A Link of Intellectual Capital Performance with Corporate Performance: Comparative Study from Banking Sector in Pakistan

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Abstract

The aim of this study is to investigate the Intellectual Capital (IC) performance and its impact on financial performance of banking sector in Pakistan for the period of 2010. Intellectual Capital performance is measured by a well renowned approach Value Added Intellectual Coefficient (VAIC™) and its impact on financial returns of banks is analyzed through predictive analysis. VAIC™ has three major components Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). The empirical results reveal that Human Capital Efficiency (HCE) has substantive positive relationship with financial performance (ROE and ROA) at (P <0.05), Structural Capital Efficiency (SCE) with financial performance (ROE and ROA) at (P<0.05) and Capital Employed Efficiency (CEE) with financial performance (ROE) at (P<0.01). This study also suggests that Value added (VA) efficiency has significant and positive relation with (ROE and EPS) at (P<0.01) and (P<0.05) respectively where as VAIC™ also has a positive and significant relationship with (ROE) at (P<0.01).

Keyword: Intellectual Capital (IC), Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Capital Employed Efficiency (CEE), VAIC™, ROE, ROA, EPS, Banks, Pakistan.

Introduction

In emerging economy the banking system plays a significant role for growth of economy. Banks play significant role to facilitate the financial transactions. Pakistan has more 50 years history of banking sector. More development and FDI are encouraged during the last decades. Measurement of Intellectual Capital (IC) performance is very crucial. Normally, organizations use traditional ways to measure the IC performance. So, capital referred to any asset which generates future cash flow. Most well known assets of organization are recognized as tangible assets. The tangible assets referred to physical and financial assets which determined the financial position of organization. The values of these assets are shown in annual report.

During the phase of industrialization most of companies emphasize on physical assets (land, building, equipment etc) and financial assets (retain earning, working capital, account receivable and prepaid assets etc.). However with the introduction of knowledge base economy and impulse of globalization has emerged so strongly that shaped organizations into knowledge incentive rather than traditional. In era of globalization most of organizations need to recognize intellectual assets or intangibles in their annual reports. Therefore intangible assets have become driving force in gaining competitive advantage. Intellectual capital assets report considerable difference between market and book value Brennan and Connel (2000). The traditional measures of performance which are based on conventional approaches may be unsuitable for knowledge base economy (Stewart, 1997; Pulic, 1998; Pulic, 1999 and Sveiby, 2000). They further declared these conventional approaches may lead investors and stakeholders to make ineffective decisions. The primary purpose of this study is to investigate the IC performance government owned banks, private owned banks and Islamic banks of Pakistan and its impact on financial performance indicators.

Intellectual Capital

Intellectual Capital (IC) is being evolved rapidly over the last decade. There are number of definitions and descriptions available for IC. Many author(s) has defined IC in context of knowledge base economy and how IC works in generating value creation efficiency. The concept of Intellectual Capital (IC) and intangible assets are being used interchangeably. Peppard and Rylander (2001) argued that intellectual assets provide framework and how they integrate each other in value creation. Intangible assets have the potential to generate value for the organization as stated by (Mavridis 2005). Edvinsson and Malone (1997) argued it is a knowledge, information and experience which are applied to create value for an organization.

IC is multi dimensional concept which determines the company's stock of knowledge base assets and how they change over the time (Huang, Luther, & Tayles, 2007). IC is a knowledge, information and experience of people which is applied to generate the value argued by (Edvinsson and Malone 1997). Marr, Schiuma, and Neely (2004) IC is recognized as group of knowledge base assets which trait value to organization by providing competitive positioning to organization. Intellectual capital covers knowledge and experience of skilled employees which can be used to gain competitive advantage by applying creative strategies. So, IC has different components like Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). One of important component is human capital. It is a knowledge and experience of employee. Bontis et al (2000) defined human capital as stock of knowledge and experience which is helpful for the organization. Chen et al (2004) argued that human capital is considered such factors as employees' attitude, skill, knowledge, information and experience fostering organization performance. So human capital is employees' know-how, information and general capabilities which are use to create value for organization as stated by (Galunic and Anderson 2000). Whereas structural capital is organization's innovative processes, copy rights, patents, procedures and generate value creation for organization. However, relational capital is relation of employees with internal and external stake holders.

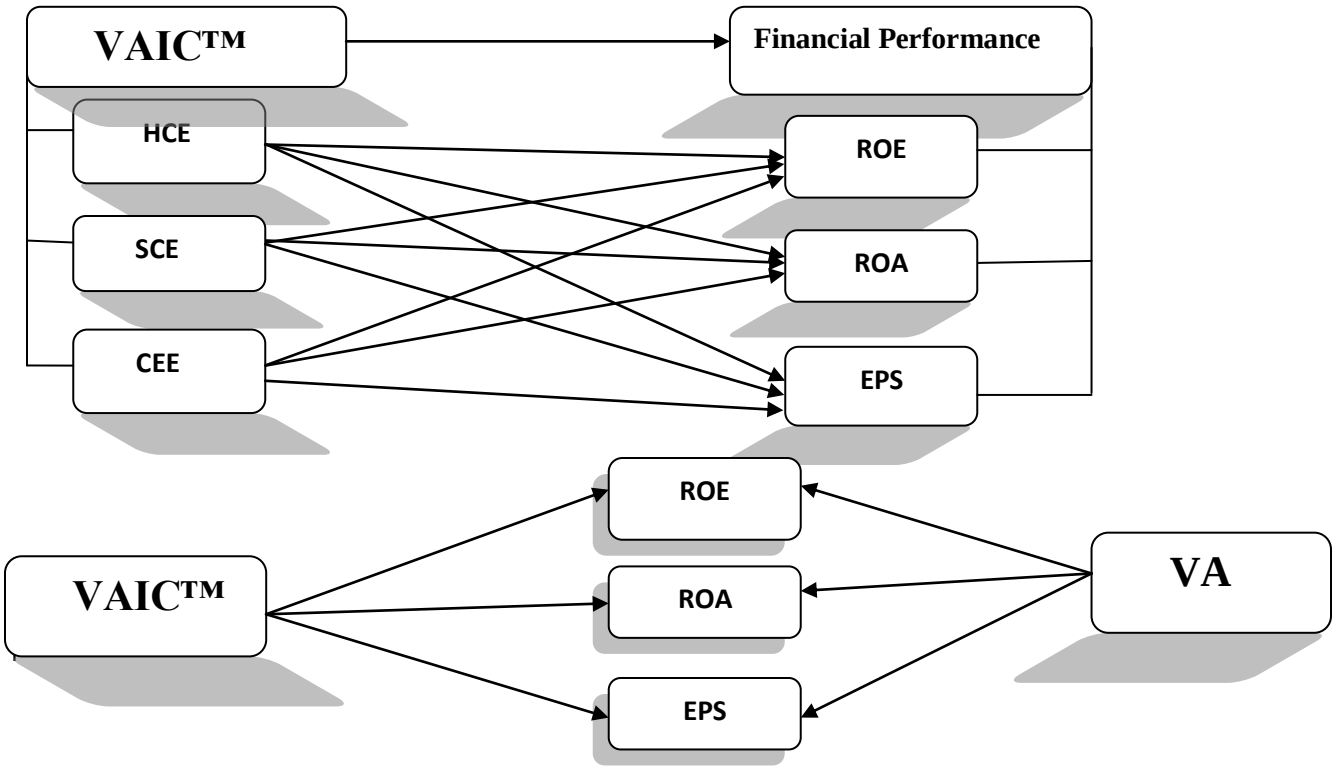
Literature Review

The empirical literature reveals that Intellectual Capital (IC) encourages the business performance. Abdul Aziz, Shawqi and Nick (2010) explored the empirical relation between intellectual capital and corporate performance of Jordan pharmaceutical industry. They concluded that IC has significant and positive impact on financial performance of Jordan pharmaceutical industry. Intellectual Capital (IC) has significant and positive effect with corporate performance argued by Cheng (2010). Goh (2005) examined the empirical relation between intellectual capital and bank's performance. He explored that value creation competency is more positively encourage by HCE which means that investment on human capital is more returnable as compare to physical and structural capital. He further concluded that domestic banks have more value creation competency as compare to foreign banks. Another study was conducted to examine the relationship of intellectual capital and value added performance of 17 Greeks commercial banks through predictive analysis for a period 1996 to 1999. This study explored that there is normal, strong and significant positive relation between (VA) and physical capital and (VA) with other variables like OUT, IN, GP, Equity, Employees and Branches Mavridis (2005). Ting and Lean (2009) explored the empirical relation of intellectual capital performance with financial performance of Malaysian financial sector over the 1999 to 2007. They concluded that Valued Added Intellectual Coefficient (VAIC™) has significant and positive relation with financial performance (ROA) of Malaysian financial sector.

They further argued that Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE) have significant relation with (ROA) where Structural Capital Efficiency (SCE) is not positively associated with (ROA). Another study was conducted to measure the relationship between intellectual capital and financial performance of 150 companies listed in Singapore Stock Exchange Hancock et al. (2007). The IC performance is measured by Value Added Intellectual Coefficient (VAIC™) model whereas the financial performance is measured by Return on Equity (ROE), Earning per Share (EPS) and Annual Share Return (ASR). They concluded that there is positive and significant relation between IC and company's financial performance, IC and future performance Hancock et al. (2007). A study was conducted to measure the intellectual capital performance with financial performance of technological intensive industries in Malaysia where as the IC performance is measured through VAIC™. The empirical results reveal that Capital Employed Efficiency (CEE) has significant and positive effect with profitability where as Human Capital Efficiency (HCE) has positive and significant association with productivity Gan and Saleh (2008). Ahangar (2011) explored the empirical results while examining the relation between IC and corporate performance. The empirical results of this study revealed that HCE has significant relation with profitability (ROA) where as structural and physical capital did not have significant relation with financial performance.

Zeghal and Maaloul (2010) examined that VAIC™ has a significant and positive association with economic performance, financial performance and stock market performance. They also explored that this positive relation was only examined in high-tech industries where as Capital Employed Efficiency (CEE) was considered a key instrument to encourage the financial and stock market performance. Joshi et al (2010) examined the empirical results while exploring the IC performance of Australian Owned Banks for the period of 2005-2007 through VAIC™ model. They explored that Human Capital Efficiency (HCE) is a key determinant to enhance the IC performance of Australian banks which means investment on Human Cost (HC) is more returnable as compare to other determinant of VAIC™. Mohiuddin et al. (2006) was conducted the research to examine relationship between intellectual capital performance of banking sector of Bangladesh. They have employed the VAIC™ for measuring the intellectual capital efficiency. The empirical findings of this study revealed that all the banks have relatively larger values of Human Capital Efficiency (HCE) as compare the other constituents of VAIC™ model.

Theoretical Frame Work



Theoretical Frame Work

Research Questions and Hypothesis

The foremost purpose of this study is to address the intellectual capital performance of banking sector of Pakistan and its relation with financial performance indicators of banks. The most important objective of this is; Does IC performance has significant impact on financial performance indicators of banks? For that purpose we finally extract the following proposed hypothesis with the help of extensive literature review.

H1a: There is a positive relationship between constituents of VAIC™ (HEC, SCE and CEE) and financial performance indicator of banks (ROE).
H1b: There is a positive relationship between constituents of VAIC™ (HEC, SCE and CEE) and financial performance indicator of banks (ROI).
H1c: There is a positive relationship between constituents of VAIC™ (HEC, SCE and CEE) and financial performance indicator of banks (EPS).
H2a: There is a positive relationship between Value Added (VA) and financial performance indicator of banks (ROE).
H2b: There is a positive relationship between Value Added (VA) and financial performance indicator of banks (ROA)
H2c: There is a positive relationship between Value Added (VA) and financial performance indicators of banks (EPS).
H3a: There is a positive relationship between VAIC™ and financial performance indicator of banks (ROE).
H3b: There is a positive relationship between VAIC™ and financial performance indicator of banks (ROA).
H3c: There is a positive relationship between VAIC™ and financial performance indicator of banks (EPS).

Methodology

There are number of methods for measuring the IC performance of different sector of economy. Chen (2009) has identified 34 methods for evaluating the IC performance and he categorized it into five basic and generic approaches like;

1) Direct IC measurement.
2) Market Capitalization Approach.
3) Scoreboard Approach.
4) Economic Value Added approach and
5) Value Added Intellectual Coefficient (VAIC™)

The Value Added Intellectual Coefficient (VAIC™) is very important and latest modethodology for measuring the IC performance of banking sector of Pakistan. This approach is developed by Ante Pulic (1997, 1998, 2001 and 2002) in Austrian IC Research Centre. It is also known as Austrian Approach. Pulic has applied this approach into his numerous studies like (2000, 2001 and 2004). Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) are the components of VAIC™. The purpose of using this approach is to evaluate the IC performance and its impact on financial performance of banking sector of Pakistan where as the financial performance is measured by ROE, ROA and EPS. The data is collected from audited annual reports of 20 commercial banks for the year of 2010 out of which three are government owned conventional banks, fourteen are private owned conventional banks and three are Islamic banks for the evaluation of IC performance.

Many authors have considered VAIC™ approach for IC performance like (Mavridis 2005; Kujansivu and Lonnqvist 2005; Tan, Plowman and Hancock 2007; Ahangar 2011; Zeghal and Maaloul 2010; Joshi, Cahill and Sidhu 2010; Diez, Ochoa, Preito and Santidrian 2010; Pew et al**.** 2007; Mohiuddin,Najibullah and Shahid 2006; Maditinos et al. 2011; Yalama and Coskun 2007; Makki,Lodhi and Rahman 2008; Mavridis 2004; Kamath 2007 and 2008; Kamukama, Ahiauzu and Ntayi 2010; Kamukama, Ahiauzu and Ntayi 2011; Goo and Tseng 2005; Laing, Dunn and Lucas 2010; Tovstiga and Tulugurova 2007; Firer and Williams 2003; Iswati and Anshoria 2007; Ji-jian, Nai-ping and Yu-sheng 2006 etc) formula is as follow;

- Output = Net Premium
- Input= Operating expenses (excluding personal costs).
- Value added =Output-Input.

- HC =personal cost (Salaries and Wages), considered as an investment.
- CA= Capital employed (both physical and financial capital).
- SC= VA–HC
- HCE =VA/HC (Human Capital Efficiency).
- CEE= VA/CA (Capital Employed Efficiency).
- SCE=SC/VA

VAIC™ = HCE + CEE + SCE (Value added intellectual coefficient).

Research Models

In order to response to our proposed research hypothesis we are inclined to empirically test the following proposed models.

ROE=α+β (VA) +μ……. (1)
ROI=α+β (VA) +μ……. (2)
EPS=α+β (VA) +μ……. (3)
ROE=α+β (VAIC) +μ……. (4)
ROI=α+β (VAIC) +μ……. (5)
EPS=α+β (VAIC) +μ……. (6)
ROE=βo+β1 (HCE) +β2 (SCE) +β3 (CEE) +μ…….. (7)
ROI=βo+β1 (HCE) +β2 (SCE) +β3 (CEE) +μ…….. (8)
EPS=βo+β1 (HCE) +β2 (SCE) +β3 (CEE) +μ…….. (9)

Ranking of (VAIC™) and (VA)

Sr.	Banks	VAIC™	VAIC™ (Ranking)	VA Million (Rs.)	VA (Ranking)
	A. Government Owned Banks:				
1	Bank of Khyber	2.095	1	839.161	2
2	National Bank of Pakistan	1.746	2	23627.055	1
3	First Woman Bank Limited	1.535	3	346.702	3
	B. Private Owned Conventional Banks				
1	JS Bank	4.879	1	(156.477)	11
2	UBL	3.909	2	23808.769	2
3	Allied Bank Ltd(ABL)	3.586	3	11323.413	3
4	Bank Al Habib	3.499	4	6151.362	5
5	Habib Bank Ltd(HBL)	3.411	5	35539.318	1
6	Habib Metropolitan Bank	3.073	6	4674.609	8
7	Silk Bank	2.624	7	(741.285)	13
8	Summit Bank	2.398	8	(628.558)	12
9	Askari Bank	1.945	9	6101.57	6
10	Bank Alfalah	1.401	10	6292.072	4
11	Faysal Bank	0.303	11	2067.757	9
12	MCB Bank	0.213	12	4896.143	7
13	NIB Bank	(11.703)	13	290.666	10
14	KASB Bank	(46.682)	14	(48539.~~949~~)	14
	C. Islamic Banks				
1	Meezan Bank Ltd	2.052	1	3130.825	1
2	Al-Baraka Islamic Bank	1.308	2	446.163	3
3	Dubai Islamic Bank	0.617	3	697.935	2

Table: 1

The table: 1 represents the ranking of Value Added Intellectual Coefficient (VAIC™) and Value Added (VA) of government owned public banks, private owned public banks and Islamic banks. The value added intellectual Coefficient (VAIC™) is a very well renowned methodology which is developed by Ante Public (1997, 1998, 2001 and 2003) in Austrian Research Centre. It is also known as Austrian Approach. VAIC™ has three major components that are Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). With respect to (VAIC™ = HCE+SCE+CEE) Bank of Khyber is most efficient bank (VAIC™=2.095) out of government owned public banks followed by National Bank of Pakistan (VAIC™=1.746) and the least efficient bank is First Woman Bank Ltd (VAIC™=1.535) in IC performance. VAIC™=2.095 means for every 1-PKR invested by Bank of Khyber would generate (2.095-PKR) in return. Bank of Khyber being the most efficient bank with respect VAIC™ but it is ranked as 2nd with respect to value creation (VA=Rs.839.161Million).

JS Bank is most efficient bank with respect to (VAIC™=4.879) in private owned convention banks followed by UBL and APL where (VAIC™=3.909 and VAIC™=3.586) respectively. However the least efficient bank (VAIC™=-48549.949) is KASB and ranked 14th with respect to VAIC™. VAIC™=4.879 means that if 1-PKR invested by JS bank would create (PKR 4.879). Habib Bank Ltd (HBL) being placed 5th position with respect to VAIC™ but it would ranked as 1st with respect to (VA= Rs.35539.318 Million) followed by UBL and APL as 2nd and 3rd position in value creation.

Meezan Bank (VAIC™=2.052) is considered most efficient bank in based IC performance and also ranked at 1st position in value creation (VA=Rs.3130.825/Millions) followed by Al-Baraka and Dubai Islamic Bank where (VAIC™=1.308 and VAIC™=0.617) respectively. However Dubai Islamic Bank is ranked as 2nd and Al-Baraka Bank is ranked as 3rd in Value creation respectively.

Sr #	Banks	EPS	ROI	ROE	VAIC ™	HCE	SEC	CEE	Input	Out put	VA
1	National Bank of Pakistan	13.05	1.696	16.926	1.746423	1.425234	0.022828	0.298361	9624.914	33251.97	23627.055
2	Bank of Khyber	1.13	1.108	10.05	2.095593	1.675802	0.016521	0.403271	442.928	1282.089	839.161
3	First Women Bank Ltd.	0.84	0.186	2.143	1.5351	1.285634	0.027293	0.222174	264.005	610.707	346.702
4	NIB Bank	-2.5	-6.152	-138.336	-11.7029	0.078229	0.001769	-11.7829	2948.92	3239.586	290.666
5	MCB Bank	22.2	3.13	25.91	0.212704	0.678316	0.008627	-0.47424	4955.857	9852	4896.143
6	Silk Bank	-0.49	-1.557	-17.625	2.624481	-0.47419	-0.01021	3.108877	1590.322	849.037	-741.285
7	Allied Bank	10.52	1.89	28.8	3.586412	2.89355	0.038458	0.654404	5261.597	22565	17303.403
8	Summit Bank	-0.65	-0.65	-8.62	2.395704	-0.51889	-0.0126	2.927192	1524.388	895.83	-628.558
9	Bank Al Habib	4.92	22.42	24.493	3.460152	2.794112	0.023935	0.642105	3579.311	10796.89	7217.578
10	Askari Bank	1.48	0.229	6.362	1.945735	1.565232	0.019386	0.361117	3914.43	10016	6101.57
11	Bank Alfalah	0.72	0.24	4.9	1.400693	1.211098	0.015291	0.174303	7382.736	13674.81	6292.072
12	Habib Metropolitan Bank	3.22	1.114	13.405	3.073122	2.460932	0.01854	0.59365	2299.587	6974.196	4674.609
13	Bank Al Habib	4.76	1.164	23.475	3.499213	2.828175	0.024623	0.646415	2928.237	9079.599	6151.362
14	JS Bank	-0.66	-1.034	-6.999	4.879566	-0.24237	-0.00397	5.12591	1201.23	1044.753	-156.477
15	UBL	9.12	1.597	18.543	3.909769	3.189251	0.034072	0.686447	10299.74	34108.51	23808.769
16	KASB Bank	-2.85	-4.803	-148.085	-46.6826	-46.8438	-0.8602	1.021348	1458.949	-47081	-48539.949
17	Faysal Bank	1.63	0.53	8.51	0.303104	0.707933	0.007735	-0.41256	3723.243	5791	2067.757
18	Beezan Bank	2.36	1.065	15.353	2.052138	1.641213	0.020231	0.390694	2553.175	5684	3130.825
19	Dubai Islamic Bank	0.01	0.02	0.133	0.617085	0.819638	0.017497	-0.22005	1244.047	1941.982	697.935
20	Albaraka Islamic bank	-2.19	-1.71	-16.998	1.30885	-0.85432	-0.00734	2.170516	986.349	540.186	-446.163

Table: 2

Figure: 1

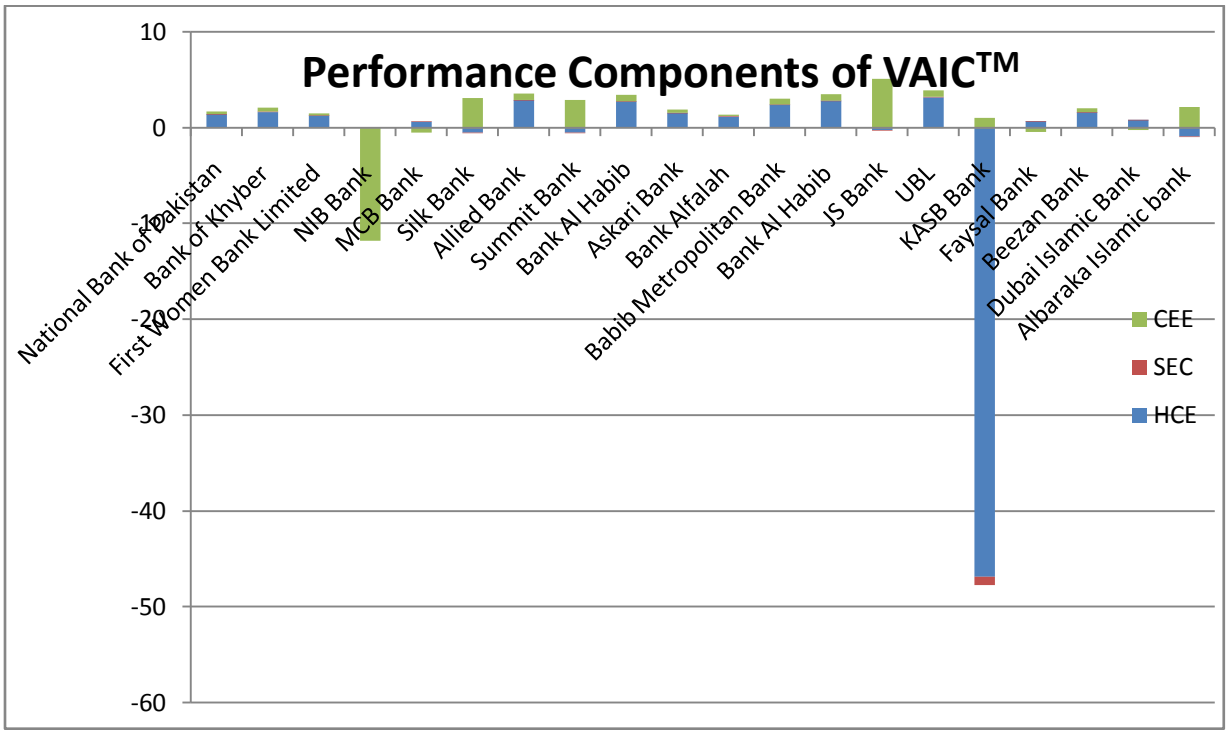


Figure 1 presents the performance components of Value Added Intellectual Coefficient (VAIC™). IC is one of the important and strategic assets in measuring the valued added efficiency of banks. Figure 1 shows that all the banks have relatively larger value of Human Capital Efficiency (HCE) as compare to other performance constituents of VAIC™, which means HEC performs an important role in measuring the VAIC™ performance of banks. It means if we invest more on HCE we get more per unit value of human capital. So in government owned banks, Bank of Khyber (BOK) intellectual capital efficiency is more relatively measured by HCE as compare to SCE and CEE. Whereas in private owned banks JS bank ranked as 1st and in Islamic banks Meezan bank is ranked as 1st. However in all bank's IC performance HCE has major contribution as compare to other components of VAIC™.

Dependent / Independent	ROE			ROA			EPS		
	M1	**M2**	**M3**	**M1**	**M2**	**M3**	**M1**	**M2**	**M3**
Constant	-13.92	-3.665	-13.811	0.666	1.174	-1.008	2.687	3.467	2.322
VA	0.000*			0.161			0.018**		
VAIC™		0.000*			0.134			0.233	
HCE			0.017**			0.024**			0.291
SCE			0.040**			0.028**			0.319
CEE			0.000*			0.391			0.916
R^2	0.73	0.844	0.925	0.326	0.347	0.605	0.522	0.279	0.369
Adj. R^2	0.531	0.712	0.828	0.106	0.120	0.366	0.272	.078	0.136
F- Statistic	20.347	44.424	31.440	2.140	2.464	3.073	6.729	1.520	0.843
Prob. (F-Stat)	0.000*	0.000*	0.000*	0.161	0.134	0.058***	0.018	0.233	0.490

Empirical Results

Table: 2 *, ** and *** presents significance level at 1%, 5% and 10% respectively.

Empirical Analysis

Table 2 represents the empirical relation of all research models. The M1; M2 and M3 are proposed research models which represents ROE, ROI and EPS being the financial performance indicators of banks. The research models 1, 2 and 3 empirical relation is shown in table 3. VA is measured by Input minus Output. Input is considered as all the operating expenses (excluded salaries and wages) where as Net Markup/Return/Interest income is considered as Output. VA is considered as one of the important determinant for measuring the Value Added efficiency of banking sector. Model M1 for ROE, ROA and EPS represents empirical relation of Value Added (VA) and financial performance indicators (ROE, ROI and EPS). A significant and positive relationship is observed between (VA) and financial performance indicators (ROE and EPS) at ($P<0.01$) and ($P<0.05$) respectively. The R^2 represents 73% and 52% variation in predictive variables (ROE and EPS) respectively. However (VA) do not have any substantive relation with (ROA). The research models 4, 5 and 6 represent the empirical findings of VAIC™ and financial performance indicators (ROE, ROA and EPS). The proposed model M2 for ROE, ROA and EPS reveals empirical findings that VAIC™ has substantive and positive relationship with (ROE) at ($P<0.01$). R^2 represents the 84% variation in predictive variable (ROE) whereas the positive relationship is not observed between VAIC™ and financial performance indicators (ROA and EPS).

The research model 7, 8 and 9 represents relationship between constituents of VAIC™ performance (HCE, SEC and CEE) with financial performance indicators (ROE, ROA and EPS). A positive and significant relationship is measured between determinants of VAIC™ (HCE, SCE and CEE) with financial performance indicator (ROE). Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) has positive and significant relationship at ($P<0.05$) whereas the Capital Employed Efficiency (CEE) is also positively associated at ($P<0.01$) with (ROE). R^2 presents 93% variation in predictive variable (ROE). The proposed research model M3 for ROA also demonstrates a significant and positive relationship between (HCE) and (SCE) at ($P<0.05$) respectively representing a 61% variation in ROA. However (HCE), (SCE) and (CEE) do not have any significant relationship with financial performance indicator (EPS).

Conclusion

Intellectual Capital has become a key source for knowledge-base economy. So it's a pioneer study to measure the IC performance of banking sector in Pakistan and its impact on financial performance. This study shows that IC performance in government owned banks, private owned commercial banks and Islamic banks are largely attributed to HCE. All banks have relatively larger value of HEC as compare to components of IC's performance. It shows that 70 to 80 percent value creation capabilities are attributed to HCE. It means investment on human capital is more returnable as compare to other constituent of IC. This study also shows that National Bank of Pakistan created the value of (23627.055-Million Rupees) and ranked as 1st in government owned banks; HBL created the value of (35539.318-Million Rupees) and ranked as 1st private owned commercial banks where Meezan bank created the value of (3130.825 Million-Rupees) and ranked as 1st in Islamic banks.

Human Capital Efficiency (HCE) has substantive positive association with financial performance (ROE and ROA) at ($P <0.05$), Structural Capital Efficiency (SCE) with financial performance (ROE and ROA) at ($P<0.05$) and Capital Employed Efficiency (CEE) with financial performance (ROE) at ($P<0.01$). This study also suggests that Value added (VA) efficiency has significant and positive relation with (ROE and EPS) at ($P<0.01$) and ($P<0.05$) respectively where as VAIC™ has only positive and significant relationship with (ROE) at ($P<0.01$).

Limitations of Study

- So, being a pioneer study to investigate the IC performance of banking sector in Pakistan and its impact of financial returns. So future researchers must include all banks and review the IC performance base on penal data.
- Future researches will get better results of study by increasing number of banks along with duration of study.
- As Pulic model is used to investigate the IC performance in banks. However, countries have numerous accounting practices for IC reporting in their annual reports. So, different accounting practices may reveal different results.

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