Profitability of Islamic banks: an empirical investigation of internal factors at Bank Muamalat Indonesia

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Abstract
Purpose - This research seeks to examine the impact of internal factors on the financial performance of Bank Muamalat Indonesia, a forerunner of Islamic banking within Indonesia. **Method -** This study adopts a quantitative approach involving secondary data from Bank Muamalat Indonesia's monthly financial statements from January 2014 to December 2023 for 120 observations. Multiple linear regression analysis was employed to investigate the relationship between a dependent variable and various independent variables. **Findings -** This study reveals that the CAR, RISK, and FIN variables, serving as capital adequacy, credit risk, and financing indicators, exhibit a noteworthy negative effect on profitability. In contrast, the COST and LIQ variables, which act as proxies for efficiency and liquidity, demonstrate a notable positive influence on profitability. **Implications -** Theoretically, this research provides a conceptual framework for comprehending the influence of internal variables on profitability via investment strategies while contributing to scientific knowledge. Practically, this research is a reference for policymakers to promote economic advancement through initiatives to enhance banking profitability.
Keywords: internal factors, profitability, Islamic banks.

Introduction

Islamic banking has garnered a favorable reception owing to the characteristics of its instruments, streamlined operations, inventive product offerings promoting financial inclusion, and resilience in times of crisis (Kim, Batten, and Ryu 2020; Ashraf, Tabash, and Hassan 2022). Consequently, it becomes imperative to uphold the stability of Islamic banking to ensure the economic sustainability of a nation (Shaban et al. 2014; Hassan and Aliyu 2018; Banna et al. 2022). As the preeminent Muslim nation globally, Indonesia is currently undergoing a rapid upsurge in the Islamic banking sector. The government's unequivocal stance towards the Islamic banking industry is evident through implementing sustainable financial regulations (Zulkhibri and Sukmana 2017). The inception of the Islamic banking sector in Indonesia commenced with the establishment of Bank Muamalat Indonesia (BMI) in 1992. The advent of BMI as an Islamic banking institution provided a viable alternative to the conventional banking system by facilitating the allocation, investment, and mobilization of funds to the broader community (Anwar et al. 2020). The aspiration is that it can enhance funding for the authentic economic sector regarding its function as an investment contributor and revenue disseminator. Within the framework of the function of BMI, earlier scholars elucidated that there exist four significant roles of Islamic banks as financial mediators for economic advancement. The roles encompass contributing to financially viable projects,

promoting granting loans, fostering economic stability, and encouraging savings (Imam and Kpodar 2016).

BMI, a pioneer in the sharia financial sector in Indonesia, continues to achieve sustainable growth despite experiencing a contraction in its growth trajectory. The financial performance of BMI over the span of a decade serves as empirical evidence of this prevailing circumstance (BMI 2023). In 2013, the performance was quantitatively measured by the return on assets (ROA) ratio, which stood at 0.50%. Subsequently, in 2014, there was a decline to 0.17%, followed by a significant rise to 0.20% and 0.22% in 2015 and 2016, respectively. However, from 2017 to 2021, Bank Muamalat Indonesia witnessed a decline in performance. It is important to note that this decline can be attributed to the global economic crisis and the substantial impact of the Covid-19 pandemic on the overall economy, thereby influencing BMI's financial performance. However, BMI is undertaking measures to enhance its performance again by establishing a strong foundation for business expansion. Consequently, it is anticipated that in the year 2022, the ROA will witness a significant surge, escalating from 0.02% to 0.09%. It is projected that BMI's total assets in 2022 will amount to IDR 61,364 trillion, whereas the average total assets of national sharia commercial banks will be IDR 468,103 trillion (BMI 2023; OJK 2023). This substantiates that the proportion of BMI's total assets of the total assets of national commercial banks will reach 0.13% in the national aggregate. Despite encountering a concerning growth contraction, BMI has managed to maintain positive and sustainable profitability, which serves as an indicator of the company's performance.

Financial ratios, which researchers and professionals commonly utilize, allow observing BMI's profitability performance indicators (Linares-Mustarós, Coenders, and Vives-Mestres 2018). With its pioneering role in Indonesia's Islamic financial industry, BMI holds significant historical significance. Consequently, assessing BMI's profitability is crucial for investors and managers. The evaluation of profitability not only provides insights into bank performance and stability, but also informs depositors of the decision to deposit or withdraw their funds (Zarrouk, Ben Jedidia, and Moualhi 2016). Previous research has even contended that the banking sector's profitability is crucial in safeguarding the economy against adverse financial shocks (Athanasoglou, Brissimis, and Delis 2008). The specific internal factors of Islamic banks serve as the pivotal elements that facilitate the attainment of profitability (Masood and Ashraf 2012). For instance, internal factors within the banking sector, such as capital adequacy, efficiency, liquidity, financial risk, and financing, necessitate careful consideration to attain profitability. Consequently, conducting this research at BMI, a trailblazing Islamic bank in Indonesia with noteworthy performance, is paramount. The examination of BMI's internal variables about profitability, which exert either a positive or a negative influence, holds significant value. Moreover, this analysis optimizes the prosperity of both shareholders and depositors while contributing to the existing body of literature.

Numerous investigations into the internal variables influencing profitability yield a wide range of diverse and inconsistent findings. Research into the capital adequacy ratio (CAR) produces inconclusive outcomes. On one hand, CAR is asserted to influence profitability positively (Bashir 2003; Kumar, Acharya, and Ho 2020). Conversely, it has been posited that CAR has no discernible effect on profitability (Idris et al. 2011). In certain instances, CAR significantly negatively correlates with profitability (Bansal et al. 2018; Madugu, Ibrahim, and Amoah 2020). The efficiency quantified through the cost-to-income ratio (COST) exerts a detrimental influence on profitability (Kosmidou 2008; Kumar, Acharya, and Ho 2020), whereas alternative research findings indicate that COST positively impacts profitability (Mehzabin et al. 2023). Furthermore, the findings of an investigation regarding liquidity, as assessed by the Current Ratio (CR), reveal a considerable positive correlation with profitability (Amponsah-Kwatiah and Asiamah 2021), in contrast to other studies that suggest

CR exerts no influence on profitability (Alarussi and Alhaderi 2018). Investigations concerning credit risk (RISK), as quantified by the ratio of non-performing loans to the total loans' portfolio, demonstrate a positive correlation with profitability (Khan, Ijaz, and Aslam 2014; Madugu, Ibrahim, and Amoah 2020). Conversely, subsequent investigations reveal that RISK negatively affects profitability (Petria, Capraru, and Ihnatov 2015). Subsequent investigations concerning financing (FIN), operationalized through the financing to deposit ratio, indicate that financing is acknowledged as exerting a beneficial influence on profitability (Izhar and Asutay 2007). However, findings from alternative studies suggest that financing does not yield a statistically significant impact on profitability (Wahyudi and Pohan 2024). The observed discrepancies in the research outcomes underscore a significant gap necessitating further scholarly inquiry into this subject matter.

While neglecting the financing component, specific investigations underscore that profitability is predominantly influenced by managerial conduct, such as capital adequacy, efficiency, liquidity, and credit risk. Indeed, an in-depth examination of preceding studies reveals that this indicator of managerial behavior is shaped by financing (Zeitun 2012), which serves as the principal source of revenue for banking institutions (Rosly and Zaini 2008; Alzoubi 2018; Boubakri, Mirzaei, and Saad 2023). Consequently, this research contributes novelty by incorporating financing variables as internal determinants influencing profitability. This is since investigations that amalgamate management behavior and financing as influential factors on profitability are still infrequently conducted, creating an avenue for further scholarly inquiry. This research may serve as a holistic framework beneficial for practitioners within the Islamic banking sector to enhance profitability and augment profit-sharing for investors and customers through the integration of management behavior and financing dimensions. This research employs return on assets (ROA) as an indicator of profitability. By the preceding assertion, ROA accurately reflects the genuine profitability status of the organization (Lim and Rokhim 2021), alongside the most widely recognized financial ratios (Yazdanfar and Öhman 2014; Alsharari and Alhmoud 2019). Concurrently, metrics derived from internal dimensions, including capital adequacy, operational efficiency, liquidity, financial risk, and funding, are utilized as variables that influence profitability.

Considering the previous research's inconsistent results and the element of novelty, this study must be conducted through an empirical investigation. Such an approach will yield a more thorough contribution to comprehending the impact of internal factors on the profitability of BMI, while simultaneously augmenting the body of academic literature. Consequently, the primary objective of this study is to examine the effects of internal factors on the profitability of BMI. The selection of BMI as a case study is justified by its status as a forerunner of Islamic banking in Indonesia, thereby rendering the exploration of profitability within BMI significantly crucial.

Literature review

Signaling theory

Signaling theory serves as a conceptual framework for elucidating the dynamics of information exchange between two parties (individuals or organizations) possessing disparate levels of access to information (Connelly et al. 2011; Akkermans, Tomlinson, and Anderson 2024). The information disseminator may transmit signals to the recipient to mitigate information asymmetry (Connelly et al. 2011). Signals constitute observable traits that convey information regarding latent qualities or characteristics (Moradi et al. 2024). Nevertheless, discrepancies in the quality or reliability of signals can result in information asymmetry between the two entities. Signaling theory addresses the phenomenon of information asymmetry between corporate management and stakeholders, wherein the origin of such asymmetric information is predominantly associated with the quality of information

(Stiglitz 2000). Within this framework, information quality pertains to how one party conveys its unobservable attributes in exchange for a premium from the other party (Spence 1978). On the contrary, this phenomenon pertains to mitigating moral hazard that may emerge from the conduct of the entities engaged in exchanging information (Holmstrom 1979). The signaling theory posits that proficient enterprises disseminate pertinent information to investors to augment the enterprise's capital (Al-Sartawi 2017). Within the purview of this investigation, Islamic banking institutions must convey internal operational conditions to stakeholders, particularly investors and clientele, through their financial disclosures. Moreover, investors are likely to react favorably to affirmative information or signals emanating from Islamic banks, with the anticipation of enhancing investments, thereby potentially escalating the profitability of these institutions.

Profitability

The sustenance of a nation's economy in the face of financial shocks is contingent upon the profitability of its banking sector (Abasimel 2023). Profitability is an intricate notion, as it arises not solely from the determinations made by a company regarding investment and production strategies, but also from the hurdles that necessitate foresight (Reynaud and Thomas 2013). Profitability is acknowledged as a standard for attaining the fiscal objectives of an organization and maximizing profits (Bradley and Moles 2002; Adetayo, Adetayo, and Oladejo 2004). In the realm of scholarly discourse, diverse metrics are employed to scrutinize the aspect of profitability, such as the internal attributes of a firm (Click and Coval 2002; Reynaud and Thomas 2013). The attainment of profitability ensues from the augmentation of the capability of assets to generate profits with commensurate margins. Consequently, the optimization of asset employment is directly bound to the capacity of a company to amplify potential gains (Tarawneh et al. 2024).

Commonly employed measures of accounting profitability encompass the division of income by assets, the division of net profit by assets, and the division of ordinary variable income by sales (Chkareuli et al. 2024). Deducting taxes and extraordinary items from ordinary income yields net profit (Joh 2003). The return on assets (ROA), regarded by certain scholars, signifies the total resource-generated profit of a company, and typically offers valuable understanding into management efficiency, as determined by asset utilization (Amponsah-Kwatiah and Asiamah 2021; Lim and Rokhim 2021). From a different perspective, considering that funding is derived from savings instead of capital, it is more advisable to opt for return on assets (ROA) rather than equity (ROE). ROA primarily demonstrates the effectiveness with which bank administration transforms assets into net profit (Rosly and Bakar 2003).

Capital adequacy

The principle of capital adequacy is predicated on the notion that capital safeguards against banking-related risks. When regulatory authorities establish standardized guidelines about capital adequacy, this facilitates the implementation of effective banking oversight (Shah 1996). An increased capital base within a banking institution enhances the protection afforded to creditors or government-backed insurance entities while enabling the institution to absorb more significant capital losses without precipitating insolvency (Berger, Herring, and Szegö 1995). Regulatory bodies impose capital requirements on banking institutions that encompass three distinct categories: risk-weighted capital adequacy, leverage ratio, and minimum liabilities (Andersen and Juelsrud 2024). Deposit guarantees and the anticipation of government intervention for financially troubled banks may also lead to a scenario where banks maintain a lower equity capital than what is deemed economically optimal (Andersen and Juelsrud 2024). Within the banking sector, the capital adequacy ratio is represented by

the capital adequacy ratio (CAR), which serves as a significant indicator of both financial robustness and stability (Karim et al. 2018; Greenbaum, Thakor, and Boot 2019; Ledhem and Mekidiche 2020). This ratio is recognized as a critical element in various academic discourses that affect banking institutions' profitability (Beltratti and Paladino 2015).

Efficiency

A comprehensive understanding of the concept of efficiency is imperative for assessing a bank's performance and its comparative analysis with other financial institutions (Rehman, Aslam, and Iqbal 2022). Efficiency is the utilization of minimal inputs to yield optimal outputs, emphasizing the judicious allocation of resources to generate superior products at the lowest possible cost (Alber et al. 2019). Consequently, efficiency proficiently transforms input into output, thereby ensuring that the revenue growth rate surpasses the escalation rate in operating expenses. The cost-to-income ratio indicates a financial institution's operational expenditures and is utilized to elucidate the discrepancies in banking costs throughout the financial system. While the correlation between expenditure and profitability suggests that increased expenses result in diminished profits, this assertion does not consistently hold. It is conceivable that elevated expenses might correlate with an augmented volume of banking operations, thereby signifying enhanced income (Kosmidou 2008).

Liquidity

Bank liquidity is a specific assurance mechanism for unforeseen operational necessities arising abruptly or because of factors (Diamond and Dybvig 1983). Considering its critical importance, liquidity generation constitutes the primary function of banking institutions (D. Dietrich and Gehrig 2025). The liquidity ratio is a metric for assessing bank liquidity, acting as a liquid asset against short-term obligations. This ratio is typically employed to evaluate the impact of liquidity risk on the financial performance of banks. During periods of financial turmoil, a diminished liquidity ratio may precipitate insolvency. In contrast, an elevated liquidity ratio tends to correlate with a reduced rate of return. Consequently, it can be posited that a higher proportion of liquid assets relative to short-term liabilities will be linked to enhanced profitability (Kosmidou 2008). The assessment of bank liquidity is conducted through the ratio of liquid assets to current liabilities (Amponsah-Kwatiah and Asiamah 2021).

Credit risk

Credit evaluation constitutes a pivotal mechanism for risk management within financial institutions, particularly in loan sanctioning, credit card distribution, and various operational activities (Manoharan et al. 2023). Nonetheless, an inherent degree of risk is imperative for corporations to attain profitability and avert insolvency. The incentives associated with risk-taking engender a dichotomy: increased risk-taking incentives may precipitate elevated default risks, adversely affecting creditors. Conversely, augmented risk-taking incentives can simultaneously motivate managers to pursue more advantageous net present value projects, ultimately enhancing future financial outcomes, thus mitigating default risks (Koharki and Watson 2025). Banking stakeholders encounter various risks associated with banking operations, as these risks significantly influence the continuity of operations. Numerous scholarly investigations have acknowledged the critical significance of risk engagement by banking institutions. It is anticipated that an elevated level of risk-taking will yield commensurate additional profits, aligning with the organization's strategic objectives regarding risk (Olszak and Pipień 2016). Nevertheless, an overabundance of risk-taking can harm the integrity of the entire financial system and the broader economy (Batten and Vo 2019).

Financing

The concept of financing within the framework of Islamic banking is primarily aimed at augmenting revenue through the implementation of a profit and loss sharing model (Aleraig and Asutay 2023). For instance, in the context of mudaraba financing, a contractual agreement is established between the bank and the client to collaboratively engage in a business endeavor, wherein the bank functions as the provider of capital, while the client (entrepreneur) contributes expertise and labor necessary for the execution of the project. In the case of musharaka financing, both the bank and the client jointly participate in the financial backing of a project, with each party serving as a provider of capital (Warninda, Ekaputra, and Rokhim 2019). Consequently, it is extensively acknowledged that the predominant source of revenue for Islamic financial institutions is derived from their financing activities (Rosly and Zaini 2008; Alzoubi 2018; Boubakri, Mirzaei, and Saad 2023). Considering the significant role that financing plays in banking operations, it is imperative to maintain a focus on the deployment of collected funds for financing purposes, while simultaneously accounting for potential risks that may arise (Wang 2024).

Hypothesis development

The capital adequacy ratio (CAR) is a metric that assesses capital adequacy based on the bank's size and the composition of its assets and liabilities. It indicates financial strength and stability (Karim et al. 2018; Greenbaum, Thakor, and Boot 2019; Ledhem and Mekidiche 2020). Signaling theory posits that the communication of managerial information to investors must be unambiguous; hence, data concerning capital adequacy constitutes a significant determinant that affects the profitability of banking institutions, a notion that is extensively corroborated in contemporary scholarly literature (Beltratti and Paladino 2015). This phenomenon is anticipated to yield a favorable outcome, reflecting a substantial sum of monetary resources allocated to bolster commercial undertakings. Consequently, it serves as a safeguard in the event of unfortunate circumstances. Aside from that, augmenting the capital can yield advantages, specifically in the form of an indication of improved future potential for the financial institution (Djalilov and Piesse 2016). Capital adequacy pertains to the adequate quantity of capital to assimilate disturbances that a financial institution might encounter. A greater ratio of capital to assets is expected to indicate a reduced requirement for external financing and, consequently, an elevated level of profitability for the bank. Furthermore, financial institutions possessing substantial capital encounter a diminished likelihood of insolvency, consequently diminishing their financial outlays (Kosmidou 2008). To illustrate, the CAR exhibits a noteworthy positive association with the profitability of the private banking industry (Bashir 2003).

H1: the capital adequacy ratio has a positive effect on profitability.

Signaling theory posits that organizations exhibiting optimal performance disseminate pertinent information regarding their operational efficiency to stakeholders, thereby augmenting corporate capital (Al-Sartawi 2017). The cost-to-income ratio quantifies a financial institution's overhead or operational expenses, with salaries typically comprising the primary component. This metric represents the proportion of income to operational costs and provides insights into fluctuations in banking fees within the banking system. The correlation between costs and earnings is apparent, suggesting that increased costs result in reduced profits or vice versa; however, this is not universally true. The rationale behind this is that greater amounts of expenditure may be linked to a larger scale of banking operations, consequently indicating a higher level of income (Kosmidou 2008). This variable is anticipated to exert an adverse influence on performance, as the anticipation is that proficient banks will function at reduced expense. Specific research exhibits highly varied outcomes. Bank internal aspects, such as effective administration, contribute to augmented profitability. Additional

research expounds that a robust positive association is observed between the efficiency of a company (as measured by the asset turnover ratio) and its profitability (Alarussi and Alhaderi 2018). The diminishment in the accomplishment of banks is likewise evidenced by the diminishing effectiveness and return on assets (ROA). An increase in the operational efficiency ratio can also indicate a reduction in effectiveness within the banking industry. The decline in effectiveness is the source of the banking industry's decreased profitability. This predicament has aroused the government and diverse economic regulators to an increasingly heightened awareness of the significance of the financial system's stability (Zahra, Ascarya, and Huda 2018). The employment of the ratio of total cost to total income is a substitute for the efficacy of banking administration, and an increased ratio indicates the presence of less efficient management (Kosmidou 2008). As a result, it is posited that the correlation between the ratio of total cost to total income is inversely related to the level of profitability (A. Dietrich and Wanzenried 2011; Petria, Capraru, and Ihnatov 2015).

H2: efficiency has a negative effect on profitability.

Signal theory holds that an organization anticipating favorable performance will disseminate affirmative information about its liquidity. The liquidity ratio serves as a fluid mechanism to assess short-term obligations and ascertain the impact of liquidity risk on the profitability of financial institutions. As evidenced during the financial crisis, diminished liquidity ratios can readily precipitate insolvency. On the contrary, a heightened liquidity ratio typically yields a high rate of return. Consequently, it is foreseeable that an augmented proportion of readily convertible assets against immediate obligations will be correlated with diminished profitability (Kosmidou 2008). The gauge employed to assess bank liquidity entails the calculation of the ratio between liquid assets and current debt (Amponsah-Kwatiah and Asiamah 2021). A greater proportion percentage indicates that the bank possesses a greater degree of fluidity. One of the primary reasons for a banking institution's collapse is its liquidity insufficiency. Conversely, assets with higher fluidity are accompanied by a greater cost of foregone returns. A positive correlation was discovered between the liquidity level and banks' profitability (Masood and Ashraf 2012). Nevertheless, contrasting findings indicate that the liquidity level, as measured by the current ratio, does not possess a significant association with profitability (Alarussi and Alhaderi 2018). Banks may face difficulties fulfilling their obligations without the necessary liquidity and funding. Consequently, to evade bankruptcy, banks frequently possess liquid assets that can be readily transformed into cash. Nevertheless, liquid assets typically yield lower returns (Kosmidou 2008).

H3: liquidity has a positive effect on profitability.

Signaling theory posits that the information disseminated by corporate management to stakeholders regarding organizational risks must be devoid of asymmetrical elements. Banking stakeholders exhibit significant apprehension regarding the potential repercussions that bank risks can have on the uninterrupted functioning of the financial institution. Earlier research endeavors have acknowledged the criticality of banks engaging in risk-taking activities. It is anticipated that assuming greater risks will be rewarded with supplementary profits, while the extent of risk undertaken may serve as the underlying motive for earnings management (Olszak and Pipień 2016). However, an overabundance of risk assumptions can adversely affect the overall financial system and the economy (Batten and Vo 2019). Nonperforming financing serves as a metric for evaluating credit risk and indicates the level of bank performance regarding outstanding loans, which are less likely to be repaid (Kumar, Acharya, and Ho 2020). The anticipated effect on profitability is projected to be adverse due to the positive correlation between heightened credit risk exposure and decreased bank profitability (Djalilov and Piesse 2016). This observation highlights the tendency of banks engaging in precarious lending practices to accumulate a substantial quantity of nonperforming loans. Consequently, this predicament exerts a detrimental influence on the

profitability of banks—credit risk and bank profitability correlate negatively (Petria, Capraru, and Ihnatov 2015). Nonperforming loans and asset quality issues lead to financial risk, thereby negatively affecting bank finances (Ali, Zulkhibri, and Kishwar 2018; Masood and Ashraf 2012). Additionally, bad credit, which encompasses credit risk, can diminish profitability and even result in bank failure (Brewer, Kaufman, and Wall 2008).
H4: credit risk has a negative effect on profitability.

The initial conceptual examinations regarding the profitability of Islamic banks proposed utilizing market interest rates as a foundation for determining the proportion of profit sharing in financing (Nienhaus 1983). Additionally, the writer suggests that the profit-sharing ratio should align with the interest rate employed by conventional banks. This study affirms that Islamic banks will augment customer expenses, amplifying overall revenue. From the vantage point of signaling theory, corporate disclosures about financial matters must accurately represent the underlying realities to foster consumer confidence and, consequently, enhance potential revenue streams. Signaling theory explains that financing decisions inform the market about the bank's profitability prospects. Several subsequent studies indicate that funding is acknowledged as having the capacity to enhance the profitability of Islamic banks (Izhar and Asutay 2007). On average, Islamic banking is highly lucrative by adopting profit-sharing agreements within its financing framework, thus generating shareholder value. Internal factors, specifically decisions regarding financing, play a pivotal role in exerting a substantial influence on the profitability of Islamic banks. This argument is further reinforced by subsequent studies, which assert that financing plays a significant role in enhancing the profitability of Islamic banks during periods of economic strength, owing to the minimal likelihood of defaulting on profit-sharing funds (Yanikkaya, Gumus, and Pabuccu 2018).
H5: financing has a positive effect on profitability.

Following elaborating the hypothesis, the research framework is illustrated in Figure 1.

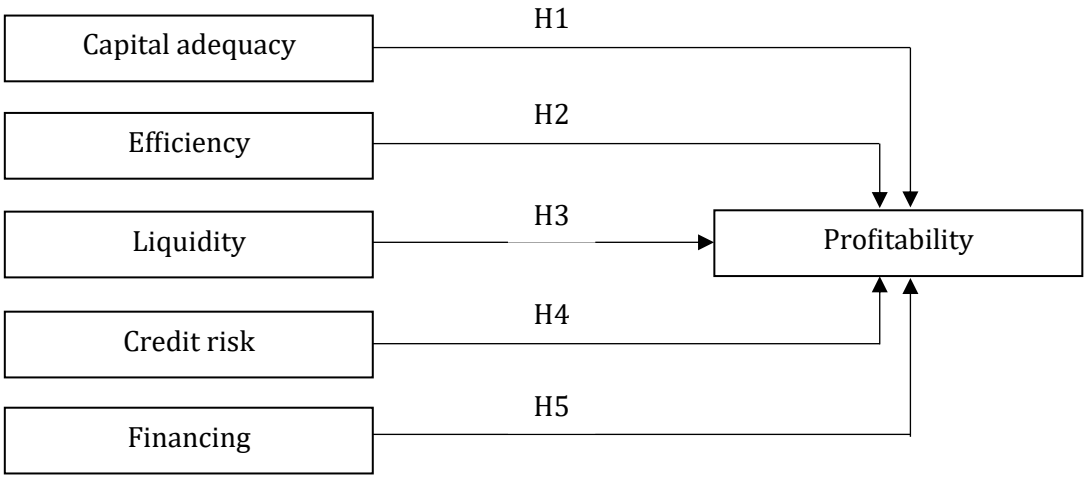

Figure 1 research framework

Method

This research employs a quantitative methodology to examine the internal factors influencing profitability. The investigation adheres to an empirical deductive framework by formulating hypotheses grounded in pertinent literature and subsequently employing testing methodologies to validate the robustness of the proposed hypotheses (Wilson 2014). This study conducted a sampling procedure at BMI. The establishment of BMI is the inaugural Islamic banking institution that offers alternative solutions to the conventional banking system in fund allocation, investment, and mobilization towards the public. In addition, BMI,

being the pioneer of Indonesia's first shariah-compliant financial enterprise, consistently attains sustainable expansion despite encountering growth contraction. The data utilized in this study were derived from BMI's monthly financial reports covering ten years, specifically from January 2014 to December 2023, for 120 observations. The data were procured from the Indonesian Financial Services Authority (FSA) and the official website of BMI. The information within this timeframe is widely acknowledged for adequately representing BMI's financial performance across diverse circumstances.

The analysis of data employs the utilization of multiple linear regression to scrutinize the correlation between a singular dependent variable (ROA) and several independent variables, namely CAR (X1), COST (X2), LIQ (X3), RISK (X4), and FIN (X5). Classical assumption testing is conducted to determine the validity and lack of bias of the estimator parameters and to ascertain the presence of a significant association within the model. This testing includes the examination of normality, multicollinearity, autocorrelation, and heteroscedasticity. The analytical instrument employed in this research utilizes SPSS software version 25. The subsequent Table 1 elucidates the operational variables incorporated in this investigation.

Table 1 operational variables

Variables	Formula	References	Scale
Profitability	$ROA = \frac{\text{Net income}}{\text{Total assets}}$	(Amponsah-Kwatiah and Asiamah 2021; Lim and Rokhim 2021)	Ratio
Capital adequacy	$CAR = \frac{\text{Capital}}{\text{Risk}-\text{Weighted assets}}$	(Kumar, Acharya, and Ho 2020; Ledhem and Mekidiche 2020)	Ratio
Efficiency	$COST = \frac{\text{Total cost}}{\text{Total income}}$	(Kosmidou 2008)	Ratio
Liquidity	$LIQ = \frac{\text{Current assets}}{\text{Current liabilities}}$	(Amponsah-Kwatiah and Asiamah 2021)	Ratio
Credit risk	$RISK = \frac{\text{Non}-\text{Performing loans of the bank}}{\text{Total bank loans}}$	(Belkhaoui, Alsagr, and van Hemmen 2020; Kumar, Acharya, and Ho 2020)	Ratio
Financing	$FIN = \frac{\text{Islamic bank financing}}{\text{Total deposit}}$	(Nastiti and Kasri 2019)	Ratio

Results and discussion

This section outlines the findings and discourse surrounding the investigation. The initial portion features a presentation of the descriptive statistics, which is followed by correlation analysis, multiple regression analysis, and subsequent discussion of the research outcomes.

Descriptive statistics

Descriptive statistics pertaining to the relevant variables have been presented in Table 2. The concept of the mean involves the determination of the average value within a given set of values. On the other hand, the standard deviation assists in gauging the extent to which values deviate from the mean. Moreover, the minimum and maximum values encapsulate the range of the variable. It should be noted that the total number of observations amounts to 120. Furthermore, Table 2 reveals that all variables exhibit a positive average (mean) value. Particularly for the dependent variable, ROA, the average stands at 0.130068, which is smaller than the standard deviation of 0.1484595. This indicates less variability in relation to the average. The average values for CAR, COST, LIQ, RISK, and FIN are 30.543417, 72.585417, 6.055167, 2.138250, and 77.082917, respectively. During the sample period, these values are

accompanied by standard deviations of 9.8935753, 17.8116222, 1.6176724, 1.0247866, and 23.9445474, respectively. Lastly, the minimum and maximum values for all ROA, CAR, COST, LIQ, RISK, and FIN variables are 0.0013, 7.8800, 32.1000, 1.7600, 0.0400, 13.0900, 0.6496, 54.7700, 98.8900, 8.8100, 3.6100, 101.7800.

Table 2 descriptive statistics

	ROA	CAR	COST	LIQ	RISK	FIN
Mean	0.130068	30.543417	72.585417	6.055167	2.138250	77.082917
Standard Dev.	0.1484595	9.8935753	17.8116222	1.6176724	1.0247866	23.9445474
Minimum	0.0013	7.8800	32.1000	1.7600	0.0400	13.0900
Maximum	0.6496	54.7700	98.8900	8.8100	3.6100	101.7800
Observation	120	120	120	120	120	120

Source: secondary data (processed, 2024)

Correlation

Correlation analysis aims to demonstrate the magnitude of the association between the variables employed and prevent collinearity among variables. The pairwise correlation among the employed variables is presented in Table 3. The correlation coefficient between return on assets (ROA) and capital adequacy ratio (CAR) is found to be negative and statistically significant (-0.302). This implies that these two focal variables are interconnected and exhibit opposing trends. Moreover, the correlation coefficient between ROA and both cost (COST) and liquidity (LIQ) is positive and statistically significant (0.524 and 0.554, respectively). This suggests a relationship between these variables of interest, indicating that an increase in COST and LIQ also leads to a rise in ROA. Moreover, the negative and statistically significant correlation coefficient (-0.293) between the return on assets (ROA) and risk indicates that these variables are inversely related. Specifically, as the level of risk rises, the ROA tends to decline. Conversely, the positive and statistically significant correlation (0.399) between the ROA and financial indicators (FIN) suggests a positive relationship between these focus variables. In other words, as the FIN increases, the ROA also increases. Hence, these variables play a crucial role.

Table 3 correlation

	ROA	CAR	COST	LIQ	RISK	FIN
ROA	1.000					
CAR	-0.302**	1.000				
COST	0.524**	0.375**	1.000			
LIQ	0.554**	0.507**	0.813**	1.000		
RISK	-0.293**	0.646**	0.298**	0.376**	1.000	
FIN	0.399**	0.455**	0.906**	0.902**	0.435**	1.000

**. Correlation is significant at the 0.01 level (2-tailed)
Source: secondary data (processed, 2024)

Normality

The normality assumption constitutes a fundamental premise that is invariably present in nearly all significance tests and statistically oriented models. Essentially, this assumption necessitates that a dataset employed in statistical significance testing or modeling adheres to an appropriate distribution or approximates a normal distribution (Siddiqi 2014). In this investigation, the Kolmogorov-Smirnov Test was utilized for the normality assessment due to its prominence as a widely recognized normality testing method (Drezner, Turel, and Zerom 2010). The findings from the normality assessment indicate that the residual data conforms to a normal distribution (0.105 > 0.05).

Multicollinearity

Multicollinearity is the correlation among two or more independent variables within a regression framework (Daoud 2017). To ascertain the presence or absence of multicollinearity, we employ the tolerance and variance inflation factor (VIF), operating under the premise that a tolerance value > 0.1 and VIF < 10 indicates the existence of a lack of multicollinearity (Hair 2009). Table 4 shows that tolerance values all independent variables > 0.1 and VIF value for all independent variables < 10, thus indicating their lack of multicollinearity.

Table 4 multicollinearity results

Variables	Tolerance	VIF
CAR	0.167	5.984
COST	0.165	6.043
LIQ	0.496	2.014
RISK	0.844	1.185
FIN	0.167	5.984

Source: secondary data (processed, 2024)

Autocorrelation

The examination of autocorrelation serves to ascertain the existence of a correlation among the residuals during a specified observation period. An optimal regression model is anticipated to exhibit the absence of autocorrelation among the residuals over the temporal dimension of time series data (Gujarati, Porter, and Gunasekar 2012). Autocorrelation testing employs the Durbin-Watson test (DW-Test), which is widely regarded as the most prevalent testing methodology (Gujarati, Porter, and Gunasekar 2012). The findings of the DW test, as presented in Table 6, indicate that the DW-Test statistic approximates 2, thereby suggesting no correlation of residuals across successive observations.

Heteroscedasticity

An optimal regression model is characterized by uniform variance of the residuals or the absence of Heteroscedasticity (Hair 2009). In the present research, the assessment of Heteroscedasticity was conducted utilizing the Glejser test, as it is regarded as the most straightforward testing method (Glejser 1969). Table 5 shows that all sig. values > 0.05 indicate that all independent variables do not show symptoms of Heteroscedasticity.

Table 5 heteroscedasticity results

Variables	Sig.
CAR	0.454
COST	0.897
LIQ	0.121
RISK	0.069
FIN	0.075

Source: secondary data (processed, 2024)

Hypothesis results

This section elucidates the process of multiple regression analysis to acquire the most optimal and impartial estimator parameters. Prior to executing the analysis, a preliminary evaluation of the model's robustness in the context of multiple regression was conducted, specifically through the assessment of the classical assumptions (Gujarati, Porter, and Gunasekar 2012). Subsequently, the outcomes of the multiple regression analysis were carried out to ascertain the impact of the CAR (X1), COST (X2), LIQ (X3), RISK (X4), and FIN (X5)

variables on the ROA (Y) variable. The findings of the multiple regression analysis are presented in Table 6.

Table 6 multiple regressions results

Variables	Coefficient	Standard error	t-statistic	Prob.
(Constant)	-0.235614	0.038342	-6.145090	0.000000
CAR	-0.003219	0.001090	-2.954162	0.003809
COST	0.005841	0.001029	5.678618	0.000000
LIQ	0.104114	0.011381	9.147691	0.000000
RISK	-0.050799	0.010373	-4.897387	0.000003
FIN	-0.006250	0.001077	-5.804922	0.000000
R-squared				0.709860
Adjusted R-squared				0.697134
F-statistics				55.782715
Prob (F-statistic)				0.000000
Durbin-Watson				1.965
Test statistics (K-S) Z				0.120
No. of observations				120

Source: secondary data (processed, 2024)

Table 6 illustrates that the coefficient for the CAR is -0.003219, a t-statistic of -2.954162 > 1.96, and a ρ-value of 0.003809 < 0.005, meaning the CAR exerts a statistically significant negative impact on profitability (H1 is rejected). The coefficient associated with the COST variable is 0.005841, a t-statistic of 5.678618 > 1.96, and a ρ-value of 0.000000 < 0.005, meaning the operational efficiency has a statistically significant positive influence on profitability (H2 is rejected). Furthermore, the LIQ variable displays a coefficient of 0.104114, with a t-statistic of 9.147691 > 1.96, and a ρ-value of 0.000000 < 0.005, significance level, thus confirming that liquidity significantly and positively affects profitability (H3 is accepted). Moreover, the coefficient associated with the RISK variable is -0.050799, with a t-statistic of -4.897387 < -1.96, and a p-value of 0.000003 < 0.005, indicating that credit risk exerts a substantial negative influence on profitability (H4 is accepted). The FIN variable exhibits a coefficient of -0.006250, with a t-statistic of -5.804922 < -1,96, below 0.005, meaning that financing imposes a significant and negative effect on profitability (H5 is rejected). The Probability (F-statistic) value 0.000000 < 0.05 and adjusted R-squared value of 69.7134% signifies that 69.7134% of the variation in ROA can be accounted for by the variables included in the model, meaning that simultaneous the variables CAR, COST, LIQ, RISK, and FIN significantly contribute to the variation in ROA.

The effect of capital adequacy on profitability

The internal aspect of BMI, namely CAR, has a significant negative impact on determining profitability. It has been observed that despite CAR being utilized as a safety measure for BMI's business operations, its effectiveness in generating favorable movements in profitability is limited. This discovery is noteworthy, as BMI has undertaken a significant initiative by reorganizing its capital structure. It is well-documented that the capital of BMI has experienced contractions throughout the research period. To enhance the quality of its assets, BMI has endeavored to carry out sales transactions involving assets of lower quality. The pinnacle of these efforts was the involvement of the Hajj Financial Management Agency (HFMA) as the majority shareholder in BMI, achieved through corporate actions such as a rights issue and the issuance of subordinated sukuk. BMI's capital structure has experienced a resurgence in sustainable growth, bolstered by a robust and sound financial foundation. The

augmentation of BMI's capital is anticipated to yield advantages and indicate promising prospects (Djalilov and Piesse 2016).

From the viewpoint of signaling theory, CAR BMI serves primarily as a mechanism for conveying information to investors instead of functioning as a direct determinant affecting investment choices. This transformation is an initial milestone for BMI's implementing a turnaround strategy to revitalize bank profitability. Notwithstanding the infusion of funds from BPKH, BMI's profitability experienced a contraction during the research period and exhibited a tendency towards decline, albeit without reaching a negative threshold. The advent of the Covid-19 pandemic and the ensuing economic instability, both domestically and globally, undoubtedly stimulated fluctuations in BMI's profitability. From a capital perspective, the infusion of funds from HFMA is adequate to safeguard against adverse risk shocks. Banks with substantial capital will encounter a diminished risk of insolvency, alleviating their funding expenses (Kosmidou 2008). Empirically, this discovery corroborates prior research that confirms the significant negative association between CAR and profitability (Bansal et al. 2018), albeit conflicting with other studies (Bashir 2003; Alsharari and Alhmoud 2019). This discovery bears significant implications for the management policy aimed at enhancing the capital adequacy ratio (CAR) value, as an elevated equity-to-asset ratio corresponds with a diminished requirement for external financing, consequently leading to an increase in the profitability of the banking institution. Furthermore, financial institutions with substantial capital reserves encounter a reduced risk of insolvency, thereby decreasing their overall funding costs.

The effect of efficiency on profitability

The result shows that COST has a positive and statistically significant impact on ROA. Increased BMI activity is directly proportional to higher operating income. This finding aligns with the findings of Kosmidou (2008), who posited that greater expenditure levels may indicate a larger volume of banking activities and, consequently, higher income. This observation is noteworthy regarding BMI, which has undergone a contraction. Initiatives aimed at capital restructuring appear to enhance the volume of activity; however, they continue to align linearly with anticipated profitability. Furthermore, the researchers stated that COST is associated with management efficiency. In a managerial context, the management of BMI has implemented measures to enhance the effectiveness of banking operations. The degree of efficiency can be observed through the decrease in the overall COST ratio, although it still positively impacts BMI's profitability. This discovery aligns with the assertions that efficient management leads to greater profitability (Masood and Ashraf 2012; Alarussi and Alhaderi 2018; Zahra, Ascarya, and Huda 2018). Findings reveal that BMI has taken strategic measures since 2014 to attain a healthy and excellent executor of Islamic banking service, thereby improving efficiency and profitability. This phenomenon contradicts other studies that suggest a negative relationship between efficient management and profitability (Petria, Capraru, and Ihnatov 2015). From the standpoint of signaling theory, the COST efficiency within BMI solely conveys pertinent information regarding corporate efficiency to investors; however, it does not serve as a determinant for augmenting the company's aggregate capital (Al-Sartawi 2017). The findings derived from this research offer significant implications for managerial strategies to implement constructive measures in banking operations while maintaining a steadfast focus on the pursuit of profitability.

The effect of liquidity on profitability

The results illustrate that liquidity possesses a favorable and noteworthy impact on BMI's profitability. Liquidity is a fundamental criterion for fulfilling short-term obligations; therefore, it must consistently exhibit a positive trajectory in all scenarios. This measure is

evident through BMI's ability to uphold a commendable ratio of current assets to current liabilities throughout the study. The hypothesis that is proposed is acknowledged and is consistent with empirical evidence. BMI has designated the ratio of current assets to current liabilities as an instrument of liquidity to address short-term obligations. BMI acknowledges its heightened vulnerability in times of hardship, such as the Covid-19 pandemic and economic disturbances. Nevertheless, endeavors to sustain a positive trajectory for the liquidity ratio persist. BMI remains dedicated to preserving cash flow funding sources and/or valuable liquid assets that can be utilized without impeding the Bank's operations and financial standing. In addition, it is recommended to revise the funding strategy with an emphasis on expanding low-cost funds and optimizing the income derived from services. BMI's primary objective is to achieve profitability by sustaining a positive return on assets (ROA) ratio trend. Signaling theory views that high liquidity provides a positive signal to the market about the financial condition and management performance of BMI. This indirectly increases trust and encourages increased profitability. The results of this study suggest that possessing a greater amount of liquid assets provides the opportunity for higher returns and aligns with previous research findings (Masood and Ashraf 2012). However, contrary to other studies, which argue there is no significant relationship between liquidity and profitability (Alarussi and Alhaderi 2018). The coefficient for the liquidity variable also demonstrates that this variable exerts the most substantial influence on profitability compared to other variables. The findings of this study bear significant implications for the management of BMI, emphasizing the necessity of preserving liquidity in an optimal state, not only to meet short-term obligations but also to facilitate asset enhancement through profitability.

The effect of credit risk on profitability

The results show that the effect of credit risk on return on assets (ROA) is negative and significant. This discovery bolsters the earlier assertion that an escalation in credit risk exposure is linked to a decline in bank profitability (Djalilov and Piesse 2016). To elaborate further, this contention suggests that a decrease in loan repayment leads to a deterioration in the quality of bank performance concerning outstanding loans (Kumar, Acharya, and Ho 2020). In the long run, it will inevitably result in a reduction in profitability. As a trailblazer in Islamic banking, BMI is interested in diligently attending credit risk determinations guided by caution. BMI has formulated a financing strategy with explicit objectives and metrics, specifically targeting low-risk clients and the Islamic market to establish a sound bank of high quality. BMI executes a comprehensive financing process by establishing risk acceptance criteria (RAC), initiating, analyzing, terminating, disbursing, and monitoring the financing quality. In addition, establishing a credit risk management strategy can be achieved through implementing the Financing Allocation Limit (FAL), setting limits for financing termination, and the implementation of internal regulations that are periodically reviewed.

Furthermore, this research aligns with the conclusions of other scholars (Brewer, Kaufman, and Wall 2008; Masood and Ashraf 2012; Petria, Capraru, and Ihnatov 2015; Djalilov and Piesse 2016; Ali, Zulkhibri, and Kishwar 2018). Conversely, a more audacious viewpoint argues that companies inclined towards risk-taking have the potential to attain profits (Menicucci and Paolucci 2016), resulting in credit risk exerting a positive and significant influence on bank profitability (Naceur and Omran 2011; Khan, Ijaz, and Aslam 2014). This phenomenon aligns with the philosophical tenets of signaling theory, which underscores that the quality of information disseminated to stakeholders lacks asymmetry. Proponents of this theory advocate for positive signals encouraging stakeholders to engage and augment their investments, thereby fostering a beneficial impact on BMI. The managerial implications derived from this study indicate that BMI meticulously considers credit risk

assessments while adhering to a judicious framework, alongside establishing financing trajectories characterized by explicit objectives and quantifiable metrics.

The effect of financing on profitability

This study also presents evidence indicating that the financing variable negatively and significantly impacts profitability. The Islamic bank financing to deposit ratio represents the financing variable, which reflects BMI's capacity to settle short-term debts using third-party funds (TPF). The data about this variable demonstrates that BMI possesses a considerable Islamic Bank Financing to Deposit Ratio. The utilization of TPF through BMI's financing scheme is indeed commendable. However, it does not exhibit a linear relationship with the acquired profitability. BMI implements a conservative financing strategy to enhance the quality of its financing portfolio and prioritize new financing opportunities with low-risk weight. The accumulation of financing in the substandard, doubtful, and problematic categories is believed to be the deciding factor in this scenario. On the contrary, a decrease in principal repayments for mudharaba and musharaka financing by clients partially enhances profitability. Moreover, there has been a decline in third-party funds (TPF) accumulated by BMI. This phenomenon can be attributed, among other factors, to implementing the funding reprofiling strategy in the retail and wholesale sectors, explicitly focusing on augmenting current accounts & savings accounts (CASA). Despite the common belief that Islamic banks primarily generate income through financing (Rosly and Zaini 2008; Alzoubi 2018), this research demonstrates that financing does not favor profitability. This finding diverges from the earlier conclusions (Izhar and Asutay 2007; Yanikkaya, Gumus, and Pabuccu 2018). From the standpoint of Signaling theory, data regarding elevated BMI financing serves predominantly as an instrument to convey authentic information to investors, rather than acting as a direct determinant impacting investment choices in BMI. Consequently, the outcomes of this research carry significant ramifications for managerial practices to prioritize funding within the classifications of substandard, doubtful, and problematic categories to ensure alignment with profitability goals.

Conclusions

Bank Muamalat Indonesia (BMI), a trailblazer in the sharia financial sector in Indonesia, persistently achieves sustainable growth by upholding a favorable trend in profitability, serving as an indicator of the company's performance. The establishment of BMI is widely recognized as a momentous milestone in Sharia finance, making it paramount to evaluate its profitability for stakeholders and the economic interests that mitigate adverse financial shocks. The study's findings explicate that the variables CAR, COST, LIQ, RISK, and FIN collectively exert a significant influence on the return on assets. These variables serve as proxies for BMI's internal aspects, including capital adequacy, efficiency, liquidity, credit risk, and financing, necessitating consideration in determining profitability. Notably, the CAR, RISK, and FIN variables exhibit a noteworthy negative impact, whereas the COST and LIQ variables substantially positively affect profitability.

This study presents implications that are both theoretical and pragmatic. Theoretically, this study is intrinsically linked to the exploration of Signaling Theory, which underscores the criticality of symmetric information. Islamic financial institutions are mandated to disclose pertinent information to stakeholders, particularly investors and clients, regarding the internal dynamics of Islamic banks, encompassing aspects such as profitability, capital adequacy, operational efficiency, liquidity, risk exposure, and financing within their financial disclosures. This study has significant implications for the managerial echelon, emphasizing the need for BMI to consider internal variables that can enhance profitability. Initiatives such as the further enhancement of the Islamic banking infrastructure and the augmentation of

intellectual capital among prospective employees are critically important. In the regulatory dimension, the advancement of Islamic banking should be prioritized by policymakers to stimulate economic growth through initiatives aimed at fostering profitability. Additionally, the provision of favorable legal regulations will foster the long-term development of this industry. Proficiency in managing it, particularly in adhering to Sharia principles and possessing competent Islamic bankers, is requisite.

This study is acknowledged for its simplicity, notwithstanding its limited analysis of internal aspects. Further investigation is required by expanding the scope to include other internal aspects to enhance its depth. Moreover, this research exclusively focuses on a solitary sample of banks, failing to represent the state of the national Islamic banking sector adequately. Consequently, empirical analysis becomes imperative to select a sample from the national Islamic banking industry, incorporating macro variables to ascertain profitability. Furthermore, it is essential to employ diverse methodologies, such as the utilization of multiple regression model frameworks alongside panel data methods. This approach is deemed appropriate as it combines cross-sectional and time series data.

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