is only on the private sector banks but the results from this study may be used as a guideline for future research in the Indian banking sector and also further research is needed to investigate whether these findings generalize to other sectors of banks in India, other countries and industries.

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