The Intellectual Capital Performance of Banks Within Gulf Cooperative Councel (GCC) Countries An Application of VAIC Model

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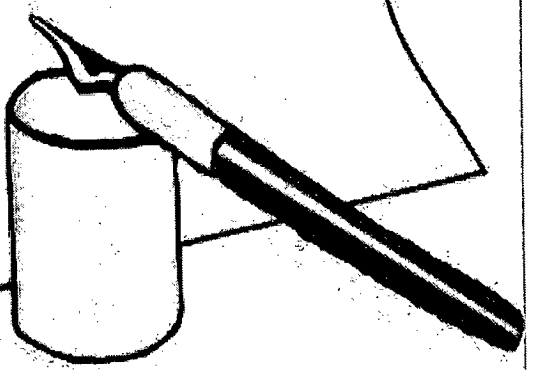

The Intellectual Capital Performance of Banks within Gulf Cooperative Councel (GCC) Countries : An Application of VAIC™[1] Model

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ABSTRACT:

The paper uses the Value Added Intellectual Coefficient VAIC™ model, a widely used model to measure the Intellectual Capital efficiency of the banks within Gulf cooperation Council (GCC) using a 5 years period data set from 2007 to 2011. Three value efficiency indicators, Human Capital Efficiency (HCE), Capital Employed Efficiency (CEE) and VAIC™, where used in the analysis. The data set was divided into conventional and no-conventional (Islamic) banks. The results of the rankings of the GCC banks for the last two years (2010-2011) show that for VAIC™, **which expresses the intellectual ability and indicates the value creation efficiency of all resources (the sum Capital Employed Efficiency indicator and Intellectual Capital Efficiency),** the two top performers for conventional are Qatar National Bank followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf AlRayan (a Qatari Bank) followed by AlRajhi Bank and Investment Company (a Saudi bank). However, the results of ranking based on Human Capital Efficiency (HCE), **an indicator which measures how much VA is created on each monetary unit invested in HC,** shows that the two top performers for conventional are Commercial Bank of Kuwait followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf Al-Rayan followed by AlRajhi Bank and Investment Company. And the ranking result based on Capital Employed Efficiency (CEE), **an indicator which shows how much VA is created on each monetary unit invested in Capital Employed (Physical and Financial),** shows that the two top performers for conventional are Oman housing Bank followed by Mashreq Bank (a UAE bank) and for the non-conventional banks the two top performers are Qatar Islamic Bank followed by AlSalam Bank (a Bahraini Bank). ***Keywords*** :Intellectual capital, performance measures, VAIC, knowledge management, GCC banking sector, value creation, value creation efficiency measure

[1] VAIC™ is the trademark of Ante Pulic of the Austrian Intellectual Capital Research

Introduction: In today's knowledge economy and global, dynamic and complex business environment intangible assets, such as knowledge assets and customer relations, are the driving force behind business success and measuring the efficiency of these assets (the Capital) Intellectual remains a challenge at both macro and micro level of economy. It is a challenge for governments which are or becoming less efficient; it is a challenge for corporations which have no reliable indicators for their business success; and it is a challenge for the employees who are unaware of their significant role in the value creation process [1]. The current conventional accounting and performance measurement systems, unfortunately, do not provide much incite in this matter as they are heavily inclined towards financial and physical resources and lack relevant information on the performance of Intellectual Capital (IC) resources [2].The Intellectual Capital (IC) of a company consists of all employees, their organization and their ability to create value, which is evaluated at the market. As such, it is not enough to monitor the capital employed but also the intellectual capital and its efficiency. A company can have the best qualification structure, i.e. intellectual potential, but if it creates little value with regard to its resources, its intellectual ability is low [1]. The challenge of today's knowledge economy is the efficient management of knowledge, and its relevant form in economy, i.e. the intellectual capital (IC). And therefore, IC becomes the key factor of value creation.Although intellectual capital is recognized as a major corporate asset capable of generating sustainable competitive advantages and superior financial performance [3], finding an appropriate measure for IC is still difficult. However, measuring the efficiency of applying knowledge in value creation [1] is possible. A very widely used management tool or model for intellectual capital (IC) performance that has been extensively reported in the literature is VAIC™. VAIC™ was developed, refined, and applied by Ante Pulic and his colleagues at the Austrian Intellectual Capital Research Center [4][5][6][7][8]. VAIC™ indicates to business managers and to policy makers how well they are converting intellectual resources into financial wealth and whether their conversion performance is improving or deteriorating [9].VAIC™ has been applied in many banking sectors around the

world and each of these applications is proving the applicability, effectiveness, and credibility of VAIC™ in measuring IC efficiency. VAIC™ was applied in Japan [10], in Turky [11], in Malaysia [12],[13], in Indian [14], in Greece [15], the Thailand [16] to name a few. VAIC™ was also applied at the firm's level in Finland [17][18], in Hong Kong [19][20], in China [21] as well as Taiwan [22]. And more recent applications are in Iran [39], in Slovenia [40], in Pakistan[41][42], and in Austria [43]. For detail coverage of VAIC™ see [4][5][6][7][8][23][1][24][25] and for a review of literature and detail insight into Intellectual Capital in general see [26][27][28][29][30[31][32][33].Despite the large number of research studies in the area of Intellectual Capital (IC) around the world during the last two decades, and despite the significant number of VAIC™ applications, only one study, according to the authors knowledge, has been reported that investigate the application of VAIC™ in Kuwaiti banking sector [44]. This paper is a continuation of our effort to further apply VAIC™ to measure the capital intelligent efficiency of the banking sector within the Gulf Cooperative Council (GCC) region. As stated in our previous paper [44], the reason for choosing banks as the subject of our study because banking sector, in general provides a rich environment for conducting Intellectual Capital research and because of the availability of reliable data in the form of published accounts (balance sheets, P/L). Banking sector is "intellectually" intensive or knowledge-intensive and its staff are (intellectually) more homogeneous than in other sectors [10][36]. Banking sector is also the most sophisticated sector in terms of the quality of human resources employed, their organization, the quality of training these employees received and the manner in which the sector utilizes the human resources in generating banking services to satisfy their customers [44].The rest of the paper is organized as follows: Section 2 covers the methodology, including the VAIC™ model and the data collection. Section 3 the analysis and results and Section 4 covers the conclusion and future research.

1. **Methodology:**As stated above, the objective of this paper is to assess and analyze the efficiency in which the GCC banks utilize their intellectual capital using the widely use VAICTM covering a

period of 5 years. The methodology used is similar to the one used in many of the VAICTM banking applications cited above in the introduction. In the following two subsections the important variables, indicators and coefficients within the VAICTM Model are operationally defined followed by the data collection subsection

2.1 VAIC™ Model: The operation definitions of variables, indicators and coefficients for calculating Value Creation Efficiency Index or Value Added Intellectual Coefficient (VAICTM) which are covered in [37][1]. For detail coverage of VAICTM see [4][5][6] [7][8][23][24]25] as well. The variables, indicators and coefficients, within VAICTM model, are defined and discussed as follows:

- Value added (VA): Newly created value, calculated for an institution during a particular fiscal year as:

  $VA = OUTPUT - INPUT$

  where OUTPUT = total income from all products and services sold during the particular fiscal year. And INPUT = The total costs and expenses that incurred by the firm during that particular fiscal year (excluding labor expenses, which are employees' compensation and all expenses that are related to their training and development. In this analysis, labor expenses is considered an investment and not cost.
- Structural Capital (SC): result of Human Capital's past performance (organization, licenses, patents, image, standards, relationship with customers), and it is calculated as:

  $SC = VA - HC$

  where HC(Human Capital) = overall employees' compensations and all expenses that are related to their training and development.
- Human Capital Efficiency (HCE): an indicator which shows how much VA is created on each monetary unit invested in HC.

  $HCE = VA / HC$
- Structural Capital Efficiency (SCE): an indicator that shows the share of SC in value creation.

  $SCE = SC / VA$
- Intellectual Capital Efficiency (ICE): an indicator which shows how efficiently IC has created value.

  $ICE = HCE + SCE$
- Capital Employed Efficiency(CEE): an indicator that shows how much VA is created on each monetary unit invested in CE.

  $CEE = VA / CE$

  where CE(Capital Employed) = Physical and Financial assets.

- Value Added Intellectual Coefficient (VAIC™): it indicates the value creation efficiency of all resources (sum of the previous indicators). It expresses the intellectual ability of a company, a region or a national economy as a whole.

$$VAIC^{TM} = ICE + CEE$$

1.2 Data Collection:

1. The data for the GCC banks was collected from the financial reports published by the Institute of Banking Studies (IBS). Institute of Banking Studies (IBS) is a major source of data in the banking industry in Kuwait. The data set .Institute of Banking Studies (IBS) is a major source of data in the banking industry here in Kuwait. The data set covers 55 banks in the gulf region after excluding three banks due to reason that is explained bellow. Table 1 shows the number of banks (conventional and Islamic) by country.

Table 1. Number of gulf banks in the data set by country and bank type.

	number of banks in data set		
Country	conventional	Islamic	Total
Bahrain [a]	6	2	8
Kuwait	6	4	10
Oman	7	0	7
Qatar	5	3	8
Saudi Arabia	9	1	10
UAE	10	2	12
Total	43	12	55

a. Three banks from Bahrain were excluded from the analysis.

The data set covers annual data for four main variables for a period of 5 years, from 2007 to 2011. These four main variables are as follows:

- INPUT: the total costs and expenses excluding labor expenses, which are employees' compensations and all expenses that are related to their training and development. In this analysis, labor expenses are considered investment and not cost.
- OUTPUT: the total revenue during a fiscal year for each bank.
- Human Capital (HC): overall employees' compensation and all expenses that is related to their training and development.
- Capital Employed (CE): physical and Financial assets for each bank.

Since our analysis spans a period of 5 years, from 2007 to 2011, any bank with data of less than 3 years has been removed from the data set. Thus, 3 banks from Bahrain (2 conventional and 1 Islamic) were excluded from the analysis. Table 1 shows the banks that were included in the analysis. Notice that Oman has only conventional banks, thus no Islamic bank is included in our analysis for Oman

3. Analysis and Results:3.1 Descriptive Statistics: Table 2 shows the result of computing the yearly average of Value Added Intellectual Coefficient (VAIC™), for conventional and Islamic banks, by GCC country. Tables 3 and 4 show Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE), respectively, for conventional and Islamic banks, by each country in the GCC.The mean VAIC™ for conventional banks is higher in 2007 and 2008 compared to 2009-2011 for almost all GCC countries, except for Qatar. Saudi Arabia, Oman and Bahrain had the almost the same trend as seen in **Figure 1**, whereas UAE has same trend with higher VAIC by an average of almost 0.5. As for Kuwait, is has a very high VAIC (7.35) compared to the rest of the GCC countries in 2007, and then went down to share the same values and trends of Oman and Bahrain. Qatar can be classified in a different category since it kept an average of 6.0 from 2007 to 2011. This anomaly can be clearly observed in **Figure 1**.As for the mean VAIC for Islamic banks, it can clearly observed that Kuwait, UAE and Bahrain have a mean VAIC between 4 to 5 in 2007, with a negative trend that brought the value of the mean VAIC to between 2.0 and 2.5 in 2011, except for Bahrain which went to 1.2. Saudi Arabia has only one bank in the sample which kept its mean VAIC between 5.5 and 6.0 with slightly stable trend. Qatar can also be classified in a different category since it has a mean VAIC average of 16.0 in 2007 with a negative trend that reached 9.5 in 2011. This anomaly can be clearly observed in **Figure 2** too. Oman has no Islamic banks. **Figure 3** shows the overall average for all GCC banks for conventional and Islamic bank from 2007 to 2011. The mean VAIC for Islamic banks is higher than the mean for conventional banks throughout the whole period, with negative trends in both.

Table 2. The mean of VAIC for conventional and non-conventional (Islamic) banks, by country, and as well as overall mean, for the year 2007 to 2011.

VAIC by country	2007	2008	2009	2010	2011
Bahrain					
Conventional	4.23	4.42	2.99	3.06	3.26
Non Conv.	5.12	4.63	4.48	2.34	1.17
All	4.45	4.49	3.24	2.88	2.91
Kuwait					
Conventional	7.35	4.84	2.94	3.64	3.37
Non Conv.	4.57	2.81	2.05	2.57	2.30
All	6.43	4.08	2.69	3.21	2.94
Oman					
Conventional	4.58	4.24	3.49	3.44	3.15
Non Conv.					
All	4.58	4.24	3.49	3.44	3.15

Qatar					
Conventional	6.24	5.56	5.39	6.21	6.38
Non Conv.	15.96	11.28	11.09	12.09	9.47
All	10.41	7.71	7.53	8.41	7.54
Saudi					
Conventional	4.89	4.18	3.69	3.80	4.01
Non Conv.	6.32	5.81	5.78	5.75	5.60
All	5.03	4.35	3.90	4.00	4.17
UAE					
Conventional	5.54	4.64	4.19	3.99	4.02
Non Conv.	4.20	3.45	2.18	2.70	2.81
All	5.32	4.43	3.82	3.77	3.82
All					
Conventional	5.40	4.60	3.80	3.94	3.97
Non Conv.	7.87	5.84	5.78	5.20	4.55
All	5.92	4.88	4.16	4.21	4.09

Table 3. The mean of HCE for conventional and Islamic banks, by country, and as well as overall mean, for the year 2007 to 2011.

HCE by country	2007	2008	2009	2010	2011
Bahrain					
Conventional	3.55	3.70	2.40	2.47	2.64
Non Conv.	4.29	3.85	3.73	1.86	1.08
All	3.73	3.75	2.62	2.32	2.38
Kuwait					
Conventional	6.48	4.08	2.44	2.99	2.79
Non Conv.	3.82	2.29	1.64	2.07	1.86
All	5.59	3.41	2.21	2.62	2.42
Oman					
Conventional	3.81	3.49	2.82	2.77	2.52
Non Conv.					
All	3.81	3.49	2.82	2.77	2.52
Qatar					
Conventional	5.39	4.81	4.63	5.39	5.55
Non Conv.	14.94	10.32	10.14	11.13	8.56
All	9.48	6.88	6.70	7.54	6.68
Saudi					
Conventional	4.12	3.49	3.09	3.16	3.32
Non Conv.	5.44	4.96	4.94	4.91	4.76
All	4.25	3.64	3.27	3.33	3.46
UAE					
Conventional	4.74	3.90	3.49	3.33	3.34
Non Conv.	3.46	2.78	1.81	2.14	2.23

All	4.52	3.70	3.19	3.13	3.15
All					
Conventional	4.61	3.86	3.16	3.28	3.30
Non Conv.	7.02	5.10	5.11	4.55	3.95
All	5.12	4.14	3.52	3.55	3.43

Table 4. The mean of CEE for conventional and Islamic banks, by country, and as well as overall mean, for the year 2007 to 2011.

CEE by country	2007	2008	2009	2010	2011
Bahrain					
Conventional	0.038	0.040	0.022	0.024	0.023
Non Conv.	0.083	0.055	0.024	0.025	0.007
All	0.049	0.045	0.022	0.024	0.020
Kuwait					
Conventional	0.035	0.025	0.016	0.020	0.020
Non Conv.	0.039	0.024	0.014	0.018	0.016
All	0.036	0.024	0.016	0.019	0.018
Oman					
Conventional	0.044	0.042	0.034	0.035	0.032
Non Conv.					
All	0.044	0.042	0.034	0.035	0.032
Qatar					
Conventional	0.031	0.029	0.026	0.030	0.029
Non Conv.	0.100	0.066	0.055	0.050	0.040
All	0.061	0.043	0.037	0.037	0.033
Saudi					
Conventional	0.034	0.025	0.022	0.023	0.025
Non Conv.	0.063	0.050	0.050	0.046	0.042
All	0.037	0.027	0.025	0.025	0.026
UAE					
Conventional	0.033	0.032	0.030	0.027	0.028
Non Conv.	0.033	0.029	0.018	0.021	0.025
All	0.033	0.031	0.028	0.026	0.028
All					
Conventional	0.036	0.031	0.026	0.026	0.026
Non Conv.	0.065	0.044	0.034	0.030	0.026
All	0.042	0.034	0.027	0.027	0.026

Similarly, the same anomaly can be seen in Table 3 which shows Human Capital Efficiency (HCE) for the GCC banks; conventional, non-conventional and overall from 2007-2011. This is mostly attributed to the magnitude of HCE compared to Capital Employed Efficiency (CEE), which both contributes in the value of VAIC.

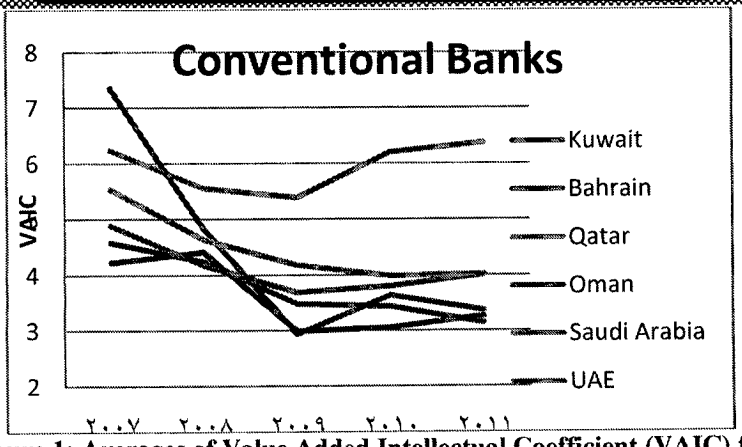

Figure 1: Averages of Value Added Intellectual Coefficient (VAIC) for conventional banks by GCC country for the years 2007 to 2011.

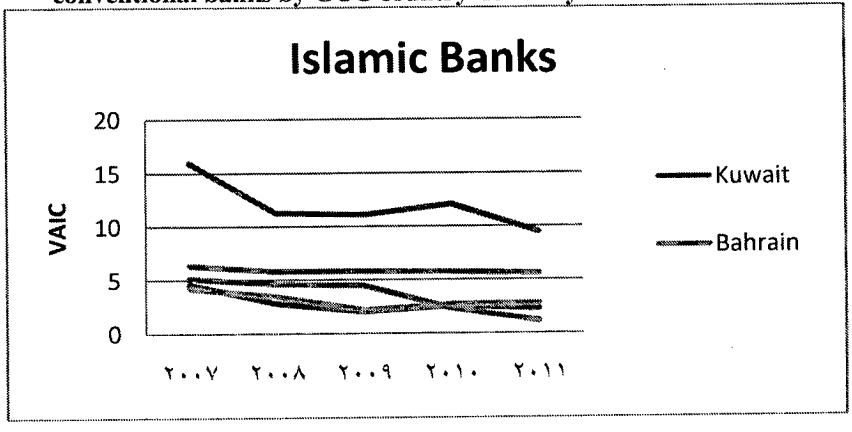

Figure 2: Averages of Value Added Intellectual Coefficient (VAIC) for non-conventional banks by GCC country for the years 2007 to 2011.

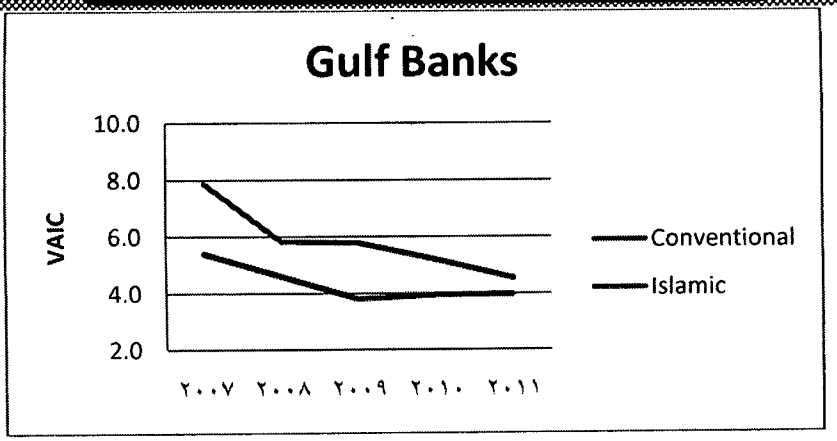

Figure 3: Averages of Value Added Intellectual Coefficient (VAIC) for GCC area, conventional and Islamic for the years 2007 to 2011.

Furthermore, **Table 4** also shows Capital Employed Efficiency (CEE) for GCC banks; conventional and non-conventional (Islamic) and overall for years 2007 to 2011. The mean CEE for the conventional banks for year 2007 is 0.36, with declining trend reaching 0.26 for 2009-2011. A similar trend is seen for non-conventional banks, with 0.65 for year 2007 with a declining trend reaching 0.26 in year 2011. As for the overall mean, a similar trend is also seen. This is clearly shown in **Figure 3**.

Tables 5-10 show VAIC™ for each bank (conventional and non-conventional) within each GCC country for years 2007-2011.Table 5. VAIC™ values for Kuwaiti Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
Al Ahli Bank of Kuwait	6.461	4.435	3.826	4.384	4.057
Burgan Bank	8.026	4.079	2.937	2.541	4.168
Commercial Bank of Kuwait	9.657	7.538	1.022	4.102	1.108
Gulf Bank	8.007			2.133	2.548
National Bank of Kuwait	6.097	4.700	4.904	5.423	5.323
Industrial Bank of Kuwait	5.865	3.463	2.011	3.260	2.999
Non-conventional					
Ahli United Bank			1.986	3.083	3.146
Boubyan Bank	3.691	1.393		1.803	1.898
Kuwait Finance House	6.405	3.551	2.113	2.084	1.562
Kuwait International Bank	3.629	3.472		3.318	2.601
		HCE			

Conventional					
Al Ahli Bank of Kuwait	3.332	3.632	3.125	3.684	5.607
Burgan Bank	3.437	2.021	2.350	3.361	7.134
Commercial Bank of Kuwait	1.053	3.381	1.009	6.659	8.739
Gulf Bank	2.028			1.708	7.117
National Bank of Kuwait	4.514	4.608	4.118	3.924	5.255
Industrial Bank of Kuwait	2.394	2.619	1.616	2.794	5.012
Non-conventional					
Ahli United Bank			2.525	2.471	1.599
Boubyan Bank	1.534	1.469		1.207	2.987
Kuwait Finance House	1.312	1.669	1.688	2.873	5.539
Kuwait International Bank	2.065	2.668		2.800	2.939
		CEE			
Conventional					
Al Ahli Bank of Kuwait	0.025	0.027	0.021	0.022	0.033
Burgan Bank	0.022	0.014	0.013	0.015	0.032
Commercial Bank of Kuwait	0.005	0.017	0.005	0.029	0.033
Gulf Bank	0.013			0.010	0.031
National Bank of Kuwait	0.031	0.032	0.030	0.031	0.031
Industrial Bank of Kuwait	0.023	0.022	0.014	0.027	0.053
Non-conventional					
Ahli United Bank			0.017	0.017	0.012
Boubyan Bank	0.015	0.015		0.015	0.039
Kuwait Finance House	0.012	0.015	0.017	0.026	0.046
Kuwait International Bank	0.020	0.025		0.030	0.030

Table 6. VAICTM , HCE, CEE values for Bahraini Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
Ahli United Bank	4.393	3.695	3.255	3.874	4.245
Arab Banking Corporation	1.846		2.423	2.693	2.882
Bank of Bahrain and Kuwait	3.314	2.864	2.856	2.955	2.648
National Bank of Bahrain	4.089	3.631	3.979	3.970	4.104
United Gulf Bank	8.570	7.495	2.439	3.224	
The Bahraini Saudi Bank	3.156			1.626	2.435
Non-conventional					
Al Salam Bank	6.243	5.573	4.481	2.569	1.166
Arcapita Bank	4.001	3.690		2.109	
		HCE			
Conventional					
Ahli United Bank	3.511	3.171	2.621	3.007	3.644
Arab Banking Corporation	2.292		2.141	1.926	1.503
Bank of Bahrain and Kuwait	2.102	2.352	2.269	2.280	2.667
National Bank of Bahrain	3.373	3.250	3.257	2.945	3.356
United Gulf Bank	2.575	1.934	6.557	7.585	
The Bahraini Saudi Bank	1.933			1.350	2.525

Non-conventional					
Al Salam Bank	1.083	2.042	3.725	4.726	5.358
Arcapita Bank	1.673	2.975		3.218	
		CEE			
Conventional					
Ahli United Bank	0.018	0.018	0.016	0.020	0.023
Arab Banking Corporation	0.027		0.019	0.016	0.008
Bank of Bahrain and Kuwait	0.022	0.028	0.028	0.022	0.023
National Bank of Bahrain	0.027	0.027	0.029	0.026	0.031
United Gulf Bank	0.037	0.021	0.090	0.116	
The Bahraini Saudi Bank	0.020			0.016	0.027
Non-conventional					
Al Salam Bank	0.007	0.017	0.024	0.058	0.072
Arcapita Bank	0.034	0.051		0.094	

Table 7. VAICTM values for Qatari Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
Qatar National Bank	6.623	7.610	8.906	10.742	10.824
Commercial Bank of Qatar	6.378	5.610	5.076	5.411	5.694
Doha Bank	6.148	5.436	5.262	4.926	4.763
Al Khalij Commercial Bank (Al Khaliji)		1.883	2.357	3.820	4.435
Ahli Bank - Qatar	5.799	7.282	5.334	6.131	6.164
Non-conventional					
Qatar Islamic Bank	11.024	8.647	8.817	8.743	6.153
Masraf Al Rayan	23.154	14.041	12.722	15.424	12.179
Qatar International Islamic Bank	13.714	11.166	11.737	12.096	10.092
		HCE			
Conventional					
Qatar National Bank	9.897	9.816	8.004	6.731	5.770
Commercial Bank of Qatar	4.870	4.598	4.278	4.788	5.524
Doha Bank	3.983	4.138	4.459	4.621	5.299
Al Khalij Commercial Bank (Al Khaliji)		3.681	3.110	1.870	1.516
Ahli Bank - Qatar	5.321	5.291	4.533	6.410	4.976
Non-conventional					
Qatar Islamic Bank	5.305	7.830	7.891	7.714	10.037
Masraf Al Rayan	11.229	14.438	11.747	13.042	22.059
Qatar International Islamic Bank	9.157	11.132	10.778	10.203	12.718
		CEE			
Conventional					
Qatar National Bank	0.028	0.028	0.027	0.028	0.027
Commercial Bank of Qatar	0.030	0.030	0.031	0.031	0.035
Doha Bank	0.032	0.029	0.027	0.031	0.038

Al Khalij Commercial Bank (Al Khaliji)		0.026	0.032	0.022	0.027
Ahli Bank - Qatar	0.031	0.028	0.021	0.028	0.024
Non-conventional					
Qatar Islamic Bank	0.037	0.041	0.053	0.062	0.087
Masraf Al Rayan	0.039	0.055	0.060	0.076	0.140
Qatar International Islamic Bank	0.044	0.054	0.052	0.061	0.074

Table 8. VAICTM values for Omani Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
Bank Muscat	4.131	3.932	3.598	3.779	3.769
National Bank of Oman	5.038	4.401	2.795	2.897	3.193
Bank Dhofar	4.772	3.874	3.675	3.760	2.235
Bank Sohar			2.383	2.512	2.734
Oman International Bank	4.943	4.821	3.927	3.306	2.901
Oman Arab Bank	4.205	4.259	3.887	3.781	3.386
Oman Housing Bank	4.419	4.182	4.134	4.023	3.806
		HCE			
Conventional					
Bank Muscat	3.067	3.074	2.918	3.217	3.393
National Bank of Oman	2.555	2.302	2.220	3.639	4.230
Bank Dhofar	1.778	3.054	2.981	3.160	3.987
Bank Sohar			2.173	1.995	1.893
Oman International Bank	2.308	2.655	3.205	4.029	4.146
Oman Arab Bank	2.716	3.065	3.159	3.494	3.447
Oman Housing Bank	3.069	3.265	3.366	3.409	3.628
		CEE			
Conventional					
Bank Muscat	0.028	0.030	0.023	0.026	0.033
National Bank of Oman	0.029	0.030	0.025	0.036	0.045
Bank Dhofar	0.019	0.034	0.029	0.030	0.036
Bank Sohar			0.021	0.019	0.019
Oman International Bank	0.026	0.028	0.034	0.041	0.039
Oman Arab Bank	0.038	0.042	0.045	0.051	0.048
Oman Housing Bank	0.063	0.064	0.065	0.066	0.067

Table 9. VAICTM , HCE and CEE values for Saudi Arabian Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
The National Commercial Bank	5.704	2.600	3.571	3.786	3.102
Samba Financial Group	5.559	5.049	5.411	5.479	5.314
Riyad Bank	4.928	4.245	4.464	4.251	4.184
Banque Saudi Fransi	6.856	6.337	5.660	5.780	5.320
The Saudi British Bank	5.239	5.045	3.922	3.625	4.671
Arab National Bank	4.699	4.498	4.281	3.744	3.802
Saudi Hollandi Bank	2.446	4.462	1.341	3.507	4.075
The Saudi Investment Bank	4.631	3.549	3.397	2.902	3.590
Bank Al-Jazira	3.940	1.869	1.150	1.142	2.033
Non-conventional					
Al Rajhi Banking & Investment Company	6.324	5.805	5.785	5.753	5.595
		HCE			
Conventional					
The National Commercial Bank	2.484	3.085	2.892	2.065	4.872
Samba Financial Group	4.507	4.664	4.597	4.252	4.731
Riyad Bank	3.449	3.513	3.710	3.507	4.137
Banque Saudi Fransi	4.515	4.953	4.840	5.492	5.990
The Saudi British Bank	3.900	2.942	3.210	4.251	4.430
Arab National Bank	3.098	3.048	3.534	3.737	3.919
Saudi Hollandi Bank	3.348	2.837	1.179	3.704	1.943
The Saudi Investment Bank	2.913	2.318	2.744	2.881	3.865
Bank Al-Jazira	1.627	1.066	1.070	1.508	3.199
Non-conventional					
Al Rajhi Banking & Investment Company	4.763	4.910	4.937	4.958	5.444
		CEE			

Conventional					
The National Commercial Bank	0.020	0.026	0.025	0.019	0.037
Samba Financial Group	0.029	0.030	0.031	0.032	0.039
Riyad Bank	0.025	0.023	0.024	0.023	0.033
Banque Saudi Fransi	0.027	0.028	0.026	0.027	0.033
The Saudi British Bank	0.028	0.023	0.023	0.029	0.034
Arab National Bank	0.027	0.024	0.030	0.028	0.035
Saudi Hollandi Bank	0.026	0.022	0.010	0.027	0.018
The Saudi Investment Bank	0.021	0.015	0.017	0.015	0.024
Bank Al-Jazira	0.020	0.014	0.014	0.024	0.054
Non-conventional					
Al Rajhi Banking & Investment Company	0.042	0.046	0.050	0.050	0.063

Table 10. VAIC™ values for United Arab Emirates Banks (Conventional and Non-Conventional) for years 2007-2011

Bank Name	2007	2008	2009	2010	2011
		VAIC			
Conventional					
Emirates NBD	3.983	3.248	3.158	2.774	2.657
National Bank of Abu Dhabi	5.972	5.229	4.236	4.281	3.936
Abu Dhabi Commercial Bank	5.659	3.282		1.814	3.079
First Gulf Bank	7.973	7.233	7.597	8.265	8.386
Union National Bank	5.316	5.318	4.616	4.867	5.008
Commercial Bank of Dubai	4.329	3.243	2.647	2.380	2.389
The National Bank of Ras Al-Khaimah	5.275	4.008	3.838	3.935	3.786
Mashreq Bank	3.630	3.590	3.629	3.924	3.972
Bank of Sharjah	8.414	6.652	5.874	4.922	3.843
National Bank of Fujairah	4.835		2.083	2.708	3.174
Non-conventional					
Dubai Islamic Bank	4.666	3.651	3.123	2.516	2.731
Abu Dhabi Islamic Bank	3.740	3.251	1.244	2.879	2.880
		HCE			
Conventional					
Emirates NBD	2.114	2.211	2.533	2.609	3.273
National Bank of Abu Dhabi	3.225	3.539	3.500	4.431	5.143
Abu Dhabi Commercial Bank	2.469	1.482		2.645	4.841
First Gulf Bank	7.492	7.372	6.715	6.357	7.082
Union National Bank	4.221	4.089	3.855	4.511	4.510
Commercial Bank of Dubai	1.894	1.889	2.101	2.597	3.575
The National Bank of Ras Al-Khaimah	3.079	3.215	3.126	3.282	4.460
Mashreq Bank	3.212	3.171	2.908	2.869	2.917
Bank of Sharjah	3.143	4.137	5.038	5.793	7.504
National Bank of Fujairah	2.537		2.149	1.663	4.047

Bank Name	2007	2008	2009	2010	2011
Non-conventional					
Dubai Islamic Bank	2.170	1.998	2.499	2.958	3.884
Abu Dhabi Islamic Bank	2.290	2.291	1.123	2.608	3.043
		CEE			
Conventional					
Emirates NBD	0.017	0.015	0.020	0.022	0.016
National Bank of Abu Dhabi	0.022	0.025	0.022	0.024	0.023
Abu Dhabi Commercial Bank	0.015	0.007		0.015	0.025
First Gulf Bank	0.027	0.029	0.031	0.033	0.032
Union National Bank	0.024	0.022	0.021	0.029	0.028
Commercial Bank of Dubai	0.024	0.021	0.022	0.030	0.034
The National Bank of Ras Al-Khaimah	0.032	0.031	0.032	0.031	0.040
Mashreq Bank	0.071	0.069	0.065	0.070	0.056
Bank of Sharjah	0.019	0.027	0.034	0.032	0.043
National Bank of Fujairah	0.031		0.025	0.022	0.035
Non-conventional					
Dubai Islamic Bank	0.022	0.018	0.024	0.031	0.040
Abu Dhabi Islamic Bank	0.028	0.024	0.011	0.027	0.026

3.2 Results :

Prior to getting results from the data it was necessary to check the reliability of the data. Thus, regression models were applied, using the Value Added (VA) as a dependent variable, and Capital Employed (CE) and Human Capital (HC) as independent variables. The same regression models were reapplied by adding a dummy variable to take control for any difference between conventional and non-conventional banks. The dummy variable (NonComm) takes the value one for a non-conventional bank and zero for a conventional bank. **Table 11** shows the results for each model for years 2007 to 2011. The coefficient of determination (*R2*) is in the high .70s high and low .8s for the first model (VA dependent and CE independent), and for the second model (VA dependent and HC independent) it is .88 for the year 2007 with a declining trend reaching 0.64 in 2011. With dummy variable, R2 for HC being independent and VA dependent exhibit exactly the same pattern as that of HC being independent and VA dependent without dummy variable while CE being independent with and without dummy variable exhibit similar patterns.

Table 11. Regression results of VA as dependent variable and CE or HC as independent variables.

	2007	2008	2009	2010	2011
				CE independent and VA dependent	
Slope	0.027***	0.025***	0.025***	0.023***	0.024***
Intercept	94.1	66.5	–1.16	25.9	25.7
R2	0.71	0.82	0.83	0.78	0.86
				HC independent and VA dependent	

Slope	4.4***	3.1***	3.2***	3.1***	2.9***
Intercept	18.4	89.9	28.0	36.9	74.6
R2	0.88	0.78	0.75	0.70	0.64
		CE independent and VA dependent (with NonConv dummy variable)			
Slope	0.028***	0.025***	0.026***	0.024***	0.024***
Non-Conv	267.4**	174.3*	140.3	101.5	78.7
Intercept	19.9	15.4	–29.7	–0.81	6.9
R2	0.76	0.84	0.84	0.79	0.84
		HC independent and VA dependent (with NonConv dummy variable)			
Slope	4.4***	3.1***	3.2***	3.1***	2.9***
Non-Conv	78.1	46.4	25.9	3.9	–22.2
Intercept	2.7	78.7	23.7	36.0	79.1
R2	0.88	0.78	0.75	0.70	0.64

*, **, *** refers to significant levels of 0.05, 0.01 and 0.001, respectively.

Table 12 shows the same regression models but by individual GCC countries. For the first model (VA dependent and CE independent), Qatar and Oman have the highest R2, .95, and Bahrain has the lowest, .67 and with dummy variable, the highest is again Qatar (0.98) followed by Saudi (.92) and the lowest is again Bahrain. The second model (VA dependent and HC independent) , Oman is the highest (.96) followed by Kuwait (.81) and the lowest is the Emirates (0.69) and with dummy variable, Saudi is the highest (0.85) followed by Qatar (0.83) and Bahrain (0.82) and the lowest is Kuwait (0.70) followed by the and the Emirates (0.71).

Table 12. Regression results of VA as dependent variable and CE or HC as independent variables by GCC Countries.

	Bahrain	Emirates	Kuwait	Oman	Qatar	Saudi
				CE independent and VA dependent		
Slope	0.015***	0.017***	0.026***	0.026***	0.026***	0.030***
Intercept	82.9**	158.3***	–41.8	20.7**	113.4***	–21.0
R2	0.67	0.81	0.78	0.95	0.95	0.70
				HC independent and VA dependent		
Slope	2.2***	2.3***	2.9***	3.1***	7.5***	3.8***
Intercept	40.4	155.4**	47.4	–3.4	–51.7	5.5
R2	0.82	0.69	0.81	0.96	0.76	0.76
			CE independent and VA dependent (with NonConv dummy variable)			
Slope	0.015***	0.017***	0.026***		0.028***	0.026**
Non-Conv	20.4	2.0	–66.3		184.9***	1041.0***

Intercept	75.0*	157.8***	−16.9	17.2	8.9
R2	0.67	0.81	0.79	0.98	0.92
HC independent and VA dependent (with NonConv dummy variable)					
Slope	2.2***	2.3***	3.0***	8.6***	3.1***
Non-Conv	−13.3	−148.3	−211.3*	281.9***	742.3***
Intercept	45.2	178.2**	107.9	−243.6**	93.4
R2	0.82	0.71	0.70	0.83	0.85

*, **, *** refers to significant levels of 0.05, 0.01 and 0.001, respectively

Figure 2 depicts the overall averages of VAIC for non-conventional and conventional banks over the five years, 2007-2011. To test the parallelism of the lines segments for the adjacent years utilizing the multivariate profile analysis method (in D. F. Morrison), leads to reject the parallelism of line segments ($p<0.01$). Table 3 shows the results for each model which is a linear relation between CE and VA, the former being the independent variable and the latter dependent variable for each country and for every year. All models show a positive linear relation between the two variables (significant positive slope). For example, for year 2007 the model is VA = 66.5 + 0.025 CE with coefficient of determination R2 = 0.71. In other word, the correlation coefficient between VA and CE is 0.84. And adding the Bank Type (conventional and non-conventional) to the model, it becomes VA = 19.9 + 0.028 CE + 19.9 D, where D is a dummy variable such that D is 0 for conventional banks and 1 for non-conventional.The results of the rankings of the GCC banks based on the Value Added Intellectual Coefficient (VAIC™), Human Capital Efficiency (HCE), and Capital Employed Efficiency (CEE) for the last two years (2010-2011) for conventional and non-conventional are presented in Tables 13, 14 and 15 respectively. The ranking in Table 13 shows that for VAIC™, **which expresses the intellectual ability and indicates the value creation efficiency of all resources (the sum Capital Employed Efficiency indicator and Intellectual Capital Efficiency),** the two top performers for conventional are Qatar National Bank followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf AlRayan (a Qatari Bank) followed by AlRajhi Bank and Investment Company (a Saudi bank). However, the ranking in Table 14 based on Human Capital Efficiency (HCE), **an indicator which measures how much VA is created on each monetary unit invested in HC,** shows that the two top performers for conventional are Commercial Bank of Kuwait followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf Al-

Rayan followed by AlRajhi Bank and Investment Company. And the ranking in table 15 based on Capital Employed Efficiency (CEE), **an indicator which shows how much VA is created on each monetary unit invested in Capital Employed (Physical and Financial),** shows that the two top performers for conventional are Oman housing Bank followed by Mashreq Bank (a UAE bank) and for the non-conventional banks the two top performers are Qatar Islamic Bank followed by AlSalam Bank (a Bahraini Bank).

Table 13. VAIC Ranking Summary for GCC Conventional and Non-Conventional Banks for Years 2010-2011

Conventional Banks	2010	2011
Qatar National Bank (Qatari)	10.74	10.82
First Gulf Bank (UAE)	8.27	8.39
Bank Saudi Fransi (Saudi)	5.78	5.32
National Bank of Kuwait (Kuwaiti)	5.4	5.3
National Bank of Bahrain (Bahraini)	3.97	4.1
Omani Housing Bank (Omani)	4.02	3.8
Non-Conventional Banks		
Masraf AlRayan (Qatari)	15.4	10.82
Company(Saudi)AlRajhi Banking and Investment	٥.٧٥	٥.٦
Ahli United Bank (Kuwaiti)	3	3
Abu dhabi Islamic Bank	٢.٨	٢.٨٨
AlSalam Bank (Bahrain)	٢.٥٧	١.١٦

Table 14. HCE Ranking Summary for GCC Conventional and Non-Conventional Banks for Years 2010-2011

Conventional Banks	2010	2011
Commercial Bank of Kuwait	٦.٦٦	8.74
First Gulf Bank (UAE)	٦.٤	٧.١
Qatar National Bank	٦.٧٣	٥.٧٧
Faransi Bank Saudi	٥.٠٠	٦.٠٠
United Gulf Bank (Bahraini)	٧.٦	
Omani International Bank (Omani)	٤.٠٠	٤.١
Non-Conventional Banks		
Masraf AlRayan (Qatari)	١٣.٠٠	٢٢.١
Company(Saudi)AlRajhi Banking and Investment	٥.٩٦	٥.٤
AlSalm Bank (Bahrain)	٤.٧	5.34
Finance House Kuwait	٢.٨٧	٥.٥٤
(UAE)Duabi Islamic Bank	٣	٣.٨٨

Table 15. CEE Ranking Summary for GCC Conventional and Non-Conventional Banks for Years 2010-2011

Conventional Banks	**2010**	**2011**
Oman Housing Bank (Oman)	.066	.٠٦٧
Mashreq Bank (UAE)	.٠٧٠	.٠٥٦
Industrial Bank of Kuwait (Kuwaiti)	.٠٢٧	.٠٥٣

Bank AlJazira (Saudi)	٠.٢٤	.054
Doha Bank (Qatari)	٠.٣	.038
National Bank of Bahrain (Bahraini)	٠.٢٦	.031
Non-Conventional Banks		
Qatar Islamic Bank (Qatari)	٠.٦٢	٠.٨٧
AlSalam Bank (Bahrain)	٠.٥٨	٠.٧٢
AlRajhi Bank and Investment Company (Saudi)	٠.٥٠	٠.٦٣
Kuwait Finance House	٠.٢٦	٠.٤٦
Duabi Islamic Bank(UAE)	٠.٣١	٠.٤٠

4. **Conclusions and Future Research:Conclusions:** The paper uses VAIC™ model to measure the Intellectual Capital efficiency of the GCC Banks. Three value efficiencies, HCE, CEE and VAIC™ indicators were used in the analysis using a data set related to GCC Banks covering a five years period from 2007 to 2011. The data set was divided into conventional (commercial) and no-conventional (Islamic) banks. The results of the rankings of the GCC banks for the last two years (2010-2011) show that for VAIC™, **which expresses the intellectual ability and indicates the value creation efficiency of all resources (the sum Capital Employed Efficiency indicator and Intellectual Capital Efficiency),** the two top performers for conventional are Qatar National Bank followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf AlRayan (a Qatari Bank) followed by AlRajhi Bank and Investment Company (a Saudi bank). However, the results of ranking based on Human Capital Efficiency (HCE), **an indicator which measures how much VA is created on each monetary unit invested in HC,** shows that the two top performers for conventional are Commercial Bank of Kuwait followed by First Gulf Bank (a UAE bank) and for the non-conventional (Islamic) banks the two top performers are Masraf AlRayan followed by AlRajhi Bank and Investment Company. And the ranking result based on Capital Employed Efficiency (CEE), **an indicator which shows how much VA is created on each monetary unit invested in Capital Employed (Physical and Financial),** shows that the two top performers for conventional are Oman housing Bank followed by Mashreq Bank (a UAE bank) and for the non-conventional banks the two top performers are Qatar Islamic Bank followed by AlSalam Bank (a Bahraini Bank).**Future Research:** One area of future research could be to apply VAIC™ on other sectors within a GCC member country Stock Market, such as Kuwait and to do a comparison among the member countries within the same sector. Another area of future research could be to apply VAIC™ on the national level and draw comparison

between GCC countries. The development of a VAICTM based Decision Support System for Intellectual Capital performance could be another research study.

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