

“Intellectual capital and financial performance of Sharia-compliant banks in Saudi Arabia”

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Mohammad Naushad (The Kingdom of Saudi Arabia)

INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE OF SHARIA-COMPLIANT BANKS IN SAUDI ARABIA

Abstract

The current study is aimed at analyzing the impact of intellectual capital on the performance of Sharia-compliant banks in Saudi Arabia for the period 2013–2018. The intellectual capital efficiency has been measured by applying a widely-used proxy to intellectual capital, i.e., Value Added Intellectual Coefficient (VAIC). A multiple linear regression method, based on panel data using the pooled Ordinary Least Squares (OLS), was exerted. Regression equations were obtained to determine the impact of VAIC and its components (Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE)) on the financial performance of banks, designated as Return on Assets (ROA) and Return on Equity (ROE). The study has found out that VAIC has a statistically significant impact on the financial performance of Sharia-compliant banks in Saudi Arabia. But VAIC components fail to have a significant impact on ROE. However, these components significantly affect ROA. The study concludes that Sharia-compliant banks in the Kingdom of Saudi Arabia should pay particular attention to Intellectual Capital (IC) in general and Human Capital (HC), Structural Capital (SC), and Employed Capital (EC) in particular to increase Return on Assets and financial performance as a whole.

Keywords

Sharia-compliant banks, Intellectual Capital (IC), Value Added Intellectual Coefficient (VAIC), Return on Assets (ROA), Return on Equity (ROE), Saudi Arabia

JEL Classification

G21, 034, C31

INTRODUCTION

The roots of the conventional banking system can be traced back centuries (Cerović et al., 2017). The conventional banking system was based solely on the interest-based banking system. In contrast to the interest-based banking system (conventional), there is a non-interest based banking system called the Islamic banking system. It fully complies with banking principles referred to in Sharia law, also known as the Sharia-compliant banking system. The Sharia banking system arose at the dawn of Islam (Ali, 2015; Chachi, 2005). The basis of the Sharia-compliant banks lies on three important pillars, i.e.:

- a) prohibition of Ribaa' (interest);
- b) prevention of speculative activities (gharar);
- c) proscription of financing the illegal (haram) business activities (Chachi, 2005; Nawaz & Haniffa, 2017).

The Kingdom of Saudi Arabia (KSA), which is one of the largest Muslim countries, does not exclude the presence of the Islamic banking. There are currently four full-fledged Sharia-compliant banks in

KSA, and other conventional banks also offer the Sharia-compliant products (Oxford Business Group, 2018). The performance of Sharia-compliant banks has been stable, since banks are well capitalized, sound and profitable (Iqbal & Molyneux, 2005). But how Intellectual Capital (IC) influences the performance of these banks has not yet been investigated. This study is based on this notation, focusing on the Sharia-compliant banks in Saudi Arabia.

The present work studies the impact of the Intellectual Capital (IC) on the financial performance of Sharia-compliant banks in Saudi Arabia. Though the influence of IC on the financial performance of conventional banks in Saudi Arabia and other parts of the world has been well examined by researchers (e.g., Al-Musali, & Ismail, 2014; Kamath, 2007; El-Bannany, 2008; Kyrmizoglou & Mavridis, 2005; Karem & Ismail, 2012; Mavridis, 2004; Meles, Porzio, Sampagnaro, & Verdoliva, 2016), the Sharia-compliant banks must be explored specifically in the Saudi context.

1. LITERATURE REVIEW

Numerous studies have shown the impact of intangible assets on a firm's financial performance (Chareonsuk & Chansa-ngavej, 2008; Haji & Ghazali, 2018; Moeller, 2009; Sriram, 2008). It is important to note that measurements of intangible assets in the literature are in the form of intellectual capital (IC). However, researchers do not seem to have a unified view of the definition of intellectual capital. According to Edvinsson and Malone (1997), intellectual capital is considered as the excess of a firm's market value over its book value. According to Edvinsson and Sullivan (1996), IC is knowledge that can be transformed into values. However, intellectual capital is not limited only to knowledge, but is a combination of information, Intellectual Property Rights (IPR), knowledge and experience (Stewart & Ruckdeschel, 1998). Chen, Liu, and Kweh (2014) confirm that IC is intangible assets based on knowledge deeply-rooted in organizations that include intellectual competencies, intellectual property, and other intellectual resources. Thus, it can be summarized that IC is intangible assets that include knowledge and other intellectual resources (IPR, competencies, and human intellect). Moreover, the various components of IC, as mentioned in the literature, are classified as Human Capital (HC), Structural Capital (SC), and Customer Capital (Guthrie & Petty, 2000; Kannan & Aulbur, 2004; Choong, 2008). Probably, to determine the firm's intellectual capital, more challenging task is to measure the impact of IC on the firm's financial performance and profitability. The intangible nature of IC complicates the task of observing exposure. Therefore, academics develop certain indirect methods of intellectual capital. One of the

most commonly used proxies for IC is the Value Added Intellectual Coefficient (VAIC) proposed by Pulic (2000).

VAIC is a combination of value creation efficiency for IC components, namely, Human Capital (HC), Structural Capital (SC), and Capital Employed Efficiency (CEE). Recently, VAIC has gained momentum in measuring the efficiency of the intellectual capital components of companies in various sectors (e.g., Nimtrakoon (2015) among technology firms, Kamath (2008) among pharmaceutical firms, Forte et al. (2017) among various listed companies, Naushad (2019) among listed SMEs in KSA, and Bontis et al. (2015) among the hotels).

VAIC is applied differently in different sectors, as mentioned above, but widespread use can be cited in the banking sector. The banking sector is considered as one of the most appropriate sectors for creating value and overall intellectual capital. Goh (2005) measured the intellectual capital performance among commercial banks in Malaysia from 2001 to 2003. Similarly, Ting and Lean (2009), Poh, Kilicman, and Ibrahim (2018) observed the effect of intellectual capital on the financial performance of Malaysian banks. While Yalama and Coskun (2007) realized the importance of intellectual capital coefficients for the efficiency, calculated by applying DEA among 18 listed banks in Turkey. Alhassan and Asare (2016) found a positive relationship between the intellectual coefficients and the Malmquist performance among banks in Ghana. The same can be said of Mavridis (2004) for the Japanese banking sector; Kyrmizoglou and Mavridis (2005) for the Greek banking sector; Joshi et al. (2010) for the Australian banking sector; Kamath (2007) for the

Indian banking sector; El-Bannany (2008) for the UK and Meles et al. (2016) for the US banking sector. Thus, there is evidence that indicates an optimistic trend in constructive relationships between IC and bank performance. Similarly, the influence of IC and corporate governance on the banking sector performance in the Arab world has also been determined by El-Bannany (2012) for UAE banks, Naushad and Malik (2015), Al-Musali and Ismail (2016) for banks in the GCC, Al-Musali and Ismail (2014), Abdulsalam et al. (2011) and Ismail and Kareem (2011) for Bahraini, Kuwaiti and Saudi banks, respectively. But there is a lack of suitable research that could understand the effect of VAIC on the Sharia-compliant banks' financial performance, especially in the Arab region. However, there are studies in other countries that talk about the VAIC impact on Sharia banking, such as Nawaz and Haniffa (2017), who research on 64 Islamic banks in 18 different countries. Rachmawati et al. (2018) studied the Islamic banks in Indonesia, Aziz and Hashim (2017) analyzed the Malaysian banks and Hasan et al. (2017) explored the Islamic banks in Bangladesh. But there are still no studies available in the Saudi context, specifically regarding the Sharia-compliant banks (Islamic banks). This study will be aimed at validating the applicability, effectiveness and reliability of VAIC for Sharia-compliant banks in the banking sector of Saudi Arabia.

1.1. Research hypotheses

Therefore, the following hypotheses can be stated for the current study:

H1: Intellectual capital, as measured by VAIC, influences the financial performance as measured by ROA of Sharia-compliant banks.

H1.1: The financial performance measured by ROA of Sharia-compliant banks is influenced by HCE, SCE and CEE.

H2: Intellectual capital measured by VAIC influences the financial performance measured as ROE of Sharia-compliant banks.

H2.1: The financial performance measured by ROE of Sharia-compliant banks is influenced by HCE, SCE, and CEE.

2. METHODOLOGY

This study uses data from four listed Sharia-compliant banks in Saudi Arabia. According to the Oxford Business Group Report (Oxford Business Group, 2018), there are 12 listed commercial banks in Saudi Arabia. And all banks offer the Sharia-compliant products, but only four banks are Sharia-compliant (Oxford Business Group, 2018). Therefore, this study is limited to only four banks that are fully consistent with Sharia norms in banking products and practices. The data is outspread for six years from 2013 to 2018. Overall, there are 24 observations for this study. The data is obtained from the annual reports of banks, accessed from public websites.

The study applies the Pulic VAIC® model (Pulic, 2000) to measure the value added created by a bank and a proxy of intellectual capital. While for the financial performance, Return on Assets (ROA) and Return on Equity (ROE) were applied. Multiple linear regression analysis was performed based on panel data using the pooled Ordinary Least Square (OLS) method to estimate the relationship between IC and bank financial performance. The value added intellectual coefficient (VAIC) is one of the widely-used tools for intellectual capital efficiency of companies. VAIC has four components, namely, value added, human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE). The calculation for VAIC is taken from Pulic (2004).

Therefore, the independent variables for this study have been taken as the calculated values of

- a) VAIC;
- b) HCE;
- c) SCE; and
- d) CEE.

2.1. Dependent variables

The financial performance of banks has been considered as a dependent variable. The widely-used proxies for financial performance in the literature are Return on Assets (ROA) and Return on Equity (ROE). The combination of these two represents the overall financial health

of the organization. The value of ROA can be obtained by dividing total income by total assets. While ROE value is obtained by dividing net income by average value of shareholder's equity. These values were calculated for each financial year.

2.2. Control variables

The regression model emerged for the estimation by regressing the dependent and independent variables and is controlled by two variables, namely, SIZE and LEVERAGE (LEVRG). The value for SIZE is obtained as the log value of total assets of banks in the financial year. While the value for LEVERAGE is obtained by dividing total debts by total assets of a bank in the financial year.

2.3. Empirical models

Having gathered all the variables together, the following two empirical models were obtained with one additional equation for each:

Model 1

$$ROA_{i,t} = \alpha + \beta_1 VAIC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEVRG_{i,t} + \mu_{i,t}, \quad (1)$$

$$ROA_{i,t} = \alpha + \beta_1 CEE_{i,t} + \beta_2 HCE_{i,t} + \beta_3 SCE_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEVRG_{i,t} + \mu_{i,t}. \quad (2)$$

Model 2

$$ROE_{i,t} = \alpha + \beta_1 VAIC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEVRG_{i,t} + \mu_{i,t}, \quad (3)$$

$$ROE_{i,t} = \alpha + \beta_1 CEE_{i,t} + \beta_2 HCE_{i,t} + \beta_3 SCE_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEVRG_{i,t} + \mu_{i,t}, \quad (4)$$

where i denotes a bank ($i = 1, 2, 3, 4$), t is the time ($t = (2013-2018)$), and $\mu_{i,t}$ is the error term.

3. RESULTS AND DISCUSSION

3.1. Descriptive statistics and correlation

A description of all the variables taken together is shown in Table 1. Where the mean score for VAIC is ($M = 5.496$, $SD = 1.013$), while the other antecedent has HCE ($M = 0.2837$, $SD = 0.899$), SCE ($M = 6.14$, $SD = 0.114$), CEE ($M = 0.036$, $SD = 0.008$), respectively.

Before investigating the relative impact of VAIC and its components on profitability using regression analysis, a Pearson correlation has been carried out. The VAIC is found to have a statistically significant correlation with ROA and ROE ($r = 0.849$, $p < 0.001$) and ($r = 0.459$, $p < 0.005$), respectively. Among the components of VAIC, i.e., HCE, SCE and CEE, there are those that significantly correlate with ROA, i.e. ($r = 0.849$, $p < 0.001$), ($r = 0.459$, $p < 0.005$) and ($r = 0.459$, $p < 0.005$), respectively. While there is no or low level of significant relationship between the components of VAIC and ROE, i.e. ($r = 0.461$, $p < 0.005$), ($r = 0$) and ($r = 0.559$, $p < 0.001$). Table 1 provides the correlation results in detail.

3.2. Regression results

To develop the impact of IC on the performance of Sharia-compliant banks, a multiple linear regression equation based on panel data is estimated using the pooled OLS method. Two models are estimated, in which model 1 considers the Return on Assets as the proxy of profitability and model 2 considers Return on Equity. In model 1, a significant regression equation (1) was found ($F(3, 20) = 101.506$, $p < 0.000$), with an R^2 of 0.724 and $R^2_{Adjusted} = 0.717$. The profitability predicted by ROA is equal to $-0.010 + 0.004 (VAIC) + 0.001 (SIZE) + 0.008 (LEVRG)$. In order to test the influence of VAIC components on profitability measured by ROA, the other equation (2) was estimated with VAIC components. The equation is found to be significant with ($F(3, 20) = 920.823$, $p < 0.000$), with an R^2 of 0.966 and $R^2_{Adjusted} = 0.965$. The profitability predicted by ROA is equal to $-0.026 + 0.002 (HCE) + 0.008 (SCE) + 0.356 (CEE) + 0.003 (SIZE) - 0.005 (LEVRG)$. The results are surprising with a very high R^2 and $R^2_{Adjusted}$. This may be probably due to

Table 1. Descriptive statistics and correlation matrix

	Range	Min	Max	Mean	Std. dev	Skewness	Kurtosis	ROA	ROE	VAIC	HCE	SCE	CEE	Size	LEVRG
ROA	.020	.009	.028	.018	.005	.417	−.508	1							
ROE	.183	.015	.199	.126	.046	−.337	−.167	.712**	1						
VAIC	3.244	2.252	5.496	3.487	1.013	.452	−1.185	.849**	.459*	1					
HCE	2.877	1.788	4.665	2.837	.899	.506	−1.102	.848**	.461*	1.000**	1				
SCE	.345	.441	.786	.614	.114	.024	−1.686	.806**	0	.982**	.978**	1			
CEE	.027	.023	.050	.036	.008	.298	−.823	.662**	.559**	0	0	0	1		
Size	1.002	7.560	8.562	8.005	.320	.791	−.841	.760**	.527**	.884**	.890**	.826**	0	1	
LEVRG	.153	.560	.713	.653	.037	−1.038	.786	0	0	0	0	.430*	0	0	1

Note: ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

similar nature of the variables, chance correlation and excessive model matching (Frost, 2019).

Model 2, using the Return on Equity as a proxy for the profitability, was estimated using VAIC and its components. The equation utilizing VAIC as the predictor of profitability represented by ROE is found to be significant with the following equations ($F(3, 20) = 15.734$, $p < 0.000$), with an R^2 of

0.289 and $R^2_{Adjusted} = 0.271$. The profitability predicted by ROE is equal to $-0.371 + 0.003 (VAIC) + 0.073 (SIZE) - 0.146 (LEVRG)$. While equation (3) estimated using the components of ROE found the following ($F(3, 20) = 42.835$, $p < 0.000$), with an R^2 of 0.569 and $R^2_{Adjusted} = 0.556$. The profitability predicted by ROE is equal to $-0.556 + 0.017 (HCE) + 0.079 (SCE) + 3.443 (CEE) + 0.092 (SIZE) - 0.277 (LEVRG)$.

Table 2. Regression results

	Model 1	Model 2
Dependent variable (DV)		
Std. β	ROA	ROE
Independent variable (IV)		
Constant	−0.010 (0.014)	−0.371 (0.204)
VAIC	0.004*** (0.001)	0.003** (0.008)
Size	0.001*** (0.002)	0.073** (0.025)
LEVRG (Leverage)	0.008*** (0.008)	−0.146 ^{ns} (0.110)
R^2	0.724	0.289
Adjusted R^2	0.717	0.271
F	101.506	15.734
Significance of F	0.000**	
Independent variable (IV)		
Constant	−0.026 (0.005)	−0.556 (0.163)
HCE	0.002*** (0.001)	−0.017** (0.019)
SCE	0.008*** (0.004)	0.079 ^{ns} (0.121)
CEE	0.356** (0.011)	3.443 ^{ns} (0.348)
SIZE	0.003*** (0.001)	0.092** (0.019)
LEVRG	−0.005*** (0.002)	−0.277* (0.075)
R^2	0.966	0.569
Adjusted R^2	0.965	0.556
F	920.823	42.835
Significance of F	0.000**	
Targeted hypotheses	H1 and H1.1	H2 and H2.1

Notes: *, **, *** Significant at 0.90%, 0.95% and 0.99%, respectively.

4. DISCUSSION

This work is aimed at studying the effect of IC on the financial performance of Sharia-compliant banks in Saudi Arabia. Though the effects of IC on financial performance of conventional banks in Saudi Arabia and other parts of the world is well established by researchers (e.g., Al-Musali & Ismail, 2014; Kamath, 2007; El-Bannany, 2008; Kyrmizoglou & Mavridis, 2005; Karem & Ismail, 2012; Mavridis, 2004; Meles et al., 2016), studies that could understand the impact of VAIC on the financial performance of Sharia-compliant banks, especially in the Saudi context, are scant. The present study is based on these notations, focusing on Sharia-compliant banks in Saudi Arabia. The study finds that intellectual capital, as measured by VAIC, influences the financial performance (proxied by ROA) of Sharia-compliant banks in Saudi Arabia. This resembles the authors' conclusion with El-Bannany (2012), Meles et al. (2016), Nawaz and Haniffa (2017). Similarly, VAIC components, i.e. HCE, SCE and CEE, indicate strong significance with ROA. Thus, the results indicate that any increase in HCE, SCE and CEE will increase the Return on Assets of the Sharia-compliant banks.

In another regression model where ROE has been taken as a proxy of profitability, the study regressed VAIC and its components. The outcome provides mix results, where VAIC has a statistical-

ly significant relationship with ROE and equation (3) is found to be significant with a relatively low R-squared. But other components of VAIC (SCE and CEE) are found to be statistically insignificant. This indicates that structural capital efficiency and capital employed efficiency have no impact on the profitability of banks. While the HCE has a negative significant effect on ROE. The results are in line with Joshi et al. (2013), and Goh (2005) who perceived the same results on the components of VAIC for profitability. This may be due to the fact that ROE is considered as a relatively weak proxy of profitability due to its inclination towards the capital structure. In contrast, ROA is a stronger proxy because it is used to illustrate the financial value of intangible assets (Stewart & Ruckdeschel, 1998). ROA represents a framework that indicates the efficiency of management in using their assets for generation of income. Thus, it can be concluded that banks should consider the combination of financial assets with the appetite of IC management. This will allow them gaining the sustainable operations with increased profitability (Meles et al., 2016). The result is also in line with the fact that in the banking industry, human capital provides the competitive advantage to organizations. The results substantiate that human capital is the source of value creation, which emphasizes the hidden value of intellectual wealth (Young et al., 2009). Therefore, Sharia-compliant banks should also attract employees with extensive expertise using a variety of training tools.

CONCLUSION

The effect of IC on the financial performance of conventional banks in Saudi Arabia and other countries of the world is investigated by many researchers. In the literature on banking and IC, a sufficient amount of studies has shown a positive impact of IC on the profitability and overall financial performance of conventional banks. However, Sharia-compliant banks, which differ from conventional banks in the basic principles of banking, require proper consideration. The conventional Sharia banks perform well enough in value creation, human capital and general intellectual capital. Conversely, Sharia banks lack the attention of academics on IC fronts. This study establishes the IC efficiency and its impact on the financial performance of four Sharia-compliant banks between 2013 and 2018 in Saudi Arabia. IC efficiency was calculated using the Value Added Intellectual Coefficient (VAIC) and financial performance represented by ROA and ROE. A multiple linear regression method, based on panel data using the pooled Ordinary Least Squares (OLS), was used to show the impact of IC on the financial performance of the banks. The study confirmed that there is a positive statistically significant relationship between VAIC and the financial performance indicators (ROA and ROE). But there is no statistically significant relationship among VAIC components, namely HCE, SCE & CEE and ROE. The findings obtained mean that VAIC as

a whole has a significant impact on the profitability and overall financial performance of Sharia-compliant banks, but its individual components do not influence the return on equity.

The study provides substantial inputs to the current banking and IC literature, which includes findings about Sharia banks with the range of conventional banks. However, a comparative study is needed to compare Sharia and conventional banks. The study is limited in scope since it uses only one method of measuring IC, though there are other methods of IC measurement such as Tobin's Q, Skandia IC Navigator, Balance scorecard and Calculated Intangible Value (CIV), etc. However, the results of the study can be confirmed by extending to Sharia-compliant banks in GCC and other parts of the world.

REFERENCES

1. Abdulsalam, F., Al-Qaheri, H., & Al-Khayyat, R. (2011). The intellectual capital performance of Kuwaiti Banks: an application of VAICTM1 model. *iBusiness*, 3(1), 88-96. <https://doi.org/10.4236/ib.2011.31014>
2. Alhassan, A. L., & Asare, N. (2016). Intellectual capital and bank productivity in emerging markets: evidence from Ghana. *Management Decision*, 54(3), 589-609. <https://doi.org/10.1108/MD-01-2015-0025>
3. Ali, M. A. (2015). The roots and development of Islamic Banking in the world and in Pakistan. *South East Asian Journal of Contemporary Business, Economics and Law*, 7(1), 58-63. Retrieved from <https://pdfs.semanticscholar.org/7cc7/90d4eda8296075ad928be9dc361c2be93b46.pdf>
4. Al-Musali, M. A., & Ismail, K. N. I. (2014). Intellectual capital and its effect on financial performance of banks: Evidence from Saudi Arabia. *Procedia-Social and Behavioral Sciences*, 164, 201-207. <https://doi.org/10.1016/j.sbspro.2014.11.068>
5. Al-Musali, M. A., & 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>
6. Aziz, M. R. A., & Hashim, A. A. M. (2017). Intellectual Capital (IC) Determinants: Impact on Productivity of Islamic Banks. *Binus Business Review*, 8(3), 189-197. <https://doi.org/10.21512/bbr.v8i3.3741>
7. Bontis, N., Janosevic, S., & Dzenopoljac, V. (2015). Intellectual capital in Serbia's hotel industry. *International Journal of Contemporary Hospitality Management*, 27(6), 1365.
8. Cerović, L., Suljić Nikolaj, S., & Maradin, D. (2017). Comparative analysis of conventional and Islamic banking: Importance of market regulation. *Ekonomika misao i praksa*, 1, 241-263. Retrieved from <https://pdfs.semanticscholar.org/309a/45ed77efb3d8a0e869b4c00cb1aaf251dcb8.pdf>
9. Chachi, A. (2005). Origin and development of commercial and Islamic banking operations. *Journal of King Abdulaziz University: Islamic Economics*, 18(2), 3-25. Retrieved from https://www.kau.edu.sa/Files/320/Researches/51027_21164.pdf
10. Chareonsuk, C., & Chansangavej, C. (2008). Intangible asset management framework for long-term financial performance. *Industrial Management & Data Systems*, 108(6), 812-828. <https://doi.org/10.1108/02635570810884021>
11. Chen, F.-C., Liu, Z.-J., & Kweh, Q. L. (2014). Intellectual capital and productivity of Malaysian general insurers. *Economic Modelling*, 36, 413-420. <https://doi.org/10.1016/j.econmod.2013.10.008>
12. Choong, K. K. (2008). Intellectual capital: definitions, categorization and reporting models. *Journal of Intellectual Capital*, 9(4), 609-638. <https://doi.org/10.1108/14691930810913186>
13. Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: realizing your company's true value by finding its hidden brainpower* (230 p.). New York: Harper Business. <https://www.amazon.com/Intellectual-Capital-Realizing-Companys-Brainpower/dp/0887308414>
14. Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European Management Journal*, 14(4), 356-364. [https://doi.org/10.1016/0263-2373\(96\)00022-9](https://doi.org/10.1016/0263-2373(96)00022-9) Get rights and content
15. El-Bannany, M. (2008). A study of determinants of intellectual capital performance in banks: the UK case. *Journal of Intellectual Capital*, 9(3), 487-498. <https://doi.org/10.1108/14691930810892045>
16. El-Bannany, M. (2012). Global financial crisis and the intellectual capital performance of UAE banks. *Journal of HRCAC: Human Resource Costing & Accounting*, 16(1), 20. <https://doi.org/10.1108/14013381211272626>
17. Forte, W., Tucker, J., Matonti, G., & Nicolò, G. (2017). Measuring the intellectual capital of Italian listed companies. *Journal of Intellectual Capital*, 18(4), 710-732. <https://doi.org/10.1108/JIC-08-2016-0083>
18. Frost, J. (2019). *Regression Analysis. An Intuitive Guide for Using and Interpreting Linear Models*. Retrieved from <https://>

- statisticsbyjim.com/regression/regression-analysis-intuitive-guide/
19. Goh, P. C. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital*, 6(3), 385-396. <https://doi.org/10.1108/14691930510611120>
 20. Guthrie, J., & Petty, R. (2000). Intellectual capital literature review: Measurement, reporting and management. *Journal of Intellectual Capital*, 1(2), 155-176. <https://doi.org/10.1108/14691930010348731>
 21. Haji, A. A., & Ghazali, M. N. A. (2018). The role of intangible assets and liabilities in firm performance: empirical evidence. *Journal of Applied Accounting Research*, 19(1), 42-59. <https://doi.org/10.1108/JAAR-12-2015-0108>
 22. Hasan, R., Mohammad, N., & Alam, M. F. (2017). Impact of Intellectual Capital on Profitability-Conventional versus Islamic Banks. *Journal of Accounting, Finance and Auditing Studies*, 3(2), 64-80. Retrieved from https://www.um.edu.my/library/oar/bitstream/123456789/27225/3/Impact_of_intellectual_capital_on_profitability_conventional_versus_Islamic_banks_2017.pdf
 23. Iqbal, M., & Molyneux, P. (2005). *Thirty Years of Islamic Banking: History, Performance and Prospects* (190 p.). London: Palgrave Macmillan. Retrieved from <https://epdf.pub/thirty-years-of-islamic-banking-history-performance-and-prospects.html>
 24. Ismail, K., & Karem, M. A. (2011). Intellectual capital and financial performance of banks in Bahrain. *Journal of Business Management and Accounting*, 1(1), 63-77. Retrieved from https://www.researchgate.net/publication/258695260_Intellectual_Capital_and_the_Financial_Performance_of_Banks_in_Bahrain
 25. Joshi, M., Cahill, D., & Sidhu, J. (2010). Intellectual capital performance in the banking sector: An assessment of Australian owned banks. *Journal of HRCA: Human Resource Costing & Accounting*, 14(2), 151. <https://doi.org/10.1108/14013381011062649>
 26. 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>
 27. Kamath, G. B. (2007). The intellectual capital performance of the Indian banking sector. *Journal of Intellectual Capital*, 8(1), 96-123. <https://doi.org/10.1108/14691930710715088>
 28. Kamath, G. B. (2008). Intellectual capital and corporate performance in Indian pharmaceutical industry. *Journal of Intellectual Capital*, 9(4), 684-704. <https://doi.org/10.1108/14691930810913221>
 29. Kannan, G., & Aulbur, W. G. (2004). Intellectual capital: Measurement effectiveness. *Journal of Intellectual Capital*, 5(3), 389-413. <https://doi.org/10.1108/14691930410550363>
 30. Karem, A. M., & Ismail, K. (2012). Intellectual capital performance and board characteristics of GCC banks. *Procedia Economics and Finance*, 2, 219-226. [https://doi.org/10.1016/S2212-5671\(12\)00082-2](https://doi.org/10.1016/S2212-5671(12)00082-2)
 31. Kyrmizoglou, P., & Mavridis, D. G. (2005). Intellectual capital performance drivers in the Greek banking sector. *Management Research News*, 28(5), 43-62. <https://doi.org/10.1108/01409170510629032>
 32. Mavridis, D. G. (2004). The intellectual capital performance of the Japanese banking sector. *Journal of Intellectual Capital*, 5(1), 92-115. <https://doi.org/10.1108/14691930410512941>
 33. Meles, A., Porzio, C., Sampagnaro, G., & Verdoliva, V. (2016). The impact of the intellectual capital efficiency on commercial banks performance: Evidence from the US. *Journal of Multinational Financial Management*, 36(Supplement C), 64-74. <https://doi.org/10.1016/j.mul-fin.2016.04.003>
 34. Moeller, K. (2009). Intangible and financial performance: causes and effects. *Journal of Intellectual Capital*, 10(2), 224-245. <https://doi.org/10.1108/14691930910952632>
 35. Naushad, M. (2019). Arrays of Intellectual Capital among SMEs in Saudi Arabia. *Journal of Advance Research in Dynamical & Control Systems (JARDCS)*, 11(09-Special Issue), 1750-1755.
 36. Naushad, M., & Malik, S. A. (2015). Corporate governance and bank performance: a study of selected banks in GCC region. *Asian Social Science*, 11(9), 226-234. <http://dx.doi.org/10.5539/ass.v11n9p226>
 37. 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>
 38. 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>
 39. Oxford Business Group. (2018). *The Report 2018*. Retrieved from <https://oxfordbusinessgroup.com/analysis/strong-results-sharia-compliant-banks-maintain-steady-performances>
 40. Poh, L. T., Kilicman, A., & Ibrahim, S. N. I. (2018). On intellectual capital and financial performances of banks in Malaysia. *Cogent Economics & Finance*, 6(1), 1-15. <https://doi.org/10.1080/23322039.2018.1453574>
 41. 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>
 42. Pulic, A. (2004). Intellectual capital – does it create or destroy value? *Measuring Business Excellence*, 8(1), 62-68. <https://doi.org/10.1108/13683040410524757>
 43. Rachmawati, E. N., Hayati, R., & Yulandi, F. (2018). The influence of intellectual capital on financial

- performance in sharia banking companies. Proceedings of the 15th International Symposium on Management (INSYMA 2018). Retrieved from https://www.researchgate.net/publication/323466433_The_influence_of_intellectual_capital_on_financial_performance_in_sharia_banking_companies
44. Sriram, R. S. (2008). Relevance of intangible assets to evaluate financial health. *Journal of Intellectual Capital*, 9(3), 351-366. <https://doi.org/10.1108/14691930810891974>
 45. Stewart, T., & Ruckdeschel, C. (1998). Intellectual capital: The new wealth of organizations. *Performance Improvement*, 37(7), 56-59. <https://doi.org/10.1002/pfi.4140370713>
 46. Ting, I. W. K., & Lean, H. H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of Intellectual Capital*, 10(4), 588-599. <https://doi.org/10.1108/14691930910996661>
 47. Yalama, A., & Coskun, M. (2007). Intellectual capital performance of quoted banks on the Istanbul Stock Exchange market. *Journal of Intellectual Capital*, 8(2), 256-271. <https://doi.org/10.1108/14691930710742835>
 48. Young, C.-S., Su, H.-Y., Fang, S.-C., & Fang, S.-R. (2009). Cross-country comparison of intellectual capital performance of commercial banks in Asian economies. *The Service Industries Journal*, 29(11), 1565-1579. <https://doi.org/10.1080/02642060902793284>