Intellectual Capital and Profitability of Islamic Commercial Banks in Indonesia

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The aim of this study is to investigate the impact of intellectual capital on the profitability of Indonesian Islamic Commercial Banks (BUS), highlighting the significance of intangible assets in enhancing financial performance. Utilizing regression analysis, this study scrutinizes secondary data from BUS's quarterly financial reports between 2015-2020, focusing on the impact of Value Added Intellectual Capital (VAIC), Non-Performing Financing (NPF), and Capital Adequacy Ratio (CAR) on Return on Assets (ROA). The study reveals that VAIC has a significant positive effect on ROA, indicating that effective management of intellectual capital can enhance profitability. Conversely, NPF shows a significant negative impact on ROA, while CAR does not significantly affect ROA. The combined influence of GDP, CAR, NPF, and VAIC explains a substantial portion of the variance in ROA. The scope is confined to BUS within 2015-2020. Future research could extend globally and incorporate more variables to enrich insights. Islamic banks should prioritize the effective management of intellectual capital, particularly human resources, to boost profitability and gain a competitive edge. Regulatory bodies, like the OJK, are recommended to establish policies that support and guide the management of intellectual capital within the banking sector.This study provides novel insights into the significance of intellectual capital in improving the profitability of Indonesian Islamic banks, emphasizing the need for effective management strategies and regulatory policies to enhance the sector's performance and contribution to economic growth.

Keywords: Intangible Assets; Intellectual Capital; Islamic Commercial Bank; Profitability

INTRODUCTION

According to data from The Islamic Corporation for the Development of the Private Sector (ICD) in 2022, the global increase in Islamic finance assets has averaged 10% per year since 2015 (ICD 2022).

In addition, Islamic financial assets have attained $3,958 billion in 2021 and are projected to reach $5,900 billion by 2026. This accomplishment demonstrates that Islamic financial assets have continued to grow and develop globally over the past seven years. Figure 1 shows the evolution of Islamic financial assets.
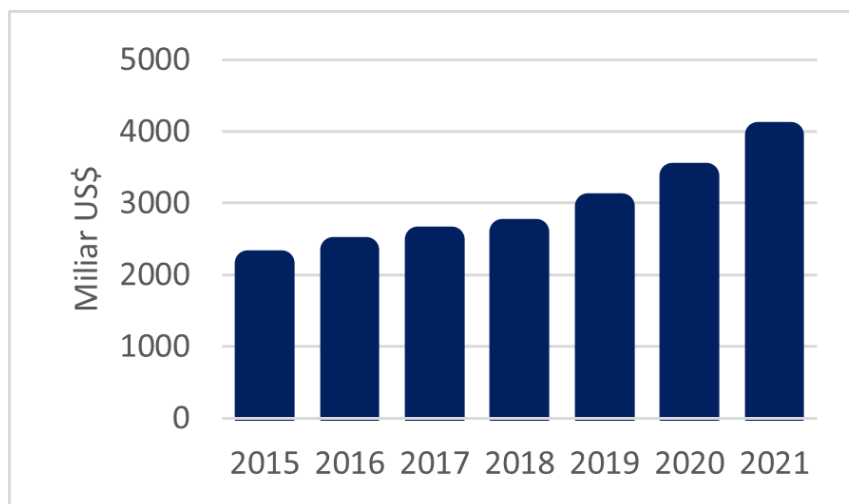

Figure 1 Evolution of Islamic financial assets
Source : ICD – Refinitiv Islamic Finance Development Report 2022: Embracing Change

According to the ICD, the growth of Islamic financial assets is calculated using five sectors: Islamic banking, sukuk, Islamic financing, takaful, and other Islamic financial institutions. The Islamic banking sector is the largest, accounting for up to 70% (ICD 2022). Indonesia is ranked third as the most developed country in Islamic finance, with a score of 61, according to the Islamic Finance Development Indicator (IFDI), and has the highest score of all other countries on the knowledge indicator. Sub-indicators of knowledge include education and research. Indonesia, the country with the world's largest Muslim population, has multiple Islamic colleges and the most suppliers of Islamic finance education, contributing 190 journals on Islamic finance in 2021.

The development of Islamic finance in Indonesia corresponds to the growth of the Islamic finance market share in Indonesia, which has reached 9.57% or US$125.28 billion (Ministry of Finance 2021). In Indonesia, the Islamic finance market share is made up of three components: the Islamic capital market, Islamic banking, and Islamic Nonbank Financial Institutions (NBFI). According to the Ministry of Finance's report (2021), the entire contribution of Islamic banking or Sharia banking to Indonesia's Islamic finance market share reached 34.21%, or approximately US$42.86 billion.

Islamic banking has a major economic role in Indonesia. Islamic banking is a significant contributor to economic growth (Supriani *et al.* 2021). Banking is also an intermediary institution for all sectors, which means that if banks face shocks that affect several sectors, Islamic banking must maintain high performance in order to preserve and improve financial system stability (Pardede dan Pangestuti 2016).

Profitability represents good banking performance. Profitability is the ability of a corporation to make profit/profit based on sales, total assets, and capital (Mahpudin dan Suparno 2016). In general, Return on Assets (ROA) is an effective measure for assessing a company's profitability and performance. ROA is a critical aspect in banking since it is used to assess the efficiency with which funds are managed to generate profits (Adyani dan Sampurno 2011). Profitability is another signal that can impact decisions made by both internal (Company Management) and external (Customers and Investors) parties. Return on Assets (ROA) is a superior indicator of banking profitability than Return on Equity (ROE) because ROA better represents the level of profitability than ROE (Dendawijaya 2001). Figure 2 depicts the evolution of the average ROA of Islamic Commercial Banks (BUS) in Indonesia.
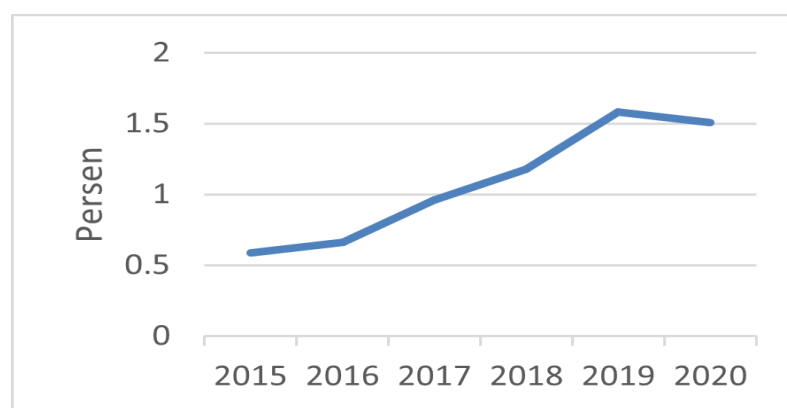
Figure 2 Evolution of the average ROA of Islamic Commercial Banks (BUS)
Source : OJK – Sharia Banking Statistics 2015-2020)

According to Figure 2, the average ROA rise for Islamic banking in Indonesia was over 10% per year between 2015 and 2019. Due to Covid-19, Indonesia's average ROA of Islamic banking dropped in 2020. Even though the drop was not large, only about 0.04%, it hurt numerous industries.

The expansion of Islamic banking in Indonesia must be accompanied by the ability to adapt to technology advancements and competition. To compete, any organization must be able to continue to produce various inventions (Kurniasari 2015). Companies that create innovations and adopt new technologies are expected to be able to optimally employ knowledge and technological development. Companies require qualified personnel to continue innovating and adapting to new technologies. The resources in consideration include both visible resources, such as facilities, and intangible ones, such as knowledge. As a result of the necessity of investing in tangible assets, businesses must also invest in intangible assets (Soraya dan Syafruddin 2013). Intellectual capital is one of the intangible resources or assets.

Intellectual capital is an intangible asset capable of adding value and, if effectively managed, bringing economic benefits or profits to the firm. Human capital, structural capital, and customer capital are the three components of intellectual capital (Stewart 1997).

The banking industry provides an important part in a country's economic development (Rafinda et al. 2011). In the last six years, the Islamic banking business in Indonesia has expanded. Islamic banking in Indonesia desires to support national development by encouraging greater justice, togetherness, and equitable distribution of people's welfare. To attain these objectives, banks must employ innovative business management approaches and ideas, also Islamic management perspective (Maulida & Rusydiana, 2022). Banking must maximize efficiency and profitability (Latumaerissa 2011). Intellectual capital is one strategy utilized to maximize productivity and profitability.

Intellectual capital is a knowledge resource that can assist the organization. Knowledge resources will be converted into intellectual capital if they are appropriately developed, preserved, transformed, and implemented (Anggraini et al. 2017). The premise underlying the company's sustainability and ability to generate added value from its resources is intellectual capital. Properly managing intellectual capital will result in increased value from products produced, increasing corporate sales and profitability. Pokrajei et al. (2011) suggested in their study that enhancing efficiency in managing intellectual capital has the potential for improving firm profitability.

There are various factors that exert an influence on the Return on Assets (ROA) metric. These factors encompass the Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Operating Expenses to Operating Income (BOPO), and Financing to Deposit Ratio (FDR) (Hasibuan 2020). A recent study conducted by Anisa dan Anwar (2021) has demonstrated that the variables of CAR, NPF, BOPO, and FDR have a significant impact on the determination of Return on Assets (ROA). Furthermore, a study conducted by Khairiyansyah dan Vebtasvili (2018) demonstrates that the profitability of the banking industry in Indonesia is positively and significantly influenced by intellectual capital, which is measured by the proxy of Value Added Intellectual Capital (VAIC).

Based on the aforementioned description, this study aims to address two main inquiries. First, it explores the development of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), and Value-

Added Intellectual Capital (VAIC) in Islamic Commercial Banks in Indonesia. Second, it investigates how CAR, NPF, and VAIC influence the profitability of these banks.

LITERATURE REVIEW

Islamic Banking in Indonesia

Islamic banking operates based on Sharia principles, emphasizing fairness, risk-sharing, and investments in halal activities while avoiding elements such as riba (interest), gharar (excessive uncertainty), and haram (prohibited) activities (OJK, 2022). Indonesian Islamic banks are categorized into Islamic Commercial Banks (BUS), Islamic Business Units (UUS), and Islamic Rural Banks (BPRS), as mandated by Law No. 21 of 2008. Unlike conventional banks, Islamic banks utilize profit-sharing mechanisms, ensuring dynamic adjustment based on business performance. They also prioritize societal prosperity, blending profit orientation with social objectives. These distinctions underscore the dual focus of Islamic banks: economic growth and adherence to ethical standards (OJK, 2022).

Resources-Based Theory (RBT)

The Resource-Based Theory (RBT) underpins the strategic importance of managing organizational resources to gain a competitive advantage. Barney (1991), RBT posits that organizations achieve sustained competitive advantage by leveraging firm-specific resources that are valuable, rare, inimitable, and non-substitutable (VRIN framework). In banking, RBT emphasizes the critical role of intangible resources, such as intellectual capital, in fostering differentiation and long-term profitability (Kor & Mahoney, 2004). RBT's relevance to financial institutions lies in its ability to link resource management to organizational performance, with intellectual capital serving as a cornerstone for innovation and competitive strength.

Capital Adequacy Ratio (CAR)

CAR is a critical metric in banking, reflecting a bank's capacity to absorb losses and maintain financial stability amidst operational risks. Defined as the ratio of a bank's capital to its risk-weighted assets, CAR ensures regulatory compliance and operational soundness. A high CAR value indicates a robust capital structure, which enhances investor confidence and profitability. Previous studies, such as Yusriani (2018), highlight that banks with higher CAR values exhibit greater resilience,

enabling them to sustain operational efficiency and profitability under varying economic conditions.

Non-Performing Financing (NPF)

NPF, analogous to Non-Performing Loans (NPL) in conventional banking, represents the proportion of non-performing assets within a bank's total financing portfolio. High NPF ratios indicate poor asset quality and heightened credit risk, negatively impacting profitability and operational stability (Hanania, 2015; Werdaningtyas, 2002). Effective NPF management is particularly vital in Islamic banking due to its reliance on profit-sharing mechanisms, which amplify the need for stringent risk assessments.

Intellectual Capital

Intellectual capital encompasses intangible assets such as human capital, structural capital, and customer capital, all of which collectively enhance organizational value (Stewart, 1997).

- **Human Capital** refers to employees' knowledge, skills, and experiences, which directly influence decision-making and innovation. Effective utilization of human capital fosters creativity and adaptability, key drivers of competitive advantage (Bontis, 1999)

- **Structural Capital** includes organizational systems, processes, and intellectual property that support operational efficiency and knowledge retention (Sawarjuwono & Kadir, 2003). Strong structural capital enables seamless knowledge sharing and innovation within organizations (Partanen, 1998).

- **Customer Capital** pertains to the value of relationships with external stakeholders, including customers, suppliers, and regulators. Robust customer capital reflects trust and long-term engagement, crucial for sustaining market competitiveness (Sveiby, 1997).

Empirical evidence consistently links intellectual capital to improved financial performance. Studies by Rahmawati et al. (2020) confirm the significant positive effect of Value Added Intellectual Capital (VAIC) on profitability, positioning intellectual capital as a strategic asset in the modern banking industry.

Profitability in Islamic Banks

Profitability, typically measured by Return on Assets (ROA), reflects a bank's efficiency in converting assets into net income. ROA serves as a vital indicator

of financial health, providing insights into a bank's operational efficiency and resource utilization (Dendawijaya, 2001; Sartono, 2010). Studies in Islamic banking, such as those by Dewi & Sudarso (2021) and Wahyudi (2020), emphasize the influence of both internal factors (e.g., CAR, NPF, BOPO) and external variables (e.g., inflation, economic growth) on profitability. Higher ROA values signify effective resource management and operational efficiency, aligning with Islamic banks' dual objectives of financial and social returns.

Empirical Evidence from Previous Studies

Prior research has explored the determinants of profitability in Islamic banks, with varying results. Malik and Anwar (2021) found that financing mechanisms positively influence profitability, while BOPO negatively impacts it. Dewi and Sudarso (2021) demonstrated that CAR positively affects long-term profitability. Notably, intellectual capital, as measured by Value Added Intellectual Capital (VAIC), has shown a significant positive relationship with ROA (Kurniawan & Zulaikha, 2020), underscoring its strategic importance in the banking sector.

METHOD

This type of research is quantitative research using descriptive analysis methods and panel data regression. The type of data used is panel data, a combination of time series and cross-section data. The data used in the research is secondary data derived from the annual financial reports of each research object. The annual financial reports from the official OJK website for 2015-2020. The objects of this research are the nine Islamic Commercial Banks (BUS) as follows, Bank Muamalat Indonesia, Bank Victoria Syariah, Bank BRI Syariah, Bank BNI Syariah, Bank Syariah Mandiri, Bank Mega Syariah, Bank Syariah Bukopin, BCA Syariah, Bank Tabungan Pensiunan Nasional Syariah.

The research employed a descriptive and quantitative analysis methodology. The descriptive analysis method refers to a straightforward analytical approach that is presented in the form of a graph or table, facilitating its interpretation (Sari dan Sugiyono 2016). The descriptive analysis provides a comprehensive explanation of the object being studied, without making any general conclusions (Sugiyono 2008). The study's findings were derived through the application of quantitative analysis techniques, specifically panel data regression. The findings obtained from panel data regression analysis will provide an

explanation of the relationship between the independent variable and the dependent variable. The data analysis was conducted using Microsoft Excel 2019 and Eviews 9 software.

Panel data regression is a statistical method that integrates time series data, which represents a specific sequence of observations over time, with cross-sectional data, which represents multiple individuals observed at a single point in time (Jaya dan Sunengsih 2009). The utilization of panel data regression analysis offers two distinct advantages. Firstly, it enables the combination of time series data with cross-sectional data, thereby expanding the scope of data and variables under investigation. Secondly, panel data proves to be more effective in identifying effects compared to the exclusive use of either pure time series or pure cross-sectional data. Furthermore, the utilization of the panel data method offers enhanced information, mitigates collinearity issues, and augments the degrees of freedom, thereby enhancing the efficiency of the obtained results.

This study uses five variables consisting of one dependent variable, namely ROA; three independent variables, namely CAR, NPF, and VAIC; and one control variable, namely real GDP. The equation model in this study is the panel data regression analysis model. Mathematically, the formulation of this study is as follows:

$$ROAit = \alpha + \beta(LN\_PDB)it + \beta(CAR)it + \beta(NPF)it + \beta(VAIC)it + \mathcal{E}it$$

Information:
i   : Amount of sharia banking (*Unit Cross Section*)
t   : Time Period (*Unit Time Series*)
α   : Intercept Coefficient
β   : Slope Coefficient
ROAit : *Return on Assets* (%)
PDBit : GDP Rill (LN)
CARit : *Capital Adequacy Ratio* (%)
NPFit : *Non Performing Financing* (%)
VAICit : *Value Added Intellectual Capital* (Ordinal)
$\mathcal{E}it$: Residual

The ratio of profit before tax in one period to the average total assets (OJK 2020).

$$ROA = \frac{Income\ After\ Tax}{Total\ Asset}\ x\ 100\%$$

Economic growth is not affected by the price factor (BPS 2021)

$$PDB = C + I + G + (Ekspor - Impor)$$

Ratio of Capital to Risk Weighted Assets (RWA)(OJK 2020)

$$CAR = \frac{Modal}{RWA} \ x \ 100\%$$

RWA = Risk Weighted Asset

The ratio is an illustration of the problematic financing with the total financing provided (OJK 2020).

$$\frac{Problematic\ financing}{Total\ Financing} \ x \ 100\%$$

Intellectual capital is a combination of three added values denoted by VAIC, the added value used is Value Added Human Capital (VAHU), Structural Capital Value Added (STVA), and Value Added Customer Capital (VACA) (Pulic 1998). The components used to calculate the VAIC value are obtained by processing banking financial report data issued by the OJK.

VAIC = VAHU + VACA + STVA

RESULT AND DISCUSSION
Descriptive Analysis

This analysis will provide a comprehensive description of the data and present the key characteristics of the samples utilized in this study, specifically focusing on nine Islamic Commercial Bank (BUS) located in Indonesia. Descriptive analysis is employed with the primary objective of elucidating data trends, rather than drawing overarching conclusions. Additionally, it serves the purpose of providing a comprehensive account of the data's evolution, thereby facilitating a more accessible comprehension of its patterns. The resulting descriptions consist of four distinct independent variables, namely CAR, NPF, and VAIC, along with one control variable, specifically real GDP. Additionally, the dependent variable in this study is RtOA. The present study provides an overview of the characteristics and developmental aspects pertaining to the variables employed in this study.

Table 1 Descriptive Statistic

Indicator	ROA(%)	PDB	CAR(%)	NPF(%)	VAIC
Mean	1,76	14,73	21,98	3,61	1,89
Median	0,89	14,74	19,38	3,32	1,80
Maximum	13,58	14,82	49,44	9,80	4,93
Minimum	-2,19	14,58	12,10	0,32	1,04
Std. Dev.	3,08	7,48	8,97	2,07	0,74

Source : Own estimation (2022)

Based on Table 1, it can be seen that the minimum ROA and VAIC values are negative, which means that there were BUS that experienced losses during the study period. The maximum and minimum values of ROA are in BTPNS 2019 and BVS 2016. CAR's maximum and minimum values were in Bank BTPN Syariah in 2020 and Bank Muamalat in 2015. NPF's maximum and minimum values were in BVS in 2015 and BCAS in 2017. NPF's maximum and minimum values were in BVS in 2015 and BCAS in 2017. the minimum VAIC is in the 2015 BVS and 2019 BVS.

According to Bank Indonesia Regulation (PBI) No. 9/24/DPBS, the best ratio for ROA is ≥ 1.5%. According to Bank Indonesia Regulation (PBI) No. 21/12/PBI/2019, the best CAR/KPPM and NPF ratios are ≥ 19% and < 5% (Bank Indonesia 2019). On average, the ROA ratio still does not meet the best average requirements, while the average CAR and NPF already meet the best ratios. Based on research by Ulum *et al.* (2008), the average VAIC BUS in Indonesia is not in category 1 with a VAIC score of top performers, namely > 3. The average VAIC score of BUS in Indonesia is still in category 3, namely common performers with VAIC scores in the range of 1.5 – 2.

Average Financial Ratio of BUS

Financial ratios are quantitative tools used to analyze and evaluate the relationships between various figures presented in financial reports. They are calculated by dividing one numerical value by another. The numbers under comparison may consist of a set of numbers encompassed within one or multiple intervals. The financial ratios employed in this study encompass Return on Assets (ROA), Capital Adequacy Ratio (CAR), Non-Performing Loans Ratio (NPF), and Value Added Intellectual Coefficient (VAIC). The subsequent data presents the mean financial ratios and Value Added Intellectual Coefficient (VAIC) of nine BUS in Indonesia.
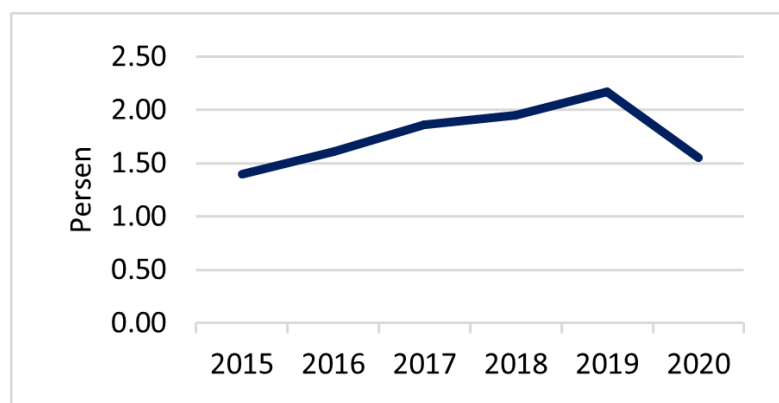
Figure 3 ROA ratio

In Figure 3, the average ROA of 9 BUS in Indonesia increased from 2015 to 2019. The increase occurred in 2015, initially 1.41% to 2.18% in 2019. However, in the end, it experienced a decrease in 2020 to 1.56% caused by the emergence of Covid-19. Even though BTPN Syariah has always had a high and above-average ROA, in terms of resilience to shocks or changes that occur, BCAS, BSB and BSM have better resilience so that the impact received is not significant.
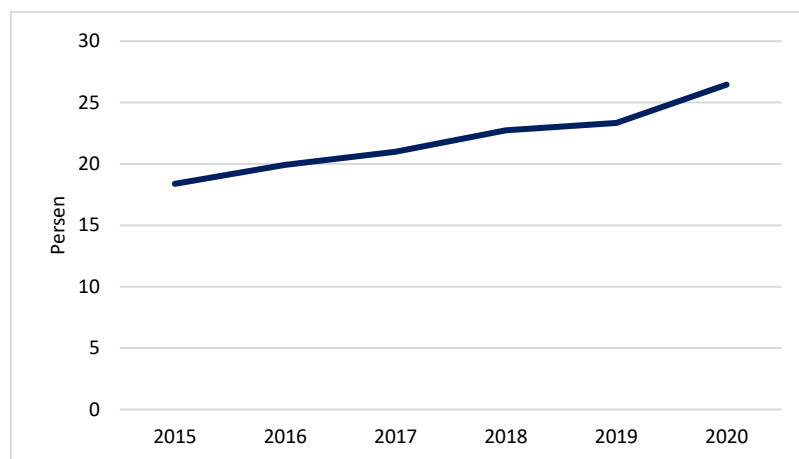
Figure 4 CAR ratio

Based on Figure 4, Indonesia's average CAR of 9 BUS shows an increase from 2015 to 2020. The increase occurred in 2015, from 18.38% to 26.46% in 2020. The emergence of Covid-19 at the beginning of the year 2020 has impacted banks to be more alert and prepare more capital reserves as an anticipatory measure. All bank samples except BRIS increased the CAR value for prevention, and BSB made the highest increase with an increase of 6.98%. BRIS CAR value decreased by 6.22% from 25.26% to 19.04%.
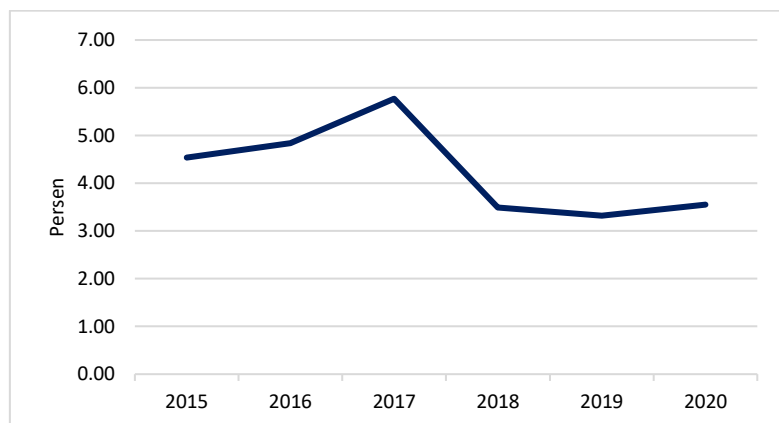

Figure 5 NPF ratio

In Figure 6, Indonesia's average NPF of 9 BUS shows fluctuations from 2015 to 2020. The increase occurred starting in 2015, initially from 4.58% to 5.77% in 2017. This result shows that banks' ability to anticipate bad loans worsens from year to year. From 2018 to 2019, the NPF value fell to 3.32%, showing that the bank's ability to handle bad loans is improving. However, the emergence of Covid-19 at the beginning of 2020 impacted the bank by increasing the NPF to 3.55%. Communities affected by the Termination of Employment (PHK) and the implementation of Large-Scale Social Restrictions (PSBB) have caused a decrease in people's income, so affected communities have difficulty paying bank loans. The bank sample most affected by its NPF value was BSB, which initially had an NPF value of 5.89% to 7.49%.
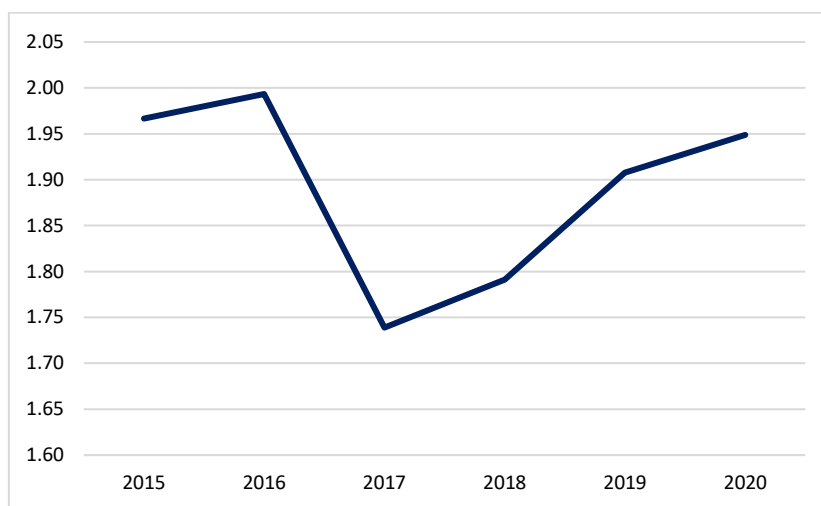

Figure 6 Average VAIC

Based on Table 1, it can be seen that the minimum ROA and VAIC values are negative, which means that there were BUS that experienced losses during the study period. The maximum and minimum values of ROA are in BTPNS 2019 and BVS 2016. CAR's maximum and minimum values were in Bank BTPN Syariah in 2020 and Bank Muamalat in 2015. NPF's maximum and minimum values were in BVS in 2015 and BCAS in 2017. NPF's maximum and minimum values were in BVS in 2015 and BCAS in 2017. the minimum VAIC is in the 2015 BVS and 2019 BVS.

Development of Financial Ratios 9 BUS

ROA is a ratio that shows how reliably a company uses its assets to make a profit. BTPN Syariah has always had a ROA above the average of other BUS since 2015-2020.

Table 2 ROA development of 9 BUS in Indonesia

ROA (%)						
Bank	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
BMS	0,30	2,63*	1,56	0,93	0,89	1,74*
BM	0,25	0,22	0,11	0,08	0,05	0,03
BSB	0,79	0,76	0,02	0,02	0,04	0,04
BVS	2,36*	-2,19	0,36	0,32	0,05	0,16
BCAS	0,96	1,13	1,17	1,17	1,15	1,09
BNIS	1,43*	1,44	1,31	1,42	1,82	1,33
BRIS	0,77	0,95	0,51	0,43	0,31	0,81
BSM	0,56	0,59	0,59	0,88	1,69	1,65*
BTPNS	5,24*	8,98*	11,19*	12,37*	13,58*	7,16*
Mean	1,41	1,61	1,87	1,96	2,18	1,56

Note: *) more than average
Source: Own estimation (2022)

CAR is a capital adequacy ratio that shows a company's ability to respond to the provision of funds to accommodate the risk of losses a bank may face. BCA

Syariah and BTPN Syariah have CAR values above Indonesia's average BUS since the 2015-2020 period.

Table 3 CAR development of 9 BUS in Indonesia

CAR (%)						
Bank	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
BMS	18,74*	23,53*	22,19*	20,54	19,96	24,15
BM	12,10	12,74	13,62	12,34	12,42	15,21
BSB	16,31	17,0	19,2	19,31	15,25	22,22
BVS	16,14	15,98	19,29	22,07	19,44	24,6
BCAS	40,0*	36,78*	29,39*	24,27*	38,28*	45,26*
BNIS	15,48	14,92	20,14	19,31	18,88	21,36
BRIS	13,94	20,63*	20,29	29,72*	25,26*	19,04
BSM	12,85	14,01	15,89	16,26	16,16	16,88
BTPNS	19,93*	23,8*	28,91*	40,92*	44,57*	49,44*
Mean	18,39	19,93	20,99	22,75	23,36	26,46

Note: *) more than average

Source: Own estimation (2022)

NPF is a ratio that shows a company's ability to manage troubled financing. Bank Mega Syariah, BCA Syariah, and BTPN Syariah have NPF values below the average every year from 2015-2020, which means that

these three banks have succeeded in reducing the number of problem financing compared to other banks, especially BCA Syariah, which always has a value below 1%.

Table 4 NPF development of 9 BUS in Indonesia

NPF (%)						
Bank	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
BMS	4,26*	3,3*	2,95*	2,15*	1,72*	1,69*
BM	6,07	3,83	4,43	3,87	5,22	4,81
BSB	2,99*	3,17*	7,85	5,71	5,89	7,49
BVS	9,8	5,82	4,59	3,99	3,94	4,73
BCAS	0,7*	0,5*	0,32*	0,35*	0,58*	0,5*
BNIS	2,53*	2,94*	2,89*	2,93*	3,33	3,38
BRIS	4,86	4,57	6,43	6,73	5,22	3,24*
BSM	6,06	4,92	4,53	3,28*	2,44*	2,51*
BTPNS	1,25*	1,53*	1,67*	1,39*	1,36*	1,91*
Mean	4,28	3,40	3,96	3,38	3,30	3,36

Note: *) more than average

Source: Own estimation (2022)

VAIC or Value Added Intellectual Coefficient is a calculation method first developed by Pulic in 1998. This calculation makes measuring a company's Intellectual Capital easier because it uses components from financial statements. VAIC is also an indicator that

emphasizes company efficiency. Table 5 shows that Bank Jabar Banten Syariah in 2016 had a negative VAIC value. This result defines that the bank experienced a loss that year.

Table 5 VAIC development of 9 BUS in Indonesia

VAIC						
Bank	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
BMS	1,10	2,37*	2,05*	1,62	1,67	2,52*
BM	1,29	1,20	1,12	1,17	1,07	1,06
BSB	2,01*	1,97	1,11	1,09	1,07	1,18
BVS	4,93*	2,82*	1,39	1,40	1,04	1,29
BCAS	1,87	2,02*	2,18*	2,29*	2,86*	2,37*
BNIS	1,68	1,96	2,04*	2,05*	2,32*	2,01*
BRIS	1,58	1,78	1,44	1,50	1,34	1,94
BSM	1,42	1,45	1,46	1,69	2,17*	2,43*
BTPNS	1,82	2,37*	2,86*	3,31*	3,63*	2,74*
Mean	1,97	1,99	1,74	1,79	1,91	1,95

Note: *) more than average

Source: Own estimation (2022)

Goodness of Fit Model

Several tests are conducted to determine the most appropriate panel data regression model. The test conducted in this study is the Hausman Test. The Hausman test is used to determine which model is better to use, namely between REM and FEM, with the following result:

Table 6 Hausman test

Test Summary	*Prob.*
Cross-section random	0.0014

Source: Own estimation (2022)

Based on the table above, the probability random cross-section of 0.0014 is smaller than the significant level value used in this study, namely ($\alpha = 0.05$), so it can be said that accept H1. Accept H1 defines that a better model to use in this research is FEM. If the selected model is FEM, then the heteroscedasticity test is unnecessary. In his research, Myers *et al.* (2012) explained that the weighted least square method can be used to overcome the problem of heteroscedasticity.

Classic Assumption Test

The classical assumption test on panel data is carried out with a multicollinearity test. The multicollinearity test determined whether a regression model has a high or perfect correlation between the independent variables. The following is the result of the multicollinearity test:

Table 7 Multicollinearity test

	LN_PDB	**CAR**	**NPF**	**VAIC**
LN_PDB	1,000	0,210	-0,107	0,115
CAR	0,210	1,000	-0,566	0,483
NPF	-0,107	-0,566	1,000	-0,426
VAIC	0,115	0,483	-0,426	1,000

Source: Own estimation (2022)

Based on the multicollinearity test above, none of the variables has a value > 0.8, so it can be concluded that the selected model does not indicate a multicollinearity problem.

Significance test

Three tests are carried out in the significance test: the t-test, the F-test, and the R-test. The following is a regression analysis table that includes the three tests:

Table 8 Analysis Cross-section weights

Variable	Coefficient	Prob.
C	-0,4875	0,9036
LN_PDB	0,0619	0,8229
CAR	0,0002	0,9733
NPF	-0,0323	0,0532*
VAIC	0,8015	0,0000*
Weighted Statistics		
R-squared		0,8853
Adjusted R-squared		0,8784
F-statistic		128,65
Prob(F-statistic)		0,0000

Source: Own estimation (2022)

A t-test was employed to ascertain the direction and significance of the impact that each independent variable had on the dependent variable. The probability values for each variable are provided in Table 8, based on the estimation results using FEM Weighted. A significance level of 0.05 is observed to have a partial impact on the return on assets (ROA).

The F test is employed to assess the collective impact of multiple independent variables on the dependent variable. Based on the findings from the concurrent testing, the probability value (f-statistic) reported in Table 11 is 0.0000, indicating statistical significance. This value is lower than the predetermined significance level of $\alpha = 0.05$ employed in this study. Consequently, it can be inferred that the variables GDP, CAR, NPF, and VAIC collectively have a significant influence on the variable ROA.

The R test was employed to ascertain the extent to which the model generated influence in this study by explaining variations in the dependent variable. According to the test results of the R test, the adjusted R-squared value in Table 11 is 0.8784. This indicates that the research model can account for approximately 87.84% of the variation observed in the ROA variable. On the contrary, it is worth noting that the remaining 12.16% of the subjects in this study exhibit influences that extend beyond the variables encompassed within the model.

Panel Data Regression Estimation Results

Based on the estimation results of the FEM Weighted regression model, the panel data regression equation by adding the external variable, namely GDP, in this study is as follows:

$$ROA = -0,4875 + 0,0619\ LN\_PDB + 0,0002\ CAR - 0,0323\ NPF + 0,8015\ VAIC$$

The value of the regression coefficient on the model constant is -0.4875. This finding indicates that in the absence of any value for the GDP, CAR, NPF, and VAIC variables, the ROA variable exhibits a negative value of -0.48%.

The inclusion of GDP as an exogenous variable in the regression model suggests that further evidence is required to establish a causal relationship between the GDP variable and the return on assets (ROA) in the present study. According to the data provided by BPS (2021), the Gross Domestic Product (GDP) growth of Indonesia in the year 2020 experienced a decline of -2.07% compared to the previous year's growth rate of 5.02% in 2019. The Islamic banking sector in Indonesia was also affected by the negative GDP growth experienced during the initial stages of the Covid-19 pandemic. Banks will not experience a direct impact from the decline in GDP growth. However, the repercussions will manifest across multiple sectors pertaining to banking, encompassing aspects such as capital, banks' credit management capabilities, the public's credit repayment capacity, and the capacity of corporate resources to generate value-added profits for banks.

The CAR variable has no effect on ROA. The public/customers who entrust funds to the bank for management are one source of bank funding. The community trusts the bank with their money because it is thought to be competent of maintaining and managing it. Banks, as intermediary institutions, should save enough capital to cover short-term risks. If banks employ their capital too carefully, it might result in a large amount of unmanaged capital, and if there is too much idle capital, the bank will be unable to achieve optimal profits. This result is supported by the average CAR value at the BUS that served as the study's sample,

which was about 20%, with some reaching 40%. Mawardi (2005) did a similar study, which found that CAR has no effect on ROA.

The NPF variable negatively and significantly affects ROA, where every 1% addition to NPF will reduce ROA by 0.323. The higher the number of problematic financing in a bank, it will reduce the bank's profit. NPF has a significant effect on ROA, where when a bank's ability to manage troubled financing decreases, the credit quality worsens; of course, this greatly impacts the soundness of a bank, and the risk that a bank will have problems is also getting more significant. In addition, the impact of Covid-19, which reduced people's income, also affected people's ability to pay credit to banks, thereby increasing the risk of bad credit. The negative relationship between NPF and ROA is also similar to the results of research conducted by Rochmatullah (2018).

The last variable, VAIC, has a positive and significant effect on ROA, where each addition of one unit to VAIC will add a ROA of 0.8015. When the efficiency of a bank's human, structural and customer capital is improved, it will increase the company's profits over time. The significant effect of VAIC on ROA explains that an increased VAIC value will impact increasing a bank's competitiveness. Intellectual capital that is well managed can create added value for the company; with this added value, the company will improve the company's financial performance. The results of this study are also consistent with research conducted by Rahmawati *et al.* (2020), which shows that VAIC has a significant positive effect on profitability proxied by ROA.

CONCLUSION

Based on the findings of the conducted analysis, it can be inferred that the progression of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), and Value Added Intellectual Coefficient (VAIC) in the nine selected banks in Indonesia, serving as the sample for this study during the period of 2015-2020, revealed that two banks (BCA Syariah and BTPN Syariah) exhibited CAR ratios surpassing the average of banks in Indonesia. Furthermore, three banks (Bank Mega Syariah, BCA Syariah, and BTPN Syariah) consistently demonstrated NPF values below the annual average. Furthermore, BCAS and BTPNS demonstrated VAIC scores that exceeded the average for five consecutive years.

The outcomes of the analysis conducted using partial panel data regression are acquired in the following

manner. The capital adequacy ratio (CAR) doesn't have a significant impact on the return on assets (ROA). However, the non-performing loans ratio (NPF) exhibits a significant negative influence on ROA, while the value-added intellectual coefficient (VAIC) demonstrates a significant positive impact on ROA. The variables of CAR, NPF, and VAIC collectively exert a substantial impact on the return on assets (ROA). The model employed in this research exhibits an adjusted R-squared coefficient of 0.8784, indicating that the variables under consideration account for approximately 87.84% of the observed influence on Return on Assets (ROA) within the context of this study. The remaining 12.16% of the variance can be attributed to variables that are not included in this particular study. The regression model employed in this study has the capability to forecast the dependent variable, specifically Return on Assets (ROA).

Based on the VAIC findings, which show a strong positive impact on the profitability of Islamic banks in Indonesia, it is crucial for bank management to prioritize effective resource management, particularly in human resources. This not only boosts profitability but also offers a competitive advantage. Regulatory bodies like the Financial Services Authority (OJK) should establish robust policies focused on human resource management, given the current lack of official VAIC standards in the sector. For future studies, expanding the sample size to include Islamic banks globally could provide more comprehensive insights. Incorporating additional variables such as Sharia Capital, BOPO, FDR, interest rates, exchange rates, and inflation is also recommended. Utilizing monthly data for an extended research period can further improve the quality of the study.

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