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Determinants of Microfinance Institutions' Financial Performance in Indonesia

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Abstract

This study investigates the determinants of financial performance in Indonesian Microfinance Institutions (MFIs), analyzing financial and social factors alongside the impacts of COVID-19. Using panel data from 242 OJK-regulated MFIs from 2018 to 2023 (1,452 observations), fixed-effects regression reveals that the Debt-to-Equity Ratio (DER), Women's Empowerment Index (WEI), and Microcredit Proportion (PMC) negatively affect Return on Assets (ROA), while Firm Size (SIZE) and Loan-to-Deposit Ratio (LDR) show positive effects. Service Accessibility (ACCES) proves to be insignificant. The findings highlight a critical trade-off: while MFIs' social missions such as women's empowerment and microcredit expansion depress profitability, operational scale and liquidity management enhance performance. The pandemic exacerbated these tensions, particularly in under-supported empowerment programs. This study contributes to the microfinance literature by empirically validating capital structure and social performance theories in Indonesia's unique context. Practical implications suggest optimizing capital structures to reduce leverage risks, balancing microcredit portfolios with larger loans, and integrating digital tools to improve efficiency. For policymakers, these insights underscore the need for regulations harmonizing financial sustainability with inclusive development goals. By bridging empirical gaps, this research offers a framework for MFIs navigating post-pandemic recovery while maintaining their dual social–financial mission.

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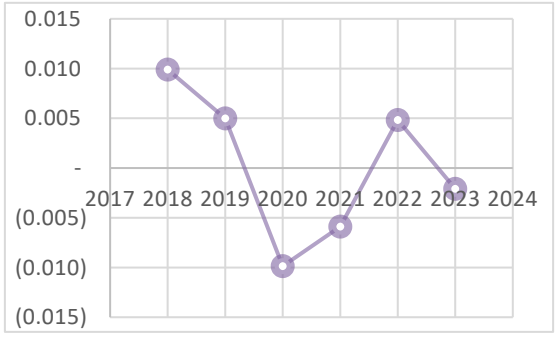
INTRODUCTION

Microfinance institutions (MFIs) have become a strategic instrument in promoting financial inclusion and poverty alleviation in developing countries, including Indonesia. Since the introduction of the Grameen Bank model by Muhammad Yunus in Bangladesh in 1976, microfinance has been recognized as a transformative tool to empower low-income communities through access to productive credit, savings, and entrepreneurship training (Yunus, 2007). In Indonesia, MFIs are crucial in supporting Micro, Small, and Medium Enterprises (MSMEs), contributing 61.07% to the national GDP and absorbing6.92% of the workforce (BPS, 2024). However, despite their significant contribution, the financial performance of MFIs in Indonesia still faces complex challenges. Data from the Financial Services Authority (OJK, 2024) show that of the 242 registered MFIs, 61% are conventional and 39% are sharia-based, with an average Return on Assets (ROA) of -0.0023 from 2018–2023. This negative ROA indicates that many MFIs have been unable to optimize the use of assets to generate profits and tend to experience financial pressure, especially after the COVID-19 pandemic.

The main problems MFIs face in Indonesia can be grouped into three critical aspects. First is the institutional aspect, where many MFIs face limited capital and managerial capacity. As many as 67% of MFIs in Indonesia operate with capital below IDR 10 billion, making it difficult to meet the financing needs of large-scale MSMEs (OJK, 2024). In addition, 45% of MFIs do not yet have adequate governance systems, such as internal audits and structured risk management, which increases operational risk (Abrar, Hasan, and Kabir, 2021). Second, the operational aspect, which relates to the suboptimal management of credit and liquidity risks. A study by Hermes and Lensink (2011) revealed that 30% of MFIs' credit portfolios in Indonesia are classified as high risk (non-performing loans/NPLs above 5%), especially in the agricultural and micro-trade sectors, which are vulnerable to market fluctuations. On the other hand, the imbalance in the Loan-to-Deposit Ratio (LDR)—with 58% of MFIs having an LDR above 110%—indicates excessive dependence on external funding, which could trigger a liquidity crisis (Rose and Hudgins, 2005). Third, the external aspect involves the impact of the COVID-19 pandemic, which has worsened the financial performance of MFIs. The OJK survey (2024) noted that 52% of MFIs experienced an increase in non-performing loans of 15–30% during the pandemic, while interest income fell by an average of 22% due to credit restructuring and reduced customer business activities (Zheng and Zhang, 2021).

Figure 1 Financial Performance (ROA) of LKM 2018-2023



Source: OJK Data 2024 (processed)

In Figure 1, OJK data show that the average financial performance of MFIs, measured by Return on Assets (ROA), from 2018 to 2023 is -0.0023, indicating depressed profitability. The graph illustrates a decline in ROA from approximately 1% in 2018 to 0.5% in 2019, falling sharply to -1.0% in 2020 as non-performing loans and operating expenses increased during the pandemic. ROA then partially improved to -0.5% in 2021, recovered to 0.5% in 2022, and declined to near zero in 2023. This fluctuation reflects the structural challenges MFIs face in Indonesia and emphasizes the urgency of further research to identify the determinants of MFI financial performance from 2018 to 2023, considering both financial and social aspects.

Previous studies have shown mixed results regarding the influence of the Debt-to-Equity

Ratio (DER), Loan-to-Deposit Ratio (LDR), Women Empowerment Index (WEI), Poverty Mitigation Component (PMC), and accessibility on the financial performance (ROA) of MFIs. For instance, some studies report a negative effect of DER, arguing that high debt increases the interest burden (Dabi *et al.*, 2023), while others find a positive effect, suggesting that debt supports aggressive expansion strategies (Chauhan, Verma and Kumar, 2024). Findings on LDR are also contradictory: Ali, Gueyié and Okou (2021) in Niger observed that a high LDR reduced ROA due to liquidity risk, whereas Shkodra (2019) in Kosovo reported that a high LDR increased interest income. Similarly, the role of social inclusion variables such as WEI and PMC remains inconclusive. Some studies suggest that women's empowerment lowers non-performing loans (NPLs) and improves performance (Dempere and Abdalla, 2023), but others indicate that empowerment programs without adequate support result in high operational costs (Abrar, 2019). The impact of accessibility is also unclear; Ledgerwood and White (2006) consider it beneficial for cost efficiency, yet unplanned outreach expansion may raise NPLs due to increased risk exposure. These inconsistencies highlight a clear research gap, particularly within the Indonesian context, that necessitates a re-evaluation of these variables using recent data, while also clarifying the dual implications—financial and social—for the performance of MFIs.

Previous studies have shown mixed results regarding MFIs' financial performance determinants. The Debt-to-Equity Ratio (DER), for example, was found to negatively affect ROA by Dabi et al. (2023) in Ghana, where high debt increases interest expenses and reduces financial flexibility. However, Chauhan, Verma, and Kumar (2024) found a positive effect of DER in India, where debt supported aggressive expansion that increased revenue. The Loan-to-Deposit Ratio (LDR) also shows contradictions: Ali, Gueyié and Okou (2021) reported a negative impact of LDR on MFIs in Niger due to liquidity risk, while Shkodra (2019) linked high LDR to increased interest income in Kosovo. A study by Berger and Di-Patti (2006) revealed that large MFIs tend to achieve better economies of scale, enabling diversification of loan portfolios and operational cost efficiencies. In Indonesia, 67% of MFIs operate with assets below IDR 10 billion (OJK, 2024), and this capital constraint hampers their ability to channel medium-scale credit and adopt digital technology. However, Vanroose and D'Espallier (2013) warned that overly aggressive asset growth without proper governance increases the risk of overexpansion, particularly in areas with limited infrastructure. During times of crisis, large MFIs demonstrated greater resilience due to their ability to restructure credit and access emergency funding, whereas smaller MFIs were more vulnerable to liquidity shocks (Parvin *et al.*, 2020).

The Women Empowerment Index (WEI) reflects the role of women in accessing economic resources. Kabeer (2001) emphasized that women's participation positively impacts credit risk management. World Bank data (2024) show that 58% of MFI customers in Indonesia are women. A study by Dempere and Abdalla (2023) found that a 10% increase in WEI correlated with a 1.5% decrease in non-performing loans (NPLs) in Islamic MFIs, as women tend to be more disciplined in using funds and repaying loans. However, Amir-ud-Din, Naz, and Ali (2024) criticized women's empowerment programs for often lacking accompanying entrepreneurship training, thereby limiting their contribution to MFIs' profitability.

The proportion of microcredit (PMC) in the MFIs' portfolio is both an indicator of social commitment and a source of financial risk. Hermes, Lensink, and Meesters (2011) stated that a PMC above 70% can reduce ROA due to high transaction costs and default risks associated with undocumented microbusinesses. In Indonesia, the average PMC of MFIs reaches 61% (OJK, 2024), with 45% of microcredit directed to the traditional trade sector, which is vulnerable to price fluctuations. Ashraf and Hassan (2011) noted that every 1% increase in PMC raises operational costs by 0.3% in rural MFIs, while Abrar, Hasan and Kabir (2021) found that optimizing PMC within the range of

50–60% can balance social impact and profitability. A major challenge in Indonesia is the low financial literacy of micro-customers, as 38% of MSMEs lack formal financial records (BPS, 2023), exacerbating the risk of information asymmetry.

Accessibility of Services (ACCES) is measured by the ratio of loans to the poor population, reflecting MFIs' ability to reach the unbanked segment. Ledgerwood and White (2006) emphasized that increasing geographic access through field agents can reduce transaction costs by 15–20%. However, Le Saout and Daher (2016) warned that aggressive expansion without geographic risk analysis may increase NPLs. Zheng and Zhang (2021) added that the pandemic accelerated digital technology adoption, with MFIs offering e-wallet platforms experiencing a 27% higher customer increase than conventional MFIs. Nonetheless, the gap in internet infrastructure in remote areas remains a significant barrier, with only 34% of villages in Indonesia having adequate internet access (World Bank, 2023). These inconsistencies highlight the need for contextual studies, as market characteristics, regulatory frameworks, and business cultures in Indonesia differ significantly from those in other countries.

This study analyzes the determinants of the financial performance of Microfinance Institutions (MFIs) in Indonesia using a quantitative approach. The variables examined include financial aspects: (1) the Debt-to-Equity Ratio (DER) to measure capital structure, (2) Company Size (SIZE) as a proxy for operational capacity, and (3) the Loan-to-Deposit Ratio (LDR) to assess liquidity management; and social aspects: (1) the Women Empowerment Index (WEI) to measure women's contributions to decision-making, (2) the Proportion of Microcredit (PMC) as an indicator of service orientation, and (3) Service Affordability (ACCES), representing MFIs' accessibility to underserved populations. These variables were selected based on two main considerations. First, they are theoretically grounded in the literature on finance and development. For example, the capital structure theory by Modigliani and Miller (1958) explains the effect of DER on the cost of capital, while Ledgerwood's (1999) concept of financial inclusion highlights the importance of service affordability. Second, prior studies have produced contradictory results regarding these variables, necessitating re-evaluation using recent empirical data from Indonesia.

The context of the COVID-19 pandemic serves as a critical dimension in this study. The global health crisis worsened MFIs' financial performance through increased non-performing loans and altered customer behavior. Bank Indonesia (2023) reported that 41% of MSMEs shifted their credit usage priorities from business expansion to consumption during the pandemic, reducing productivity and loan repayment capacity. Moreover, Islamic MFIs face distinct challenges, as profit-sharing schemes such as *mudharabah* and *musyarakah* require longer recovery periods compared to the fixed-interest model used by conventional MFIs (Berguiga, Said and Adair, 2020).

The findings of this study are expected to yield both academic and practical contributions. Academically, it will enrich the microfinance literature by empirically testing theories of capital structure, risk management, and financial inclusion within the Indonesian context—an underexplored area. Furthermore, including social variables such as WEI and PMC in the analysis of MFIs' financial performance will offer new insights into microfinance's dual objectives (double bottom line): profitability and social impact. The study's results may inform policymakers (e.g., OJK and the Ministry of Finance) in designing measures that enhance MFIs' financial stability, such as capital incentives, risk management training, and digital technology integration. For MFI management, the findings can guide optimizing resource allocation, such as balancing micro and medium credit portfolios to mitigate risk.

Based on this background, this study aims to: 1. Test the effect of financial variables (DER, SIZE, LDR) and social variables (WEI, PMC, ACCES) on MFIs' ROA in Indonesia for 2018–2023. This analysis seeks to determine whether previous contradictory findings on DER and

LDR can be explained through the specific context of Indonesia, while also evaluating the contribution of social factors to financial performance. 2. Analyze the mechanism of influence of each variable on MFIs' financial performance. 3. Formulate evidence-based policy recommendations to improve MFIs' financial performance, especially when facing post-pandemic and geographical disparities. These recommendations will cover regulation, governance, and adaptive operational strategies. Using panel data regression methods on 242 MFIs over six years, this study is designed to provide strong empirical evidence relevant to the current dynamics of microfinance in Indonesia.

RESEARCH METHODS

This study employs a descriptive quantitative approach to analyze the factors influencing the financial performance of MFIs in Indonesia. This approach is chosen because it provides a deeper understanding of the relationship between independent and dependent variables through statistical analysis based on empirical data (Berguiga, Said, and Adair, 2020). The data used in this research consists of secondary data obtained from the annual financial reports of MFIs registered and supervised by the Financial Services Authority of Indonesia (Otoritas Jasa Keuangan, OJK), as well as data on the Women Empowerment Index (WEI) and the Proportion of Microcredit (PMC) sourced from the Central Bureau of Statistics (BPS) and the World Bank (World Bank, 2024). Secondary data in microfinance research is widely adopted in international studies due to its reliability in depicting the financial condition of institutions (Karlan and Zinman, 2011).

The research data is structured in a panel data format, which combines time-series and cross-sectional data, covering 242 MFIs from 2018 to 2023, resulting in 1,452 observations. Panel data modeling is selected as it captures both temporal dimensions and heterogeneity across entities, providing more accurate estimations than conventional regression methods (Chmelíková, Krauss, and Dvouletý, 2019). The data analysis uses EViews 13, a statistical software widely used in financial and microeconomic research (Ibrahim *et al.*, 2018). The first stage of analysis involves descriptive statistics to examine the characteristics of the variables, including mean, minimum, maximum, and standard deviation. This preliminary analysis is crucial for understanding the data distribution before conducting further hypothesis testing (Subramanyam, 2014).

Systematic operationalization of variables is necessary to ensure the clarity of variable definitions and measurement methods used in this study. Table 1 presents the definitions, parameters, measurement scales, and reference sources for each variable included in the analysis. The dependent variable in this study is Return on Assets (ROA), which reflects the financial performance of MFIs. In contrast, the independent variables include Debt-to-Equity Ratio (DER), Firm Size (measured by the natural logarithm of total assets), Loan-to-Deposit Ratio (LDR), Women Empowerment Index (WEI), Microcredit Proportion (PMC), and MFIs' Accessibility. The operationalization of these variables follows academic standards established in previous microfinance research, ensuring better validity and research replicabilit

Table 1. Operationalization of Research Variables

No	Variable	Definition	Parameter	Scale	Source
1.	Financial Performance (ROA)	The ratio is used to measure the effectiveness of a company in generating profits by utilizing all the company's assets.	$ROA = \frac{Net\ Income}{Total\ Asset} x100\%$	Ratio	(Dahlquist and Knight, 2022)

No	Variable	Definition	Parameter	Scale	Source
2.	DER	The ratio is used to measure the proportion between total debt and total equity.	DER=$\frac{Total\ Liabilities}{Total\ Equity}$ $x100\%$	Ratio	(Subramanyam, 2014)
3.	SIZE	The ratio used to measure the amount of assets owned by a company.	*Size= LN(total asset)*	Ratio	(Vanroose and D'Espallier, 2013)
4.	LDR	The ratio used to measure the loan amount issued is divided by the deposits received.	LDR=$\frac{Total\ Loan}{Total\ Savings}x100\%$	Ratio	(Berger and Bouwman, 2013)
5.	WEI	An indicator helps assess the status of women in society and its impact on economic growth and poverty reduction.	The Women's Empowerment Index is issued by the World Bank.	Index	(Mengstie, 2022)
6.	PMC	The ratio determines the proportion of micro credit disbursed to total credit disbursed.	PMC=$\frac{Microcredits\ is\ distributed}{Total\ credit\ disbursed}\times$ 100%	Ratio	(Félix and Belo, 2019)
7.	MFIs Accessibility	This ratio provides an overview of the proportion of loans disbursed to the number of people in need so that the effectiveness of the loan program in reaching underprivileged groups can be assessed.	Accessibility =$\frac{Total\ loans\ disbursed}{Total\ poor\ people}$	Ratio	(Berguiga, Said and Adair, 2020)

To examine the relationship between variables, this study applies a panel data regression model with the following equation:

$$ROA_{i,t} = c + \beta\ DER_{i,t} + \beta\ SIZE_{i,t} + \beta\ LDR_{i,t} + \beta\ WEI_t + \beta\ PMC_t + \beta\ ACCESi,t + \mathcal{E}_{i,t} \quad \text{.....(1)}$$

Where *i* represent an individual MFIs, *t* denotes the time and $\mathcal{E}_{i,t}$ is the error term. ROA (Return on Assets) serves as the financial performance indicator of MFIs, while cc is the constant and β beta represents the regression coefficients of each independent variable (Gujarati and Porter, 2009). The independent variables considered in this study include the Debt-Equity ratio (DER), Firm Size (measured by the natural logarithm of total assets), Loan Deposit Ratio (LDR), Women Empowerment Index (WEI), Proportion of Microcredit (PMC), and MFIs Accessibility.

The appropriate regression model is determined through a series of statistical tests, including the Chow test to compare the common effect model with the fixed effect model, and the Hausman test to assess whether the fixed effect model is preferable to the random effect model. Selecting the correct model is crucial to ensuring the accuracy of the estimation results (Ghozali and Ratmono, 2018). Additionally, this study

conducts classical assumption tests, including the Jarque-Bera test for normality, the heteroskedasticity test to check for constant variance in residuals, the multicollinearity test to detect strong linear relationships among independent variables, and the autocorrelation test to ensure the absence of correlation among residuals (Gujarati and Porter, 2009).

The regression results are interpreted based on statistical significance at a 95% confidence level (p-value < 0.05). The interpretation not only focuses on statistical significance but also considers the coefficient of determination (R^2), which measures the extent to which independent variables explain the dependent variable. A high R^2 value indicates that the independent variables in this study strongly influence the financial performance of MFIs (Armendáriz and Morduch, 2010).

RESULTS AND DISCUSSION

This study analyzes the determinants of the financial performance of MFIs in Indonesia during the period 2018–2023 using a panel data approach. The selection of the panel data method is based on its ability to accommodate unobserved heterogeneity across MFIs and temporal variations, allowing for a more in-depth analysis of cross-sectional and time-series factors influencing financial performance (Baltagi, 2011). The model selection process begins with the Chow and Hausman tests to determine the most appropriate model among the Common Effects Model (CEM), Fixed Effects Model (FEM), and Random Effects Model (REM). The results of the Chow test (p-value = 0.0001) and Hausman test (p-value = 0.0023) consistently support the use of FEM, as this model captures structural differences among MFIs in Indonesia, such as regulatory variations, operational scale, and institutional characteristics between conventional and Islamic MFIs (Ghozali and Ratmono, 2018). FEM is considered superior in this context because the heterogeneity among MFIs is systematic (e.g., differences in Islamic versus conventional principles) rather than random, ensuring consistent and unbiased estimation (Wooldridge, 2010).

Table 2. Classical Assumption Test Results

Uji	p-value	Interpretation	Result
Normality	0,843	p-value > 0.05, the Data has been normally distributed.	The regression model used is worthy of further interpretation.
Autocorrelation	0,187	p-value > 0.05, No autocorrelation was found in the data.	
Heteroskedasticities	0,469	p-value > 0.05, there is no indication of heteroscedasticity.	

Before interpreting the results, classical assumption validation was conducted to ensure model reliability, as presented in Table 2. The residual normality test using the Jarque-Bera test (p-value = 0.843) indicates a normal distribution of residuals, which is a prerequisite for the validity of parametric statistical tests (Ghasemi and Zahediasl, 2012). The Breusch-Godfrey autocorrelation test (p-value = 0.187) and the Breusch-Pagan heteroskedasticity test (p-value = 0.469) show no violations of the assumptions of residual independence and homoscedasticity, confirming the efficiency of regression coefficient estimation (White, 1980). Additionally, the multicollinearity test in Table 3, with values below the critical threshold (value < 8), confirms the absence of high correlation among independent variables, which could compromise estimation stability. This validation strengthens the validity of the FEM used, with an Adjusted R^2 value of 75% (as shown in Table 4), indicating that the combination of independent variables explains most of the variation in MFIs' financial performance.

Table 3. Multicollinearity Test Results

	DER	SIZE	LDR	WEI	PMC	ACCES
DER	1.000000					
SIZE	0.160121	1.000000				
LDR	0.606729	-0.085704	1.000000			
WEI	0.004907	0.270751	0.162909	1.000000		
PMC	-0.036555	0.131756	0.209265	0.422121	1.000000	
ACCES	0.313037	0.769144	0.122512	0.234507	0.129702	1.000000

Source: Data Processed, 2025

Empirical analysis in Table 4 reveals that the Debt-to-Equity Ratio (DER) has a significant negative impact on Return on Assets (ROA) with a coefficient of -0.0439 ($p < 0.01$). This finding is consistent with the Trade-Off Theory, where increased leverage heightens financial risk through interest burden and liquidity pressure, particularly during crises such as the COVID-19 pandemic, which exacerbated borrowers' ability to meet obligations (Tarighi *et al.*, 2024). Previous studies by Dabi et al. (2023) also found a negative relationship between DER and profitability. However, other studies by Chauhan, Verma and Kumar (2024) reported opposite results, likely due to market structure and regulation differences. In the context of Islamic MFIs, high DER may be further constrained by Islamic principles that limit the use of interest-based debt, suggesting policy implications such as strengthening core capital through profit-sharing schemes (*mudharabah*) or sukuk issuance.

Table 4. FEM Panel Data Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.559441	0.111528	5.016150	0.0002
DER	-0.043900	0.002743	-16.00678	0.0000
SIZE	0.082709	0.006115	13.52658	0.0000
LDR	0.004992	0.001173	4.255616	0.0008
WEI	-0.012096	0.001834	-6.594669	0.0000
PMC	-0.001613	0.000535	-3.015762	0.0093
OUT	-0.001449	0.000763	-1.898629	0.0784
R-squared			0.848527	
Adjusted R-squared			0.751152	
F-statistic			8.713997	
Prob(F-statistic)			0.000226	

Source: Data Processed, 2025

Firm Size, measured by the logarithm of total assets, has a significantly positive effect on ROA ($\beta = 0.0827$; $p < 0.01$). This finding aligns with the economies of scale theory, where larger MFIs can diversify portfolios, adopt technology, and reduce per-unit operating costs (Cull, Demirguc-Kunt and Morduch, 2009). During the pandemic, larger MFIs demonstrated greater resilience due to broader access to funding sources and flexible credit restructuring capabilities (Korynski and Pytkowska, 2022). Conversely, smaller Islamic MFIs face expansion challenges due to limitations in debt-based products and reliance on profit-sharing financing. This suggests the need for affirmative policies to enhance asset capacity in Islamic MFIs through synergies with national Islamic banking or government programs.

The Loan-to-Deposit Ratio (LDR) has a significantly positive effect ($\beta = 0.00499$; $p < 0.01$), indicating that optimizing credit disbursement relative to customer deposits contributes to increased profitability. This finding is consistent with Ali, Gueyié and Okou

(2021), who emphasize the importance of liquidity management in enhancing interest income. However, in Islamic MFIs, high LDR must be balanced with prudential principles, as profit-sharing financing (*mudharabah* and *musyarakah*) carries a higher risk than interest-based loans (Berguiga, Said and Adair, 2020). Additionally, the COVID-19 pandemic heightened credit risk due to declining borrower income, necessitating proactive credit restructuring strategies and business assistance to maintain financing quality.

The Women Empowerment Index (WEI) exhibits a significant negative effect ($\beta = -0.0121$; $p < 0.01$), contradicting theoretical expectations that women's empowerment should enhance economic productivity (Kabeer, 2001). This result can be explained within the pandemic context, where female micro-entrepreneurs, who comprise most of MFIs' clients, faced dual burdens of managing businesses and domestic responsibilities, reducing productivity (The Asia Foundation, 2024). Additionally, women's empowerment programs often require additional operational costs (e.g., training and mentoring), which do not immediately increase revenue. The implication is that MFIs should design empowerment programs integrated with sustainable mentoring schemes, market access, and financial incentives to ensure long-term impact.

The Proportion of Micro Credit (PMC) also has a significant negative effect ($\beta = -0.0016$; $p < 0.01$), reflecting the high inherent risk of microcredit due to low-income borrower profiles and lack of collateral (Ashraf and Hassan, 2011). During the pandemic, economic pressures worsened micro-borrowers' repayment capacity, increasing non-performing loans and restructuring costs (Palash *et al.*, 2024). This finding contrasts with the study by Abrar, Hasan and Kabir (2021), which highlights microcredit's role in financial inclusion but aligns with Aghion and Morduch (2005), who critique the trade-off between social mission and financial sustainability. Therefore, financial product diversification, such as group-based productive financing or integration with digital platforms, should be considered to reduce reliance on conventional microcredit.

Service Accessibility (ACCES) is not statistically significant ($\beta = -0.0014$; $p > 0.05$), suggesting that geographical expansion without service quality improvements is insufficient to enhance profitability. This finding aligns with Le Saout and Daher (2016), who highlight that outreach expansion often increases transaction costs and credit risk, particularly in remote areas. Instead, service deepening through digital technology adoption, financial literacy, and socially inclusive services is deemed more effective in improving financial performance while achieving developmental goals (Koefer *et al.*, 2024).

The regression results of this study reveal both alignments and divergences with prior literature. The financial performance (ROA) of Indonesian MFIs is negatively affected by DER, which is consistent with capital structure theory (Modigliani–Miller), which posits that high leverage increases the interest burden. This finding aligns with Dabi et al. (2023) in Ghana but contrasts with Chauhan, Verma and Kumar (2024) in India, who observed a positive effect of DER due to debt-fueled expansion. Similarly, LDR positively affects ROA in our sample, indicating that sound liquidity management supports profitability, which aligns with the banking theory by Berger and Di-Patti (2006). However, this differs from Ali, Gueyié and Okou (2021) in Niger, who found that high LDR increases liquidity risk and reduces ROA.

On the social side, the proportion of microcredit (PMC) and accessibility exhibit negative or insignificant impacts on ROA. High microcredit concentration appears to raise operating costs and NPLs, echoing Hermes and Lensink (2011). Our findings support this: increases in PMC tend to lower ROA, consistent with Ashraf and Hassan (2011), who argue that microloan portfolios are costly to manage. However, this contrasts with Abrar and Javaid (2016), who suggest that maintaining PMC at 50–60% can balance social impact and profitability. Our results indicate a predominantly negative effect, particularly

during and after the pandemic. The Women Empowerment Index (WEI) also shows a negative relationship with ROA, suggesting that empowerment programs incur costs that have not yet been offset by increased revenue. This supports concerns that WEI initiatives without sufficient support do not automatically improve profitability, differing from Dempere and Abdalla (2023), who found that higher WEI reduces NPLs. Accessibility is statistically insignificant, consistent with Le Saout and Daher (2016), who warn that service expansion without technological or quality improvements may increase risks and costs. Our findings highlight a trade-off between social outreach (e.g., women's empowerment, microcredit, broad accessibility) and financial sustainability. This aligns with the "double bottom line" framework of Aghion and Morduch (2005), which emphasizes that greater social inclusion may suppress MFI profitability in the short term.

The theoretical contribution of this study lies in integrating microfinance theories (such as Trade-Off Theory and Agency Theory) with Indonesia's socio-economic context, particularly the impact of the COVID-19 pandemic. The findings on the tension between social missions (e.g., women's empowerment) and profitability enrich insights into the operational complexities of MFIs in developing countries. Practically, this study recommends holistic policies encompassing (1) regulatory strengthening to manage leverage and microcredit risks, (2) technological innovation in Islamic financial products, (3) integration of empowerment programs with sustainable mentoring, and (4) inter-institutional collaboration to create an inclusive financing ecosystem. Thus, MFIs serve as financial institutions and catalysts for sustainable economic development in Indonesia.

These findings provide empirical reinforcement for the microfinance sector's capital structure and liquidity management theories. The negative effect of DER on ROA supports the Modigliani–Miller proposition, indicating that high leverage increases the cost of capital and may harm performance. Conversely, the positive impact of LDR highlights the importance of liquidity efficiency and reflects economies of scale benefits for larger MFIs, consistent with bank-based financial theories (e.g., Berger & Di Patti, 2006).

Our results also offer a critical perspective on financial inclusion theory (Ledgerwood, 1999). While inclusion efforts such as expanding microcredit portfolios (PMC) and women's empowerment programs (WEI) are central to the social mission of MFIs, the data suggests these do not automatically enhance financial returns. Specifically, high PMC is associated with increased costs and NPLs, and WEI showed a negative correlation with ROA, possibly due to insufficient program support or high operational burdens. These findings suggest that the presumed linear relationship between social inclusion and financial performance may be context-dependent and, in some cases, even contradictory.

Such outcomes emphasize the need for a revised theoretical framework that integrates trade-off theory and social sustainability perspectives, particularly for developing countries facing external shocks such as the COVID-19 pandemic. From a managerial standpoint, these insights underline MFIs' need to optimize capital structure, control leverage ratios (in line with regulatory suggestions by OJK), and diversify loan portfolios to mitigate risks while sustaining their mission. Adopting digital financial technologies and financial literacy programs is also essential to improve service quality and operational efficiency.

From a policy standpoint, regulators are encouraged to strengthen macroprudential oversight, review the resilience of Islamic versus conventional financing models under crisis conditions, and integrate both financial and social performance metrics into reporting systems. Moreover, facilitating the consolidation of small MFIs and providing tailored support to socially driven institutions can help balance outreach and sustainability. Overall, this study illustrates the persistent trade-off between social and financial objectives in the MFIs sector, particularly during and post-pandemic, and contributes to the ongoing development of a more holistic, resilient microfinance model.

CONCLUSION

This study contributes significantly to the microfinance literature by uncovering the complex relationship between financial-social determinants and MFIs' performance in Indonesia. Theoretically, the study's findings strengthen and extend several key finance and development theory propositions. First, the results are consistent with the Modigliani and Miller (1958) capital structure theory, indicating that in the context of MFIs, especially in developing economic environments with high uncertainty, excessive use of leverage becomes a financial burden rather than a value-enhancing tool. Second, the findings on the positive effect of firm size support the theory of economies of scale (Armendáriz and Morduch, 2010), but with the specific nuance that in the microfinance sector, large operational scales must be balanced with sophisticated risk management systems.

From a development theory perspective, the results of this study challenge the linear assumption of the relationship between financial inclusion and financial performance. The finding that the proportion of microcredit (PMC) hurts ROA suggests the need to reconceptualize the microfinance business model that has considered increasing microcredit distribution an absolute indicator of success. Similarly, the negative impact of women's empowerment (WEI) on profitability questions the effectiveness of a "one-size-fits-all" approach to gender-based financial inclusion programs, especially in a crisis such as the COVID-19 pandemic.

The practical implications of this study are multidimensional. For regulators and policymakers, the results indicate the need for a more dynamic regulatory framework that: (1) sets prudent limits for DER ratios while providing incentives for MFIs to develop non-debt financing alternatives, (2) encourages consolidation of small MFIs to achieve optimal economies of scale without sacrificing service reach, and (3) integrates socio-financial indicators in MFIs' performance evaluations. For practitioners, these findings underscore the urgency of digital transformation and product innovation to address the trade-off between outreach and sustainability, particularly in microcredit and women's empowerment programs.

This study also opens several important avenues for future research. First, longitudinal studies are needed to explore the long-term impact of the pandemic on MFIs' business models, including the resilience of various financing schemes (conventional vs. Sharia) in the face of systemic shocks. Second, in-depth qualitative research is needed to understand the non-financial factors (such as organizational culture, leadership capacity, and technological adaptation) that mediate the relationship between financial-social determinants and MFIs' performance. Third, cross-country comparative studies can test the generalizability of these findings across institutional contexts and levels of financial market development.

Finally, this study highlights the need to develop a new analytical framework that integrates the sustainable finance paradigm with the inclusive development theory. Such a framework should be able to capture the complex dynamics between (1) short-term profitability pressures, (2) MFIs' social responsibility, and (3) microfinance system stability in the face of global uncertainty. Developing more holistic performance indicators - encompassing financial, social, and governance dimensions - is an urgent need for academics and practitioners.

In the context of post-pandemic development policies, the findings of this study provide an empirical basis for designing more targeted MFIs support programs, such as: (1) hybrid financing schemes that combine commercial and social elements, (2) integrated digital platforms to improve operational efficiency while expanding reach, and (3) risk management capacity programs tailored to the specific characteristics of conventional and Islamic MFIs. Thus, this study provides academic contributions and a practical roadmap to strengthen the role of MFIs in achieving sustainable development goals in the post-crisis era.

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