

GOOD CORPORATE GOVERNANCE AND MODERATING THE INFLUENCE OF INTELLECTUAL CAPITAL ON THE FINANCIAL PERFORMANCE: THE STUDY OF THE ISLAMIC BANKING INDUSTRY

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Abstract

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The importance of intellectual capital (IC) in the financial sector has become increasingly evident in the Fourth Industrial Revolution (4IR). Tayles et al. (2007) have shown that companies must acknowledge, incentivize, and oversee their IC to achieve sustainable performance excellence. This study investigates the impact of IC on the financial performance of Sharia banking in Indonesia and assesses the role of good corporate governance (GCG) in enhancing the connection between IC and financial performance. Data were collected from 14 Islamic banks throughout Indonesia based on quarterly data over five years, from 2015 to 2019, and involved 266 observations. This study employed the generalized method of moments (GMM) estimator to examine empirical data and observed that intellectual capital has a beneficial impact when GCG is a moderator. The paper adds to the current literature by introducing a new analytical framework that explores the role of GCG in moderating the relationship between intellectual capital and financial performance.

Keywords: Intellectual Capital, Corporate Governance, Financial Performance, Islamic Banking

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1. INTRODUCTION

The study of intellectual capital (IC) and banking financial performance is an issue that is increasingly being considered, especially in the era of the Fourth Industrial Revolution (4IR) as it is today. Companies are encouraged to invest more capital in intangible assets such as human resource development, technology development, and product innovation they provide (Chen et al., 2005). Intellectual capital comprises intangible assets such as information, knowledge, intellectual property, and experience, which can be recognized, leveraged, and employed to create more valuable assets (Davenport & Prusak, 1998; Kannan & Aulbur, 2004). Tayles et al. (2007) argue that for companies to attain sustainable performance excellence, it is essential to acknowledge, incentivize, and manage their IC. They further suggest that companies need to modify their knowledge management strategy by prioritizing the effectiveness of IC as the critical element. This approach can motivate business leaders to achieve the company's objectives and goals more effectively (Wang et al., 2016).

Multiple research studies have been carried out to investigate how intellectual capital's efficiency impacts Sharia banking's financial performance (Naushad, 2019; Nawaz, 2019; Nawaz & Haniffa, 2017; Nurmawati et al., 2020; Soewarno & Tjahjadi, 2020). The above study shows that companies have not made the most of intellectual capital. For example, the research by Nawaz (2019) suggests that further research should include other variables to find a better model in examining the determinants of a company's financial performance in the form of the company's external control structure, such as the capital market, money market, regulators, and others. More specifically, Nurmawati et al. (2020) suggested that further research include new variables such as corporate governance. In its development, good corporate governance (GCG) is a variable that can be a moderator variable on its financial performance (Boyd & Solarino, 2016). One alternative approach to assess the influence of the moderator variable on the connection between the independent and dependent variables is to test for interactions between the model or subsamples. This can determine the extent to which the moderator variable influences the strength of the relationship (Boyd & Solarino, 2016).

Therefore, this study aims to determine whether GCG moderates the relationship between intellectual capital efficiency and Islamic banks' financial performance. First, the novelty in this study will discuss how the role of the GCG variable in moderating the influence of the IC component on the financial performance of Islamic banking in Indonesia following the model built by Boyd and Solarino (2016). Other researchers have not studied the moderating role of the GCG variable on the relationship between IC and financial performance. Another difference is the use of the value-added intellectual coefficient (VAIC™) subcomponent as an independent variable that affects banking financial performance. Theoretically, this research will improve previous studies (Dalwai & Mohammadi, 2020; Nawaz, 2019; Nawaz & Haniffa, 2017; Nurmawati et al., 2020). Then to provide a broader perspective, in addition to using agency

theory (Jensen & Meckling, 1976) and resource-based theory (Barney, 1991), the study will also use resource dependence theory (RDT) (Salancik & Pfeffer, 1977) which have not been used in similar studies. RDT focuses on the relationship between a company, its constituents, and the business environment (Hillman et al., 2009).

The reason for selecting Indonesia as the research subject is its position as the country with the world's largest Muslim population, with a total of 230 million individuals. This aligns with the research focus on Islamic banking. Then because of the availability of data and the ease of accessibility of financial and non-financial information in the database of electronic websites. This study uses combined data from 14 Islamic commercial banks in Indonesia during the 2015-2019 period. This study uses VAIC™, a proxy for intellectual capital, as the independent variable. In this study, the company's performance is the dependent variable, and it is assessed using two metrics: return on assets (ROA) and return on equity (ROE). This study also includes the composite value of Islamic banks as a proxy for GCG as a moderating variable and four other control variables, namely capital adequacy, size, inflation, and gross domestic product (GDP), to examine their influence on the relationship between IC efficiency on Islamic banking financial performance.

Finally, the study results will be helpful for company owners, investors, management, regulators, policymakers, and scholars to increase their awareness of IC and the importance of maximizing the role of GCG in Islamic banking. Furthermore, these results will be helpful for companies to prioritize and plan their finances for the effective and efficient use of intellectual capital.

This paper's second section provides an overview of the importance of IC and GCG in determining the financial performance of Islamic banks. The subsequent section, Section 3, outlines the methodology used in this study. The fourth and fifth sections present, analyze, and discuss the study's results and findings. Finally, the conclusion summarizes the research limitations, implications, and possible future research areas.

To elaborate further, Section 2 of the paper emphasizes the significance of IC and GCG as critical determinants of the financial performance of Islamic banks. IC refers to the contracts and agreements that comply with Islamic principles and regulations central to the Islamic financial system's operations. On the other hand, GCG refers to the structures and processes that ensure the bank's accountability and transparency to its stakeholders, particularly its shareholders.

Section 3 of the paper outlines the methodology employed in this study, which includes data collection from Islamic banks' financial reports, analysis of statistical data using multiple regression analysis, and hypothesis testing.

Sections 4 and 5 present the study's findings and analysis of the relationship between IC, GCG, and the financial performance of Islamic banks. The study's results reveal that both IC and GCG significantly influence the financial performance of Islamic banks.

Finally, Section 6 summarizes the research limitations and implications for the Islamic banking industry. The study's findings suggest that

improving IC and GCG practices can enhance the financial performance of Islamic banks. However, the study also acknowledges some limitations, such as the limited scope of data used and the exclusion of non-financial performance measures. The concluding section also highlights possible future research areas, such as exploring the impact of cultural factors on IC and GCG practices in Islamic banks.

2. LITERATURE REVIEW

2.1. Theoretical literature

2.1.1. Agency theory

According to Jensen and Meckling (1976), two types of agency relationships: exist shareholders and managers and lenders and managers. At the core of these relationships is the separation between ownership (represented by the principal/investor) and control (represented by the agent/manager) (Jensen & Meckling, 1976). Ownership is represented by investors who delegate asset management to an agent (manager). Investors are looking to benefit from growing wealth and prosperity through decentralization (Kusuma & Rosadi, 2019, p. 166).

Several studies have investigated IC from the point of view of the agency problem. For example, Goebel (2019) supports agency theory because firms report intellectual capital to justify resource allocation and avoid mispricing. Likewise, Yan's (2017) research report is consistent with agency theory because board composition is positively related to intellectual capital disclosure in CEO statements. Explain the perspective of agency theory in which IC reports are linked to the value creation process. A study by Mangena et al. (2010) reported a negative relationship between IC disclosure and the cost of capital.

2.1.2. Resource-based theory (RBT)

In the concept of RBT, a company's competitive advantage is obtained from the unique values of each company. So, even though one company with another company has the same type of business, it will still produce different outputs or company performance. This competitive advantage's principal value is created from creativity and innovation (Barney, 1991; Chen et al., 2005; Davenport & Prusak, 1998; Kannan & Aulbur, 2004).

2.1.3. Resource dependence theory (RDT)

Resource dependence theory, developed by Pfeffer and Salancik (1977), states that an organization builds collaborative relationships and manages resources to respond to environmental uncertainty. Resource dependence theory explains that the firm is an open system that depends on the contingency of the external environment. Organizations are not autonomous but are limited by interdependent networks with other organizations. Resource dependence theory characterizes the firm as an open system, dependent on resources from external environmental variables (Hillman et al., 2009).

2.1.4. Summary of previous research

Several studies on intellectual capital and financial performance have been conducted in various countries. One of the measuring instruments often used in researching intellectual capital is the VAIC™ approach popularized by Bontis et al. (2000). The research showed that human capital is related to structure capital, and then structure capital relates to the company's performance. Another study was conducted by Alipour (2012) in Iran and obtained results stating the positive influence of the VAIC™ component on financial performance. Nawaz (2019) also obtained relatively similar results to Alipour's (2012) research, and only there is one component of VAIC™ that does not affect financial performance, namely capital employed. Dalwai and Mohammadi (2020) researched the relationship between VAIC™ and GCG. The result is a measure with a committee meeting, which indicates that the implementation of GCG significantly impacts intellectual capital. Further research was conducted by Nurmawati et al. (2020) in Indonesia, wherein the results concluded that the intellectual capital produced by VAIC™ proved to influence the financial performance of Islamic banks positively.

Intellectual capital refers to intangible assets, such as knowledge, information, intellectual property, and experience that have been formalized, applied, and utilized to create higher-value assets (Davenport & Prusak, 1998; Kannan & Aulbur, 2004; Yaseen & Al-Amarneh, 2021; Kusumawardani et al., 2021). According to resource-based theory, intellectual capital can be considered a unique resource that enables companies to gain a competitive advantage and create value. Therefore, companies that can effectively leverage their intellectual capital have the potential to achieve sustainable profits. This emphasizes the importance of intellectual capital management to maximize a company's potential for long-term success (Mavridis, 2004).

2.2. Conceptual framework and hypotheses development

2.2.1. The influence of IC on the financial performance of Islamic banking

Intellectual capital is any suitable object or combination of individuals that can provide knowledge, information, intellectual property, and experience of competitive market value that can create wealth for a firm (Kannan & Aulbur, 2004). Value added here refers to the total value created by using existing tangible, intangible, and financial resources. In other words, in the context of the present study, value creation refers to profitability as measured by ROA and ROE.

In resource-based theory, a company that can maximize its resources, both in the form of tangible assets such as building machines, offices, desks, computers, copyrights, and intangible assets such as human capital (knowledge skills and employee capabilities in providing good customer service) will have a competitive and sustainable advantage, to be able to improve the company's financial performance.

The resources of all companies are classified in IC, which the VAIC™ measures. This proxy is consistent with previous research in the banking sector, which reported a significant positive relationship between VAIC™ and bank performance. Furthermore, empirical evidence supports the influence of IC on financial performance (Budiasih, 2015; Nawaz, 2019; Nawaz & Haniffa, 2017; Nurmawati et al., 2020). Therefore, the hypotheses put forth in this study are based on the previously described research results:

H1a: Intellectual capital positively influences financial performance (ROA).

H1b: Intellectual capital positively influences financial performance (ROE).

2.2.2. The influence of IC and the role of GCG on the financial performance of Islamic banking

Good corporate governance describes how business management manages its assets and capital well so that the role of GCG in moderating the influence of IC on financial performance is possible (Boyd & Solarino, 2016). The implementation of GCG is expected to help increase and maximize existing resources within the company in realizing maximum company financial performance (Hamonangan & Hermawan, 2020). Gramling and Hermanson (2006) and O’Leary and Stewart (2007) stated that CGC showed how companies are directed to carry out their activities to achieve their goals. It is also about how companies are well-managed and can find ways to gain higher trust in the market and then

reach users’ expectations of financial statements. Gramling et al. (2004) stated that implementing GCG will ultimately improve the company’s performance (financial or non-financial). Holland (2001) reports that GCG has much to do with IC components that drive company performance. This study confirms that intangible resources such as IC influence the implementation of GCG, and human capital is specifically named the most crucial component of IC. Therefore, as emphasized in the literature, all these qualities of good governance can ultimately affect the company’s performance.

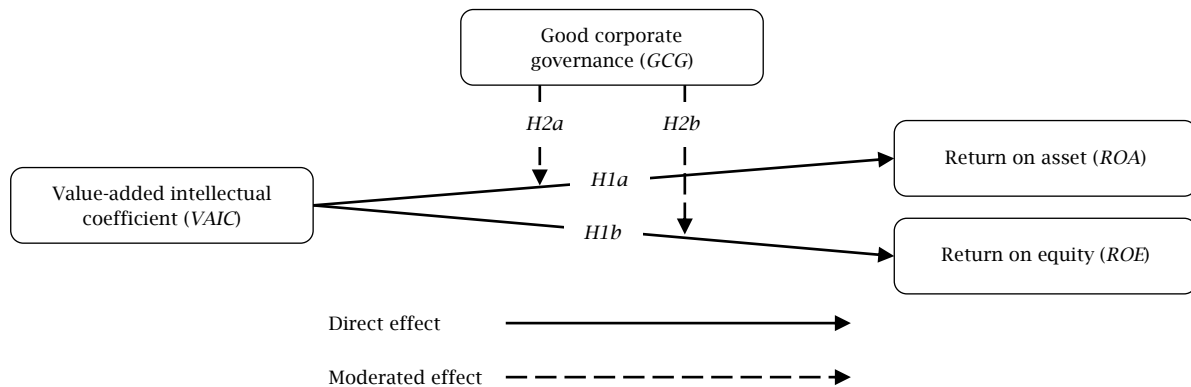
Agency theory states that agents, in this case, are the company’s intellectual capital and will operate optimally if supervision can be carried out optimally. On the other hand, resources that seek a balance between various interests can benefit the company. However, empirically no research measures the role of GCG in moderating the relationship between IC and financial performance. Therefore, it is interesting to explore the effect of GCG on the relationship between IC and financial performance. Based on the conceptual framework described earlier, the hypotheses proposed in this study are as follows:

H2a: GCG strengthens the influence of IC on financial performance (ROA).

H2b: GCG strengthens the influence of IC on financial performance (ROE).

To conclude, this paper has summarized the literature review in the proposed research model (Figure 1) for further investigation and validation.

Figure 1. Research model



3. METHODOLOGY

3.1. Sample selection

The population used in this study is Islamic commercial banks in Indonesia, which published financial reports from 2015 to 2019. The total population in this research is 14 Islamic commercial banks, while the sample companies used are saturated samples, meaning that the entire population will be used as a sample.

The data used is quarterly in the 2015–2019 period, taken from the statistical data of Islamic banking from the Financial Services Authority (*Otoritas Jasa Keuangan* — OJK). Then, 266 observation samples were found and passed the testing process

of various assumptions according to the model suitability. This observation data was then tested using the generalized method of moments (GMM) estimator developed by Hansen (1982).

3.2. Variable measurement

3.2.1. Independent variable

This study used the VAIC model as its bound variable for IC proxy. Pulic (2000) developed VAIC to measure the size and efficiency of IC. Various researchers have widely used this model in the existing literature (Alipour, 2012; Naushad, 2019; Nawaz, 2019; Nurmawati et al., 2020). Despite being so popular, the VAIC model still has some

limitations. According to Stähle et al. (2011), VAIC does not represent IC as labor efficiency, and its capital investment has no relationship with it. Other criticisms suggest that structure capital efficiency (SCE) cannot be justified as operating profit plus depreciation is comparable to the company's operating margin. Because of these issues, researchers have tried to produce modified or expanded versions of VAIC to ease its limitations. For example, Ulum et al. (2017) investigated the efficiency, and the company, IC, used a modified version of VAIC known as M-VAIC that adds back research and development (R&D) and copyright investment to obtain net added value. However, for this study, VAIC continued to have compatibility with previous similar studies.

The measurement of VAIC is represented through the following equation:

$$VAIC = HCE + SCE + CEE \quad (1)$$

where,

VAIC: value-added intellectual coefficient;

HCE: refers to human capital efficiency (measured as VA^*/HC , HC = total employee costs);

SCE: refers to structure capital efficiency (measured as SC/VA^* , $SC = VA - HC$);
CEE: refers to the efficiency of capital employed (measured as VA^*/CE , CE = capital employed).

$$VA = OP + EC + D + A \quad (2)$$

where,

OP: operating profit;

EC: employee costs;

D: depreciation;

A: amortization.

3.2.2. Dependent and control variables

ROA represents the variables in this study, and ROE is collected from the company's annual report. To strengthen the effect of the dependent, independent, and moderating variables on the regression model, it is necessary even to control the control variables. Therefore, this study uses CAR, Size, and LVRG variables. The summary measurement of variables used in this study is defined in the following table:

Table 2. Variable measurement

Variable	Label	Measurement	Reference
<i>Independent variable</i>			
Intellectual capital	IC	$IC = VACA + VAHU + STVA$	Pulic (2000), Ulum (2013)
<i>Moderating variable</i>			
Good corporate governance	GCG	Islamic bank composite value	Bank Indonesia Circular Letter 13/24/DPNP/2011
<i>Dependent variable</i>			
Return on asset	ROA	Net income/Total assets	Naushad (2019)
Return on equity	ROE	Net income/Bank capital	Naushad (2019)
<i>Control variable</i>			
<i>Bank specific</i>			
CAR	CAR	Bank capital/Bank assets	Irawati et al. (2019)
Bank size	Size	Natural logarithm of total assets	Ousama et al. (2019)
Leverage	LVRG	Total debts by total assets of a bank	Naushad (2019)

Note: VACA — Value added capital employed, VAHU — Value added human capital, and STVA — Structural capital value added.

3.2.3. Moderating variable

GCG is a moderator variable that strengthens the relationship between intellectual capital and financial performance according to the model suggested by Boyd and Solarino (2016). The calculation of GCG will use the composite value rating of Islamic banks according to the rules issued by Bank Indonesia. The assessment of the implementation of GCG based on the 5 (five) basic principles is grouped into a governance system consisting of 3 (three) aspects of governance, namely governance structure, governance process, and governance outcome. The assessment of the 3 (three) aspects of governance was conducted on:

1) The execution of the duties and obligations assigned to the board of commissioners.

2) The board of directors' duties and responsibilities are being implemented.

3) The committee's duties are complete and being implemented.

4) The Sharia Supervisory Board is implementing its duties and responsibilities.

5) Sharia principles are being implemented in fundraising, distribution of funds, and services.

6) Conflicts of interest are being handled

appropriately.

7) The compliance function is being implemented.

8) The internal audit function is being implemented.

9) The external audit function is being implemented.

10) The maximum limit for the distribution of funds (BMPD) is being adhered to.

11) Transparency of Islamic Commercial Bank (Bank Umum Syariah — BUS) financial and non-financial conditions, reports on implementing GCG, and internal reporting.

In order to accurately evaluate the strengths and weaknesses of the 3 (three) dimensions of governance, it is essential to focus not only on fulfilling formal procedural requirements but also on the actual implementation of governance. Therefore, the assessment of governance structure, process, and outcome should be integrated, comprehensive, and structured to ensure that conclusions about governance outcomes reflect the degree to which the implementation of governance processes is supported by an adequate governance structure, which requires further testing and verification.

Table 3. Good corporate governance composite rating

No.	Ratio	Rank
1	Composite value < 1.5	Excellent
2	1.5 < Composite value < 2.5	Good
3	2.5 < Composite value < 3.5	Good enough
4	3.5 < Composite value < 4.5	Not good
5	Composite value > 4.5	Bad

Source: Bank Indonesia Circular Letter 13/24/DPNP/2011.

Dependent variable ROA:

$$ROA_{i,t} = VAIC_{i,t}^{TM} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (3)$$

$$ROA_{i,t} = VAIC_{i,t}^{TM} + GCG_{i,t} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (4)$$

$$ROA_{i,t} = VAIC_{i,t}^{TM} + GCG_{i,t} + VAIC_{i,t}^{TM} * GCG_{i,t} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (5)$$

Dependent variable ROE:

$$ROE_{i,t} = VAIC_{i,t}^{TM} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (6)$$

$$ROE_{i,t} = VAIC_{i,t}^{TM} + GCG_{i,t} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (7)$$

$$ROE_{i,t} = VAIC_{i,t}^{TM} + GCG_{i,t} + VAIC_{i,t}^{TM} * GCG_{i,t} + CAR_{i,t} + Size_{i,t} + LVRG_{i,t} + \mu_{i,t} \quad (8)$$

where,

$Y1 = ROA$;

$Y2 = ROE$;

$\alpha = \text{constant}$;

$\beta = \text{regression coefficient}$;

$X1 = \text{value-added intellectual coefficient}$;

$M = GCG$;

$X2 = \text{size (Control variables)}$;

$X3 = \text{capital adequacy ratio (CAR) (Control variables)}$;

$X4 = \text{leverage (LVRG) (Control variables)}$;

$t = \text{time}$;

$i = \text{cross section } (i = 1, \dots, n)$.

3.3. Estimation method

Unlike a GMM, traditional econometric methods (ordinary least squares (OLS), fixed effect, and generalized effect) do not avoid the endogeneity problem arising from a causal relationship between the independent and dependent variables due to lagged dependent variables. To alleviate this problem, the GMM is used as a generic tool to estimate a statistical model's parameters. The GMM estimator, which Hansen first introduced in 1982, was further developed by Arellano and Bover (1995) and Blundell and Bond (1998).

This method addresses the issue of endogeneity in independent variables by employing a set of instrumental variables generated through lagged variables, which helps mitigate the impact of simultaneity bias.

Furthermore, to test the moderating effect, we use moderated regression analysis. The regression model used in this study includes interactions between independent variables and moderating variables, which impact the dependent variable. A moderating variable is a variable that has a contingent effect on the relationship between the independent and dependent variables (Sekaran & Bogie, 2016). The impact of the contingency in question can affect either the direction or the strength of the relationship between the independent and dependent variables (Baron & Kenny, 1986). Testing moderating regression analysis can be done using the hierarchical regression method analysis (Baron & Kenny, 1986).

An alternative model is added to this study, which is done to test the robustness of the model (robust check) so that results can be responsible. For this reason, we added the pooled least square endogeneity test, which refers to the study (Khatab et al., 2011). In the second model robustness test, we performed a test by removing all control variables.

4. RESULTS

4.1. Descriptive statistic

Based on Table 4, it can be explained that the number of observed data amounted to 266 in the data analyzed in this study. The descriptive statistical values processed include average (mean), minimum, maximum, and standard deviation. The average value for the VAIC variable is 1.3782, the minimum value is -45.743, the maximum value is 5.4825, and the standard deviation is 3.3935. GCG has a minimum value of 1, a maximum value of 3, an average value of 2.11, and a standard deviation value of 0.6461. ROA represents the minimum value of -0.201, the maximum value of 0.1358, and the standard deviation of 0.0383. ROE represents a minimum value of -0.94, a maximum value of 0.37, and a standard deviation of 0.161. The bank size has an average value of Ln 16.04, meaning that the average of the sample companies has an Ln value of 15.56. The minimum value represents 13.40, and the maximum value is 18.53. Natural logarithm (Ln) minimizes the difference in numbers far from the data obtained. The CAR represents a minimum value of -0.841, a maximum value of 2.931, and a standard deviation of 0.489. LVRG represents a minimum value of 0.340, a maximum value of 0.7450, and a standard deviation of 0.0482.

Table 4. Descriptive statistic result

Variable	ROA	ROE	VAIC	GCG	CAR	SIZE	LVRG
Mean	0.008334	0.032701	1.378164	2.11278	0.23663	16.0471	0.5216
Maximum	0.135800	0.371600	5.482505	3.00000	1.93350	18.5366	0.7450
Minimum	-0.201300	-0.945100	-45.74275	1.00000	0.10160	13.4000	0.3400
Std. dev.	0.038275	0.161395	3.393531	0.64608	0.19957	1.27718	0.0482
Observers	266	266	266	266	266	266	266

Source: Data processed with EViews 9, 2022.

4.2. Regression test results with the first different-GMM approach

4.2.1. Unit root test

At this stage, the unit root test was carried out using the Levin et al.'s (2002) t-approach (assuming the unit root process was carried out as a whole) and

Im et al.'s (2003) W-stat (assuming the unit root process was carried out individually). The test probabilities for decision-making are with the criteria. If the probability value is above 0.05, the data has a unit root. If the p-value is less than 0.05, the tested data does not possess a unit root. The table below presents the outcomes of the unit root test:

Table 5. Unit root test

Method	Variable	Statistic	Prob.	Explanation
<i>Null: Unit root (Assumed whole root unit process)</i>				
Levin, Lin, & Chu t	ROA	-2.56677	0.0051	Stationery
	ROE	-0.31152	0.3777	Unstationery
	VAIC	-0.11091	0.4558	Unstationery
	GCG	-0.04499	0.4821	Unstationery
	VAIC * GCG	-0.96024	0.1685	Unstationery
	LN_SIZE	-0.27356	0.3922	Unstationery
	CAR	-1.47304	0.0704	Unstationery
	LVRG	-0.27356	0.3922	Unstationery
<i>Null: Unit root (Assumed individual root unit process)</i>				
Im, Pesaran, & Shin W-stat	ROA	-1.58302	0.0567	Unstationery
	ROE	-1.77221	0.0382	Stationery
	VAIC	-1.37759	0.0842	Unstationery
	GCG	-0.91470	0.1802	Unstationery
	VAIC * GCG	-1.68989	0.0455	Stationery
	LN_SIZE	2.51108	0.9940	Unstationery
	CAR	-1.18658	0.1177	Unstationery
	LVRG	-1.85733	0.0842	Unstationery

Source: Data processed with EViews 9, 2022.

The unit root test results using the Levin, Lin & Chu t-approach show that the variable has a probability value above 0.05. Meanwhile, the unit root test results using the Im, Pesaran, & Shin W-stat approaches showed the same thing. This means a unit root in the data because the variable has a probability above 0.05. Therefore, if the test shows a unit root or a unit root in the data, then a second test is carried out, namely the degree of integration test (first difference).

4.2.2. Integration degree test (First different)

If the test shows a unit root or a unit root in the data, a second test is carried out, namely the degree of integration test (first difference). The following table shows the unit root test results using the degree of integration test.

Table 6. Integration degree test (First different)

Method	Variable	Statistic	Prob.	Explanation
<i>Null: Unit root (Assumed whole root unit process)</i>				
Levin, Lin, & Chu t	ROA	-6.46536	0.0000	Stationer
	ROE	-3.09605	0.0010	Stationer
	VAIC	-5.57878	0.0000	Stationer
	GCG	-9.98587	0.0000	Stationer
	VAIC * GCG	-6.32536	0.0000	Stationer
	LN_SIZE	-4.78845	0.0000	Stationer
	CAR	-6.29647	0.0000	Stationer
	LVRG	-5.58871	0.0000	Stationer
<i>Null: Unit root (Assumed individual root unit process)</i>				
Im, Pesaran, & Shin W-stat	ROA	-1.58302	0.0000	Stationer
	ROE	-3.09605	0.0010	Stationer
	VAIC	-7.20109	0.0000	Stationer
	GCG	-7.60032	0.0000	Stationer
	VAIC * GCG	-7.53393	0.0000	Stationer
	LN_SIZE	-7.45997	0.0000	Stationer
	CAR	-7.08279	0.0000	Stationer
	LVRG	-7.31985	0.0000	Stationer

Source: Data processed with EViews 9, 2022.

Based on the integration degree test results using the Levin, Lin & Chu t approach, it can be concluded that all variables show a probability level of 0.0000. This means that the data is not exposed to the unit root or stationery because it has a probability below 5 percent. Based on the unit root test results using the Im, Pesaran, & Shin W-stat approach, it can be concluded that all variables show a probability level of 0.0000. This means that the data is not affected by the unit root or the data is stationary at the level because it has a probability of below 5 percent.

4.2.3. Arellano-Bond test (AB test)

The Arellano-Bond test was conducted to determine the correlation between one residual component and another in the first different-GMM model (Arellano & Bond, 1991). Suppose the model has a probability value of more than $\alpha=0.05$. In that case, the estimation with the first different-GMM approach can be considered consistent, and there is no autocorrelation.

Table 7. Arellano-Bond test result

Equation	M-statistic	Prob.
Model 1	0.116904	0.9069
Model 2	0.100586	0.9995
Model 3	0.116904	0.8166
Model 4	-0.000567	0.9155
Model 5	-0.000904	0.9007
Model 6	-0.001556	0.8075

Source: Data processed with Eviews 9, 2022.

Based on the results of the AB test, it can be concluded that all models have a probability above 0.05. This shows that the estimation with the first different-GMM approach is consistent, and there is no autocorrelation.

4.2.4. Instrument validity test with Sargan test (J-statistic)

The instrument variable validity test is used to see the possibility of bias in the estimation parameters due to the inappropriate use of instrumental variables in the equation. The Sargan specification test was used in this study to test the validity of the instrument variables. The probability of testing for decision-making is with the criteria if the probability value is above 0.05, which means that there are conditions of the moment (instruments used).

Table 8. Sargan test (J-statistic) result

Equation	Method	Prob. (J-statistic)
Model 1	Sargan specification test	0.250153
Model 2	Sargan specification test	0.356323
Model 3	Sargan specification test	0.360174
Model 4	Sargan specification test	0.432250
Model 5	Sargan specification test	0.365094
Model 6	Sargan specification test	0.395466

Source: Data processed with Eviews 9, 2022.

Based on the instrument validity test results with the Sargan specification test approach, it can be concluded that all models have a probability above 0.05. This means there are conditions of the moment (the instrument used is valid).

4.2.5. Regression test with the generalized method of moments (GMM)

This model was created to overcome the constraint problem, which assumes that there is no serial correlation in the residuals in the linear model. As in the equation containing individual effects, the dependent variable is a lag and weak exogenous variables (Arellano & Bond, 1991). The GMM analysis model is a dynamic regression analysis model characterized by a dependent variable as a lag in the equation. Therefore, this model is appropriate to be used to find empirical evidence that states that there is an influence of intellectual property on banking financial performance and is moderated by the GCG variable. Financial performance is not directly affected by the crucial variable in the same period (t) but requires time intervals ($t-1$, $t-2$... $t-n$). The following table shows the regression analysis results using the GMM approach.

4.2.6. Regression result (First different-GMM)

The researchers use one lag on the dependent variable, meaning that the instrument used is delayed by one quarter, and the data will be more valid. For example, if the model uses a one-month lag to see changes in the dependent variable, the distance is too close; meanwhile, the distance is too far away if the model uses four quarters to see changes in the dependent variable. So, the instrument used will be more valid if the lag lasts one year.

Table 9. Regression result (first different-GMM) (Part 1)

	Coef. (Model 1)	Coef. (Model 2)	Coef. (Model 3)	Coef. (Model 4)	Coef. (Model 5)	Coef. (Model 6)
Dependent variable	ROA	ROA	ROA	ROE	ROE	ROE
<i>Independent variables</i>						
VAIC	0.001079***	0.001323***	-0.085613***	0.021939***	0.01701***	-0.553852***
<i>Moderating variables</i>						
GCG		-0.017138***	-0.028745***		-0.11062***	-0.194003***
<i>Interaction</i>						
VAIC * GCG			0.095539***			0.627651***
<i>Control variables</i>						
CAR	0.003165***	0.002186***	0.001320***	0.016712***	0.016070	0.0046310
SIZE	0.033789***	0.031795***	0.026478***	0.159191***	0.132468***	0.083279**
LVRG	0.013455***	0.06334***	0.037437***	0.09365***	0.047412***	0.063221**

Table 9. Regression result (first different-GMM) (Part 2)

	Coef. (Model 1)	Coef. (Model 2)	Coef. (Model 3)	Coef. (Model 4)	Coef. (Model 5)	Coef. (Model 6)
<i>Effects specification</i>						
Mean dependent var.	0.000295	0.000295	0.000295	0.001817	0.001817	0.001817
SE of regression	0.025093	0.024462	0.020981	0.154597	0.147222	0.122946
J-statistic	11.80745	11.54606	8.317883	11.23614	8.524333	7.816112
Prob. (J-statistic)	0.298150	0.240126	0.403050	0.432250	0.482287	0.451636

Note: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Source: Data processed with Eviews 9, 2022.

Based on the GMM analysis results in Model 3, it can be concluded that IC, measured by $VAIC^{TM}$, negatively affects financial performance as measured by ROA. This negative influence can be seen from the $VAIC^{TM}$ coefficient, which is -0.085613, and the error probability value is below 5 percent, which is 0.0000. This means that IC, or as measured by $VAIC^{TM}$, has a negative and significant effect on financial performance, so the hypothesis that says it is not accepted.

Furthermore, the GMM analysis results in Model 6 were consistent with Model 1, where IC, measured by $VAIC^{TM}$, negatively affects financial performance as measured by ROE. This negative influence can be seen from the $VAIC^{TM}$ coefficient, which is -0.553852, and the error probability value is below 5 percent, which is 0.0000. This means that IC, as measured by $VAIC^{TM}$, has a negative and significant effect on financial performance, so the hypothesis that says it is not accepted. While the results of the analysis of the influence of IC as measured by the $VAIC^{TM}$ on financial performance moderated by GCG found a positive and significant influence. These results were consistently obtained from the two models that were built. The coefficient value is 0.095539 (Model 3) and 0.627651 (Model 6), and the probability value is 0.0000 in Model 1 and Model 2.

4.2.7. Robustness test

Pooled least square endogeneity test

To ensure the reliability of the study results, a test is conducted to account for the potential impact of reverse causation from VAIC, GCG, and VAIC * GCG

on firm performance. Previous literature has suggested the existence of such a relationship, which can create endogeneity in our model (Khatab et al., 2011). The result is presented in Table 10.

Table 10. Pooled least square endogeneity test

Variables	ROA	ROE
Constant	-0.024880	-0.418334
VAIC	-0.047779	-0.189696
GCG	-0.022703	-0.096384
VAIC * GCG	0.057166	0.216243
Residual	0.988262	3.410341
R-squared	0.816036	0.660369
Adj. R-squared	0.811775	0.652501
Durbin-Watson	0.948399	0.697118
F-statistic	0.00000	0.000000

Note: Dependent variables: ROA and ROE. In the first row of the results, the coefficients are listed, and their corresponding t-statistics are in parentheses. The symbols *, **, and *** indicate the level of significance for a variable at the 1%, 5%, and 10% levels, respectively.

We tested the relationship between the ROA and ROE and all the independent variables, including the calculated error term (residual). Our findings indicate that there is no relationship between the residual and the ROA or ROE, indicating that there is no endogeneity in either of the models.

Robustness test by removing all control variables

In the second model robustness test, we performed a test by removing all control variables and the result is still consistent with when using the control variable. This means that the research model built can be said to be a solid model.

Table 11. Robust test (Dependent variable: ROE)

Variable	Coefficient	Std. error	T-statistic	Prob.
ROE(-1)	0.353986	0.040403	8.761292	0.0000
ROE(-2)	-0.019480	0.032445	-0.600402	0.5490
ROE(-3)	-0.079436	0.033439	-2.375563	0.0185
ROE(-4)	0.059732	0.049978	1.195150	0.2335
VAICSTD	-0.558523	0.021757	-25.67094	0.0000
GCG	-0.181231	0.021735	-8.338111	0.0000
VAICGCG	0.628995	0.024552	25.61897	0.0000
<i>Effects specification</i>				
<i>Cross-section fixed (First differences)</i>				
Mean dependent var.	0.001817	SD dependent var.	0.135562	
SE of regression	0.123074	Sum squared residual	2.862816	
J-statistic	6.989612	Instrument rank	13	
Prob. (J-statistic)	0.321809			

Table 12. Robust test (Dependent variable: ROA)

Variable	Coefficient	Std. error	T-statistic	Prob.
ROA(-1)	0.365320	0.018569	19.67345	0.0000
ROA(-2)	0.054502	0.010365	5.258334	0.0000
ROA(-3)	-0.071119	0.008096	-8.784647	0.0000
ROA(-4)	0.081554	0.023615	3.453533	0.0007
VAICSTD	-0.085438	0.001297	-65.85243	0.0000
GCG	-0.027606	0.001002	-27.55773	0.0000
VAICGCG	0.094842	0.001751	54.17445	0.0000
Effects specification				
Cross-section fixed (First differences)				
Mean dependent var.	0.000295	SD dependent var.	0.021186	
SE of regression	0.020255	Sum squared residual	0.077541	
J-statistic	6.771186	Instrument rank	13	
Prob. (J-statistic)	0.342527			

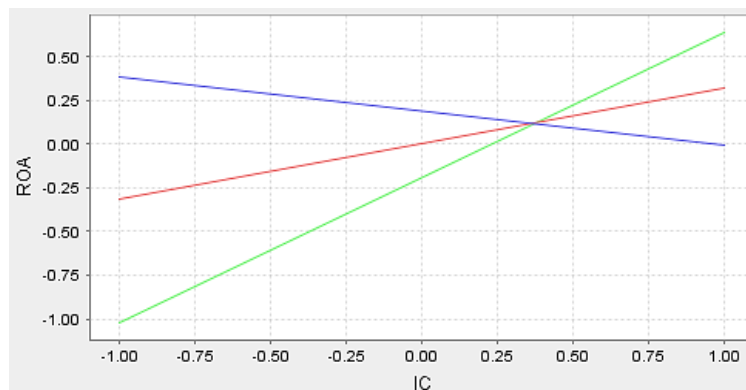
Note: *** significance at 1%; ** significance at 5%; * significance at 10%.

Source: Data processed, 2022.

4.2.8. Moderation test

This research hypothesized that GCC would moderately influence the relationship between intellectual capital and financial performance. As Chin et al. (2003) mentioned, partial least squares (PLS) can provide more precise estimates of moderator effects by reporting an error that attenuates approximated relationships and enhances the validation of theories (Henseler & Fassot, 2010). To test the potential moderating effect, intellectual

capital (predictor) and good corporate governance (moderator) is multiplied to create transaction constructs to predict Islamic banking financial performance. Figure 2 explains that there is a change in the slope of the moderator line. The slope of the line to the moderator at -1 SD is a simple effect of network capability reducing interaction effects. The slope of the line for the moderator at +1 SD is a simple effect of network capabilities plus interaction effects.

Figure 2. Slope analysis

Note: — GCG at -1 SD; — GCG at mean; — GCG at +1 SD.

5. DISCUSSION

5.1. The influence of IC on the financial performance of Islamic banking

The research analysis results show that the influence of intellectual capital, as measured by the $VAIC^{TM}$ on the financial performance of Islamic banking, has a negative and significant coefficient value. According to the RBT, the influence of the IC variable on company performance is unidirectional. The positive effect shows that the IC variable can improve the financial performance of Islamic banking. However, this study obtained results that contradict this theory. These results indicate that the added value of the funds issued by the company for its employees does not improve the company's financial performance. Human capital, the main component of IC, is measured through the expenses incurred by the company for its employees, namely in the form of salaries and benefits. According to Sudana (2011), salary is a current expenditure that

can reduce company profits. Companies tend to keep salaries and other operational costs to a minimum to increase value added. High operational costs will reduce company profits.

The findings in this study may raise several policy implications related to IC, and it will be helpful for the regulatory authority of the Islamic banking industry, in this case, the Financial Services Authority, to consider regulations regarding the adoption of binding rules for reporting IC and reduce the possibility of asymmetry information that may arise as a result. Based on these findings, the hypothesis that the influence of intellectual capital increases the financial performance of Islamic banking is not proven.

The reason for not proving the hypothesis built is because, according to agency theory, the company's success in achieving maximum profit cannot be separated from the conflict of interest between managers and company owners. The result is caused by information asymmetry caused by a lack of managerial information provided to

company owners (Fama & Jensen, 1983). For example, Goebel's (2019) research supports agency theory because companies report intellectual capital to justify resource allocation and avoid pricey mistakes. This phenomenon will affect the company's profits because of the fraudulent intellectual capital expenditure by agents (managers). This income is in line with the results of a study by Mangena et al. (2010), which reported a negative relationship between the disclosure of intellectual capital and the cost of capital.

5.2. The role of GCG in moderating the influence of IC on the financial performance of Islamic banking

The influence of IC on Islamic bank financial performance moderated by the role of GCG shows positive and significant results. A significant effect with a positive coefficient value implies that companies that implement GCG principles can encourage the influence of intellectual capital on company performance. IC is a significant part of the company's progress, especially in the digital era like today. According to the agency theory, a fundamental conflict of interest exists between the agent (manager) and the company owner. In this context, it is worth noting that intellectual capital can potentially decrease company profits if managers report on intangible assets that do not adhere to the principles of good corporate governance, such as transparency, accountability, responsibility, independence, and fairness.

The findings in this study are the role of good corporate governance as an essential system in the Islamic banking organization. Companies encourage increased investment in IC but are not supported by applying GCG principles with discipline. What happens is that IC reduces the company's performance. On the other hand, when GCG is implemented well in the company, the results positively influence the company's financial performance, in this case, the Islamic banking industry in Indonesia. This phenomenon supports the RDT which states that companies cannot stand alone. They are tied to other entities outside the company (Hillman et al., 2009). In this case, Islamic banking is a business whose operations must be based on the OJK rules and the *ulema's fatwa* issued by the National Sharia Council (Indonesian Ulama Council — *Majelis Ulama Indonesia* (MUI)).

From the findings, it can be concluded that effective corporate governance plays a moderating role in strengthening the impact of intellectual capital on the performance of Islamic banking companies operating in Indonesia. This finding also confirms Boyd and Solarino's (2016) statement, which in their research found the possibility of GCG being a contingent variable, and in this case, as a moderator variable in the relationship between intellectual capital and financial performance. Based on the analysis conducted using the GMM estimator,

we can conclude that the hypothesis suggesting that GCG functions as a moderator in the relationship between intellectual capital and the financial performance of Islamic banking has been supported.

6. CONCLUSION

The study results confirm that intellectual capital in Islamic banking in Indonesia has a negative effect on financial performance. Then it was found that moderated by the GCG variable, the influence of intellectual capital on financial performance turned positive and significant. This study's theoretical contribution lies in confirming the crucial impact of intellectual capital on financial performance. Moreover, the study's novel finding highlights the role of GCG in enhancing the relationship between IC and financial performance in Islamic banking. This latest empirical evidence adds to the existing body of research and strengthens some of the previous studies' findings.

From a practical perspective, this study bridges theory and practice that can provide a deeper understanding to managers and regulators of Islamic banking in Indonesia — especially the importance of increasing intellectual capital development and the urgency of implementing GCG. The findings of this study imply that managers should prioritize verifying the significance of intellectual capital within their organizations, including its measurement. Failure to adhere to GCG principles when investing in intellectual capital may lead to a company's financial performance decline.

Finally, this study recommends that Islamic banking in Indonesia manage the efficiency of intellectual capital to the maximum. From the perspective of regulators, such as the OJK and the MUI must also begin to concentrate on making policies that encourage increased investment in intangible assets. As the institution that issues *fatwas*, MUI is expected to produce *fatwas* aimed at developing human resources in Islamic banking companies because it is proven that intellectual capital plays a strategic role in achieving Islamic banking financial performance and competitive advantage.

This study has limitations that can be used as a reference for further research to obtain better results. The limitations of this study are: First, the company that is the sample in this study is only one country, namely Indonesia. It can be expanded to countries in the ASEAN region in the future. Second, the scope of this study is limited because it only uses one method of measuring intellectual capital. However, other intellectual capital measurement methods include Skandia IC Navigator, Balanced Scorecard, calculated intangible value (CIV), and others. Third, intellectual capital is measured using the VAIC™ construct, which has some limitations and can be overcome using other tools, such as content analysis.

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