

## **Impact of Value Added Intellectual Coefficient on Bank Performance: Evidence from Conventional and Islamic Banks in Pakistan**

Nadeem Ahmed Sheikh<sup>1</sup> Khawaja Khalid Mehmood<sup>2</sup> Muhammad Shahzad Rasool<sup>3</sup>

### **Abstract**

*The purpose of this paper is to investigate the impact of Value Added Intellectual Coefficient (VAIC) and its components such as Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) on the financial performance of conventional and Islamic commercial banks in Pakistan. For estimations, the data was collected from Financial Statement Analysis (FSA) of Financial Firms assembled by the State Bank of Pakistan (SBP) during 2007-2016. Pooled Ordinary Least Squares (OLS) method was used to estimate the impact of VAIC and its components on performance of 6 Islamic and 22 conventional commercial banks in Pakistan. Results show that VAIC and its components (i.e. HCE, SCE and CEE) have a significant, positive impact on all performance measures (i.e. ROA, ROE and EPS) of conventional banks. CEE is the only component of VAIC that significant and positively impacts the performance of Islamic banks. Descriptive statistics show that the mean value of HCE is higher for conventional banks than for Islamic banks. No big difference is observed between the mean values of SCE and CEE in both types of banks. However, mean value of intellectual capital efficiency (ICE) was higher for conventional banks due to the greater mean value of HCE, than for Islamic banks. In sum, VAIC has substantial effect on the performance of conventional banks. This might be due to the reasons that conventional banks are operating in Pakistan since independence, and have a strong deposits-base due to nationwide branch network than Islamic banks, which are at the infancy stage.*

**Keywords:** Value Added Intellectual Coefficient (VAIC), Intellectual capital, Human capital, Structural capital, Conventional banks, Islamic banks

### **Introduction**

In modern economies and businesses over the globe, intangible assets have gained significant importance for improving performance. In today's knowledge-based world, information and knowledge have evolved out as dominating factors, impacting the welfare of organizations (Mondal & Ghosh, 2012). Internationally, with the rising competition in different sectors, intellectual capital is now being considered as crucial for

---

<sup>1</sup>Bahauddin Zakariya University, Multan, E-mail: [shnadeem@hotmail.com](mailto:shnadeem@hotmail.com)

<sup>2</sup>Bahauddin Zakariya University, Multan, E-mail: [khawjakhalid@bzu.edu.pk](mailto:khawjakhalid@bzu.edu.pk)

<sup>3</sup>Bahauddin Zakariya University, Multan, E-mail: [malikshahzad.ids@gmail.com](mailto:malikshahzad.ids@gmail.com)

businesses to create more value and yield high business sustainability (Isanzu, 2015). Researchers believe that ingredients of intellectual capital such as human capital and relational capital have become critical success factors behind value creation and sustainable competitive advantage (Al-Musali & Ismail, 2016). Therefore, practitioners are now devoting sublime attention to the role of intellectual capital in businesses (Mondal & Ghosh, 2012). Importantly, intellectual capital has a greater role to play in knowledge-based industries such as banking, because the main resources occupied by banks are intellectual and non-tangible in nature (Al-Musali & Ismail, 2016; Shih *et al.*, 2010). Technically, value creation and satisfaction of a bank's customers would normally depend upon how well the bank manages its human resources, uses information technology, and runs its systems and processes, and its general administration. Hence, a bank's performance has to largely depend upon the management of intellectual capital. This research utilizes Pulic's (2004) VAIC<sup>TM</sup> model to examine the effect of VAIC and its components on the financial performance of conventional as well as Islamic commercial banks operating in Pakistan. Researchers believe that banks are the most convenient businesses for such a study researching intellectual capital due to the intellectual nature of banking activities, and the possibility of accessing reliable data (El-Bannany, 2012).

The banking sector of Pakistan has marked exceptional growth in recent years. It earned pre-tax profits of Rs.150.4 billion, with a strong ROE of 22% and ROA of 1.8% (Arifeen, 2018) during 2017. Arifeen (2018) notes that advances (gross) to the private sector rose by 6.1% in the second quarter of year 2017, compared to 4% for the same quarter of 2016 which could be attributed to macroeconomic conditions, for instance, monetary easing and steady large-scale manufacturing performance. Furthermore, he notes that the banking sector presented favorable figures regarding deposits; year 2016 marked a 20.4% increase in the deposits, which was greater compared to the average increase of 12% for the previous three years. With the size of Pakistan's economy - \$300 billion with a growth rate of 5.28% for 2016-17 (Rana, 2017), and the importance of the banking sector for the economy, the significance of this study is well evident. The impact of VAIC on organization's performance has been a growing area of investigation in various contexts; however this research area did not receive enough attention in Pakistan.

Thus, this study makes invaluable contribution by conducting research on Pakistan's banking sector on a contemporary topic of intellectual capital. The findings of this research are useful for Pakistan's banking sector as they guide bank managers and strategists about the importance of managing intellectual capital and its components in their banks. There are a few studies on this topic in the context of Pakistan, but they deal with a particular category of financial institution such as insurance companies (Wasim-

ul-Rehman *et al.*, 2013) or Islamic banks (Khan, Yasser, & Hussain, 2015), while only limited research is available on the comparative performance of conventional and Islamic banks (Gul *et al.*, 2015). They do not include recent data, or they are limited in number (Ahmad & Ahmed, 2016; Rehman *et al.*, 2012). Hence, the objective of this paper is to revisit the impact of VAIC and its components on the performance of conventional and Islamic commercial banks using the most recent dataset (2007-2016) available on the website of the SBP, and by taking three accounting-based performance measures such as Return on Assets (ROA), Return on Equity (ROE), and Earnings per Share (EPS). Specifically, the impact of HCE, SCE, ICE and CEE is analyzed on the three performance measures. Moreover, the importance of this study can be assessed from the fact that 6 Islamic banks, including the newly established MCB Islamic bank, and 22 conventional banks, including 5 big commercial banks are part of the analysis. For better understanding, the regression analysis was not only performed on the individual dataset (Islamic and conventional), but also on the cumulative dataset for all commercial banks.

The remaining paper is structured as follows. Literature review of earlier empirical studies on the impact of VAIC on bank performance is presented in the next section. Afterwards, details regarding data and methodology are presented. This is followed by descriptive statistics and regression results. The next section presents the discussion on the results. Finally, the last section provides conclusions and suggestions for future research.

## **Literature Review**

### **Intellectual Capital**

With the mounting importance of intellectual capital for business success, the definition of this concept has also become rich and complex. It is under improvement and varies with respect to different sectors (Isanzu, 2015). The literature reveals that organizations as well as researchers have relied on various definitions of intellectual capital. As per Organization for Economic Cooperation and Development (OECD), intellectual capital refers to the economic value of an organization's human capital and structural capital (Al-Musali & Ismail, 2014). Traditionally, Itami (1987) expressed intellectual capital as composition of a firm's intangible assets like reputation, royalties, brand name, and technology, etc. which are important for attaining competitive advantage. Later, other researchers have followed to explain intellectual capital as comprising of intangible components like experience, intellectual property, information, knowledge, franchises, copyrights, patents, etc., but those components have been varying among the scholars (Meles *et al.*, 2016).

Moreover, a large volume of literature indicates that researchers have measured intellectual capital across three main dimensions including human capital, structural

capital, and relational capital (Chen, 2008; Meles *et al.*, 2016). Human capital is conceptualized at the individual level which basically refers to the employees' knowledge, expertise, intellectual abilities, wisdom, and competence. Structural capital is contained at the organizational level and points towards intellectual capital as evident through organizational systems, procedures, databases, technology, and culture etc. Researchers argue that structural capital is what remains with the company when its employees go back to their homes after work (Meles *et al.*, 2016; Roos *et al.*, 1997). Relational capital is about wisdom and knowledge accumulated by an organization through its relationships with its stakeholders. Among a plethora of definitions, some organizations have developed their own definition. For example, Skandia Insurance Company defines intellectual capital as something consisting of organizational experience, knowledge, skills, technology, and customer relationships that could provide the company a competitive advantage (Ting & Lean, 2009).

Although various conceptualizations suggested by past scholars are rich and sound comprehensive, yet they suffer from certain weaknesses such as being too qualitative, demanding sensitive judgment, and unavailability of public data. Therefore, this research relied on Pulic's (2004) VAIC<sup>TM</sup> for its purpose. VAIC<sup>TM</sup> consists of three dimensions: HCE, SCE), and CEE. HCE represents the value added through investment in employees and their competences. For example, it represents the degree to which a firm has improved its performance by investing in employee training, education, health and safety, job design, labor management relations, etc. (Alhassan & Asare, 2016). Similarly, SCE indicates the value created by an organization through investment in the structural capital, contained at organizational level such as technology, systems, and culture. Lastly, CEE measures organizational value addition through the capital employed in the firm. A large number of researchers have utilized VAIC<sup>TM</sup> as a tool to assess intellectual capital in their studies (Mondal & Ghosh, 2012; Ting & Lean, 2009). Sveiby (2010) worked on the methods of measuring intellectual capital and provided a review of 42 methods for measuring intangible assets. He suggests that VAIC is one method which measures intellectual capital at organizational level and offers a reasonable mechanism to obtain monetary valuation.

### **Intellectual Capital and Performance**

The impact of intellectual capital on organizational performance has been the subject of many studies conducted in different contexts. These studies have been diverse with respect to the measurement of intellectual capital and the choice of performance indicators. Results of these studies vary to some extent, but most of them suggested that performance could be enhanced by improving ICE. Concerning corporate and industrial sectors, researchers in various contexts have reported a positive impact of intellectual

capital on the performance of companies (Abdullah & Sofian, 2012; Kurfi *et al.*, 2017). Xu and Wang (2019) recently did a study taking VAIC and Modified VAIC models into account for South Korean and Chinese textile firms for the period 2012-2017. Overall, the findings reported positive effect of intellectual capital on productivity, profitability, and earnings of South Korean and Chinese companies. At sub component level, contribution of CEE was most important for both countries' firms, and that of Relational Capital Efficiency (RCE) was the least. Soetanto and Liem (2019) also argue that the results of the previous studies, concerning the impact of intellectual capital on performance and market value, are mixed. To explore further, they analyzed 127 firms in Indonesia from 12 different industries for the period 2010 and 2017 and found that intellectual capital positively affects the performance. CEE and SCE had positive effects on company value creation, but the effect of intellectual capital on market value was not significant. Importantly, CEE had a positive impact for high-level knowledge industry. Another recent study in the same context by Tarigan *et al.* (2019) found similar results. Based on five-year data, it reported that intellectual capital had a significant relationship with financial performance, but not with market value. Interestingly, HCE had no significant relation with performance and market value, but CEE had significant relationship; and SCE had negative relationship with market value. Hamdan (2018) conducted his study in the context of Saudi Arabia and Bahrain, and found a significant relationship between intellectual capital and ROA, and an insignificant relationship between intellectual capital and Tobin's Q. The findings were also different for the two countries.

Smriti and Das (2018) studied the companies listed on the Centre for Monitoring Indian Economy Overall Share Price Index (COSPI) between 2001 and 2016 and discovered that human capital majorly affected company productivity. In addition, SCE and CEE were also positively connected to market value and sales growth. Moreover, Kurfi *et al.* (2017) suggested that intellectual capital positively impacted financial performance of food product companies in Nigeria. Employing Pulic's VAIC terminology, they suggested that CEE and SCE were the most important influencers of performance over the period 2010-2014. Similarly, Abdullah and Sofian (2012) suggested that various components of intellectual capital were positively related to corporate performance among Malaysian PLCs, wherein relational capital had the greatest relationship. Basically, the relationship between intellectual capital and performance is based on and is supported by the Resource Based Theory (RBT), which suggests that higher performance could result by managing organizational resources such

as knowledge, human resource, and culture etc., well (Abdullah & Sofian, 2012; Kurfi *et al.*, 2017).

In the financial sector, numerous studies have been conducted on the topic. For instance, in the context of US banks, Meles *et al.* (2016) conducted a research on this topic for 5749 commercial banks, over the period 2005-2012, and reported positive effect of intellectual capital on banks' performance. Among various intellectual capital's dimensions, HCE had the greatest impact. Similar findings were reported by Isanzu (2015), which suggested the positive influence of intellectual capital on banks' performance in Tanzania. Additionally, the study reported the positive impact of HCE and CEE and the negative impact of SCE on performance. Al-Musali and Ismail (2014) had also reported similar findings in their study of banks operating in Saudi Arabia. Later, Al-Musali and Ismail (2016) reported positive influence of intellectual capital on banks' financial performance for six countries in the Gulf Cooperation Council (GCC). In the context of Malaysian financial sector, Ting and Lean (2009) reported positive impact of VAIC on ROA. In the context of Indian banks, Mondal and Ghosh (2012) suggested that intellectual capital was important for attaining competitive advantage, and the relationship between VAIC and banks' profitability and productivity indicators actually varied.

### **Empirical Studies in Context of Pakistan**

Certain studies on intellectual capital have been conducted in Pakistan's context, but the designs of those studies have been different. However, they have, on overall, reported the positive influence of intellectual capital on performance. For instance, Iqbal and Zaib (2017) suggested that with regards VAIC, HCE impacts the performance of microfinance banks and investment banks; and SCE positively impacts the performance of commercial banks. Ahmad and Ahmed (2016) also conducted a similar study on the topic by taking 78 various listed financial institutions in Pakistan over the period 2008-2013 and concluded that intellectual capital is an important determinant of financial efficiency of those institutions. Additionally, they reported that human capital played a greater role in improving performance. Wasim-ul-Rehman *et al.* (2013) reported somehow varied findings in the context of insurance companies in Pakistan. Relying on panel data, they reported that HCE positively affects EPS, but that CEE has a negative relationship with the return on investment. Further, for 2010, Rehman *et al.* (2012) reported positive effects of three components of VAIC on various indicators of banks' performance (ROA and ROE).

Moreover, Khan *et al.* (2015) conducted a study to examine the effect of VAIC on the financial performance of five Islamic banks in Pakistan. Covering six years' time period (2009-2014), the study concluded positive effect of intellectual capital on banks'

financial performance. Recently, Haris et al. (2019) studied the effect of intellectual capital on bank profitability in Pakistan and reported curvilinear relationship between the two. Interestingly, CEE and HCE had a positive, while SCE had a negative effect on the banks' profitability. Given the size of Pakistan's economy, as well as the importance and contribution of the banking sector to it, the studies conducted so far on the subject of intellectual capital and performance relationship seem limited. Although, a few studies have been conducted on the subject, but either they deal with a particular category of financial institution such as insurance companies (Wasim-ul-Rehman *et al.*, 2013) or Islamic banks (Khan *et al.*, 2015), or they do not include recent data, and are limited in number (Ahmad & Ahmed, 2016; Rehman *et al.*, 2012). This research fills an important research gap of revisiting the impact of intellectual capital on performance by relying on the most recent data (2007-2016) and performing a separate analysis for conventional banks and Islamic banks operating in Pakistan.

### **Data and Research Methodology**

#### **Data**

For this research, data was obtained from the FSA of Financial Firms assembled by the SBP during 2007-2016. SBP has compiled the data of 28 commercial banks, out of which 22 are conventional, and 6 are Islamic. So, all conventional and Islamic commercial banks are included in this study. However, the sample consists of 251 observations, out of which 204 pertain to conventional, and 47 relate to Islamic banks. The reasons for using the unbalanced panel data are as follows:

- a) Different Islamic and conventional commercial banks started their operations in Pakistan at different points in time that is why data relevant to all commercial banks during the study period was not available. For instance, SBP has started compiling data of MCB Islamic bank since 2015. Moreover, some commercial banks either closed their operations or merged with other commercial banks in Pakistan.
- b) More importantly, banks with missing/incomplete data were deleted from the analysis.

#### **Variables**

Table 1 presents the definition of VAIC and its components, and performance measures. Measurements relevant to VIAC and its components were adopted from Pulic (2004), while the description of performance indicators was taken from earlier empirical studies.

Table 1: *Definition of Variables*

Variable	Symbol	Measurement
<i>Performance measures</i>		
Return on Assets	ROA <sub>it</sub>	Pre-tax profit/total assets
Return on Equity	ROE <sub>it</sub>	Pre-tax profit/shareholders equity
Earnings per Share	EPS <sub>it</sub>	Pre-tax profit/common shares outstanding.
<i>Value Added Intellectual Coefficient and its Components</i>		
Human Capital Efficiency	HCE <sub>it</sub>	Ratio of value added to human capital. Value added defined as the difference between output and input. Output is defined as interest/profit earned whereas input is measured as interest expensed/return on deposits. Human capital measured through administrative costs incurred by the banks.
Structural Capital Efficiency	SCE <sub>it</sub>	Ratio of structural capital to value added; wherein, structural capital is described as the difference between the value added and the human capital.
Intellectual Capital Efficiency	ICE <sub>it</sub>	Summation of human capital efficiency and structural capital efficiency.
Capital Employed Efficiency	CEE <sub>it</sub>	Ratio of value added to capital employed. Capital employed defined as the difference between total assets and intangible assets.
Value Added Intellectual Coefficient	VAIC <sub>it</sub>	Summation of intellectual capital efficiency and capital employed efficiency.
<i>Control Variables</i>		
Bank size	BSZ <sub>it</sub>	Natural logarithm of total assets.
Leverage	LEV <sub>it</sub>	Total deposit liabilities + non-deposits liabilities to total assets ratio.
Liquidity	LIQ <sub>it</sub>	Ratio of cash and balance with treasury banks + balance with other banks to total assets.

## Methodology

This study employs the Pooled OLS method on unbalanced panel data to investigate the impact of VAIC and its components, i.e. HCE, SCE, and CEE on the performance of banks measured as ROA, ROE and EPS. The basic regression equations are as following:

$$ROA_{it}, ROE_{it}, EPS_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 BSZ_{it} + \beta_5 LEV_{it} + \beta_6 LIQ_{it} + \xi_{it} \quad (1)$$

$$ROA_{it}, ROE_{it}, EPS_{it} = \alpha + \beta_1 VAIC_{it} + \beta_2 BSZ_{it} + \beta_3 LEV_{it} + \beta_4 LIQ_{it} + \xi_{it} \quad (2)$$

where

$ROA_{it}$  = Return on assets,  $ROE_{it}$  = Return on equity,  $EPS_{it}$  = Earnings per share,  $HCE_{it}$  = Human capital efficiency,  $SCE_{it}$  = Structural capital efficiency,  $CEE_{it}$  = Capital employed efficiency,  $BSZ_{it}$  = bank size,  $LEV_{it}$  = leverage,  $LIQ_{it}$  = Liquidity,  $\alpha$  = y-intercept,  $\xi_{it}$  = error term,  $\beta_1, \beta_6$  = Coefficients of concerned explanatory variables

### Descriptive Statistics

Table 2 provides the summary statistics of variables relevant to conventional and Islamic banks. The mean values of ROA for conventional and Islamic banks are 1.02 percent and 0.01 percent respectively. Similarly, mean values of ROE for conventional and Islamic banks are 13.67 percent and 5.20 percent respectively. Finally, mean values of EPS for conventional and Islamic banks are Rs.5.08 and Rs.0.77 respectively. In sum, these statistics show that conventional banks are more profitable compared to Islamic banks, which might be for the reason that conventional banks have a long history of operating in Pakistan since the independence. In contrast, Islamic banks have a short history because Meezan bank is the premier bank that started its operations in Pakistan in 2002. Averages of HCE reveal that spending on human capital produce more value for conventional banks than for Islamic banks. Notably, averages of SCE are more or less the same in both types of banks, which may be due to the reason that all commercial banks are liable to adhere to the policy decisions made by the SBP. The mean values of ICE of conventional and Islamic banks are 2.06 and 1.46 respectively. Although, no big difference can be observed between the mean values of SCE in both types of banks, but conventional banks have a higher value of ICE due to the higher value of HCE. It is interesting to note that the mean values of CEE are approximately the same in both types of banks. Finally, mean values of VAIC for conventional and Islamic banks are 2.10 and 1.50 respectively. As explained earlier, no big difference is observed between the mean values of SCE and CEE in both types of banks, but the figure of ICE is higher for conventional banks than for Islamic banks due to higher mean value of HCE.

Mean values of the natural log of total assets (i.e. bank size) for conventional and Islamic banks are 19.31 and 17.95 respectively, which show that conventional banks are bigger than Islamic banks. Mean values of leverage for conventional and Islamic banks are 89.39 percent and 85.01 percent respectively. These averages show that conventional banks have more deposit liabilities and non-deposit liabilities than Islamic banks. Finally, the mean values of liquidity for conventional and Islamic banks are 8.57 percent and 12.65 percent respectively. These statistics show that Islamic banks retain more liquid assets than conventional banks because Islamic banks tend to finance the working capital needs of the firms.

Table 2: *Descriptive Statistics*

Variable	Conventional Banks <i>N</i> =204			Islamic Banks <i>N</i> =47			All Banks <i>N</i> =251		
	<i>Mean</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Min</i>	<i>Max</i>
ROA <sub>it</sub>	.010	-.096	.051	.001	-.046	.020	.008	-.096	.051
ROE <sub>it</sub>	.137	-1.79	3.65	.052	-.229	.338	.120	-1.79	3.65
EPS <sub>it</sub>	5.08	-4.54	24.4	.771	-1.25	6.58	4.28	-4.54	24.4
HCE <sub>it</sub>	1.57	-1.14	7.90	1.01	-2.36	1.72	1.47	-2.36	7.90
SCE <sub>it</sub>	.490	-6.69	20.5	.450	-5.08	24.6	.486	-6.69	24.6

ICE <sub>it</sub>	2.06	-6.56	20.4	1.46	-4.92	24.6	1.95	-6.56	24.6
CEE <sub>it</sub>	.038	-.057	.078	.038	-.013	.067	.039	-.057	.079
VAIC <sub>it</sub>	2.10	-6.56	20.4	1.50	-4.91	24.6	1.99	-6.56	24.6
BSZ <sub>it</sub>	19.3	15.8	21.6	17.9	15.7	20.3	19.0	15.7	21.6
LEV <sub>it</sub>	.899	.652	.970	.851	.464	.949	.885	.460	.977
LIQ <sub>it</sub>	.085	.030	.210	.126	.056	.277	.093	.032	.277

### Regression Results

Regression results presented in Table 3 show the effects of HCE, SCE, and CEE on three different performance measures i.e. ROA, ROE and EPS. In conventional banks, HCE and CEE have a significant positive effect on all performance measures, whereas SCE positively affects only EPS. Bank size positively affects ROA and EPS. Notably, leverage positively affects ROA and negatively affects EPS. Finally, liquidity is positively related to EPS.

In Islamic banks, HCE is positively related to ROA and ROE and negatively related to EPS, however the relationships are insignificant. SCE is negatively related to ROE and EPS while positively related to ROA, however the relationships are not significant. CEE is the only component of VAIC that is significant and positively affects all performance measures. Further, bank size has a positive effect and leverage has a negative effect on all performance indicators. Liquidity has an insignificant impact on the performance of Islamic banks.

In all banks, HCE is positively linked to all performance indicators. SCE has insignificant impact on performance. CEE is positively related to ROA and ROE. Bank size is positively related to all performance indicators. Leverage is positively linked to ROA and negatively linked to EPS. Finally, liquidity is positively related to EPS.

In summary, VAIC and its components are positively linked to the performance of conventional banks. In contrast, CEE is the only component of VAIC that is positively linked to the performance of Islamic banks.

Table 3: *Effects of HCE<sub>it</sub>, SCE<sub>it</sub>, and CEE<sub>it</sub> on Performance Measures*

Variable	Conventional Banks <i>N=204</i>			Islamic Banks <i>N=47</i>			All Banks <i>N=251</i>		
	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>
C	-.095*** (-9.87)	-1.35*** (-3.08)	-38.9*** (-6.54)	-.188*** (-4.67)	-2.11*** (-7.58)	-29.8*** (-8.37)	-0.09*** (-10.9)	-1.21*** (-3.84)	-42.1* (-9.74)
HCE <sub>t</sub>	.009*** (12.6)	.138*** (4.14)	2.51*** (5.58)	.004 (1.19)	.028 (1.02)	-.013 (-.040)	.009*** (11.6)	.130*** (4.45)	2.26*** (5.66)
SCE <sub>t</sub>	.002 (1.13)	-.012 (-1.03)	.313* (1.94)	.001 (0.37)	-.002 (-1.00)	-.013 (-.360)	.003 (1.63)	-.006 (-.830)	0.193 (1.73)
CEE <sub>t</sub>	.685*** (19.5)	6.30*** (3.94)	44.5** (2.07)	.391*** (2.58)	2.96*** (2.81)	29.1** (2.16)	.611*** (16.9)	5.66*** (4.26)	45.1 (2.48)
BSZ <sub>t</sub>	.001*** (2.94)	.034 (1.46)	3.01*** (9.39)	.011*** (3.65)	.141*** (6.62)	2.13*** (7.83)	.002*** (4.55)	0.04** (2.03)	3.08*** (11.3)
LEV <sub>t</sub>	.038*** (3.66)	.384 (.810)	-25.3*** (-3.96)	-.043* (-1.81)	-.609** (-3.62)	-10.5*** (-4.92)	.018** (2.18)	.125 (0.40)	-21.7** (-5.07)

LIQ <sub>t</sub>	.001	.180	299***	.034	.074	1.61	.018	0.512	18.8***
	(0.11)	(.240)	(2.97)	(1.16)	(0.36)	(.620)	(1.39)	(1.06)	(2.85)
R <sup>2</sup>	.896	.388	.630	.677	.818	.792	.856	.387	.634
RMSE	.007	.326	4.40	.009	.066	.851	.008	.290	4.09
F-Statistic	282	20.8	56.0	14.0	300	25.5	242	25.7	70.6
Prob.	.000	.000	.000	.000	.000	.000	.000	.000	.000

\*\*\*, \*\*, \* show level of significance at 1%, 5% and 10% respectively (*t*-Statistic reported in parenthesis)

Results reported in Table 4 show the effect of VAIC on different performance measures. In conventional banks, results show that VAIC is statistically significant and has positive association with ROA and EPS. Bank size has a positive and leverage has a negative effect on all performance indicators. Liquidity is positively related to EPS. In Islamic banks, VAIC is inversely linked to all performance measures, however the relationships are insignificant. Bank size has a positive, whereas leverage possesses a negative relationship with all performance indicators. Liquidity has insignificant impact on performance. In all banks, VAIC is positively related to ROA and EPS. Leverage is inversely, whereas bank size is directly linked with ROA, ROE and EPS. Liquidity is positively linked to EPS. In sum, VAIC has significant positive impact on performance of conventional banks. In contrast, VAIC has insignificant effect on performance of Islamic banks.

Table 4: *Effects of VAIC<sub>it</sub> on Performance Measures*

Variable	Conventional Banks N=204			Islamic Banks N=47			All Banks N=251		
	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>	ROA <sub>t</sub>	ROE <sub>t</sub>	EPS <sub>t</sub>
C	-.130***	-.910**	-46.7***	-.200**	-2.24***	-29.0***	-0.14***	-1.88***	-51.2***
	(-5.42)	(-3.83)	(-7.27)	(-5.10)	(-7.75)	(-9.46)	(-8.19)	(-5.39)	(-11.0)
VAIC <sub>t</sub>	.001**	.006	.593***	-.001	-.005	-.034	.008*	.001	0.328***
	(2.31)	(.530)	(3.55)	(-.330)	(-1.44)	(-0.87)	(1.74)	(0.13)	(2.73)
BSZ <sub>t</sub>	.009***	.132***	4.10***	.014***	.162***	2.18***	.009***	.129***	4.17***
	(8.07)	(5.39)	(12.9)	(4.59)	(7.36)	(9.22)	(9.79)	(6.48)	(15.7)
LEV <sub>t</sub>	-.050**	-.645	-35.1***	-.056**	-.690***	-10.0***	-.043**	-.574*	-29.6***
	(-2.23)	(-1.22)	(-5.16)	(-2.06)	(-3.57)	(-5.06)	(-2.43)	(-1.62)	(-6.32)
LIQ <sub>t</sub>	.040	.515	31.8***	-.002	-.197	-.591	.015	.403	16.4**
	(.970)	(.590)	(2.86)	(-0.07)	(-.778)	(-2.10)	(.560)	(.730)	(2.24)
R <sup>2</sup>	.302	.150	.533	.447	.673	.737	.325	.164	.535
RMSE	.018	.383	4.92	.012	.087	.936	.017	.347	4.59
F-Stat	21.5	8.83	56.7	8.51	21.6	29.4	29.6	12.0	70.7
Prob.	.000	.000	.000	.000	.000	.000	.000	.000	.000

\*\*\*, \*\*, \* show level of significance at 1%, 5% and 10% respectively. (*t*-Statistic reported in parenthesis)

### Discussion on Results

Results reported in Tables 3 and 4 show that VIAC and its components positively affect the performance measures of conventional banks. Specifically, the positive relationships of HCE, SCE, CEE and VAIC with different performance measures confirm the findings of earlier empirical studies (Abdullah & Sofian, 2012; Kurfi *et al.*, 2017;

Meles *et al.* 2016; Ting & Lean, 2009). More importantly, results largely confirm the prediction of RBT, which suggest that the presence of invaluable resources (human, physical, and structural) lead the firm towards better performance. Summary statistics presented in Table 2 show that the mean value of HCE is higher for conventional banks than for Islamic banks. In other words, spending on employees generates substantial value addition for conventional banks than for Islamic banks. Notably, no big disparity is observed between the mean values of SCE in both types of banks. This might be due to the reason that SBP is responsible for the maintenance of the creditability of the financial system in the country. Consequently, it is mandatory for all commercial banks to adhere to the policy decisions made by the SBP. Moreover, all banks believe in following the best practices in order to build image and to maintain creditability. The mean value of ICE is higher for conventional banks than for Islamic banks. It is because of the higher mean value of HCE. Another interesting finding of this study is that no big difference was observed between the mean values of CEE in both types of banks. In other words, physical and financial assets generate more or less, the same value addition for Islamic and conventional banks, regardless of the differences in the nature of banking and banking products. Finally, VAIC positively affects the performance of conventional banks in Pakistan. VAIC is the summation of ICE and CEE, and ICE is the summation of HCE and SCE. As explained earlier that average values of SCE and CEE are approximately the same in both types of banks, HCE is the most significant element and due to it VAIC positively affects the performance.

CEE is the only component of VAIC that is significant and possesses a positive relationship with the performance of Islamic banks. In other words, physical and financial capital creates substantial value for Islamic banks than the value created by human and structural capital. This is because Islamic banks are in the initial stage of their life cycle and have short history. Although Islamic banks have spent a reasonable amount of money on human capital but have not yet been able to create substantial value for themselves. In summary, VAIC<sup>TM</sup> proposed by Pulic (2004) lend a helping hand in recognizing the effect of intellectual capital on the performance of banks in Pakistan.

Bank size is positively related to ROA, ROE and EPS. This might be due to the reason that banks with more assets, multiple banking products and a wider branch network can magnetize more customers and deposits than banks having limited banking products and branch networks. In general, leverage is negatively related to performance. Deposits act as life blood for any commercial bank. In general, a bank accepts deposits at lower rates compared to the rates at which it lends money to the borrowers. However, aggressive lending leads to excessive losses which in turn negatively affects the performance. Finally, liquidity is positively related to EPS. Summary statistics indicate

that Islamic banks retain more liquid assets than conventional banks. This is because of the nature of banking business as Islamic banks prefer to provide funds for working capital needs of firms.

### **Conclusion**

Do VAIC and its components (HCE, SCE and CEE) affect the performance of conventional and Islamic banks working in Pakistan? It is an important research question which is addressed in this research due to unclear results of earlier empirical studies. Results show that HCE, SCE, CEE and VAIC have a positive impact on the performance of conventional commercial banks. In contrast, CEE is the only component of VAIC that has a positive impact on performance of Islamic banks. Thus, results suggest that Islamic banks will have to make substantial investments in human capital to enhance their financial performance. Moreover, we recommend that all banks must focus on intellectual capital for improving their performance. Bank size and liquidity have a positive, while leverage has a negative effect on performance. Descriptive statistics show that conventional banks are bigger, and have more deposits and non-deposit liabilities than Islamic banks due to their nationwide branch network and long history. In contrast, Islamic banks retain more liquid assets than conventional banks. This may be due to the reason that Islamic banks prefer to finance the working capital needs of the firms. In sum, results indicate that Pulic's (2004) VAIC is relevant in explaining the performance of Islamic and conventional commercial banks in Pakistan - an emerging economy. Moreover, the results of this paper are useful for bank managers to understand the importance of VIAC and its components on measuring banks' performance. In particular, book-based performance measures are used in this empirical study due to the non-availability of data relevant to share price because few Islamic banks are listed on PSX. Finally, we suggest that the impact of relational capital on bank performance may also be explored, which is the task for future research.

### **References**

- Abdullah, D.F., & Sofian, S. (2012). The relationship between intellectual capital and corporate performance. *Procedia - Social and Behavioral Sciences*, 40, 537-541.
- Ahmad, M., & Ahmed, N. (2016). Testing the relationship between intellectual capital and a firm's performance: An empirical investigation regarding financial industries of Pakistan. *International Journal of Learning and Intellectual Capital*, 13(2-3), 250-272.
- Alhassan, A.L., & Asare, N. (2016). Intellectual capital and bank productivity in emerging markets: Evidence from Ghana. *Management Decision*, 54(3), 589-609.
- Al-Musali, M.A.K., & Ismail, K.N.I.K. (2014). Intellectual capital and its effect on financial performance of banks: Evidence from Saudi Arabia. *Procedia-Social and Behavioral Sciences*, 164, 201-207.
- Al-Musali, M.A., & Ismail, K.N.I.K. (2016). Cross-country comparison of intellectual capital performance and its impact on financial performance of commercial banks in GCC

- countries. *International Journal of Islamic and Middle Eastern Finance and Management*, 9(4), 512-531.
- Arifeen, M. (2018, February 7). Banking sector performance in 2016 and 2017. *The Financial Daily*. Retrieved from <https://thefinancialdaily.com/banking-sector-performance-2016-2017/> (accessed on June 11, 2018).
- Chen, Y.S. (2008). The positive effect of green intellectual capital on competitive advantages of firms. *Journal of Business Ethics*, 77(3), 271-286.
- El-Bannany, M. (2012). Global financial crisis and the intellectual capital performance of UAE banks. *Journal of Human Resource Costing & Accounting*, 16(1), 20-36.
- Gul, F., Awan, M.B., & Ahmad, I. (2015). Do Islamic Banks Financially Perform Better Than Conventional Banks? A Comparative Study of Pakistani Banks. *NUML International Journal of Business & Management*, 10(2), 27-50.
- Hamdan, A. (2018). Intellectual capital and firm performance: Differentiating between accounting-based and market-based performance. *International Journal of Islamic and Middle Eastern Finance and Management*, 11(1), 139-151.
- Haris, M., Yao, H., Tariq, G., Malik, A., & Javaid, H. M. (2019). Intellectual Capital Performance and Profitability of Banks: Evidence from Pakistan. *Journal of Risk and Financial Management*, 12(2), 56.
- Iqbal, J., & Zaib, J. (2017). Corporate governance, intellectual capital and financial performance of banks listed in Pakistan Stock Exchange. *Pakistan Administrative Review*, 1(3), 175-196.
- Isanzu, J.N. (2015). Impact of intellectual capital on financial performance of banks in Tanzania. *Journal of International Business Research and Marketing*, 1(1), 16-23.
- Itami, H. (1987). *Mobilizing invisible assets*. Boston: Harvard University Press.
- Khan, M.M.S., Yasser, F., & Hussain, T. (2015). Intellectual capital and financial performance: An evaluation of Islamic banks in Pakistan. *Islamic Banking and Finance Review*, 2(1), 59-75.
- Kurfi, S.A., Udin, N.M., & Bahamman, S.M. (2017). The impact of intellectual capital on the financial performance of listed Nigerian food products companies. *Journal of Accounting and Taxation*, 9(11), 147-160.
- Meles, A., Porzio, C., Sampagnaro, G., & Verdoliva, V. (2016). The impact of the intellectual capital efficiency on commercial banks performance: Evidence from the US. *Journal of Multinational Financial Management*, 36, 64-74.
- Mondal, A., & Ghosh, S.K. (2012). Intellectual capital and financial performance of Indian banks. *Journal of Intellectual Capital*, 13(4), 515-530.
- Pulic, A. (2004). Intellectual Capital - Does it create or destroy value? *Measuring Business Excellence*, 8(1), 62-68
- Rana, S. (2017, May 18). Pakistan is now a \$300-billion economy. *The Express Tribune*. Retrieved from <https://tribune.com.pk/story/1412545/pakistan-now-300-billion-economy-gdp-growth-5-3/> (Accessed on June 11, 2018).
- Rehman, W.U., Rehman, H.U., Usman, M., & Asghar, N. (2012). A link of intellectual capital performance with corporate performance: Comparative study from banking sector in Pakistan. *International Journal of Business and Social Science*, 3(12), 313-321.
- Roos, J., Roos, G., Dragonetti, N.C., & Edvinsson, L. (1997). *Intellectual capital: Navigating in the new business landscape*. UK: Macmillan, Basingstoke.
- Shih, K., Chang, C., & Lin, B. (2010). Assessing knowledge creation and intellectual capital in banking industry. *Journal of Intellectual Capital*, 11(1), 74-89.

- Soetanto, T., & Liem, P.F. (2019). Intellectual capital in Indonesia: Dynamic panel approach. *Journal of Asia Business Studies*, 13(2), 240-262.
- Smriti, N. & Das, N. (2018). The impact of intellectual capital on firm performance: A study of Indian firms listed in COSPI. *Journal of Intellectual Capital*, 19(5), 935-964.
- Sveiby, K.E. (2010). *Methods for measuring intangible assets*. Retrieved from <http://www.sveiby.com/files/pdf/intangiblemethods.pdf> (Accessed on June 6, 2018)
- Tarigan, J., Listijabudhi, S., Hatane, S.E., & Widjaja, D.C. (2019). The impacts of intellectual capital on financial performance: An evidence from Indonesian manufacturing industry. *Indonesian Journal of Business and Entrepreneurship*, 5(1), 65-76.
- Ting, I.W.K., & Lean, H.H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of Intellectual capital*, 10(4), 588-599.
- Wasim-ul-Rehman, Asghar, N., & Rehman, H. (2013). Intellectual capital efficiency and financial performance of insurance sector in Pakistan: A panel data analysis. *Middle-East Journal of Scientific Research*, 17(9), 1251-1259.