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# Efficiency Of Intellectual Capital Performance Of Public Sector Banks And Private Sectors Banks In India Using Mvaic

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**Abstract**-This paper proposes to measure the efficiency of intellectual capital performance of public sector banks and private sectors banks in India, using the Modified Value Added Intellectual Coefficient (**Ihyaul Ulum, 2017**). The data were drawn from 20 biggest market capitalization banks, each ten from public and private sector listed in the National Stock Exchange of India Limited. It is an empirical study, which used SPSS for the data analysis. The results of this study indicated that all the sample banks administered an average value, for each one INR invested on intangible assets held by it (**Neha Smriti and Niladri Das, 2018**). It means that MVAIC could be used to predict the future of intellectual capital performance. The results could extend the understanding of the role of intellectual capital, in creating corporate value and building sustainable advantages, for companies in emerging economies.

**Key words:** Intellectual Capital, MVAIC, NSE, Public Sector Banks and Private Sector Banks

**Jel Code:** O34 and G21

## Introduction

Intangible assets have become an essential source of organizational wealth creation and sustainable competitive advantage, over the past few decades (**Hardeep Chahal and Purnima Bakshi, 2016**). The term “intellectual capital (IC)” has been widely used in recent times, by the research community, in the developed world; however but there are very few studies, that have used emerging economies, as a case for evaluating the implications of IC for specific industries (**Bharathi Kamath, 2007**). In general parlance, the IC is defined as any creation of the human intellect or mind. However, several researchers, across the globe, have defined and delineated specific concepts of intellectual capital in their own ways (**Stewart, 1997**). Human capital is the basic component in the development process of intellectual capital (**Yang and Lin, 2009**). Structural capital refers to the mechanism and structure of an organization, that helps to support employees for optimum intellectual performance (**Bollen, et al., 2005**). Modified VAIC is a comprehensive measure of IC, based on VAIC model (**Ihyaul Ulum, et al., 2017**). Efficiency and competitiveness are the key to the survival of banking institutions (**Mukherjee, et al., 2003**). Thus, low efficiency and productivity may weaken the Indian banking industry and offset the growth story of emerging India. VAIC, as a measure of IC, has been tested in various contexts of industries and countries. There are many recent studies, that used VAIC as a tool, to measure the performance of banking companies (**Soriya and Narwal, 2015**). The implications of IC are more pertinent in economies where they have abundant human capital at their disposal. Therefore, it is important to learn whether this resource is effectively employed by specific service sectors, to enhance their growth and generate value over a period. On the one hand, service sectors occupy a prime role in the development of economies while these economies are shifting towards more globalization. In the changing scenario of an environment wherein competitiveness is becoming vital, domestic industries are geared up to meet the

competition, both from India and outside. In the emerging knowledge economy, the roles of traditional accounting and measurement systems, to evaluate performance appear to have been diluted and hence there is need to look at the whole scenario, from a different dimension of evaluating the business performance of firms, that use IC as an important resource for growth. Banks happen to be one of the service sectors, that use a huge amount of human capital and customer capital for its survival. Hence this paper evaluates the business performance of the Indian banking system, with reference to public and private sector banks, over a period of five years, using the Value Added Intellectual Coefficient (VAIC).

Today, banks do not primarily invest their money in fixed assets but also in intangible assets, that play an important role in determining the value of a bank. These intangible assets include knowledge and innovations by their employees (**Omete F. Ikapel, 2016**). The current corporate performance measurement systems are heavily inclined towards financial and physical aspects of the bank but it lacks relevant information regarding the performance of the intangible assets or intellectual capital efficiency. No wonder these intangible assets are not reported in the financial statements, though it constitutes a critical component of business performance. Intellectual Capital is emerging as a key business component in the present world economies. **Burgman and Roos (2007)** have viewed intellectual capital, as an asset, representing all the stocks responsible for creation of enterprise value, that is not represented on its traditional balance sheet as monetary or physical assets. Therefore, the knowledge of the impact of intellectual capital, on the performance of listed commercial banks in India, is pertinent. The finding would be a basis for providing useful recommendations, for policy development, by the industry players.

## **Review of Literature**

**Pulic (1998)** put forth a model known as Value-Added Intellectual Coefficient (VAIC), which measures a firm's intellectual efficiency in this current knowledge economy. According to **Pulic (2000)**, the model is related to the physical/financial, structural, and human capital, which creates value for the firms. The VAIC model is widely utilized, to measure the intellectual capital performance of firms in various countries and within different sectors (**Selvam et al., 2019**). There is a wide range of studies investigating the impact of intellectual capital on the performance of firms by means of the VAIC model. Studies, which (**Bontis, et al., 2005**). **Pew Tan et al., 2007**) acknowledged the positive impact of intellectual capital on the financial performance of firms, analyzed the relationship between the efficiency of intellectual capital and financial performance of financial institutions by employing VAIC and its components (CEE, HCE and SCE) as indicators of intellectual capital efficiency (**Murugesan et al., 2018**). On the other hand, return on assets (ROA) and return on equity (ROE) are utilized as indicator of the financial performance. **Goh (2005)** asserted that there was positive relationship between financial performance indicators and VAIC. However, there has been an ongoing debate over which VAIC components improve the performance of financial institutions in which proportion. **Murugesan. (2018)** demonstrated that there was weak relationship between the efficiency of the value added by these banks and profitability. Moreover, the authors argued that there was a positive correlation between SCE and profitability but there was negative relationship between HCE/CEE and profitability. **Yalama and Coskun (2007)** tested the impact of the intellectual capital held by banks, on their profitability, with the data envelopment analysis. Further, the authors created a portfolio, based on the intellectual capital, in order to test the impact of intellectual capital on profitability. **Kayacan and Ozkan (2015)** suggested there was positive correlation between the intellectual capital performance of the participation banks operating in Turkey and their profitability ratio. In addition, the authors argue that CEE exercised greater impact on the profitability of participation banks compared to other VAIC components. The research, by **Ghose and Mondal (2009)** on Indian software and pharmaceutical industry, found that intellectual capital was an indicator of profitability but not productivity and market valuation. Similar results, by **Kamath (2008)** and **Vishnu and Gupta (2014)**. **Pal and Soriya (2015)** indicated that those pharmaceutical companies were better in utilizing intellectual capital and hence they performed better. Intellectual capital was also positively associated with profitability but not with productivity and market valuation. **Ulum et al. (2014)** analyzed MVAIC, to measure the performance of a value-based Indonesian banking sector, for 2009–2012. The results proved that MVAIC is a comprehensive model for measuring intellectual capital performance, based on VAIC. **Mitha Dwi Restuti et al., (2018)**, in their study in Southeast Asian countries, examined the influence of intellectual capital on financial performance and market performance of a company in the knowledge-based industry. This study proved that human capital plays an important role, in the sample company in the knowledge-based industry.

## Objective of the Study

The main objective this study was to measure the efficiency of intellectual capital performance of sample public and private sector banks in India, using Modified Value Added Intellectual Coefficient.

## Hypotheses of the Study

NH-1: No public sector banks attained the high level efficiency of intellectual capital

NH-2: No private sector banks attained the high level efficiency of intellectual capital

## Methodology of the Study

As stated earlier, the aim of this paper was to measure the efficiency of intellectual capital performance of sample banks. Banking firms are knowledge based firms, which contribute much to the economic growth of India. Hence, it was proposed to cover top 10 banks, each from Public and Private Sector, as on 31st, December, 2018, with reference to National Stock Exchange of India Limited. The data were collected from ProwessIQ (CMIE), to derive the MVAIC for all the sample banks, during the study period from 01, January, 2008 to 31, December, 2018. The following variables were employed to compute the Modified Value Added Intellectual Coefficient (**Figure-1**), to measure the efficiency of intellectual capital performance of sample banks

Value Added = Operating Profit + Employee Cost + Depreciation + Amortization.....(1)

Human Capital Efficiency = Value Added / Human Capital.....(2)

Structural Capital Efficiency = Structural Capital / Value Added.....(3)

Relational Capital Efficiency = Relational Capital / Value Added.....(4)

Capital Employed Efficiency = Value Added / Capital Employed.....(5)

Modified Value Added Intellectual Coefficient = Intellectual Capital Efficiency + Capital Employed Efficiency.....(6)

Intellectual Capital Efficiency = Human Capital Efficiency + Structural Capital Efficiency + Relational Capital Efficiency.....(7)

Modified Value Added Intellectual Coefficient = Human Capital Efficiency + Structural Capital Efficiency + Relational Capital Efficiency + Capital Employed Efficiency.....(8)

## Data Analysis

### 6.1 Testing the Average Values for Sample Variables, for Public Sector Banks, using Descriptive Statistics

The results of Descriptive Statistics, for testing the efficiency of intellectual capital performance of the public sector banks, during the study period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2018, are provided in **Table-1**. It is noted that HCE, SCE, CEE, RCE and MVAIC were used as variables, to measure the efficiency of intellectual capital performance of public sector banks. The values of HCE were recorded by State Bank of India at 2.525, Bank of Baroda at 2.434, Punjab National Bank at 2.119, Industrial Development Bank of India at 2.131, Bank of India at 0.108, Canara Bank at 2.368, Allahabad Bank at 0.369, Uco Bank at 2.578, Corporation Bank at 2.512 and Union Bank at 2.423, during the study period. The values of structural capital, with respect to State Bank of India, Bank of Baroda, Punjab National Bank, Industrial Development Bank, Industrial Development Bank of India, Bank of India, Canara Bank, Allahabad Bank, Uco Bank, Corporation Bank and Union Bank, were 0.919, 0.909, 0.873, 0.874, 1.123, 0.904, 0.843, 0.911, 0.885 and 0.909 respectively. The CEE and RCE earned the values of 0.895 and 0.007 for State Bank of India, 0.488 and 0.002 for Bank of Baroda, -0.791 and 0.001 for Punjab National Bank, -0.699 and 0.001 for Industrial Development Bank of India, 2.283 and 0.002 for Bank of India, 0.679 and 0.001 for Canara Bank, 0.592 and 0.002 for Allahabad Bank, -0.564 and 0.002 for Uco Bank, -0.683 and 0.001 for Corporation Bank, -0.655 and 0.003 for Union Bank. The total value of MVAIC was 2.660 for State Bank of India, 3.834 for Bank of Baroda, 2.203 for Punjab National Bank, 2.307 for Industrial Development Bank of India, 3.518 for Bank of India, 3.954 for Canara Bank, 1.068 for Allahabad Bank, 2.927 for Uco Bank, 2.715 for Corporation Bank, 2.680 for Union Bank. This indicated the fact that public sector bank administered an average value, for each one INR, on

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intangible assets held by it. Hence **NH-1: No public sector bank attained the high level efficiency of intellectual capital** was rejected. Using the compound values of MVAIC, the following sample banks were ranked as Canara Bank-1, Bank of Baroda-2, Bank of India-3, Uco Bank-4, Corporation Bank-5, Union Bank-6, State Bank of India-7, Industrial Development Bank of India-8, Punjab National Bank-9 and Allahabad Bank-10, during the study period.

## **6.2 Testing the Average Values for Sample Variables, for Private Sector Banks, using Descriptive Statistics**

The results of Descriptive Statistics, for testing the efficiency of intellectual capital performance of private sector banks, during the study period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2018, are provided in **Table-2**. As pointed out earlier, HCE, SCE, CEE, RCE and MVAIC were used as variables, to measure the efficiency of intellectual capital performance of sample private sector Bank. The value of HCE was recorded, by HDFC Bank, at 2.207, Kotak Mahindra Bank at 1.887, ICICI Bank at 2.406, Axis Bank at 2.401, IndusInd Bank at 2.336, Bandhan Bank at 2.314, IDFC First Bank at 2.444, Federal Bank at 2.525, Yes Bank at 1.929 and City Union Bank at 1.604. The values of structural capital, with respect to HDFC Bank, Kotak Mahindra Bank, ICICI Bank, Axis Bank, IndusInd Bank, Bandhan Bank, IDFC First Bank, Federal Bank, Yes Bank and City Union Bank, were at 0.887, 0.846, 0.908, 0.908, 0.902, 0.900, 0.912, 0.919, 0.835 and 0.637 respectively during the study period. The CEE and RCE registered the values of 0.434 and 0.004 for HDFC Bank, 0.293 and 0.007 for Kotak Mahindra Bank, 0.187 and 0.005 for ICICI Bank, 0.305 and 0.003 for Axis Bank, 0.360 and 0.003 for IndusInd Bank, 0.529 and 0.003 for Bandhan Bank, 0.321 and 0.004 by IDFC First Bank, 0.895 and 0.007 by Federal Bank, 2.608 and 0.001 by Yes Bank, 1.009 and 0.006 for City Union Bank. The total value of MVAIC, was at 2.347, for HDFC Bank, 2.048 for Kotak Mahindra Bank, 2.502 for ICICI Bank, 2.505 for Axis Bank, 2.451 for IndusInd Bank, 2.447 for Bandhan Bank, 2.546 for IDFC First Bank, 2.660 for Federal Bank, 3.096 for Yes Bank, and 3.256 for City Union Bank, which indicated the fact that private sector bank administered an average value, for each one INR, on intangible assets held by it. Hence **NH-1: No private sector bank attained the high level efficiency of intellectual capital**, was rejected. Using the compound values of MVAIC, the following private sector banks were ranked as City Union Bank-1, Yes Bank-2, Federal Bank-3, IDFC First Bank-4, Axis Bank-5, ICICI Bank-6, IndusInd Bank-7, Bhandhan Bank-8, HDFC Bank-9 and Kotak Mahindra Bank-10, during the study period.

## **Conclusion and Recommendation**

This study measured the efficiency of intellectual capital performance of sample banks and found that the M-VAIC had recorded the highest mean value, which administered an average value, for each one INR, invested on intangible assets held by sample banks (**Neha Smriti and Niladri Das, 2018**). It was found that Canara Bank attained the first rank as it recorded the highest value of MVAIC while Allahabad Bank recorded low level of average value and secured tenth rank among the public sector banks, during the study period. Likewise, City Union Bank scored the highest average value of MVAIC and secured the first rank among private sector sample banks while Kotak Mahindra Bank was placed in the tenth rank, among private sector banks. It is interesting to record that Canaraa Bank and City Union Banks had effectively utilized their human capital during the study period. Thus the MVAIC played a vital role in the increase of profitability of the sample banks. The findings of this study are consistent with the findings of **Goh (2005)**, on banks in Malaysia, who found that there was significant difference between rankings of banks according to intellectual capital efficiency, measured by VAIC and traditional performance measures, represented by assets (**Omete F. Ikapel, 2016**). It is found from the results of this study that State Bank of India, Bank of Baroda, Punjab National Bank, Industiral Development Bank of India, Bank of India, Allahabad Bank, Uco Bank, Corporation Bank and Union Bank, from public sector banks and HDFC Bank, Kotak Mahindra Bank, ICICI Bank, Axis Bank, IndusInd Bank, Bandhan Bank, IDFC First Bank, Federal Bank and Yes Bank, from private sector banks should invest more on their human capital and pay more attention to its development. It is suggested that the banks in India should enhance their capital employed efficiency, by ensuring that capital is allocated to the most deserving sectors of the economy as this has bigger efficiency in overall bank performance. With respect to human capital efficiency, the banks in India should endeavor to recruit and employ competent professionals, with required skills and competencies, to motivate the employees to give their best. Further, the banks should improve their investment in technology and training and development to spur their performance. This study concentrated only on 20 banks, each ten from public and private sector, operating in India, with the help of secondary data. The study extends the understanding of the role of intellectual capital, in creating corporate value and building sustainable advantages, for companies in emerging economies.

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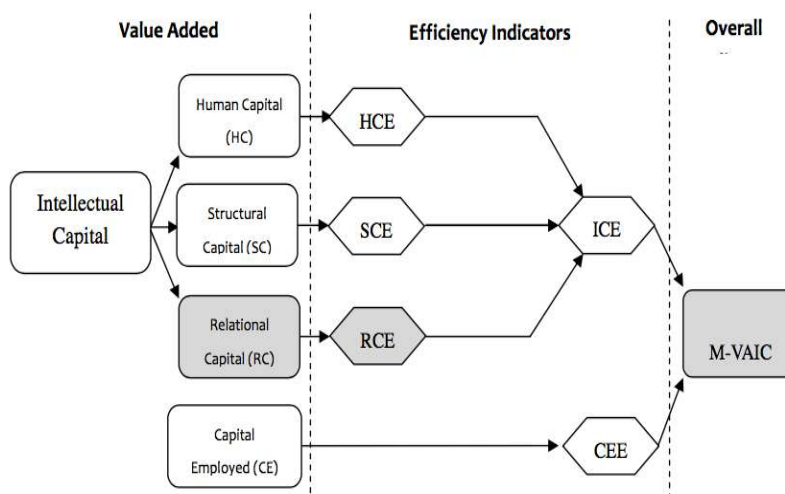
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**Figure-1:** Modified Value Added Intellectual Coefficient Model



Source: Ihyaul Ulum, Noviar Kharismawati and Dhaniel Syam (2017)

**Table-1:** The results of Average Value of sample variables of PUBLIC SECTOR BANKS during the study period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2018

Name of the Banks	HCE	SCE	CEE	RCE	MVAIC	Rank
State Bank of India	2.525	0.919	0.895	0.007	2.660	7

Bank of Baroda	2.434	0.909	0.488	0.002	3.834	2
Punjab National Bank	2.119	0.873	-0.791	0.001	2.203	9
Industrial Development Bank of India	2.131	0.874	-0.699	0.001	2.307	8
Bank of India	0.108	1.123	2.283	0.002	3.518	3
Canara Bank	2.368	0.904	0.679	0.001	3.954	1
Allahabad Bank	0.369	0.843	0.592	0.002	1.068	10
Uco Bank	2.578	0.911	-0.564	0.002	2.927	4
Corporation Bank	2.512	0.885	-0.683	0.001	2.715	5
Union Bank	2.423	0.909	-0.655	0.003	2.680	6

**Source:** Collected from <https://prowessiq.cmie.com> and computed using SPSS.16

**Table-2:** The results of Average Value of sample variables of PRIVATE SECTOR BANKS during the study period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2018

Name of the Banks	HCE	SCE	CEE	RCE	VAIC	Rank
HDFC Bank	2.207	0.887	0.434	0.004	2.347	9
Kotak Mahindra Bank	1.887	0.846	0.293	0.007	2.048	10
ICICI Bank	2.406	0.908	0.187	0.005	2.502	6
Axis Bank	2.401	0.908	0.305	0.003	2.505	5
Indusind Bank	2.336	0.902	0.360	0.003	2.451	7
Bandhan Bank	2.314	0.900	0.529	0.003	2.447	8
IDFC First Bank	2.444	0.912	0.321	0.004	2.546	4
Federal Bank	2.525	0.919	0.895	0.007	2.660	3
YES BANK	1.929	0.835	2.608	0.001	3.096	2
City Union Bank	1.604	0.637	1.009	0.006	3.256	1

**Source:** Collected from <https://prowessiq.cmie.com> and computed using SPSS.16