

Intellectual Capital: Its Effect on Financial Performance of Indian Public and Private Sector Banks

Virender Singh Thakur*

Department of Management, Chandigarh University, Gharuan , Kharar , Punjab, India

*For Correspondence: Virender Singh Thakur, Department of Management, Chandigarh University, Gharuan, Kharar, Punjab, India, Tel: 9896775493;E-mail: virenders1923@gmail.com

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Research Article

ABSTRACT

In this study the value added intellectual coefficient (VAIC) methodology has been used to find out the intellectual capital (IC) performance of listed public and private banks in India and to find the effects of IC on the financial performance of the banks during the period 2013 to 2015. There are two financial performance indicators for Indian banks which are Return on Asset (ROA) and Return on Equity (ROE). The annual reports of the banks have been used to obtain the data. The panel data taken has been analyzed using panel regression method. The intellectual capital contains physical capital, human capital and structural capital as its components. These components of banks have been analyzed. The results show that intellectual capital performance of Indian banks is much better than the intellectual performance in other countries but it has come down from 2013 to 2015. The component of VAIC which affected most significantly the financial performance of the banks in the Physical capital. But the components of VAIC show a different relationship with the financial performance of banks.

Keywords: Intellectual capital, Listed public and Private banks, VAIC, ROA, ROE, Financial performance

INTRODUCTION

In the traditional financial methods, much stress was given on the tangible assets to get the competitive advantage. But these days these traditional financial methods are unable to explain how the performance of banks is affected. There is difference between the values which are shown in the books and the real market value which is an indicator that there must be something which is not considered so far and is affecting the performance of the banks and has not yet studied in traditional financial methods. In the traditional methods it has been found that the intangible assets have not been given much stress. So these are required to be considered which could explain the unknown factors responsible for the performance of the banks in India.

These days, it has been noticed that resources of intellectual capital (IC) like services to customers, human resource, brand image, training to employees, experience are giving much more advantage to the organizations than the traditional resources. The financial institutions and banks rely much more on non-tangible resources for their performance^[1]. So it is very important for banks to utilize those non-tangible resources in an efficient way than any other industry^[2].

Ante Pulic^[3], developed a coefficient for value creation efficiency known as Value added intellectual Coefficient (VAIC) for organizations to measure the IC performance of banks and financial institutions in India. One unit of money invested in intellectual capital resources creates a value which can be measured with the help of VAIC. Return on assets (ROA) and return on equity (ROE) are the financial performance indicators in this study and the study will investigate whether intellectual capital (IC) and its components influence the bank's financial performance or not. The banking sector in India is regulated by the Reserve Bank of India (Central Bank of India). In the liberalization era of 1990s, the government of India provided licensing to private and foreign banks which revitalized the banking sector in India which caused rapid growth with the contribution from all the sectors of banking namely, government banks, private banks, foreign banks and regional rural banks. In this study only the listed government nationalized banks and private nationalized banks have been considered.

The study will help banks in India to know the role of intellectual capital in financial performance of the banks. This study will also provide simple methods to the Indian banks to understand how to improve overall performance by the use of intangible assets with maximum efficiency.

LITERATURE REVIEW

According to Economic Co-operation and Development (ECONOMY) (2000), IC is the economic value of two categories of intangible assets of firm namely human capital and organization capital. So it divide IC into two components namely human capital and organization capital. According to Ting and Lean [4], IC has three components namely human capital, structural capital, and relational capital. Human capital is related to the skill, qualifications and experiences of employees [1]. Structural capital contains the knowledge which remains with the firm like management in organization, information technology, customer and supplier relation, brand name and processes of production. But there is no tool which can measure the components of IC. There are 34 methods to measure IC VAIC methodology is one of them which measures the IC performance of banking and non-banking sectors.

The market capitalization approach for the measurement of intellectual capital. According to the market capitalization approach the value of a company's intellectual capital is the difference between the company's market capitalization and its book value.

Pulic [3] in his approach used Return on asset approach (ROA) for the measurement of intellectual capital. According to this approach the return on tangible assets and economic value added and value added intellectual capital is equal to its intellectual capital. Firer and Williams [5] in South Africa used 75 listed companies for the year 2001 with MB, ROA, ATO and used the technique of correlation linear multiple regression to find the effects of VAIC and its components. In his study he found a mixed association between intellectual capital and performance of organizations.

Ting and Lean [4] by using technique of correlation regression found that VAIC and ROA are positively related among Malaysia's financial sector.

Chen et al. [6] used descriptive statics correlation and found that there is positive impact of intellectual capital financial performance and market value of organizations. The expenditure on Research and development for structural capital put positive effect on financial performance and market value of the firms.

Chu et al. [7] in Hong Kong, Ku Ismail et al. [8] in Hong Kong, Kujansivu and Lonqvist [9] in Finland, in Pakistan used the various techniques to find the relation between the IC and its effects on performance.

IC is an very important for an organization and it helps a firm in creating an edge over its competitors. Expecting IC and its components to increase the bank's financial performance, we can formulate the hypothesis as:

H1: Organizational performance increases with the increase in the IC performance of the bank.

H1a: Organizational performance increases with the increase in the human capital efficiency of the bank.

H1b: Organizational performance increases with the increase in the structural capital efficiency of the bank.

H1c: Organizational performance increases with the increase in the capital employed efficiency of the bank.

RESEARCH METHODS

Sample and time period

The sample contains all the public and private sector scheduled commercial banks listed in Indian Stock Exchanges (Bombay Stock Exchange and National Stock Exchange). There are currently 27 public sector banks and 22 private sector banks in India. But all of them are not listed in Indian stock exchanges. So there are a total number of 40 banks in our study which are listed in Indian stock exchanges. Data has been collected from the annual reports of the commercial banks from the period 2013 to 2015. There are a total number of 120 observations.

VAIC model

As stated, the main objective of this paper is to analyze the efficiency with which the Indian banks use their intellectual capital. To analyze the intellectual capital (IC), we will use the VAIC model. To calculate the value creation efficiency or Value Added Intellectual Coefficient (VAIC), there are variables, coefficients and indicators which are defined as follows

IC performance and independent variables

In this study, the value added intellectual coefficient (VAIC) method has been used for the measurement of IC performance.

Value Added (VA): It is calculated for an institution during a particular fiscal year as

$$VA=OUTPUT-INPUT$$

Where

OUTPUT=the total income from all products and services sold in a particular year.

INPUT=the total expenses and costs incurred during a particular year (excluding labour expenses which are employees compensation and all expenses that are related to their training and development. Here, labour expenses are considered as an investment and not a cost).

Capital Employed Efficiency (CEE): It is the value added efficiency of capital employed (CE). It shows the VA created by investing each monetary unit in CE (capital employed). Here, CE can be calculated as the book value of total tangible assets.

$$CEE=VA/CE$$

Human Capital Efficiency (HCE): It refers to efficiency of human capital and indicates how much value added (VA) is created on each monetary unit invested in HC (Human Capital). HC can be calculated as the overall employee compensations and expenses that are related to their training and development.

$$HCE=VA/HC$$

Structural Capital Efficiency (SCE): It refers to efficiency of structural capital on the VA and is equal to the ratio of SC and VA. Here, SC (Structural Capital) is the result of all past performances like image and standard of organization, its relationship with the customers, patents, licenses etc. The SC is calculated as follows:

$$SC=VA-HC$$

and

$$SCE=SC/VA$$

Value Added Intellectual Capital (VAIC) indicates the efficiency of all the above mentioned resources (sum of above indicators) in value creation. Mathematically, VAIC is computed as follows:

$$VAIC=CEE+HCE+SCE$$

Dependent variables

The return on equity (ROE) and return on assets (ROA) are used as the dependent variables in this study as they represent the financial performance.

ROE represents the return on common stocks of shareholders and is considered as financial indicator for owners. It is calculated as annual net profit of bank before tax divided by average shareholder's equity.

ROA reflects the efficiency of utilizing the available assets in creating profits and can be calculated as annual net profit of individual bank before tax divided by average total assets.

Control variables

As considered in the previous studied, we have taken bank size (measured as the total assets) as the control variable.

Models

For conducting the empirical research, four models have been run.

In Models 1 and 2, association between VAIC and two dependent variables (ROE and ROA) have been examined. ROE and ROA are the financial performance indicators.

In Models 3 and 4, VAIC has been replaced with its three components (CEE, HCE and SCE).

The linear regression assumptions which include linearity, normality, multi-collinearity and homogeneity to ensure the quality of the data and the variable have been tested.

Panel data regressions have been used as the panel data contains time series and cross sectional data. The regression model equations are

$$\text{Model 1: } ROE=\alpha+\beta_1VAIC+\beta_2SIZE+e$$

$$\text{Model 2: } ROA=\alpha+\beta_1VAIC+\beta_2SIZE+e$$

$$\text{Model 3: ROE}=\alpha+\beta_1\text{HCE}+\beta_2\text{SCE}+\beta_3\text{CEE}+\beta_4\text{SIZE}+e$$

$$\text{Model 4: ROA}=\alpha+\beta_1\text{HCE}+\beta_2\text{SCE}+\beta_3\text{CEE}+\beta_4\text{SIZE}+e$$

STATA gives the facility to perform a Hausman test that is heteroskedasticity consistent and robust to general forms of spatial and temporal dependence. As there are cross sectional dependencies and heteroskedasticity in the panel data, Driscoll-Kraay standard errors method for coefficients estimation by pooled OLS and FE (within) regression has been used. The error structure is assumed to be autocorrelated and heteroskedastic up to some lag and possibly correlated between the panels.

FINDINGS

Table 1 below shows sample mean values of the banks variables or the IC performance of our sample from 2013 to 2015. This table shows the trend of IC performance during the three years as well as the overall IC performance of Indian nationalized government and private banks. It shows that the overall mean IC performance (VAIC) of banks is 5.438. The overall mean IC performance found in other studies for different banks of different countries is: Joshi et al. (2010) for Australian banks (3.80), Al-Musali and Ku Ismail in 2011 for Emirates banks (4.4), El-Bannany (2008) for British banks (10.80), Gimede Gigante in 2012 for Czech Republic, Denmark, Finland , Germany, Italy, Norway, Poland, Spain and Sweden to be 4.5, 3.41, 12.23, 1.88, 2.85, 3.58, 3.01, 2.74, 3.97 respectively.

However, the trend of IC performance during the three years shows that banks in India experienced a decline in the value creation efficiency from 2013 to 2015 as the VAIC value for 2013 is 5.918, for 2014 is 5.378 and for 2015 it is 5.020.

The comparison of components of VAIC i.e. HCE, SCE and CEE shows that during the period 2013 to 2015, the banks in India are most efficient in generating value by the use of capital employed (CE), then comes the human capital (HC) and least with the use of structural capital (SC) which shows that banks in India are not fully utilizing their human capital and structural capital for the creation of the value.

Table 1: IC performance of listed banks in India during 2013-2015.

Years	Variables	Coefficients
2013	HCE	2.186
	SCE	0.476
	CEE	3.254
	VAIC	5.918
2014	HCE	1.93
	SCE	0.64
	CEE	2.808
	VAIC	5.378
2015	HCE	1.837
	SCE	0.576
	CEE	2.606
	VAIC	5.02
2013-2015	HCE	1.985
	SCE	0.564
	CEE	2.889
	VAIC	5.438

Table 2: Statistical significance of four models.

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0.0465*	-0.00122	0.0218	-0.00096
	-0.0093	-0.000371	-0.0263	-0.00053
VAIC	0.00942**	0.00165***		
	-0.00056	-0.0000173		
CEE			0.00915**	0.000634*
			-0.00071	-8.9E-05
HCE			0.05	0.00377**
			-0.0121	-0.00021
SCE			-0.0249	-0.00107
			-0.0151	-0.00038
SIZE	1.19e-15*	-1.48E-17	-1.22e-14**	-9.08E-18
	-2.47E-16	-1.04E-17	-1.11E-15	-2.77E-17
N	120	120	120	120
R2	0.126	0.509	0.471+	0.755
Adj. R2	-0.001	0.246	0.194	0.555
Sig.	0.004	0	0.004	0
Regression Results;Notes: The figures in the parentheses are the Driscoll-Kraay Standard errors. ***, **, * Denote statistical significance at 1, 5 and 10 percent levels respectively.				
+ within R-square.				

The summary of linear regression results of Model 1 to 4 has been shown in Table 2. The model reveals that all the four models have high statistical significance. The explanatory power of Model 1 is very low. But for the Model 2, 3 and 4, the explanatory power are high.

The results of Model 1 and Model 2 show that there is a significant positive association between VAIC and both the financial performance indicators ROE and ROA. Model 1 and 2 indicate that VAIC is a predictor of bank's efficiency or its financial performance in India. Both the models provide support to our expectation and it implies that organization's financial performance increases with the increase in the IC performance of the bank.

In Model 3 and 4, shown in **Table 2**, VAIC is further split into HCE SCE and CEE and are used to predict ROE and ROA by using the regression equations. The result here in Model 3 shows that there is significant positive relationship between CEE and the financial performance indicator ROE of banks in India. In terms of HCE, there is also a significant positive relationship between HCE and the financial performance indicator ROE. But in case of SCE, there is insignificant association with financial performance indicator ROE. The result also indicate that CEE (physical and financial) plays very important role and it creates much more profitability rather than HCE or SCE in India. The control variable, size of the bank has a negative and significant effect on ROE. The results indicate that big firms enjoy the benefits of large scale but they are not paying much attention towards intellectual capital.

The result in Model 4 shows that there is significant positive relationship between CEE and HCE with the financial performance indicator ROA of banks in India. But SCE has insignificant association with financial performance indicator ROA. Here also CEE (physical and financial) helps in creating much more profitability rather than HCE or SCE. The control variable, size of the bank has insignificant association with the bank's ROA.

The results show consistency with the other studies by [5,8,10] in Bahrain and who claimed that physical capital or tangible assets were the most significant and influencing components which helps in increasing the future financial performance of the organizations.

Conclusion

Indian listed commercial banks have shown a good level of IC performance compared to the other developed and developing economies which shows that non-performing resources are very less ^[11]. But results also show that the IC performance has gone down from year 2013 to 2015 which also indicates that redundant and non-performing resources are increasing ^[12]. So there is a need for restructure to increase the value creation efficiency ^[13]. The results of components of IC which are HCE, SCE and CEE when compared show that the Indian banks are mainly dependent on the CEE for the value creation. This finding is a little bit surprising because banking sector is a service sector where human capital should be utilized more than the physical assets ^[14]. But HCE is on the second number for the value creation. It shows that Indian banks are not utilizing their human capital as efficiently as it is required. So it is advised to Indian banks that they should make efforts in identifying key people and train them to deliver high HCE which would help them to increase the performance of employees and managers performance. It also shows that there is a need for improvement in SCE for increasing the IC performance ^[15]. So the banks are advised to improve their technical know-how, information technology, customer and supplier relation, bank's bank image so as to improve their SCE ^[16].

The result of regression analysis in Model 1 and Model 2 indicate that VAIC can explain the financial performance of banks in India and with the increase in the VAIC the profitability of banks also increases ^[17]. The results of Model 3 and Model 4 indicate that the managers of Indian banks are not able to well utilize the two very important components of VAIC which are human capital (HCE) and structural capital (SCE). However, most of the efficiency is improved by the use of CEE (physical and financial) by the banks in India ^[18]. So there is a need to make some policies and strategies to improve the overall efficiency by utilizing the HCE and SCE components in an efficient way.

The results show that there is a need for enhancement of relationships with customers and also there is a need to make link between the tangible and intangible form of value creation ^[19]. It can also be concluded that one of the main challenges for the managers is to maintain the conditions for successful creation of intangible value (service, image and relationship) and to transform this intangible value into tangible value (shares, income etc). The central bank should focus on making strategies to strengthen the value creation things related to intellectual capital so as to efficiently utilize the intellectual resources.

References

1. Zeghal D and Maaloul A. Analyzing value added as an indicator of intellectual capital and its consequences on company performance. *J Intellectual Capital*. 2010;11:39-60.
2. Ahuja BR and Ahuja NL. Intellectual capital approach to performance evaluation: A case study of the banking sector in India. *Int Res J Finan Econ*. 2012;93:110-122.
3. Pulic A. Intellectual capital-does it create or destroy value? *Measuring Business Excellence*. 2004;8: 62-68.
4. Ting IWW and Lean HH. Intellectual capital performance of financial institutions in Malaysia. *J Intellectual Capital*. 2012;10:588-599.
5. Firer S and Williams SM. Intellectual capital and traditional measures of corporate performance. *J Intellectual Capital*. 2003;4:348-360.
6. Chen MC et al. An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *J Intellectual Capital*. 2005;6:159-176.
7. Chu SKW et al. Charting intellectual capital performance of the gateway to China. *J Intellectual Capital* 2011;12:249-276.
8. Ku Ismail et al. Intellectual capital and the financial performance of banks in Bahrain. *Journal of Business Management and Accounting*. 2011;1:63-77.
9. Kujansivu P and Lonnqvist A. Investigating the value and efficiency of intellectual capital. 2011.
10. El-Bannany MA. study of determinants of intellectual capital performance in banks: the UK case. *J Intellectual Capital*. 2011;9:487-498.
11. Chan KH. Impact of intellectual capital on organizational performance: An empirical study of companies in the Hang Seng Index. *The learning Organization*. 2009;16:4-21.
12. Gaddam L et al. Commercial banks in Saudi Arabia: a study of financial performance. *J Int Financ Econ* 2009;9:15-24.
13. Andriessen D. *Making Sense of Intellectual Capital: Designing a method for the valuation of intangibles*. (1st Ed) 2004;Published by Elsevier, Inc.

14. Barney JB. Firm resources and sustainable competitive advantage. *J Management* 1991;17:99-120.
15. Al-Musalli MA and Ku Ismail. Corporate governance, bank specific characteristics, banking industry characteristics, and intellectual capital performance of banks in Arab gulf cooperation council countries. *Asian Academy Management J Accounting & Financ* 2011;8:115-135.
16. Youndt MA et al. Intellectual capital profiles: an examination of investments and returns. *J Management Stud* 2004;41:335-361.
17. Gigante and Gimede. *Intellectual Capital and Bank performance in Europe*. 2011.
18. Bhatia et al. Intellectual Capital and financial performance of Indian Software industry: A panel data analysis. *Pacific business rev int* 2015;8:33-43.
19. Abdul Salam F et al. *The intellectual capital performance of Kuwaiti banks: an application of VAIC model*.2011