

The Role of Gender Diversity in Moderating the Impact of Intellectual Capital on the Performance of Islamic Banks

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Abstract

This study aims to analyze the effect of intellectual capital components, namely Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE), on the performance of Islamic banks, as well as to examine the moderating role of gender diversity in Islamic banking governance. This study uses a quantitative design with a panel data approach, covering 14 Islamic commercial banks in Indonesia during the period 2017–2022, and analyzed using moderated regression analysis. The results show that HCE and CEE have a positive effect on Islamic bank performance, while SCE has a negative effect. Furthermore, gender diversity was found to moderate the relationship between intellectual capital and bank performance, with a positive moderating effect on the SCE–performance and CEE–performance relationships, but a negative moderating effect on the HCE–performance relationship. These findings indicate that gender diversity can strengthen governance effectiveness and financial efficiency, but the optimization of human capital is still influenced by organizational factors and cultural context. The policy implications of this study emphasize the importance of formulating governance strategies that not only encourage increased gender diversity at the board level but also ensure the alignment of roles and the effective utilization of intellectual capital in Islamic banking. The limitations of this study lie in the use of specific measures of intellectual capital and its focus on the context of Islamic banking in Indonesia. Therefore, further research is recommended to use alternative proxies and consider cross-country institutional factors.



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PENDAHULUAN

The rapid growth of Islamic banking in Indonesia over the past two decades has faced significant challenges, particularly during the COVID-19 pandemic, which lasted from 2020 to 2022. Despite these difficulties, the Islamic banking sector demonstrated remarkable resilience, maintaining growth and gradually returning to pre-pandemic business conditions. This resilience highlights the ability of Islamic banks to operate effectively, even in times of crisis, and their capacity to adapt to a dynamic economic environment.

In the post-pandemic era, digital transformation has become a primary challenge for Islamic banks. This behavioral shift requires banking institutions to continuously innovate to remain competitive in an increasingly digital world. Building a robust digital ecosystem can provide a competitive advantage for Islamic banks, enabling them to attract more customers and meet their evolving needs.

Based on Otoritas Jasa Keuangan (OJK) Sharia Banking Statistics, the capital adequacy ratio (CAR) of sharia banking increased from around 20.6% in 2018 to 24.97% in 2021, while the gross non-performing financing (NPF) ratio remained under control at around 3.28%. This resilience is also reflected in the industry's asset growth, which remained positive at a rate of around 12-13% per year in the 2019-2021 period. These strong fundamentals provide an important foundation for Islamic banks to make strategic investments, particularly in the development of technology and digital services.

In the pursuit of competitive advantage, previous studies have extensively explored the concept of intellectual capital (Bontis, 1998; Edvinsson & Sullivan, 1996; Etezadi & Katzen, 2013). Intellectual capital, an invaluable intangible asset inherent to employees and organizations, has been identified as a critical driver for achieving and sustaining competitive advantage (Bontis, 2001; Hamdan et al., 2017). Within the industrial context, including the Islamic banking sector, intellectual capital has been recognized as a pivotal element in attaining financial sustainability and maintaining a competitive edge (Xu & Wang, 2018; Mondal & Ghosh, 2012). Industries operating in advanced technology and knowledge-based sectors increasingly prioritize intangible resources, capabilities, and knowledge assets—collectively termed intellectual capital—over tangible resources, which are often deemed insufficient for creating sustainable value and maintaining a competitive advantage (Cohen & Kaimenakis, 2007; de Villiers & Sharma, 2020; Mondal & Ghosh, 2012; Ramirez et al., 2021).

As part of the knowledge-based economy, banks, including Islamic banks, are required to enhance their intellectual capital to drive value creation and improve performance (Alhassan & Asare, 2016; Aslam et al., 2018; Buallay & Madbouly, 2020; Chowdhury et al., 2019; Rehman et al., 2022; Singh & Narwal, 2015). Consequently, intellectual capital is expected to play a crucial role in fostering the development of digital ecosystems, thereby enabling Islamic banks to achieve competitive advantages and sustain superior performance in the rapidly evolving business landscape.

Intellectual capital efficiency refers to a company's ability to effectively utilize and generate value from its investment in knowledge-based assets (Pulic, 2004). This efficiency is underpinned by three key components: human capital efficiency, structural capital efficiency, and physical capital efficiency (Nimtrakoon, 2015; Pulic, 2000). Human capital encompasses skilled, experienced, and knowledgeable personnel; structural capital includes systematic processes, organizational culture, and efficient IT systems (Bhattacharjee & Akter, 2022); and capital employed refers to physical and financial resources (Pulic, 2004; Singh & Narwal, 2015).

However, intellectual capital alone is insufficient to create a sustainable competitive advantage without the support of robust governance mechanisms. As Grant (1996) emphasizes, the alignment of intellectual capital with effective governance is critical for driving organizational success. Corporate governance plays a pivotal role in fostering, managing, and optimizing intellectual capital, encompassing human, structural, and operational dimensions Keenan & Aggestam, (2001).

The presence of women on corporate boards has been shown to enhance governance mechanisms, contributing to improved decision-making processes for shareholders (Capezio & Mavisakalyan, 2016; Huang & Kisgen, 2013). Gender diversity in the boardroom strengthens the board's capacity to fulfill its supervisory and strategic roles, thereby

increasing its overall effectiveness (Kang et al., 2010). Women on boards can help mitigate agency problems and promote corporate innovation through enhanced oversight and governance practices (Chen et al., 2018). Their unique perspectives and innovative ideas bring diversity of thought, which can lead to improved decision-making and, ultimately, enhanced corporate performance (Terjesen et al., 2009). Moreover, the presence of women in top leadership positions has been positively associated with increased innovation activities, which significantly contribute to improved organizational outcomes (Deszo & Ross, 2012; Vafaei et al., 2020). Reflecting this growing recognition, female representation on boards of directors has seen a rising trend globally over the past decade (Huang & Kisgen, 2013).

Previous studies have predominantly examined the direct relationship between board gender diversity and organizational performance (Ararat & Yurtoglu, 2021; Mastella et al., 2021; Simionescu et al., 2021; Soare et al., 2022), often overlooking the potential interaction effects that could influence this relationship. Empirical findings regarding the direct impact of gender diversity on performance remain inconclusive, with evidence suggesting positive effects (Brahma et al., 2021; Gallego-Álvarez, 2020; Garanina & Muravyev, 2021; Mastella et al., 2021; Pucheta-Martínez & Simionescu et al., 2021), negative (Ahmad et al., 2019; Akram et al., 2020; Soare et al., 2022), and no significant impact (Ararat & Yurtoglu, 2021; Kochan et al., 2003; Saleh et al., 2020; Shrader et al., 1997).

Additionally, while some studies suggest that gender diversity may serve as a significant moderating variable (Daniel-Vasconcelos et al., 2022; Karim, 2021; Mensah & Onumah, 2023), the application of gender diversity as a moderating factor in prior research remains relatively scarce. This study seeks to address this gap by investigating the moderating effect of gender diversity on the relationship between intellectual capital efficiency—comprising human resource efficiency, structural capital efficiency, and capital employed efficiency—and the performance of Islamic banks. By exploring this interaction, the study aims to contribute to the broader discourse on the dynamics of gender diversity and its strategic implications for organizational performance.

This study offers two key contributions. First, it extends the existing literature on intellectual capital by highlighting how the components of intellectual capital efficiency namely, human resource efficiency, structural capital efficiency, and capital employed efficiency, can be leveraged to enhance the performance of Islamic banks. Second, it contributes to the growing body of literature by incorporating gender diversity as a moderating variable in the relationship between intellectual capital efficiency and the performance of Islamic banks. This novel approach provides a more comprehensive understanding of how intellectual capital and board diversity interact to influence organizational outcomes in the context of Islamic banking.

LITERATURE REVIEW AND HYPOTHESES

Intellectual Capital and Islamic Bank Performance

Building on the Resource-Based View (RBV) theory, human capital, structural capital, and capital employed are identified as the core components of intellectual capital (Ahamad et al., 2023; Aslam et al., 2018; Nawaz, 2019; Nawaz et al., 2021; Opong & Pattanayak, 2019; Pulic, 2000). First, human capital represents the collective intelligence of organizational members (Bontis, 1998), encompassing elements such as experience, education, knowledge, skills, abilities, morals, attitudes, commitment, and creativity (Scafarto et al., 2021). Enhancing human resource capabilities has been shown to significantly contribute to organizational growth (Aslam et al., 2018; Cohen & Kaimenakis, 2007) and improved bank performance (Al-Musali & Ku Ismail, 2016; Ismail & Kareem, 2011). Second, structural capital refers to knowledge embedded within an organization but independent of individuals, including systems, structures, strategies, patents, trademarks, organizational culture, and

principles that foster opportunities for innovation (Nawaz, 2017; Nimtrakoon, 2015). The effective implementation of structural capital has been found to generate value and enhance organizational competitiveness (Ahamad et al., 2023; Nawaz & Haniffa, 2017). Third, capital employed, comprising both physical and financial assets (Barney, 1991), serves as a critical resource for production and operational processes (Xu et al., 2021). As a key driver of bank performance, tangible capital supports efficient resource allocation and operational effectiveness (Al-Musali & Ku Ismail, 2016; Ismail & Karem, 2011).

Numerous prior studies have demonstrated that intellectual capital, comprising human capital, structural capital, and capital employed, positively influences organizational performance (Alhassan & Asare, 2016; Aslam et al., 2018; Buallay & Madbouly, 2020; Chowdhury et al., 2019; Rehman et al., 2022; Singh & Narwal, 2015). Pulic (2004) further emphasized that banks with higher investments in intellectual capital tend to achieve superior financial performance. In alignment with this perspective, this study hypothesizes the following relationships between intellectual capital components and the performance of Islamic banks:

H1a: Human capital positively influences the performance of Islamic banks.

H1b: Structural capital positively influences the performance of Islamic banks.

H1c: Capital employed positively influences the performance of Islamic banks.

The Moderating Effect of Gender Diversity on the Relationship Between Intellectual Capital and the Performance of Islamic Banks

The Resource-Based View (RBV) theory conceptualizes a firm as a collection of strategic resources, including capabilities, tangible assets, and intangible assets (Firer & Williams, 2003). According to Barney (1991), intangible assets serve as key factors in generating sustainable competitive advantage, which is essential for optimizing business performance. Wernerfelt (1984) further argues that firms can achieve a competitive edge by effectively leveraging strategic resources.

RBV is employed in this study to understand how internal strategic resources, such as intellectual capital, can be developed and utilized efficiently (Isola et al., 2020). This perspective is closely related to the value-added approach (Mondal & Ghosh, 2012), which emphasizes how firms enhance their performance by leveraging intangible assets. Intellectual capital is regarded as a knowledge-based intangible asset that contributes to value creation within firms (Hashim et al., 2015). Therefore, RBV supports the notion that the effective utilization of intellectual capital as a strategic resource can enhance firm performance and value creation (Kujansivu & Lönnqvist, 2007; Nadeem et al., 2017).

According to agency theory, the board of directors is entrusted with the responsibility of overseeing management to mitigate agency problems (Finegold et al., 2007; Reguera-Alvarado et al., 2017). The presence of women on the board can play a crucial role in alleviating agency issues by ensuring more effective monitoring and governance (Chen et al., 2018). Female representation on corporate boards offers several advantages, including enhanced board governance, reduced opportunistic behavior, improved decision-making quality, and overall firm performance improvement (Khidmat et al., 2022). Consistent with Khidmat et al. (2022), prior research has also found that gender diversity at the executive level is positively associated with innovation activities, which ultimately contribute to firm performance (Chen et al., 2018; Deszo & Ross, 2012; Vafaei et al., 2020). Given these findings, gender diversity in leadership positions can drive Islamic banking institutions to enhance their innovation capabilities by optimizing intellectual capital, thereby fostering sustainable competitive advantage.

Grant (1996) argues that intellectual capital alone is insufficient to generate competitive advantage without effective corporate governance. This highlights the critical

connection between intellectual capital and governance mechanisms. According to Keenan & Aggestam (2001), corporate governance plays a crucial role in the creation, development, and utilization of intellectual capital, ensuring that these intangible resources contribute effectively to firm performance. Gender diversity within corporate boards has been shown to enhance governance mechanisms (Capezio & Mavisakalyan, 2016). For instance, greater female representation can lead to improved decision-making quality (Huang & Kisgen, 2013) and more effective monitoring processes (Kang et al., 2010). These improvements in governance, in turn, facilitate the optimal use of intellectual capital, further strengthening an organization's competitive position.

Several prior studies have found that gender diversity has a positive impact on firm performance (Brahma et al., 2021; Garanina & Muravyev, 2021; Mastella et al., 2021; Pucheta-Martínez & Gallego-Álvarez, 2020; Simionescu et al., 2021). Similarly, extensive research has established that intellectual capital significantly influences firm performance. Within this context, corporate governance (CG) mechanisms—particularly gender diversity—play a crucial role in ensuring the efficient utilization of intellectual capital and its impact on firm outcomes. Building on this theoretical foundation, this study proposes the following hypotheses:

- H2a: Gender diversity positively moderates the relationship between human capital and the performance of Islamic banks.
- H2b: Gender diversity positively moderates the relationship between structural capital and the performance of Islamic banks.
- H2c: Gender diversity positively moderates the relationship between capital employed and the performance of Islamic banks.

RESEARCH METHOD

This study adopts a quantitative research approach and utilizes secondary data derived from the annual reports of Islamic banks. The population of this study comprises all Islamic banks operating in Indonesia. The sampling technique employed is purposive sampling, specifically judgment sampling. The sample criteria are as follows: (1) Islamic banks in Indonesia classified as Islamic Commercial Banks; and (2) availability of published annual reports for the period of 2017–2022. The statistical analysis in this study is conducted using E-Views version 12.

The data analysis techniques employed in this study include descriptive statistical analysis, classical assumption tests, and Moderated Regression Analysis (MRA). MRA is utilized to examine the moderating effect of gender diversity, which may either strengthen or weaken the relationship between the independent variables, Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE), and the dependent variable, Islamic bank performance (IBP). Regression Equation represents a Moderated Regression Analysis (MRA) model, which is employed to evaluate all hypotheses:

$$IBP_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 GD_{it} + \beta_5 HCE_{it} * GD_{it} + \beta_6 SCE_{it} * GD_{it} + \beta_7 CEE_{it} * GD_{it} + \epsilon_{it}$$

This study employs panel data, which combines time-series and cross-sectional data. Prior to conducting the Moderated Regression Analysis, several diagnostic tests are performed, including normality, multicollinearity, and heteroscedasticity tests, to ensure the validity of the regression model. Descriptive statistical techniques are then applied to analyze the data, focusing on metrics such as mean, standard deviation, and minimum and maximum values. In panel data regression, the optimal model is selected from three potential approaches: the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection of the most appropriate model is determined through the Chow test, Hausman test, and Lagrange Multiplier (LM) test.

Table 1
Operational Definition of Variable

Variable	Measurement
IBP	ROA = Net Income/Total Asset
HCE	The ratio of value added divided by human capital. Where: the value added = operating profit + employee cost + depreciation. Where: the human capital = total costs invested on employees (Chowdhury et al., 2019; Gupta & Raman, 2021)
SCE	The ratio of structural capital divided by value-added. Where: the structural capital = value-added – human capital Where: the value added = operating profit + employee cost + depreciation. (Chowdhury et al., 2019)
CEE	The ratio of value added divided by capital employed. Where: the value added = operating profit + employee cost + depreciation. Where: the capital employed = total Asset – current liabilities (Chowdhury et al., 2019; Gupta & Raman, 2021)
GD	A dummy variable is used to represent the presence of female directors, with the following conditions: 1 indicates the absence of female directors, and 2 indicates the presence of female directors.

RESULTS AND DISCUSSION

This study employs purposive sampling, selecting a total of 14 Islamic commercial banks as the sample. Based on these criteria, the ideal research sample consists of 84 observations spanning six years, from 2017 to 2022. However, due to incomplete data, the final sample size is reduced, resulting in 68 valid observations that meet the panel data criteria. Consequently, the analysis is based on these 68 observations.

Statistical Descriptive Results

The table 2. presents descriptive statistics for the period 2017–2022, including the minimum, maximum, mean, and standard deviation of the variables used in this study. The findings indicate that the average IBP is relatively low. In contrast, the mean value for HCE is quite high, suggesting that Islamic banks in this sample generally exhibit good human capital efficiency. A higher HCE typically reflects a bank's ability to effectively leverage its workforce or human capital to generate output. A moderate value of SCE implies that the systems and processes in place at these Islamic banks are functional but not optimized to the highest level. While these banks are likely utilizing their organizational systems and culture adequately, there may still be opportunities for improvement in streamlining their internal processes or enhancing their technological capabilities. In contrast to HCE and SCE, the average value for CEE is quite low, which implies that the banks in this sample might not be utilizing their physical and financial assets as effectively as possible. Finally, the mean value for GD suggests that most Islamic banks have a gender-diverse board of directors, with a notable presence of female members in their governance structures.

Table 2
Statistical Descriptive

Var	N	Mean	Max	Min	Std. Dev.
IBP	68	0,0108	0,0909	-0,0497	0,0212
HCE	68	1,5536	3,6251	-7,764	1,3222
SCE	68	0,3918	1,8180	-1,279	0,3244
CEE	68	0,0364	0,2004	-0,049	0,0432
GD	68	1,5441	2	1	0,5017

Note: IBP = Islamic Bank Performance; HCE = Human Capital Efficiency; SCE = Structure Capital Efficiency; CEE = Capital Employed Efficiency; DG = Gender Diversity.

Model Selection

This study employs a panel data model, with the final sample consisting of 68 observations. Some observations did not meet the criteria outlined earlier, resulting in an unbalanced panel dataset. The statistical software used to analyze this unbalanced panel data is E-Views version 12, which is appropriate for handling such data. E-Views is capable of determining the most suitable model for this research. Therefore, various model specifications, including the CEM, FEM, and REM, were tested to identify the best model for this study.

Table 3
Specification Test Results

No.	Test	Hypothesis Tested	Test Statistics	p-value	Decision
1.	Chow Test	CEM vs. FEM	22,812	0.019	FEM preferred
2.	Hausman Test	FEM vs. REM	15,944	0,026	FEM preferred

Table 3 presents the results of the Chow test, which shows that the p-value is 0.019, which is less than the 0.05 significance level. This indicates that the FEM is preferred over the Pooled Model. Following this, the model must be further tested using the Hausman test. Table 3 also displays the results of the Hausman test, with a p-value of 0.026, which is also less than 0.05. This suggests that the FEM is more appropriate than the REM. Therefore, there is no need for further testing to determine the appropriate model, as FEM is the most suitable for this analysis.

After selecting the FEM as the best-fitting model, this study conducted classical assumption tests to ensure the validity of the regression analysis. The classical assumption tests performed include normality, multicollinearity, heteroskedasticity, and autocorrelation tests. The first assumption tested was the normality assumption using the Jarque-Bera test. The Jarque-Bera test yielded a probability value of 0.0963, which is greater than the 0.05 significance level. This result indicates that the residuals are normally distributed, satisfying the normality assumption.

Table 4 presents the results of the multicollinearity test, which examines the correlation coefficients between independent variables. A dataset is considered free from multicollinearity if the correlation coefficient between independent variables is below 0.8. The results indicate that all correlation values between the independent variables are well below the 0.8 threshold, with the highest correlation coefficient being 0.4948. This suggests that multicollinearity is not present in the dataset, confirming that the independent variables do not exhibit strong linear relationships with one another. Therefore, the data successfully passes the multicollinearity test.

Table 4
Multicollinearity Test Results

	HCE	SCE	CEE
HCE	1	-0,1303449	0,4948533
SCE	-0,1303449	1	0,1378616
CEE	0,4948533	0,1378616	1

Based on the results obtained from E-Views, the Durbin-Watson (DW) statistic for this study is 2.028178. To determine whether the dataset is free from autocorrelation, the decision rule states that the model passes the autocorrelation test if: $d_l < DW < 4 - d_u$. Given that in this study, with $k=3$ and $N=68$, the lower bound (d_l) is 1.5164, and the upper bound (d_u) is 1.7001, the inequality becomes: $1.5164 < 2.028178 < 2.2999$. Since the DW statistic falls within

this range, it can be concluded that the data is free from autocorrelation. Furthermore, Table 5 presents the results of the heteroskedasticity test using the Glejser test approach. The results indicate that the probability values for all independent variables (HCE = 0.4330, SCE = 0.9601, and CEE = 0.9119) exceed the 0.05 significance level. Since all probability values are greater than 0.05, the null hypothesis of homoskedasticity cannot be rejected, meaning that heteroskedasticity is not present in the dataset. Thus, it can be concluded that the data satisfies the assumption of homoskedasticity, ensuring that the regression model does not suffer from variance inconsistency, and hypothesis testing can proceed reliably.

Table 5
Heteroskedasticity Test Results

Dependent Variable: ABS(RESID)				
Sample: 2017 2022				
Total panel (unbalanced) observations: 68				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0,000267	0,000189	1,416018	0,1627
HCE	3,24E-05	4,10E-05	0,790206	0,4330
SCE	-7,39E-06	0,000147	-0,050278	0,9601
CEE	-0,000241	0,002166	-0,111162	0,9119

Hypothesis Testing and Discussion

As stated in H1a, this study finds that HCE significantly and positively influences the performance of Islamic banks. The statistical results presented in Table 6 show that the coefficient for HCE is 0.0212 with a p-value of 0.0000, indicating a statistically significant positive effect at the 5% significance level, thus supporting the hypothesis (H1a is accepted). This outcome is consistent with prior research that emphasizes the critical role of human capital in enhancing both operational efficiency and financial performance. Human capital, which encompasses knowledge, skills, and employee experience, has been identified as a key driver of organizational productivity and performance. Firer & Williams (2003) argue that human capital is a vital component of intellectual capital, playing a central role in boosting productivity and corporate performance, particularly in the banking sector. Additionally, Nawaz & Haniffa (2017) provide evidence that HCE is positively correlated with the profitability of Islamic banks, particularly reflected in improved ROA. Le et al. (2022) also confirm that human capital is instrumental in enhancing the efficiency of banks, especially in knowledge-intensive sectors such as banking, where expertise, continuous knowledge development, and employee training are essential for maintaining competitive advantage. Furthermore, Joshi et al. (2013) highlight that in the financial sector, banks with higher levels of human capital efficiency tend to outperform their competitors in terms of profitability and market valuation. Alhassan & Asare (2016) underscore the importance of investing in human capital as a strategic resource, noting that its effective management contributes significantly to the financial performance of banks, particularly in emerging markets.

Table 6
Hypothesis Testing Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0,0276	0,0040	-6,8399	0,0000
HCE	0,0212	0,0029	7,2846	0,0000
SCE	-0,0229	0,0055	-4,1394	0,0001
CEE	0,2811	0,0570	4,9307	0,0000
GD	0,0090	0,0029	3,1093	0,0031
HCE x GD	-0,0110	0,0015	-7,4513	0,0000

SCE x GD	0,0206	0,0048	4,3033	0,0001
CEE x GD	0,0733	0,0276	2,6587	0,0106
R-squared				0,9864
Adjusted R-squared				0,9814
F-statistic				197,0514
Prob(F-statistic)				0,0000
Dependent Variable: IBP				

H1b posits that SCE positively influences the performance of Islamic banks. However, the statistical results presented in Table 6 show that the coefficient for SCE is -0.0229 with a p-value of 0.0001, indicating a significant negative relationship between SCE and bank performance, leading to the rejection of H1b. The impact of SCE on the performance of Islamic banks is mixed, as evidenced by various studies. For instance, Firer & Williams (2003) suggest that structural capital, encompassing organizational systems, processes, and infrastructure, can enhance operational efficiency, thereby contributing to improved bank performance. However, the direct influence of SCE on financial performance, such as ROA, is less pronounced when compared to the contributions of HCE and capital employed efficiency CEE. In line with this, Le et al. (2022) find that while SCE improves technical and cost efficiency, its effect on financial performance, particularly profitability, remains limited. Similarly, Nawaz & Haniffa (2017) demonstrate that in the context of Islamic banks, SCE is more effective in enhancing operational efficiency, but its direct impact on profitability is minimal. Overall, although SCE plays a role in improving efficiency and operational performance, its contribution to driving higher financial performance in Islamic banks appears to be less significant compared to other factors such as HCE and CEE.

H1c posits that CEE positively influences the performance of Islamic banks. The statistical results of this study (Table 6) support this hypothesis, with the coefficient for CEE found to be 0.2811 and a p-value of 0.0000, indicating a strong positive relationship between CEE and bank performance. This finding aligns with existing literature, which underscores the significant role of CEE in driving financial performance, particularly in the banking sector. Firer & Williams (2003) suggest that efficient capital utilization, as captured by CEE, is a key determinant of profitability and productivity. In a similar vein, studies by Joshi et al. (2013) and Nimtrakoon (2015) further reinforce that effective capital deployment leads to enhanced financial outcomes, including ROA and overall profitability. For Islamic banks, the role of CEE is even more critical, as it ensures the efficient use of resources while adhering to Shariah-compliant financial principles, which prioritize ethical investing and risk-sharing. Additionally, Goh (2005) and Le et al. (2022) emphasize that CEE contributes to superior financial outcomes by optimizing asset utilization and improving capital efficiency. These findings highlight the vital role of efficient capital management in enhancing the performance of Islamic banks, driving sustainable financial success while remaining consistent with Islamic finance principles.

H2a posits that gender diversity positively moderates the relationship between HCE and the performance of Islamic banks. However, the results of this study indicate that the interaction term $HCE \times GD$ has a coefficient of -0.0110 with a p-value of 0.0000, suggesting that gender diversity negatively moderates the relationship between HCE and IBP. Therefore, H2a is rejected. This finding contradicts the prevailing view in the literature that gender diversity enhances the effectiveness of human capital utilization. Adams & Ferreira (2009) argue that gender-diverse boards contribute to improved decision-making processes and governance, which can lead to more efficient human capital management, especially in knowledge-intensive sectors like banking. Similarly, Bontis (1998) highlights the pivotal role of human capital as a driver of competitive advantage in the banking sector, where the expertise and skills of employees are critical for organizational performance. Moreover,

Ararat & Yurtoglu (2021) suggests that gender diversity, particularly through active participation in board activities, strengthens corporate governance, which in turn should enhance the efficient use of human capital. Garanina & Muravyev (2021) further support this view, arguing that gender-diverse boards improve overall board effectiveness, potentially contributing to better management of human capital.

However, the negative moderating effect observed in this study suggests that the expected benefits of gender diversity in improving human capital efficiency may not materialize in the specific context of Islamic banks. This outcome can be explained through the Diversity Management Theory, which emphasizes that the effectiveness of diversity in organizational settings depends significantly on how diversity is managed within the structure of the organization. Sakyi et al. (2021) argue that while gender diversity can bring a variety of perspectives to decision-making, it can also lead to misalignments if organizational cultures are not prepared to integrate diverse viewpoints effectively. The integration of gender diversity might be hindered by cultural and organizational barriers, which can limit the expected positive impact on governance and performance. Furthermore, Yadav & Lenka (2020) highlight that without proper diversity management policies, the potential for conflict, miscommunication, and ineffective collaboration may increase, especially when diversity is not fully integrated into organizational processes. These barriers may explain why gender diversity did not have the expected positive impact on the relationship between HCE and Islamic bank performance in this study.

Furthermore, the findings of this study support H2b, indicating that gender diversity positively moderates the relationship between SCE and the performance of Islamic banks. The interaction term $SCE \times GD$ has a positive coefficient of 0.0206 with a p-value of 0.0001, suggesting that gender diversity strengthens the positive impact of SCE on bank performance (H2b is accepted). This result aligns with prior research emphasizing the role of gender-diverse boards in enhancing corporate decision-making and governance. Nadeem et al. (2019) argue that gender diversity contributes to improved intellectual capital efficiency, including SCE, by fostering broader perspectives, enhancing innovation, and facilitating the implementation of organizational structures. Similarly, Sanyaolu et al. (2022) highlight that gender-diverse boards are more likely to adopt structured processes and policies that enhance organizational efficiency, particularly in knowledge-intensive sectors such as banking. Since SCE represents an organization's ability to develop and utilize its structural resources—such as databases, operational procedures, and business strategies—gender-diverse leadership plays a pivotal role in optimizing these assets. Furthermore, Garanina & Muravyev (2021) suggest that gender diversity improves board effectiveness, leading to more comprehensive oversight of structural capital investments, which ultimately enhances bank performance. Additionally, Hosny & Elgharbawy (2022) found that gender-diverse leadership strengthens corporate governance and risk management, which are critical for maximizing SCE efficiency.

Finally, the findings of this study support H2c, indicating that gender diversity positively moderates the relationship between CEE and the performance of Islamic banks. The interaction term $CEE \times GD$ has a positive coefficient of 0.0733 with a p-value of 0.0106, suggesting that gender diversity strengthens the positive impact of CEE on bank performance (H2c is accepted). This result aligns with prior research highlighting the role of gender-diverse boards in enhancing strategic decision-making, resource allocation, and financial oversight, which are critical for optimizing CEE. Nadeem et al. (2019) argue that gender-diverse boards contribute to intellectual capital efficiency, including CEE, by fostering diverse financial perspectives and improving capital allocation efficiency. Similarly Sanyaolu et al. (2022), emphasize that gender-diverse boards enhance governance mechanisms, reducing inefficiencies in the utilization of employed capital and strengthening the overall

financial sustainability of banks. Additionally, Mensah & Onumah (2023) suggests that gender-diverse boards can mitigate risk aversion tendencies, leading to more effective capital employment strategies, which ultimately enhance profitability. These findings suggest that in the context of Islamic banking, where capital allocation must adhere to Shariah principles, gender diversity can act as a complementary mechanism that enhances CEE's impact on performance by ensuring more effective and ethical financial decision-making.

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

Conclusion

This study examines the impact of intellectual capital components, HCE, SCE, and CEE, on the performance of Islamic banks, while also assessing the moderating role of GD within the board of directors. The findings reveal that HCE and CEE positively and significantly influence Islamic bank performance, supporting H1a and H1c, respectively. These results align with prior research indicating that human capital plays a crucial role in driving bank efficiency, while efficient capital utilization enhances financial performance by optimizing resource allocation. However, the relationship between SCE and bank performance was found to be negative and significant, leading to the rejection of H1b, suggesting that structural capital alone may not directly contribute to improved performance in the Islamic banking sector.

Regarding the moderating role of gender diversity, the results indicate a negative moderating effect of GD on the relationship between HCE and bank performance, leading to the rejection of H2a. This finding implies that the presence of gender diversity in leadership does not necessarily enhance the effectiveness of human capital utilization, possibly due to cultural, organizational, or governance-related constraints. In contrast, the study confirms that gender diversity positively moderates the relationships between SCE and bank performance (H2b) and CEE and bank performance (H2c). These results highlight that a gender-diverse board strengthens structural capital efficiency by improving governance mechanisms and decision-making processes, while also enhancing capital employed efficiency by fostering more effective financial oversight and resource management.

Limitations

This study has several limitations. While gender diversity is considered as a moderating factor, it does not account for the actual influence or decision-making power of female board members. Simply having women in leadership roles does not guarantee their active participation in strategic decisions, as factors such as board dynamics, leadership hierarchy, and organizational culture may limit their impact. Additionally, the study does not address cultural and institutional differences that could affect the relationship between intellectual capital, gender diversity, and bank performance. Since Islamic banks operate in diverse regions with different governance practices, gender norms, and regulatory frameworks, the findings may not be universally applicable.

Recommendations

Future research could explore cross-country comparisons and qualitative boardroom analyses to better understand how governance structures and institutional settings influence the effectiveness of gender diversity in improving intellectual capital efficiency and overall bank performance.

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