Etikonomi
Volume 24(2), 2025: 335 - 352
P-ISSN: 1412-8969; E-ISSN: 2461-0771
https:// doi.org/10.15408/etk.v24i2.38708

Intellectual Capital and Bank Profitability Nexus: Evidence From Gulf Cooperation Council Countries

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JEL Classification:
E22
G21
O34
L25

Received: 06 May 2024

Revised: 13 May 2025

Accepted: 25 May 2025

Available online: September 2025

Published regularly: September 2025

Abstract

Research Originality: This article presents novel and fresh empirical evidence on the relationship between intellectual capital and bank profitability and reports the results for the whole sample as well as at country breakdown.

Research Objectives: Using a dataset of 60 banks from GCC countries between 2008 and 2022, the article investigates the association between intellectual capital and bank profitability by implementing M-VAIC.

Research Methods: We developed two models in which profitability ratios are the dependent variables and the M-VAIC components are the independent variables and ran pooled OLS and panel regressions.

Empirical Results: The study's findings showed that while structural capital efficiency has a negative influence on bank profitability, other components have a positive impact on bank profitability. The signs and the significance levels at the country details do not show essential differences.

Implications: The study's results will have significant implications on how bank managers and policymakers invest and manage intellectual capital. The study offered an original contribution to the literature by presenting fresh empirical evidence from GCC countries for a reasonably long period.

Keywords:
intellectual capital; bank profitability; modified value added intellectual capital; financial performance

How to Cite:

Osman, Z., & Yilmaz, I. (2025). Intellectual Capital and Bank Profitability Nexus: Evidence From Gulf Cooperation Council Countries. *Etikonomi*, *24*(2), 335 – 352. https://doi.org/10.15408/etk.v24i2.38708.

INTRODUCTION

Intellectual capital (IC) is a contemporary notion that is attracting researchers and is growing equally in terms of concept and measurement mechanism, as it is a concept that is continually renewable and evolving in response to its surroundings. Measuring, assessing, and revealing intellectual capital is a significant challenge for many businesses, particularly those in the finance industry, which depend on quantitative metrics. There is strong evidence that intellectual capital will contribute to achieving high value and growth for the organization. In the current knowledge-driven economy, intellectual capital (IC) is considered a valuable element that plays a significant role in creating value, as reflected in high performance (Kalkan et al., 2014). Many authors have believed that IC is a pivotal and significant component for the growth of banks, enhancing their profitability (Nimtrakoon, 2015; Sarea & Alansari, 2016). The IC consists of three items: human capital (HC), structural capital (SC), and capital employed (CE) (Mariya & Shakina, 2014). As opined by Anuonye (2015), HC is related to the competence, skills, and training of employees. In the same vein, the Information system, copyrights, corporate reputation, patents, and quality standards are the components of SC. At the same time, the worth of the assets that contribute to a corporation's ability to generate earnings, known as operating assets, is part of CE Public.

The majority of recent studies implemented the value-added intellectual coefficient (VAIC) model built by Joshi et al. (2013), Yalama (2013), and Asutay and Ubaidillah (2024) to examine the nexus between IC and financial performance of the firms using three components, namely: value-added efficiency of human capital (VAHU), value-added efficiency of structural capital (STVA), and value-added efficiency of capital employed (VACA). However, the literature on the link between VAIC and banks' financial performance still has not concluded on a unique outcome. The majority of previous research that has explored the linkage between the VAIC model and financial performance suggests that IC has a positive impact on the financial performance of firms and the price per share of firms (Chinnasamy et al., 2023). On the other hand, some studies found a weak relationship or negative link between the VAIC and banks' financial performance (Dženopoljac et al., 2016). Many previous studies have been conducted to explore the impact of VAIC on financial performance over the last two decades worldwide (Nawaz & Haniffa, 2017; Khan et al., 2015; Rehman et al., 2012). Despite these studies, there are limited investigations that explore the relationship between WAIC and profitability, especially in the GCC, as far as the researchers' knowledge extends (Buallay, 2019; Alqahtani & Mayes, 2018; Al-Musali & Ku Ismail, 2016; Zafar & Yasin, 2025). These studies have yielded mixed results; furthermore, the majority of them were conducted in a single country of the GCC. The present study aims to report on the gap in the literature by comparing its results with previous research in the GCC and worldwide to determine if there are significant differences compared to other studies.

Kurfi et al. (2017) define IC as a resource of knowledge that is acquired and utilized by the firm. Hence, the challenges of the firm depend on detecting, illustrating, and measuring this knowledge. IC can be defined as the difference between a company's

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

book value and its market value. Observing the missing value of the financial statements by identifying the gap between the market value and book value of enterprises has drawn the attention of much research. Many authors reported that (HC), (SC), and (CE) are the main components of IC (Cabrilo et al., 2018; Martín de Castro et al., 2011). To gauge an organization's intellectual capital performance and compare different companies. The connection between the VAIC model and firm performance has been examined by several studies, which have reported a strong link between IC and firm performance and stock returns (Nimtrakoon, 2015; Ozkan et al., 2017; Shair et al., 2021). In financial and accounting studies, HC can be considered as the intangible assets that have been the pivot of debate over the last two decades. Research in the field has found that such imperceptible assets have presented pressing issues for governments, regulatory authorities, and organizations alike (Zimmerman, 2015). In addition, HC is linked to the employees' tacit or explicit knowledge and their ability to provide helpful knowledge to the firm. Many researchers, such as Castro et al. (2011), believe that human capital (HC) encompasses skills, mental abilities, behaviors, learning, experiences, and abilities that enable individuals to perform at a high level. As mentioned by Becker, HC is the investment of organizations in the field of training and development to enhance the knowledge, experience, and expertise of workers, which leads to maximizing the organization's productivity and outputs.

On the other hand, Shair et al. (2021) defined structural capital (SC) as the support infrastructure that facilitates HC's thriving. In addition, SC is defined as the unequivocal knowledge that an organization possesses (Beltramino et al., 2020). To support the company's productivity, it is necessary to have hardware and software, databases, a structured organization, patents, trademarks, and all the necessary organizational capacity, which is considered SC, referring to the support required for the company's productivity.

Capital employed efficiency (CE) denotes the company's ability to implement procedures that enhance employee efforts to increase their intellectual performance, which is reflected in financial performance. Choudhury (2010) defines capital employed as" the capital utilized is regarded as the strongest predictor of execution". In addition, the CEE has a greater influence on the profitability of participation banks than other parts of VAIC. Similarly, Nimtrakoon (2015) asserts that CEE has a positive impact on performance. Following previous studies, the modified value-added intellectual capital (MVAIC) adopted by this study emphasizes the three components of IC, namely, HC, SC, and CE (Ozkan et al., 2017). Numerous studies in the field have investigated the relationship between IC and firm performance. The results were mixed; some studies have indicated a positive correlation between IC and financial performance, while other studies did not document a significant impact of IC on the financial performance of firms.

Using competitive advantage as a mediator, Awwad and Qtaishat (2023) examined the relationship between IC and the financial performance of Jordanian commercial banks. The authors reported a positive association between IC and both competitive advantage and the financial performance of commercial banks. In the same vein, during the COVID-19 pandemic. Similarly, the impact of IC on financial performance in the

telecommunications industry has been investigated by Lili et al. (2023). Their study documented a positive impact of return on assets (ROA) and return on equity (ROE), but it does not affect earnings per share. Their research revealed that return on equity (ROE) and return on assets (ROA) have a positive and significant influence, whereas earnings per share remain unaffected.

In addition, Ousama et al. (2020) examine the nexus between intellectual capital (IC) and profitability in Islamic banks operating in GCC countries. The results showed a favorable correlation between Profitability and Islamic banks. In their recent study, using the Skandia Navigator Model (SNM), Chinnasamy et al. (2023) evaluated the relationship between intellectual capital (IC) and profitability in India and GCC banks. The results revealed a substantial impact of IC (human capital and customer focus) on profitability in selected banks in India and the GCC. By selecting four companies operating in the distribution of drinking water, Gogan et al. (2016) examine the impact of IC on the firm's performance. The findings reported that the IC has a positive impact on organizational performance.

In technology firms across five ASEAN countries, Nimtrakoon (2015) has reported a positive impact of intellectual capital on firm performance. A recent study conducted by Shairi et al. (2021) presents a positive association between MVAIC and ROA, but a mixed relationship between the efficiency of MVAIC components and ROA. Faruq (2023) examines the relationship between IC and the performance of listed banks in Bangladesh from 2015 to 2021, employing both static and dynamic methods. The study reported that MVAIC has a significant and positive impact on bank performance, regardless of the method adopted. Additionally, corporate governance reports the same result using both methods.

Ozkan et al. (2017) conducted a study to analyze the effect of IC on the financial performance of 44 banks operating in Turkey between 2005 and 2014. The study reveals that the banks' financial performance has been influenced positively by both HC and CE. More interestingly, in the service sector of an emerging country like Vietnam, Nguyen (2023) examines the impact of IC on firm financial performance. The results showed that HC and CE have a strong positive impact on profitability, while ST's impact was inconsistent. In contrast, some authors have reported no significant impact or a negative relationship between IC and financial performance. In their study, Dženopoljac et al. (2016) attempted to investigate the impact of IC on firm financial performance in the technology sector of Serbia. The findings reveal that IC has no remarkable effect on the firm's financial performance in this sector.

This study aims to explore the connectivity between the M-VAIC model and examine the separate effects of (HCE), (SCE), (CEE), and (RCE) on bank performance during 2008-2022 across all banks (conventional and Islamic banks) in the GCC. The study makes a significant contribution to the existing body of literature in several aspects. Firstly, it presents fresh and novel evidence from GCC countries about the relationship between intellectual capital and financial performance. GCC countries exhibit distinct dynamics compared to other regions of the world, possessing strong

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

currencies and macroeconomic indicators, yet they differ from developed countries in several key aspects.

The study enhances the understanding of the intellectual capital concept in the banking sector, where capital is a crucial factor for survival and solvency. It emphasizes that intellectual capital is also important for the sector, alongside financial capital. Secondly, unlike the majority of previous studies, it employs the M-VAIC model, which is superior to and newer than the traditional VAIC model. Thirdly, the study reports the results for the whole sample as well as at the country breakdown. Moreover, this study may pave the way for scholars to conduct further research on the relationship between IC and profitability.

METHODS

The sample used in this study encompasses banks from six GCC countries for the period 2008-2022. The initial sample consisted of 66 banks, but some were excluded due to missing data. Some of the observations were also removed because of missing or outlier values. Therefore, the dataset is an unbalanced panel comprising 60 banks and 837 observations. The data was collected from the LSEG Workspace (previously Refinitiv) database.

Following Dženopoljac et al. (2016) and Pulic (2004), M-VAIC is adopted to assess the association between the IC and the financial performance of these banks. The return on equity (ROE) and return on assets (ROA) ratios are used as proxies to measure the financial performance of banks, which are widely adopted in many studies (Arif, 2012; Ozkan et al., 2017; Ul Rehman et al., 2024). They have been used in other studies, as pointed out by Joshi et al. (2013) and Yalama (2013), who clarified that ROA and ROE are the primary measures of banks' financial performance. The ROA is computed by dividing the net profit or loss of the year by total assets, while ROE is computed by dividing net profit or loss by total owner equity. Table 2 presents the variables used in the models, the corresponding measurements, and the prior studies referenced.

Table 1. Sample Details

Country	Banks	Observations
Bahrain	8	115
Kuwait	11	160
Oman	7	88
Qatar	7	88
Saudi Arabia	10	150
United Arab Emirates	17	236
Total	**60**	**837**

According to previous literature, a link has been established between IC and a firm's financial performance, and the nature of this relationship has been predominantly

viewed as positive by authors. However, some studies confirmed the negative relationship between IC and a firm's financial performance. We argue that IC has value and a significant impact on the profitability of listed Banks in the GCC. In this study, the independent variables used are the components of the M-VAIC model. As developed and reported by Pulic (2000), M-VAIC is calculated as follows:

$$\text{M-VAIC} = \text{HCE} + \text{SCE} + \text{CEE} + \text{RCE}$$

There are two dependent variables, return on assets (ROA) and return on equity (ROE). Therefore, the models can be stated as below:

(1) $$ROA_{i,t} = \beta_0 + \beta_1 HCE_{i,t} + \beta_2 SCE_{i,t} + \beta_3 CEE_{i,t} + \beta_4 RCE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 GDPGR_{i,t} + \varepsilon_{i,t}$$

(2) $$ROE_{i,t} = \beta_0 + \beta_1 HCE_{i,t} + \beta_2 SCE_{i,t} + \beta_3 CEE_{i,t} + \beta_4 RCE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 GDPGR_{i,t} + \varepsilon_{i,t}$$

Table 2. Variable Details

Variables	Calculation	Reference Studies
Human capital efficiency (HCE)	HCEi=VA/HC HC refers to the total costs invested in the employees.	(Castro et al., 2011)
Structural capital efficiency (SCE)	SC/VA SC refers to the difference between VA and HC	(Shair et al., 2021)
Capital employed efficiency (CE)	VA/CE CE refers to total equity plus long-term liabilities.	(Dženopoljac et al., 2016)
Relational capital efficiency	VA/RC RC refers to marketing and selling expenses	(Cabrilo et al., 2018)
VA	VA =OP+Ec+D+A Where VAi represents the total value added created. OP denotes the operating profit. EC refers to the employment cost, D refers to the depreciation of A refers to the amortization.	(Ozkan, et al., 2017; Cabrilo et al., 2018)
MVAIC	HCE+SCE+CEE+RCE	(Pulic, 2000; Ahlawat et al. 2024)
Return on Assets (ROA)	Net profit /Total assets	(Arif, 2012; Ozkan, et al., 2017).
Return on Equity (ROE)	Net profit/Total equity	(Joshi et al., 2013; Yalama, 2013)
Firm Size (SIZE)	Natural log of Total Assets	(Alipour, 2012)
Leverage (LEV)	Total Liabilities / Total Assets	(Khan et al., 2015)
GDPDR	GDP Growth Rate	(Al Musali et al., 2016)

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

Pooled ordinary least squares (OLS) regressions and panel regressions with fixed and random effects models have been run for each model as the estimation method. To compare between fixed and random effects models, we have used the Hausman specification test.

RESULTS AND DISCUSSION

This section of the study presents descriptive statistics, a correlation matrix, and the results of OLS and panel regressions, and discusses the presented results. Table 3 presents the mean, standard deviation, minimum, and maximum values for all variables.

Table 3. Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
HCE	837	3.577	1.782	-7.61	15
SCE	837	.691	.383	-2.75	4.73
CEE	837	.129	.087	-.78	.53
RCE	837	6.385	5.687	-55.15	61
MVAIC	837	10.782	6.493	-49.48	70.03
ROA	837	.012	.013	-.105	.059
ROE	837	.078	.193	-3	.81
LEV	837	.856	.079	.01	1
LNTA	837	23.446	1.179	19.4	26.5
GDPGR	837	2.722	4.053	-8.86	19.59

The composite measure of intellectual capital is the M-VAIC score, which has a mean value of 10.782 and a standard deviation of 6.493. Among the components of M-VAIC, the most significant value in terms of mean comes from relational capital efficiency, followed by human capital efficiency. This result supports the idea that the intellectual capital potential of banks primarily arises from investments in human resources and relationships with stakeholders.

The mean ROA is 1.2% and the mean ROE is 7.8%, which are at reasonable levels. ROE is expected to be greater than ROA, especially for the banking sector, because ROE is calculated as net profit divided by total equity. At the same time, ROA uses total assets in the denominator. Since banks operate with high financial leverage and relatively lower equity, ROE results in higher percentages. The mean leverage is 85.6 %, which is a very reasonable level for the banking industry. The GDP growth rate has a mean value of 2.7% for the countries in the sample, ranging from -8.86% to 19.59%, implying significant macroeconomic differences among the countries. Table 4 presents the pairwise correlations among the variables. The coefficients and p-values, given in parentheses, confirm that there are no high correlations among them.

Table 4. Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) HCE	1.000									
(2) SCE	0.161	1.000								
	(0.000)									
(3) CEE	0.334	-0.030	1.000							
	(0.000)	(0.392)								
(4) RCE	0.288	0.013	0.275	1.000						
	(0.000)	(0.708)	(0.000)							
(5) MVAIC	0.541	0.114	0.344	0.959	1.000					
	(0.000)	(0.001)	(0.000)	(0.000)						
(6) ROA	0.616	0.042	0.524	0.372	0.504	1.000				
	(0.000)	(0.222)	(0.000)	(0.000)	(0.000)					
(7) ROE	0.456	-0.074	0.555	0.301	0.392	0.698	1.000			
	(0.000)	(0.032)	(0.000)	(0.000)	(0.000)	(0.000)				
(8) LEV	-0.106	0.016	0.049	-0.051	-0.072	-0.119	-0.068	1.000		
	(0.002)	(0.653)	(0.158)	(0.141)	(0.037)	(0.001)	(0.051)			
(9) LNTA	0.257	0.060	-0.058	-0.042	0.036	0.235	0.189	0.325	1.000	
	(0.000)	(0.081)	(0.092)	(0.225)	(0.293)	(0.000)	(0.000)	(0.000)		
(10) GDPGR	0.161	0.047	0.094	0.100	0.136	0.204	0.078	-0.100	-0.049	1.000
	(0.000)	(0.174)	(0.007)	(0.004)	(0.000)	(0.000)	(0.023)	(0.004)	(0.155)	

This section reports the results of regressions run based on the models. There are two models in which ROA or ROE is the dependent variable, and we have run three regressions for each model: pooled ordinary least squares (OLS), panel fixed effects, and panel random effects. Therefore, the total number of regressions is six, and each of them is reported in Table 5.

Table 5 shows the pooled OLS regression results for the model in which ROA is the dependent variable. The model has an R-squared value of 56.5%, which implies that the independent variables explain 56.5% of the variability in ROA. The model has an overall significance with an F-test value of 154. Human capital efficiency, capital employed efficiency, and relational capital efficiency have a positive effect on profitability, while Structural capital efficiency has no significant relationship with ROA. The positive relationship suggests that intellectual capital plays a crucial role in driving financial success, demonstrating that banks that effectively leverage their intellectual assets are more likely to achieve better financial performance. Control variables also

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

revealed significant coefficients; leverage has a negative effect on the intellectual capital-profitability relationship, while bank size and GDP growth rate have a positive and significant effect.

Table 5. Pooled OLS – ROA is the dependent variable

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf.. Interval]	
HCE	.003	0	13.09	0	.002	.003
SCE	-.001	.001	-0.97	.334	-.002	.001
CEE	.054	.004	14.59	0	.046	.061
RCE	0	0	6.45	0	0	0
LEV	-.025	.004	-6.17	0	-.032	-.017
LNTA	.002	0	8.66	0	.002	.003
GDPGR	0	0	3.92	0	0	0
Constant	-.042	.006	-6.86	0	-.053	-.03
Mean dependent var		0.012	SD dependent var			0.013
R-squared		0.565	Number of obs			837
F-test		154.059	Prob > F			0.000
Akaike crit. (AIC)		-5640.598	Bayesian crit. (BIC)			-5602.760

Table 6. Pooled OLS – ROE is the dependent variable

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	
HCE	.023	.003	6.98	0	.017	.03
SCE	-.054	.013	-4.09	0	-.08	-.028
CEE	1.037	.063	16.34	0	.913	1.162
RCE	.004	.001	4.16	0	.002	.006
LEV	-.318	.069	-4.60	0	-.454	-.182
LNTA	.035	.005	7.25	0	.025	.044
GDPGR	0	.001	-0.36	.722	-.003	.002
Constant	-.67	.105	-6.38	0	-.876	-.464
Mean dependent var		0.078	SD dependent var			0.193
R-squared		0.450	Number of obs			837
F-test		96.758	Prob > F			0.000
Akaike crit. (AIC)		-867.430	Bayesian crit. (BIC)			-829.591

Table 6 shows the pooled OLS regression results for the model in which ROE is the dependent variable. The model has an R-squared value of 45%, which implies that the independent variables explain 45% of the variability in ROE, which is lower than

the R-squared value for the ROA model. The model has an overall significance with an F-test value of 96.7. All components produced significant results; however, Human capital efficiency, capital employed efficiency, and Relational capital efficiency have a positive effect on profitability, while Structural capital efficiency has a negative and significant relationship with ROE. In terms of control variables, the results are parallel to those in the ROA model. Similar to the case of ROA, the positive relationship implies that intellectual capital is one of the most important key drivers of value creation and profitability for the banks. Banks that foster a knowledge-based organizational culture, as evidenced by human capital efficiency, are more likely to experience sustained success and financial returns.

Table 7. Panel Regression – Fixed Effects (ROA)

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
HCE	.002	0	9.10	0	.002	.003
SCE	-.001	.001	-2.11	.036	-.003	0
CEE	.074	.005	15.31	0	.064	.083
RCE	0	0	5.17	0	0	0
LEV	-.012	.005	-2.54	.011	-.021	-.003
LNTA	.001	.001	2.00	.046	0	.003
GDPGR	0	0	3.97	0	0	0
Constant	-.032	.015	-2.07	.039	-.062	-.002
Mean dependent var		0.012	SD dependent var			0.013
R-squared		0.567	Number of obs			837
F-test		144.003	Prob > F			0.000
Akaike crit. (AIC)		-5998.443	Bayesian crit. (BIC)			-5960.604

Table 7 presents the results of the panel regressions with a fixed-effects model in which ROA is the dependent variable. The results of the fixed-effects model reveal that HCE, CEE, and RCE all have a positively significant effect on ROA at a 1% significance level, but SCE has a negatively significant effect on ROA at a 5% level. Leverage has a negatively significant effect, while firm size has a positively significant effect on ROA. The macroeconomic control variable, GDP growth rate, has a significantly positive effect.

Table 8 presents the results of the random effects model, which are parallel to those of the fixed effects model. SCE has a significantly negative effect on ROA at a 10% level. To choose between fixed and random effects, we performed the Hausman specification test. The chi-square test value was found to be 22.036 with a p-value of 0.003, which is less than 5%. This result confirms that the fixed effects model outperforms the random effects model.

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

Table 9 presents the results of the panel regressions using the fixed effects model, with ROE as the dependent variable. The results of the fixed effects model reveal that HCE, CEE, and RCE all have a significantly positive effect on ROE at a 1% significance level, whereas SCE has a significantly negative effect on ROE at a 1% level. Leverage has a negatively significant effect, while firm size has a positively significant effect on ROA. The macroeconomic control variable, GDP growth rate, has no significant effect. Compared to ROA, the coefficients under the ROE model are higher.

Table 8. Panel Regression – Random Effects (ROA)

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	
HCE	.003	0	10.73	0	.002	.003
SCE	-.001	.001	-1.83	.067	-.003	0
CEE	.068	.004	15.70	0	.059	.076
RCE	0	0	5.75	0	0	0
LEV	-.016	.004	-3.92	0	-.024	-.008
LNTA	.002	0	4.46	0	.001	.003
GDPGR	0	0	4.23	0	0	0
Constant	-.043	.01	-4.31	0	-.063	-.023
Mean dependent var		0.012	SD dependent var			0.013
Overall r-squared		0.555	Number of obs			837
Chi-square		1064.716	Prob > chi2			0.000
R-squared within		0.565	R-squared between			0.548

Table 9. Panel Regression – Fixed Effects (ROE)

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	
HCE	.016	.005	3.35	.001	.007	.026
SCE	-.044	.013	-3.55	0	-.069	-.02
CEE	1.588	.089	17.94	0	1.415	1.762
RCE	.002	.001	2.64	.008	.001	.004
LEV	-.427	.085	-5.01	0	-.595	-.26
LNTA	.083	.014	6.11	0	.056	.109
GDPGR	0	.001	0.18	.86	-.002	.002
Constant	-1.742	.283	-6.16	0	-2.297	-1.187
Mean dependent var		0.078	SD dependent var			0.193
R-squared		0.497	Number of obs			837
F-test		108.891	Prob > F			0.000
Akaike crit. (AIC)		-1124.659	Bayesian crit. (BIC)			-1086.820

Table 10 reports the results of the random effects model, which are parallel to those of the fixed effects model. SCE has a significantly negative effect on ROE at a 10 % level. Similarly, the GDP growth rate does not have a significant effect on ROE. As can be seen in these empirical results, the findings of the panel regressions are very similar to and confirm those of pooled OLS regressions. In both models, human capital efficiency, capital employed efficiency, and relational capital efficiency have a positive impact on profitability. Compared to the more tangible, asset-intensive sector, intellectual capital for banks is principally centered on human capital, including the expertise of financial analysts, product and service design teams, relationship managers, and leadership. The positive regression results highlight the value of a skilled and knowledgeable workforce that contributes to customer relations and satisfaction, as well as processes of decision-making, risk management, and innovation. All of these factors can enhance financial performance by refining operational efficiency, ensuring compliance, and informing strategic decision-making. Our results and findings are consistent with those of prior studies (Alipour, 2012; Khan et al., 2015; Faruq et al., 2023).

Table 10. Panel Regression – Random Effects (ROE)

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
HCE	.022	.004	5.57	0	.015	.03
SCE	-.046	.013	-3.68	0	-.071	-.022
CEE	1.285	.074	17.38	0	1.14	1.429
RCE	.003	.001	3.52	0	.001	.005
LEV	-.34	.074	-4.61	0	-.484	-.195
LNTA	.044	.007	6.24	0	.03	.057
GDPGR	0	.001	-0.30	.762	-.003	.002
Constant	-.885	.148	-5.97	0	-1.176	-.595
Mean dependent var		0.078	SD dependent var			0.193
Overall r-squared		0.446	Number of obs			837
Chi-square		726.691	Prob > chi2			0.000
R-squared within		0.490	R-squared between			0.443

The positive result for RCE implies that banks that focus on building and maintaining strong customer relationships, a good brand reputation, and offering individualized services are more likely to realize better financial results. The underlying reason for this situation stems from the importance of customer retention and satisfaction in the banking sector, given its highly competitive nature worldwide, including in the GCC region. As an additional analysis and a robustness check, we ran the panel regression using the "by country" command in Stata; in other words, we ran the models by country details. The results of this additional analysis are reported

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in Tables 11A and 11B, in which the ratios of ROA and ROE are the dependent variables, respectively.

Table 11A Panel Regression per Country – Random Effects (ROA)

ROA	Bahrain	Kuwait	Oman	Qatar	KSA	UAE
HCE	0.08 (0.001)***	0.09 (0.000)***	0.07 (0.002)***	0.05 (0.001)***	0.05 (0.002)***	0.07 (0.000)***
SCE	0.02 (0.002)**	0.001 (0.001)**	0.086 (0.024)***	-0.043 (0.012)*	0.079 (0.024)**	-0.001 (0.001)*
CEE	0.07 (0.016)***	0.081 (0.006)***	-0.012 (0.015)***	0.032 (0.012)***	0.016 (0.022)***	0.081 (0.006)***
RCE	0.02 (0.002)***	0.002 (0.002)***	0.002 (0.002)***	0.002 (0.002)***	0.002 (0.002)***	0.002 (0.002)***
LEV	-0.12 (0.028)**	0.011 (0.007)*	0.068 (0.011)**	-0.071 (0.017)**	-0.003 (0.008)*	-0.024 (0.007)*
LNTA	-0.002 (0.004)***	0.003 (0.001)***	-0.002 (0.001)***	-0.006 (0.002)***	-0.004 (0.002)***	0.002 (0.001)***
GDPGR	0.001 (0.005)*	0.004 (0.008)*	0.011 (0.003)*	0.006 (0.004)*	0.005 (0.007)*	0.002 (0.002)**
Constant	0.128 (0.074)***	-0.081 (0.021)***	-0.063 (0.024)***	0.171 (0.032)***	0.051 (0.042)***	-0.043 (0.021)***

*** p<.01, ** p<.05, * p<.1, Standard errors are reported in the parentheses.

Table 11B. Panel Regression per Country – Random Effects (ROE)

ROE	Bahrain	Kuwait	Oman	Qatar	KSA	UAE
HCE	0.021 (0.002)***	0.019 (0.002)***	0.017 (0.003)***	0.014 (0.004)***	0.015 (0.007)***	0.023 (0.002)**
SCE	0.03 (0.004)**	0.04 (0.004)**	0.091 (0.023)*	-0.048 (0.013)**	0.083 (0.025)**	-0.003 (0.001)*
CEE	0.069 (0.017)***	0.079 (0.007)***	-0.014 (0.011)*	0.028 (0.011)***	0.019 (0.021)***	0.088 (0.006)***
RCE	0.003 (0.005)***	0.003 (0.007)***	0.005 (0.005)***	0.004 (0.008)***	0.003 (0.004)***	0.003 (0.002)***
LEV	-0.117 (0.022)***	0.021 (0.008)***	0.066 (0.017)***	-0.074 (0.019)***	-0.004 (0.007)***	-0.023 (0.007)***
LNTA	-0.001 (0.006)***	0.004 (0.005)***	-0.003 (0.003)***	-0.007 (0.001)***	-0.006 (0.004)***	0.007 (0.001)***
GDPGR	0.001 (0.008)*	0.005 (0.009)*	0.014 (0.004)*	0.007 (0.006)*	0.007 (0.005)*	0.004 (0.002)*
Constant	0.111 (0.068)***	-0.083 (0.022)***	-0.064 (0.025)***	0.166 (0.029)***	0.054 (0.049)***	-0.044 (0.021)***

*** p<.01, ** p<.05, * p<.1, Standard errors are reported in the parentheses.

The results revealed that per-country analyses produced similar but stronger coefficients, suggesting that the impact of intellectual capital on profitability is more clearly observable in country-specific analyses. Human capital efficiency (HCE) is found to be highly and positively significant at a 1% significance level in all countries, for both ROA and ROE, with the only exception of ROE being at a % 5% level in the UAE. The coefficients for the ROE case are higher than those in the ROA case. These results suggest that banks' investment in human capital contributes positively to their profitability, with a more pronounced effect on the return on equity. Structural capital efficiency (SCE) produced mixed results in country details. In pooled OLS and panel regressions for the entire sample, it is found to have a negative impact on profitability.

However, per-country results show different signs: Qatar and the UAE have negative coefficients, while others have positive coefficients. This condition can be attributed to the

differences in the policies and regulations of the countries regarding banks' asset structures, depreciation, and amortization rules. Capital employed efficiency (CEE) has a positive impact on both profitability ratios in all countries, except for Oman. Relational capital efficiency (RCE) has a positive impact on both profitability ratios across all countries, emphasizing the importance of strong relationships with all stakeholders. Control variables yielded mixed results in country details, which can be attributed to the structural and macroeconomic differences among the countries. The regression results of the per-country analyses are also consistent with those of previous studies (Nimtrakoon, 2015; Ozkan et al., 2017; Buallay, 2019; Chinnasamy et al., 2023).

CONCLUSION

In this study, we aimed to investigate the impact of intellectual capital on the profitability of banks by using a dataset of banks from GCC countries. The results of all models are similar to one another, differing only in the significance level of certain variables. The analysis reveals that human capital efficiency, structural capital efficiency, and capital employed efficiency have a positive and significant effect on the profitability ratios. In contrast, structural capital efficiency has a negative and significant effect. The results suggest that investing in human resources, such as providing training and career development opportunities, has a positive impact on the bank's profitability. The investment in relational capital, such as marketing and advertising expenditures, as well as other expenditures to improve relationships with suppliers and customers, also positively affects the bank's profitability. Structural capital is found to have a negative effect on profitability in all models. This finding implies that the banks should invest more in human resources. The findings will have important implications for bank managers and policymakers in designing their policies for intellectual capital and developing its components. Bank managers should not regard the costs of employees as regular expenses; instead, they should consider those costs as an investment that will improve profitability. They should consider all aspects and components of intellectual capital. The positive relationships suggest that banks that foster innovation, adopt customer-oriented strategies, and employ knowledgeable human capital are likely to have a better position for sustainable growth. Investing in intellectual capital, such as workforce training, adopting sophisticated financial technologies, and enhancing brand loyalty, can establish long-term competitive advantages in a continually evolving industry.

The results contribute to a comprehensive understanding of the strategic role and value of intellectual capital, offering valuable insights for both academics and practitioners and highlighting the potential for enhanced financial performance in a knowledge-based economy. The results suggest that banks that effectively manage and invest in the components of intellectual capital and resources are likely to enjoy a better position to enhance profitability, drive innovation, and sustain long-term growth. The study has some limitations, although it covers a relatively long period. Future studies may employ a larger dataset, including more banks and a more extended period. They may cover a

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DOI: https:// doi.org/10.15408/etk.v24i2.38708

larger sample of countries, and they can compare developed and developing countries. Future studies may include some more financial performance metrics to explore the impact of intellectual capital. The regulations of countries regarding the identification and recognition of intellectual capital components could also be considered an impactful dimension in the analysis of the relationship.

REFERENCES

Ahlawat, D., Sharma, P., & Kumar, S. (2024). Impact of Intellectual Capital on Financial Competitiveness in Context of Listed Indian Healthcare Enterprises. *Measuring Business Excellence*, *28*(3/4), 516-531. https://doi.org/10.1108/MBE-02-2024-0019.

Alipour, M. (2012). The Effect of Intellectual Capital on Firm Performance: an Investigation of Iran Insurance Companies. *Measuring Business Excellence*, *16*(1), 53-66. https://doi.org/10.1108/13683041211204671.

Alqahtani, F., & Mayes, D. G. (2018). Financial Stability of Islamic Banking and the Global Financial Crisis: Evidence from the Gulf Cooperation Council. *Economic Systems*, *42*(2), 346-360. https://doi.org/10.1016/j.ecosys.2017.09.001.

Al-Musali, M. A., & Ku Ismail, K. N. I. (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. https://doi.org/10.1108/IMEFM-03-2015-0029.

Anuonye, N. B. (2015). Intellectual Capital Measurement: Using the Earnings per share Model of Quoted Insurance Companies in Nigeria. *International Business and Management*, *10*(1), 88-98. https://doi.org/10.3968/5526.

Asutay, M., & Ubaidillah. (2024). Examining the Impact of Intellectual Capital Performance on Financial Performance in Islamic Banks. *Journal of the Knowledge Economy*, *15,* 1231-1263. https://doi.org/10.1007/s13132-023-01114-1.

Arif, A., & Nauman Anees, A. (2012). Liquidity Risk and Performance of Banking System. *Journal of Financial Regulation and Compliance*, *20*(2), 182-195. https://doi.org/10.1108/ 13581981211218342.

Awwad, M. S., & Qtaishat, A. M. (2023). The Impact of Intellectual Capital on Financial Performance of Commercial Banks: The Mediating Role of Competitive Advantage. *International Journal of Learning and Intellectual Capital*, *20*(1), 47-69. https://doi.org/10.1504/IJLIC.2023.127697.

Beltramino, N. S., García-Perez-de-Lema, D., & Valdez-Juárez, L. E. (2020). The Structural Capital, the Innovation and the Performance of the Industrial SMES. *Journal of Intellectual Capital*, *21*(6), 913-945. https://doi.org/10.1108/JIC-01-2019-0020.

Buallay, A. (2019). Intellectual Capital and Performance of Islamic and Conventional Banking: Empirical Evidence from Gulf Cooperative Council Countries. *Journal of Management Development*, *38*(7), 518-537. https://doi.org/10.1108/JMD-01-2019-0020.

Cabrilo, S., Kianto, A., & Milic, B. (2018). The Effect of IC Components on Innovation Performance in Serbian Companies. *VINE Journal of Information and Knowledge Management Systems*, *48*(3), 448-466. https://doi.org/10.1108/VJIKMS-06-2016-0033.

Chinnasamy, G., Madbouly, A., Vinoth, S., & Chandran, P. (2023). Intellectual Capital and Bank's Performance: a Cross-National Approach. *Journal of Financial Reporting and Accounting*, *22*(2), 366-391. https://doi.org/10.1108/JFRA-04-2023-0172.

Choudhury, J. (2010). Performance Impact of Intellectual Capital: a Study of Indian IT Sector. *International Journal of Business and Management*, *5*(9), 72-90. https://doi.org/10.5539/ijbm.v5n9p72.

Dženopoljac, V., Janoševic, S., & Bontis, N. (2016). Intellectual Capital and Financial Performance in the Serbian ICT Industry. *Journal of Intellectual Capital*, *17*(2), 373-396. https://doi.org/10.1108/JIC-07-2015-0068.

Faruq, M. O., Akter, T., & Rahman, M. M. (2023). Does Intellectual Capital Drive Bank's Performance in Bangladesh? Evidence from Static and Dynamic Approach. *Heliyon*, 9(7), e17656. https://doi.org/10.1016/j.heliyon.2023.e17656.

Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2013). Intellectual Capital and Financial Performance: An Evaluation of the Australian Financial Sector. *Journal of intellectual Capital*, *14*(2), 264-285. https://doi.org/10.1108/14691931311323887.

Gogan, L. M., Artene, A., Sarca, I., & Draghici, A. (2016). The Impact of Intellectual Capital on Organizational Performance. *Procedia - Social and Behavioral Sciences*, *221*, 194-202. https://doi.org/10.1016/j.sbspro.2016.05.106.

Kalkan, A., Bozkurt, Ö. Ç., & Arman, M. (2014). The Impacts of Intellectual Capital, Innovation and Organizational Strategy on Firm Performance. *Procedia - Social and Behavioral Sciences*, *150*, 700-707. https://doi.org/10.1016/j.sbspro.2014.09.025.

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. https://doi.org/10.32350/ibfr.2015.02.05.

Muftiasa, A., Wibowo, L. A., & Rahayu, A. (2023). Is Intellectual Capital Related to Telecommunications Industry Financial Performance During COVID-19?. *International Journal of Learning and Intellectual Capital*, *20*(1), 29-46. https://doi.org/10.1504/IJLIC.2023.10049256.

Martín-de-Castro, G., Delgado-Verde, M., López-Sáez, P., & Navas-López, J. E. (2011). Towards 'An Intellectual Capital-Based View of the Firm': Origins and Nature. *Journal of Business Ethics*, *98*, 649-662. https://doi.org/10.1007/s10551-010-0644-5.

Kurfi, S. A., Udin, N. M., & Bahamman, S. (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. https://doi.org/10.5897/JAT2017.0246.

https://journal.uinjkt.ac.id/index.php/etikonomi
DOI: https:// doi.org/10.15408/etk.v24i2.38708

Nawaz, T., & Haniffa, R. (2017). Determinants of Financial Performance of Islamic Banks: An Intellectual Capital Perspective. *Journal of Islamic Accounting and Business Research*, *8*(2), 130-142. https://doi.org/10.1108/JIABR-06-2016-0071.

Nguyen, N. T. (2023). The Impact of Intellectual Capital on Service Firm Financial Performance in Emerging Countries: The Case of Vietnam. *Sustainability*, *15*(9), 7332. https://doi.org/10.3390/su15097332.

Nimtrakoon, S. (2015). The Relationship between Intellectual Capital, Firms' Market Value and Financial Performance: Empirical Evidence from the ASEAN. *Journal of Intellectual Capital*, *16*(3), 587-618. https://doi.org/10.1108/JIC-09-2014-0104.

Ozkan, N., Cakan, S., & Kayacan, M. (2017). Intellectual Capital and Financial Performance: A Study of the Turkish Banking Sector. *Borsa Istanbul Review*, *17*(3), 190-198. https://doi.org/10.1016/j.bir.2016.03.001.

Pulic, A. (2000). VAIC™ an Accounting Tool for IC Management. *International Journal of Technology Management*, *20*(5-8), 702-714. https://doi.org/10.1504/IJTM.2000.002891.

Pulic, A. (2004). Intellectual Capital Does It Create or Destroy Value? *Measuring Business Excellence*, *8*(1), 62-68. https://doi.org/10.1108/13683040410524757.

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.

Ousama, A. A., Hammami, H., & Abdulkarim, M. (2020). The Association between Intellectual Capital and Financial Performance in the Islamic Banking Industry: An Analysis of the GCC Banks. *International Journal of Islamic and Middle Eastern Finance and Management*, *13*(1), 75-93. https://doi.org/10.1108/IMEFM-05-2016-0073.

Shairi, S. A. B., Mohammad, H. S., & Tuyon, J. (2021). Intellectual Capital and Firm Performance: Evidence from Technology Sector in Malaysia. *International Journal of Academic Research in Economics and Management and Sciences*, *10*(1), 244-258. https://doi.org/10.6007/ IJAREMS/v10-i1/9834.

Sarea, A. M., & Alansari, S. H. (2016). The Relationship between Intellectual Capital and Earnings Quality: Evidence from Listed Firms in Bahrain Bourse. *International Journal of Learning and Intellectual Capital*, *13*(4), 302-315. https://doi.org/10.1504/IJLIC.2016.079350/

Ul Rehman, W., Saltik, O., Degirmen, S., Ocak, M., & Shabbir, H. (2024). Dynamics of Intellectual Capital and Financial Performance in ASEAN Banks. *Arab Gulf Journal of Scientific Research, 42*(4), 1426-1443. https://doi.org/10.1108/AGJSR-12-2022-0287.

Yalama, A. (2013). The Relationship between Intellectual Capital and Banking Performance in Turkey: Evidence from Panel Data. *International Journal of Learning and Intellectual Capital*, *10*(1), 71-87. https://doi.org/10.1504/IJLIC.2013.052079.

Zafar, M. B., & Yasin, T. (2025). Intellectual Capital and Financial Performance of Islamic Banks: A Meta-Analysis. *Accounting Research Journal*, *38*(2), 245-262. https://doi.org/10.1108/ARJ-07-2024-0245.

Zimmerman, J. L. (2015). The Role of Accounting in the Twenty-First Century Firm. *Accounting and Business Research*, *45*(4), 485-509. https://doi.org/10.1080/00014788.2015.1035549.

https://journal.uinjkt.ac.id/index.php/etikonomi
DOI: https:// doi.org/10.15408/etk.v24i2.38708