Intellectual Capital Performance : A Case Study of Public Sector Banks in India

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Abstract

This paper aimed to study the intellectual capital performance of public sector banks of India for the time period from 1998 – 2017 using the VAIC model. The findings suggested that intellectual capital performance of public sector banks of India had a mixed trend during the period of study. However, on examining, it was observed that the PSBs were found to be poor performers. The government should take stern measures to improve intellectual capital performance in order to survive in an intellectual economy.

Keywords : **intellectual capital performance, public sector banks, VAIC model, human capital**

JEL Classification : C6, G20, G21, G28

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The banking industry of India is one of the most skill-based, knowledge-intensive, and relationship-rich industries and continues to be the primary engine of economic growth. The role played by banks in mobilization of financial resources to promote investment and enhance economic growth in an emerging economy like India is extremely significant. They provide transaction and payment services, which increase the efficiency of economic activities in general. This efficiency is responsible for the lucrative performance of banks, thereby making the Indian banking industry a flourishing and secured industry in the banking world.

In India, prior to nationalization, banking was restricted mainly to urban areas and major portion of credit facilities were enjoyed by large industries and well established business houses due to which some of the crucial segments of the economy like agriculture, small-scale industries, etc. were neglected. Prompted by this drawback and to ensure an adequate flow of credit into productive activities, 14 major banks were nationalized in 1969, and six more got nationalized in 1980. Since then, India has developed a vivacious banking system serving as an instrument of social and economic change. Financial globalization, intense competition, recent developments in information and communication technology, regulation and deregulation are the primary drivers for the change. Instigated by this, the banking reforms initiated in India in 1990 transformed the Indian banking system and elevated it as one of the most efficient, well capitalized, and a competitive one.

The changing nature of banking industry where banks are moving from on-balance to off-balance sheet

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activities together with an increased involvement in capital have created a need for skills and transaction systems that are quite different from those of traditional lending. These new technological and organizational challenges have created a demand for new skills, thereby making intellectual capital an integral element in the banking industry.

Intellectual capital has its origin in the resource - based view of a firm. The knowledge - based view of the firm suggests that a firm's primary rationale is the creation and application of knowledge. Strategically, the notion of intellectual capital is linked to the ability to create and apply the potential of an organization's knowledge (Cabrita & Bontis, 2008). Under the modern conditions, exchange, use, and spread of knowledge have become the main drivers for innovative development of the Indian economy. It can be said that the most important factor and the driving force of innovative development in banking industry is the intellectual capital. Thus, intellectual capital has become a *sine qua non* of the banking industry in a knowledge-based economy like India.

Given the significance of intellectual capital, every economy needs to maintain it as a resource because it highlights the importance of employees as value creators and bridges the gap between investors, managers, and employees as well as between organizations and the government. Thus, it forms a new resource base for a nation as well as for the organization that sparks efficiency and leads to economic growth. Despite the fact that intellectual capital is the prime carrier of success in this era, measuring the performance of intellectual capital in the banking sector remains a challenge at the Indian level.

While experiencing a mounting and competitive environment, the banking sector around the globe has grown from colonial banking to social and development banking and then to intellectually-intensive market oriented service industry. The Indian commercial banking sector offers an immense scope for analyzing the relationship between intellectual capital and efficiency of banks. However, a long term analysis of this nature is lacking. To fill this void, the present study attempts to provide an insight into the intellectual capital and efficiency of commercial banks of India in the light of reforms occurring in the Indian banking industry in recent years.

Review of Literature

Kamath (2007) estimated the intellectual capital performance of the Indian banking sector using a 5-year time period from 2000 – 2004. He sought to analyze value based performance with the help of value added intellectual capital (VAIC) model. The results confirmed that there existed vast differences in the performance of Indian banks, and at the same time, an improvement in overall performance over the study period was found. He also stated that banks use a huge amount of human capital and customer capital for their survival.

Yalama and Coskun (2007) examined the effects of intellectual capital on the profitability of the Turkish banking sector. They applied the VAIC model and concluded that the VAIC model can be used as a benchmark against the level of IC efficiency. Also, according to them, intellectual capital is something which already exists in a firm but cannot be seen on its balance sheet exactly, a competitive advantage over a firm's competitors, future values, and includes all its intangible assets, the value of knowledge, intellectual property, and experience, a key factor influencing the future values of a firm.

Joshi, Cahill, and Sidhu (2010) examined the intellectual capital performance of 11 Australian owned banks for the time period from 2005 – 2007. They also explored the relationship among various constituents of intellectual capital. The results showed that human capital efficiency directly contributed to the value creation capability of banks. Dominance of human capital efficiency among structural capital and capital employed efficiency were the main reasons for high performance of Australian banks. They stated that due to competitiveness and dynamism of the current operating environment, intellectual capital efficiency was critical for banks to develop a cutting - edge strategy.

Mention and Bontis (2013) examined the relationship of intellectual capital to business performance for 200 banking institutions in Luxembourg and Belgium. They found that human capital contributed directly and indirectly to business performance. However, the results showed a statistically insignificant relationship. Also, this study brought into the light the fact that banking operations involve close interactions with customers and rely, to a large extent, on the integration of information and communication technologies for the development of new products and services.

Shaban and Kavida (2013) empirically investigated the impact of intellectual capital on the financial performance of Indian private sector banks. Six years (2006 – 2011) of time period were considered, and the value added intellectual capital (VAIC) model was applied to measure the intellectual capital in terms of three dimensions like capital employed efficiency, structural capital efficiency, and human capital efficiency. The results supported positive association of intellectual capital with financial performance of Indian private sector banks. Also, financial performance was positively related to capital employed efficiency and structural capital efficiency, but was negatively related with human capital efficiency.

Lipunga (2015) measured the intellectual capital efficiency of Malawi commercial banks for the time period from 2010 – 2013. The study concluded that human capital efficiency of the sampled banks was higher than structural capital and capital employed efficiency. Therefore, human capital is important for value creation of banks. Also, this study indicated that greater effort was required to improve the efficiency levels for banks in Malawi.

Joshi, Min, Deshmukh, and Jaffar (2016) examined the extent of intellectual capital disclosures and the determinants of such disclosures by the Malaysian companies using a Disclosure Index for the intellectual capital information consisting of 20 items. Multiple regression analysis was used, and the results revealed that company size, leverage, and industry type significantly affected the intellectual capital disclosure levels.

Thiagarajan, Baul, and Sekkizhar (2018) examined the financial health of a company by measuring the relationship between the intellectual capital (IC) components with the traditional measures of organizational performance for a sample of 42 listed companies from the Indian auto-component industry for the period from 2008 – 2013. The findings suggested that the Indian auto component manufacturing companies seemed to be performing effectively by utilizing their IC as seen by the empirical results during the period from 2008 – 2013 in spite of the economic recession of 2008 and its aftermaths.

Jain, Metri, and Rao (2019) empirically studied the determinants of profitability of Indian commercial banks using the random effect model on 45 commercial banks of India for the period from 2010 – 2016. The results showed poor performance of public sector banks as against private sector banks.

Kesse, Irfan, and Pattanayak (2019) examined the relationship between intellectual capital (IC) and financial performance of tourism and hospitality services firms in India for a period of 12 years for 720 firms using the value added intellectual coefficient (VAIC) model developed by Pulic (2000). The study applied fixed and random effect models to account for differences (unobserved effects) across firms, which confirmed the existence of a positive relationship between VAIC and performance of firms operating in the tourism and hospitality industry in India. Furthermore, human capital was found to be the most influential component of IC, which had a significant impact on both return on assets and sales growth, suggesting that human capital is still the most important tool driving financial performance.

Gupta and Jaiswal (2020) analyzed the comparative financial performance of selected public sector and private sector banks of India for a period of 5 years from 2015 – 2019. The results depicted that public sector banks made a significant progress, but were still not able to meet the performance benchmark set by private sector banks.

Weqar, Khan, and Haque (2020) inspected the effect of intellectual capital on the financial performance of Indian banks using modified VAIC methodology on 58 Indian banks for the period from 2009 – 2018. The results

revealed that efficiency of intellectual capital enhanced the profitability and productivity of Indian banks. Also, human capital plays a vital role in augmenting the profitability and productivity of the Indian banking sector apart from other components of intellectual capital.

Research Gaps

In view of the above review of literature, the following gaps emerge regarding different aspects of ICP (intellectual capital performance) and efficiency of commercial banks of India :

(1) Extensive studies have been conducted on ICP of private sector banks. However, a limited number of studies have been executed for public sector banks in India. Kamath (2007), Mondal and Ghosh (2012), and Shaban and Kavida (2013) are some of the studies which emphasized on the Indian banking sector.

(2) The impact of elements of intellectual capital and their association with bank efficiency has not been explored exhaustively.

Objective

The major objective of the study, keeping in view the above research gaps, is to examine the intellectual capital performance of public sector banks of India.

Data Sources

The present study is based on secondary sources. The data for the period from 1998 – 2017 is available with the Prowess database. Also, the data were taken from annual reports and publications of the respective banks and of Reserve Bank of India such as *Statistical Tables Relating to Banks in India*, *Basic Statistical Returns of Scheduled Commercial Banks in India*, and *Trends and Progress of Banking in India*.

This study uses a balanced panel data of 23 banks for a sample period of 18 years from 1998 –2017. The time

Table 1. *Sample Banks*

Sr. No.	Banks
1.	State Bank of Bikaner & Jaipur
2.	State Bank of Hyderabad
3.	State Bank of India
4.	State Bank of Mysore
5.	State Bank of Patiala
6.	State Bank of Travancore
7.	Allahabad Bank
8.	Andhra Bank
9.	Bank of Baroda
10.	Bank of India
11.	Bank of Maharashtra

12.	Canara Bank
13.	Central Bank of India
14.	Corporation Bank
15.	Dena Bank
16.	Indian Bank
17.	Oriental Bank of Commerce
18.	Punjab & Sind Bank
19.	Punjab National Bank
20.	Syndicate Bank
21.	UCO Bank
22.	Union Bank of India
23.	United Bank of India

period were selected for the period from 1998 – 2017 because during this period, significant changes in bank regulations took place in India. So, behaviour of all banks has been analyzed across the time period. Table 1 presents the sample chosen for the study.

Research Methodology

The Indian banking industry is a knowledge-intensive industry where intellectual capital is the key factor for the industry's success. So, to measure intellectual capital, value added intellectual capital (VAIC) model developed by Ante Pulic is applied on 23 banks for a period of 18 years, that is, from 1998 – 2017. VAIC is the sum of three efficiency indicators, that is, human capital efficiency, capital employed efficiency, and structural capital efficiency, which allows us to understand the intellectual ability of an organization.

$$VAIC = HCE + CEE + SCE$$

↳ **Value Added (VA) :** It is the difference between output and input. It is the value created by an organization during a particular financial year. Output refers to the total of all income or revenue generated during a financial year by an organization by selling its goods and services. Input refers to the sum of all cost that is incurred by an organization towards the purchase of inputs for operating and continuing its business. Thus, employee's compensation and other cost incurred on them for training and development would be deducted from total expenses, as they are treated as investment, not expenditure.

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

↳ **Human Capital Efficiency (HCE) :** It refers to the ratio of value added (VA) to human capital (HC), where human capital is taken as compensation of employees. This ratio shows the value added by every unit of money spent on human resources of banks in the form of compensation and development expenses. This ratio is an indicator of performance of employees.

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

↳ **Capital Employed Efficiency (CEE) :** It refers to the ratio of value added to capital employed, where capital employed is measured as physical assets of an organization.

Capital Employed Efficiency *(CEE)* = Value Added/Capital Employed

↳ **Structural Capital Efficiency (SCE) :** It refers to the ratio of structural capital to value added, where structural capital is everything that stays in the office when employees go home like database, softwares, etc. Structural capital is measured as the difference between value added and human capital.

Structural Capital Efficiency *(SCE)* = Human Capital/Value Added

Empirical Analysis and Results

Trends in Mean VAIC in the Indian Banking Industry During the Period from 1998 – 2017

This subsection delineates the trends in value added intellectual capital (VAIC) of commercial banks in India spanning over the period from 1998 – 2017. The calculated VAIC scores are shown in Table 2 and Figures 1, 2, and 3.

Table 2 and Figures 1, 2, and 3 reveal that the VAIC performance of PSBs showed a mixed trend throughout the period. The PSBs witnessed a deteriorating performance of VAIC from 0.807884 to 0.497189 during the period from 1999 – 2000 mainly due to low profitability as net interest margin thinned down. However, the VAIC performance increased sharply from 1.011446 to 3.005236 during the period from 2001– 02 followed by a descent of 2.046805 during the period from 2002 – 03 and then again it improved after 2004. The sharp rise in VAIC performance can be due to the implementation of VRS in 2000 – 01. This year is known as a landmark year in the history of Indian banking because VRS came into force as a strategy of cost cutting and improvement in efficiency. Surplus employees were one of the primary reasons of low profitability of PSBs. Thus, after the VRS period, majority of the employees opted for this scheme, thereby leading to a reduction in operating expenditure. Since the major portion of operating expenditure is staff salary ; so, it had a salutary effect on VAIC performance of PSBs. After 2004, frequent fluctuations have been observed in the pattern of VAIC performance of PSBs in India.

Thereafter, to analyze bank group-wise criteria, we bifurcated PSBs into SBI & its associates and nationalized banks. The intergroup analysis reveals that both groups have a positive trend in case of VAIC performance. In both the groups (SBI and its associates and nationalized banks), VAIC performance moved in the same direction. The IC performance of banks upsurged from –1.55087 to –0.91658 in the initial phase of the study followed by a slump during the period from 1999 – 2000, thereby showing an improvement after 2001.

Further, from the components of VAIC, it is noted that the mean HCE of PSBs followed a positive trend, indicating that HCE is the major contributor in the VAIC performance of PSBs. The mean SCE of PSBs throughout the period follows the same path as followed by mean VAIC ; whereas, mean CEE scores more or less remained stable throughout the period. In case of SBI & its associates and nationalized banks, the same pattern has been followed. Though, there is a positive trend observed in mean VAIC and its components, but the rate of increase is very little. This suggests that in order to fulfill social responsibilities of generating employment for Indian population, PSBs invest a huge amount in human capital, which could not contribute much to value creation (Kamath, 2007). Thus, banks need to improvise more to elevate their value creation significantly.

Table 2. ***Trends in Mean VAIC, HCE, CEE, SCE Scores of Public Sector Banks (PSBs) (1998 – 2017)***

Panel A : Mean *VAIC* and its Components of Public Sector Banks												
Bank Groups	**All Public Sector Banks**				**SBI & its Associates**				**Nationalized Banks**			
Year	***HCE***	***SCE***	***CEE***	***VAIC***	***HCE***	***SCE***	***CEE***	***VAIC***	***HCE***	***SCE***	***CEE***	***VAIC***
1998	0.91828	–0.1328	0.02242	0.80788	0.6623	–2.2266	0.01346	–1.5509	0.72908	–1.6804	0.0158	–0.9356
1999	0.81414	–0.3348	0.01779	0.49719	0.61867	–1.5467	0.01142	–0.9166	0.66966	–1.2305	0.01308	–0.5478
2000	0.86226	–0.2721	0.02074	0.61091	0.64655	–2.4436	0.01306	–1.784	0.70283	–1.8772	0.01506	–1.1593
2001	1.06671	–0.0744	0.01913	1.01145	0.73785	–1.4305	0.01214	–0.6805	0.82364	–1.0768	0.01397	–0.2392
2002	4.09522	–1.114	0.02405	3.00524	1.08002	–0.2024	0.01779	0.89537	1.86659	–0.4403	0.01942	1.44577
2003	1.6738	0.34569	0.02732	2.04681	1.41901	0.111	0.0234	1.5534	1.48548	0.17222	0.02442	1.68212
2004	1.8949	0.4182	0.03126	2.34435	1.59764	0.18882	0.02611	1.81257	1.67518	0.24866	0.02745	1.95129
2005	1.49928	0.25933	0.02254	1.78115	1.65979	0.37305	0.02627	2.05911	1.44263	0.21919	0.02123	1.68305
2006	1.37016	0.19781	0.01821	1.58617	1.46241	0.29251	0.02001	1.77493	1.3376	0.16438	0.01757	1.51955
2007	1.60338	0.33358	0.01822	1.95519	1.65998	0.37373	0.01845	2.05216	1.58341	0.31941	0.01814	1.92096
2008	1.45431	0.24777	0.01634	1.71842	1.48203	0.3128	0.01614	1.81097	1.44453	0.22482	0.01641	1.68576
2009	1.63175	0.3299	0.01728	1.97893	1.70568	0.3941	0.0177	2.11748	1.60566	0.30724	0.01713	1.93003
2010	1.56962	0.29036	0.01739	1.87738	1.49691	0.31117	0.01796	1.82604	1.59529	0.28302	0.0172	1.8955
2011	1.96601	0.44604	0.0187	2.43075	1.8692	0.44378	0.02022	2.3332	2.00018	0.44684	0.01817	2.46518
2012	1.91974	0.4417	0.01842	2.37986	1.75166	0.42526	0.01943	2.19635	1.97907	0.4475	0.01807	2.44463
2013	1.68543	0.36135	0.01704	2.06381	1.44627	0.29299	0.01793	1.75719	1.76984	0.38547	0.01672	2.17203
2014	1.65637	0.344	0.01555	2.01592	1.36595	0.25452	0.01617	1.63663	1.75887	0.37558	0.01533	2.14979
2015	1.5807	0.31472	0.01556	1.91099	1.55758	0.3452	0.01698	1.91975	1.58887	0.30397	0.01506	1.90789
2016	1.6432	0.3214	0.01552	1.98012	1.54764	0.3412	0.01678	1.90562	1.6542	0.3546	0.01504	2.02384
2017	1.6342	0.33154	0.1642	2.12994	1.6254	0.3514	0.01725	1.99405	1.7642	0.3654	0.01545	2.14505
Panel B: Grand Mean Scores												
1998–2017	1.62697	0.15276	0.02688	1.80662	1.36963	–0.1519	0.01793	1.23564	1.47384	–0.0843	0.01754	1.40704

Figure 1. ***Trends in Mean VAIC, HCE, CEE, SCE Scores of PSBs (1998 – 2017)***

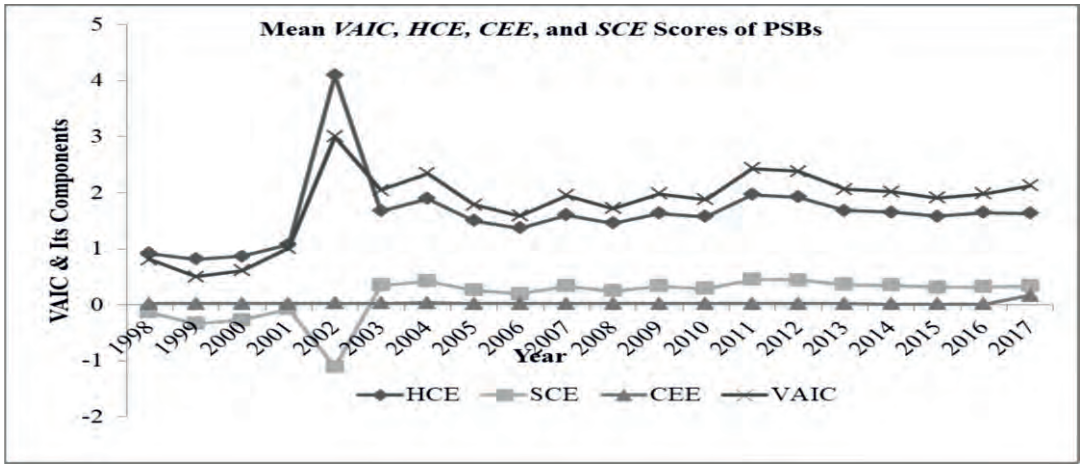


Figure 2. ***Trends in Mean VAIC, HCE, CEE, SCE Scores of SBI & Its Associates (1998 –2017)***

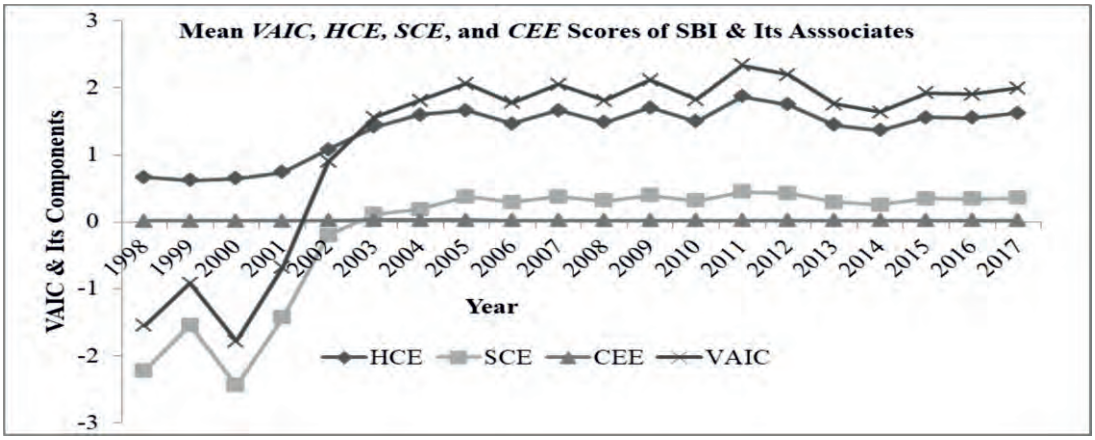
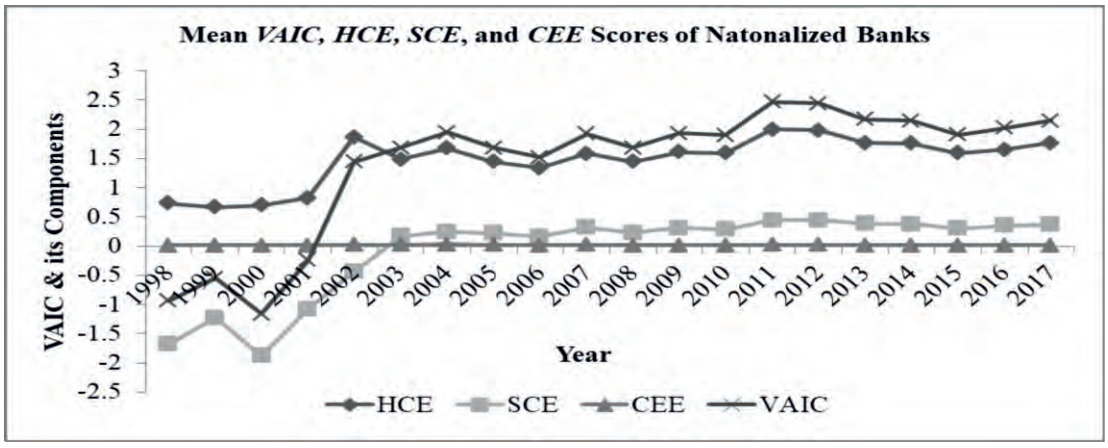


Figure 3. ***Trends in Mean VAIC, HCE, CEE, SCE Scores of Nationalized Banks (1998 –2017)***



Discussion, Conclusion, and Implications

The results suggest that the intellectual capital performance of public sector banks in India showeda mixed trend during the period of the study. However, the negative slowdown of VAIC could be attributed to the impact of low profitability. Also, the IC performance remained under stress amid an environment of economic slowdown, declining credit growth, and increasing stressed assets. The disaggregation of components of VAIC shows that HCE has more influence on VAIC followed by SCE and CEE. The supremacy of human capital efficiency described in the results is consistent with the results obtained by prior studies of Chen Goh (2005), Mavridis (2004), Kamath (2007), Yalama and Coskun (2007), Joshi et al. (2010), and Lipunga (2015). The dominance of HCE is not surprising as the banking sector is a service sector, where customer service heavily relies on human capital. However, all the components of VAIC are contributing at a very low rate, and thus, all three need improvement to enhance the value creation of banks in order to have a vibrant commercial banking sector. Thus, public sector banks are considered as poor performers, implying huge baggage of inefficient workforce, which is not contributing anything to value creation.

In today's economy, intellectual capital is a strategic asset for an economy in general, and an organization, in particular, to achieve organizational success. However, public sector banks in India are not utilizing their resources optimally due to which they are least efficient intellectually. So, the government should take stern steps to improve the intellectual capital performance in order to survive in an intellectually intensive economy.

This paper provides a new dimension to evaluate the performance of Indian public sector banks and benchmark them with global standards. Also, it reflects the lopsided growth of few sections in the Indian banking segment. The findings could help stakeholders and investors assess the value creating potential of banks and policy makers to formulate and implement policies for establishment of a resilient banking sector.

Limitations of the Study and Scope for Future Research

The study evaluates intellectual capital performance of only public sector banks of India. So, the research in this area can be extended to other segments of the banking sector in India and to alternate industries in both manufacturing and service-oriented settings. The present study focuses only on public sector banks. Further research can be extended to different segments of the banking sector. Moreover, banking in any economy is underpinned by cultural concerns and legal concerns & practices. Further scope for this study can be extended to alternative domestic settings and also to alternate industries in both manufacturing and service oriented settings. Also, the methodology used in the study may be refined in the future in order to provide useful insights.

Authors' Contribution

Dr. Himanshu presented the idea to undertake the empirical study and was in charge of overall direction and planning of the study. Dr. Madhur designed the computational framework as well as collected and analyzed the data. Data interpretation and writing the whole manuscript was done by her in consultation with Dr. Himanshu.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter, or materials discussed in this manuscript.

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