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Financial Inclusion and Bank Profitability: Evidence from Indonesia

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JAI Website:**Abstract:**

Research aims: This study attempts to investigate the effect of financial inclusion on bank profitability in the Indonesian context.

Design/Methodology/Approach: The sample of this study consisted of 93 commercial banks in Indonesia between 2015 and 2020. The researchers used panel data regression with a fixed effects approach to investigate the nexus between financial inclusion and bank profitability.

Research findings: It was found that financial inclusion positively affected bank profitability in three different dimensions of financial inclusion: access, availability, and usage.

Theoretical contribution/Originality: Most of the previous papers have investigated the impact of financial inclusion on the national levels, such as how financial inclusion affects economic growth. Meanwhile, this paper examines the impact of financial inclusion on bank-level profitability, an issue relatively unexplored in the literature, particularly in Indonesia. The use of three dimensions of financial inclusion in the context of a developing economy is also the novelty of this article.

Practitioner/Policy implication: The result of this study can also assist policymakers, such as the central bank of Indonesia, in designing better strategies and regulations to achieve higher financial inclusion and boost the economy's development.

Research limitation/Implication: The result of this paper might only be applied to Indonesia's specific setting or developing countries.

Keywords: Financial Inclusion; Bank Profitability; Commercial Bank, Emerging Economy, Indonesia

Introduction

The financial institution plays a vital role in contributing to economic growth and promoting financial inclusion by providing facilities to households (Kanungo & Gupta, 2021). Financial inclusion is defined as the accessibility and availability of financial service facilities at an affordable price to any individual within the country. Many financial services exist, such as lending, borrowing, transferring, payments, and saving (Wang & Luo, 2021). Moreover, it also can be interpreted as the process of making and ensuring that financial service is available to all populations. Financial inclusion aims to make the financial product available for the vulnerable or unprivileged population as it will help to elevate the individual

economy and welfare of society, especially for the low-income population (Lal, 2018). Meanwhile, financial inclusion is determined by the access, availability, and usage of banking products and services (Erlando et al., 2020). Access is defined as the spread of financial services into society. Availability refers to banking infrastructure facilities available and useable by customers. In addition, usage relates to the utilization of banking products.

The Global Financial Index in 2021 indicates that 515 million adults worldwide had an account at a financial institution or through a mobile money provider between 2014 and 2017 (Oz-Yalaman, 2019). The data also reveal that roughly 69% of adults now have an account, up from 62% in 2014 increased from 51% in 2011. However, although financial service development can promote the expansion of inclusive finance, most people in developing countries do not have access to financial services due to the lack of financial institutions, innovative technology, and infrastructure compared to the population in developed countries. Also, people who live in rural areas are more affected and are excluded from access to financial services (Iqbal & Sami, 2017). High-income economies also have higher access to financial inclusion than developing economies, as indicated by 94% in developed countries with banking accounts compared to only 63% in those emerging countries (Zins & Weill, 2016).

Previous studies have mostly associated financial inclusion and economic growth, such as Oz-Yalaman (2019), showing that financial inclusion contributed significantly to economic development. It was also reported that financial inclusion could reduce inequality and alleviate poverty (Kumar et al., 2022), increase employment (Iqbal & Sami, 2017), empower women (Dwumfour, 2017), enhance human development (Datta & Singh, 2019), favor education (Ongo Nkoa & Song, 2020), and support the new start-up business (Shihadeh et al., 2018). Another study also found that financial inclusion supports the development of firms, especially micro, small, and medium enterprises (Beck et al., 2005).

On the other hand, this paper looks at an Indonesian setting, an emerging economy that focused on improving financial inclusion in recent years. The President of Indonesia (Mr. Joko Widodo) launched Presidential Decree No. 82 of 2016 concerning the National Inclusive Finance Strategy, targeting 75% of the adult population to access financial services in 2019. As a result, the strategy has successfully reached its initial target. The government announced that at the end of 2019, financial inclusion increased from 67.8% in 2016 to 76.19% in 2019.

In this matter, to achieve optimal financial inclusion in the economy, banks hold a crucial role because they provide intermediary facilities for the excess and shortfall of the fund (Allen et al., 2016). Moreover, the development of innovation and technology in recent decades likely helped the bank to invent new services and products promising in tackling financial exclusion. The rise of financial technology, such as mobile banking, e-wallet, and online lending, can augment access to inclusive finance, especially among low-income groups. Therefore, financial inclusion then assists in eradicating the gap between higher-income and lower-income households and promoting social equilibrium.

Regarding the bank's role in promoting financial inclusion, Ramzan et al. (2021) note that the support of government and financial institutions escalates the financial inclusion level. In general, inclusive finance creates a huge gap between emerging and developed economies since the rate of unbanked adults residing in emerging economies is relatively high compared to advanced economies (Wang & Luo, 2021). For this reason, this study aims to examine the link between financial inclusions and bank performance from an Indonesian perspective. In addition, focusing on the emerging market provides a significant understanding of the possible relationship between inclusive finance and banking soundness. Moreover, a higher degree of financial inclusion can assure banking stability (Ahamed & Mallick, 2019; Khmous & Besim, 2020). Issaka Jajah et al. (2020) suggest that studying the relationship between financial inclusion and banks has been ignored, especially regarding economic and financial institution development. Therefore, this paper examines the role of financial inclusion in enhancing banks' profitability.

Furthermore, previous studies have focused on determining the impact of financial inclusion on bank profitability, such as Al-eitan et al. (2022) and Shihadeh et al. (2018), which conducted a study in Jordan, Issaka Jajah et al. (2020) in Sub-Saharan Africa, and Kumar et al. (2022) in Japan. The findings of these studies showed the significant impact of financial inclusion in enhancing a bank's profit. However, the related studies highlighted that the relationship between financial inclusion and bank profitability is unclear as it depends on the different measurements of financial inclusion (Issaka Jajah et al., 2020; Kumar et al., 2022; Al-eitan et al., 2022). In contrast, this present study measures financial inclusion with the three dimensions of access, availability, and usage, following Erlando et al. (2020). Using the three dimensions of national-level financial inclusion toward bank-level profitability would provide new insight into the literature. In addition, the empirical investigation of financial inclusion and banks' profitability focuses on emerging market economies. Besides, research in this area is still limited, particularly in the Indonesian context. The issue is also still unexplored in the literature, specifically whether financial inclusion can significantly increase commercial banks' profitability in Indonesia.

Since this study focuses on a single country, Indonesia, the researchers expected that a holistic point of view concerning the link between financial inclusion and bank performance could be provided from this study. The result of this study can also assist policymakers, such as the central bank of Indonesia, in designing better strategies and regulations to achieve higher financial inclusion and boost the economy's development. Also, since financial inclusion plays a vital role in the stability of the financial sector, particularly the banking industry, from the banks' perspective, they will learn from this study what they need to increase their profitability especially related to the expansion of banking facilities including access, availability, and usage.

Literature Review and Hypotheses Development

Financial inclusion: Scope of the study, factors affecting, and economic growth

Previous studies have empirically studied financial inclusion in individual, firm, and state-level data. Allen et al. (2016) showed that financial inclusion positively affected the political and legal aspects. Beck et al. (2005) found that a firm operating in a country with a good financial system and transparency tended to have lower financial constraints. Zins and Weill (2016) uncovered that amplifying bank branches in remote areas contributed to poverty mitigation. Thus, firstly, the researchers can conclude that financial inclusion can help build better social stability (Ozili, 2020). Secondly, banks operating in higher institutional quality provide flexibility in processing the administration procedure and legal documents (Risfandy et al., 2022). Lastly, inclusive finance supports the economy's growth as it aims to reduce the gap among the social class (Datta & Singh, 2019).

The recent change in information technology improves the financial inclusion landscape. Referring to Kanungo and Gupta (2021), one of the key factors contributing to inclusive finance is possibly the diffusion of technology across the nation, such as mobile phone access, the internet, and the innovation of financial products. The growth of digital banking allows financial institutions to offer higher quality, reduce costs, and increase the efficiency of services (Jayasekara, 2021). For instance, digital banks, e-wallets, e-lending, and e-payment in Indonesia indicate that inclusive finance is moving forward. Banna et al. (2021) also emphasizes that fintech companies have emerged on the market and provided an immense offer to the user, permitting individuals in underserved rural areas to benefit from the service and the product.

In addition, Iqbal and Sami (2017) reviewed factors affecting financial inclusion. They mentioned that geographical location could affect the availability of banking services because the bank office mainly operates and is available in urban areas. Accordingly, the population living in rural areas has less opportunity to access financial services, highlighting that commercial banks are not interested in expanding their service to less populated areas. Also, the absence of legal identity and gender biases affects financial inclusion. Some individuals do not have legal status documents, such as national identity cards. In addition, women are also subjected to and excluded from using the financial service (Allen et al., 2016), as some cultures forbid women to manage their financial aspects and religious reasons. Financial illiteracy has also become another barrier and challenge for financial inclusion (Andreou & Anyfantaki, 2021). Besides, bank charge also demotivates low-income household from creating an account as commercial banks have a higher charge (Bernini & Brighi, 2018). Plus, terms and conditions set by banks put much pressure on customers. Since loan facilities are one of the bank's services, most banks are interested in large-scale borrowers, and hence small-scale borrowers are a victim of rejection.

Previous studies have also revealed that financial inclusion supports economic growth and financial stability. Frame and White (2012) suggested that the economy currently relies heavily on banking transactions; it can help build a sustainable financial system that is more effective and efficient in monetary policy. However, Mehrotra and Yetman (2015) stated that the rapid growth of financial inclusion might allow low-income households previously excluded without considering their payback parity. In other words, the growing number of small-scale loans may also threaten bank efficiency.

Financial inclusion and bank profitability: Prior empirical results

Overall, there are two contrasting findings about the relationship between financial inclusion and bank profitability. Most papers found a positive association, such as Issaka Jajah et al. (2020), which conducted a study focusing on Sub-Saharan Africa. They employed bank-level financial inclusion for the independent variable and bank-level profitability for the dependent variable. The study result suggests that increasing bank branches and ATMs positively affected banks' profitability. Another study, Kumar et al. (2022), focused on the developed market economy using a sample of 122 Japanese banks. Kumar et al. (2022) uncovered the influence of bank branches on bank profitability, such as the number of loan accounts and ATMs. In this case, the authors assume that increased bank networking across remote areas assures bank revenue. Thus, financial inclusion development is essential in the advanced market as it assures financial stability while augmenting the banks' profit.

Shihadeh et al. (2018), using a sample of 13 Jordanian commercial banks, discovered that the relationship between financial inclusion and bank profitability depended on financial inclusion indicators. They utilized financial inclusion indicators, such as the number of ATMs, number of ATM services, and number of credit cards. The results revealed a positive relationship between the number of ATMs and return on assets (ROA). Thus, the availability of ATMs that enable individuals to deposit, transfer, and withdraw money made the customers financially inclusive. Similarly, Shihadeh and Liu (2019) explained that expanding bank branches could result in higher profitability, as larger banks can invest more in expanding their network. Other studies have also found a positive relationship between the branches and the bank's performance indicator, such as Bernini and Brighi (2018) and Kumar et al. (2022), who uncovered that the increase of the branches affected the increase in net income and ROA.

Meanwhile, a negative association can be observed in a study by Al-eitan et al. (2022). Similar to Shihadeh et al. (2018), they used a sample of 13 Jordanian commercial banks to determine the significant role of financial inclusion on bank revenue. The studies employed similar measurements of financial inclusion, such as availability of services, access to financial services, and use of financial services. The result showed that the profitability of Jordanian banks was negatively and significantly impacted by the number of accounts and the deposit size. In contrast, Shihadeh et al.'s (2018) studies found a positive and significant impact of ATMs' facilities and services and SMEs on bank profit. Thus, the availability of financial services facilities helps the bank to make a profit.

Hypothesis development: Financial inclusion and bank profitability

This current study investigates the impact of financial inclusion on bank profitability in developing markets. Prior studies have found strong evidence that financial inclusion helps the bank to generate more revenue (Shihadeh et al., 2018; Kumar et al., 2022; Al-eitan et al., 2022; Issaka Jajah et al., 2022). Expanding banking services and products allows banks to attract more customers and expand their market share. Hence, the present study assumes that the increase in the number of individuals registered in the

formal financial system is predicted to benefit the bank by increasing profitability. Thus, improving financial inclusion in the country supports the economy and the bank's growth. The researchers, therefore, constructed a hypothesis based on the prior findings and the above discussion.

H: Financial inclusion positively impacts bank profitability.

Research Method

Data and sample

In this paper, the researchers extracted the data from various sources. Data on the financial inclusion and commercial banks were collected from the central bank of Indonesia (*Bank Indonesia—BI*), Indonesia Financial Service Authority (*Otoritas Jasa Keuangan—OJK*), and Central Bureau of Statistic (*Badan Pusat Statistik—BPS*). The central bank of Indonesia provided data on the number of ATMs, number of bank branches, number of accounts, number of transactions per debit card, and number of transactions per credit card. The Central Bureau of Statistics provided data on the number of credit cards and debit cards per 100,000 adults, whereas Indonesia Financial Services Authority provided all bank-level data that the researchers used in this paper.

Regarding the sample, the researchers used all commercial banks available in the population as a sample to obtain a more generalized result covering the whole banking industry. Based on the OJK, there were 109 commercial banks in Indonesia, consisting of two types of banks: Islamic and conventional. Therefore, the researchers eliminated the Islamic banks on the list since they used a different ratio type and measurement than conventional banks. The researchers also eliminated several banks with uncompleted data in the sample period of 2015-2020. Then, the final sample contained 93 out of 110 commercial banks from 2015 to 2020, yielding 558 bank-year observations.

Variables and measurements

Table 1 shows variable definition, notation, measure, and sources. This paper employed return on asset (ROA) to measure bank profitability following prior studies (Issaka Jajah et al., 2020; Izzeldin et al., 2021; Risfandy, 2018; Shihadeh et al., 2018). As a dependent variable, ROA is an indicator to see the profitability of a bank relative to its total assets; it was computed by dividing net income by total assets.

Regarding the primary independent variable, there are various definitions of financial inclusion. In this paper, financial inclusion refers to the access to financial services and products for everyone at a lower cost that should be available at any time and location. In addition, financial inclusion is when an individual possesses an account at a formal institution like a bank account. It allows one to save or borrow a sum of money formally and permits registering for insurance or enabling transaction payment upon purchasing (Zins & Weill, 2016). Moreover, the financial inclusion index level is classified into three

categories: (1) access, (2) availability, and (3) usage (Hanivan & Nasrudin, 2019).

Table 1 Variable definition, notation, measure, and sources

Variables	Notation	Measure	References	Data Sources
Dependent Variable				
Return on Assets	ROA	Profit before tax/Total assets (%)	(Issaka Jajah et al., 2020; Risfandy, 2018)	OJK
Independent Variables (FINC)				
Access				
Number of debit card	DC	Number of debit card per 100,000 adults	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BPS
Number of credit card	CC	Number of credit card per 100,000 adults	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BPS
Number of accounts	ACCOUNT	Number of bank accounts per 100,000 adults	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BI
Availability				
Number of bank branches	BRANCH	Number of bank branches per 100,000 adults	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BI
Number of ATM	ATM	Number of ATMs per 100,000 adults	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BI
Usage				
Credit Card Transaction	CCTR	Number of transactions per credit card per month	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BI
Debit Card Transaction	DCTR	Number of transactions per debit card per month	(Erlando et al., 2020; Hanivan & Nasrudin, 2019)	BI
Control Variables				
Bank Size	LogSize	The logarithm of total assets of banks	(Risfandy, 2018)	OJK
Net Interest Margin	NIM	(Investment income- Interest expense)/Average earning asset	(Risfandy et al., 2022)	OJK
Cost to Income Ratio	CIR	Operating cost/Total income (%)	(Chen et al., 2021)	OJK
Loan Deposit Ratio	LDR	Total loans/ Total deposit	(Risfandy, 2018)	OJK
Notes: OJK = Indonesia Financial Services Authority, BPS = Central Bureau of Statistic, BI = Bank Indonesia.				

“Access” measures the penetration level of financial services within the society and determines the accessibility of formal financial services. Here, the number of credit cards per 100,000 adults, the number of debit cards per 100,000 adults, and the number of

accounts were utilized for the access dimension. Then, “availability” refers to the existence of banking infrastructure installed in a certain location, so the users can easily withdraw or transfer money anytime. Some indicators of “availability” the researchers used in this paper were the number of ATMs and bank branches per 100,000 adults. Lastly, the “usage” dimension alludes to the transaction level done by the credit card and debit card holder within a certain period. This study’s datasets provided the number of credit card and debit card transactions.

In this paper, the researchers also included some controls. Previous studies, such as Mirzaei et al. (2013) and Kumar et al. (2022), found that bank-specific variables, such as loan-to-deposit ratio, net interest margin, cost-to-income ratio, and bank size, were correlated with the bank’s profitability. The loan-to-deposit ratio (LDR) assesses a bank’s liquidity by comparing its loans to its total deposit. Meanwhile, Bitar et al. (2020) uncovered that liquidity ratio is the major factor in determining bank profitability. In addition, net interest margin (NIM) was used by Risfandy et al. (2022) to measure a bank’s profitability and efficiency. Technically, NIM was computed by dividing total earning assets. It has been argued that the NIM positively impacted bank profits and efficiency, and it is suggested that higher profits were associated with lower banks’ fragility (Ahamed et al., 2021). Then, the cost-to-income ratio (CIR) is an indicator of bank operational inefficiency that measures the bank’s performance in maximizing income while minimizing cost. In this case, the researchers follow Chen et al. (2021) to measure inefficiency by dividing operating cost by total income. Previous studies have also found strong evidence of the link between bank inefficiency and profitability (Issaka Jajah et al., 2020). The other control variable used in this study was bank size (*LogSize*), measured by the natural logarithm of the bank’s total assets. In general, the correlation between bank size and profit is positive as large banks can generate higher profit from the economics of scale and the market domination since larger banks tend to have a variation of products and services relative to smaller banks (Baselga-pascual & Emilia, 2021). In contrast, other studies, such as Owen and Pereira (2018), stated that when banks are getting larger, it may negatively affect bank performance due to increased operational costs related to bureaucracy, management process, and structure of larger banks.

Empirical Model

The researchers estimated the following empirical model to investigate the impact of financial inclusion (FINC) on bank profitability:

$$ROA_{it} = \alpha + \beta_1 FINC_t + \beta_2 LogSize_{it} + \beta_3 NIM_{it} + \beta_4 CIR_{it} + \beta_5 LDR_{it} + \varepsilon \dots (1)$$

Where subscripts *i* and *t* represent bank and time (year) dimensions, respectively. Since this study’s datasets consisted of cross-sectional and time-series dimensions, the researchers used panel data analysis to estimate the equation (1). The researchers also utilized fixed-effects analysis to allow for a quasi-correlation between firm-level controls and bank-fixed characteristics (Wooldridge, 2016).

Result and Discussion

Descriptive Statistics

The descriptive statistics in Table 2 demonstrate the mean, standard deviation, minimum, and maximum values of variables used in this study. The ROA as a measure of bank profitability ranged from -16 % to 6.28 %, with a mean value of 1.39%. Each indicator for financial inclusion, including access, availability, and usage, is described in Table 1. The statistic showed that debit cards were more familiar among the adult population in Indonesia than credit cards. Therefore, the number of debit card users had a higher mean, 59.682 relatives to debit card users, which was only 6,470 per 100,000 adult populations. Also, the mean of account holders per 100,000 adult population was 5,790, indicating that more than half of the adult population owned a formal account. On average, there were 12 commercial bank branches per 100,000 adult populations, with a minimum of 11 and a maximum of 13 branches. The availability of ATMs per 100,000 adults was relatively high, where the mean number of ATMs facilities was 39.21 per 100,000 adults, ranging from 37.86 to 40.29.

Regarding the usage dimension, statistically, the number of transactions per credit card had a mean of 1.59, while it was 3.86 for the number of transactions per debit card. For the bank-specific variables, the bank size (in logarithm form) had a mean of 16.81, with a minimum of 16.11 and a maximum of 21.07. The mean net interest margin (NIM) was 6.27, while the mean values of cost to income ratio (CIR) and loan to deposit ratio (LDR) were 86.25 and 108.24, respectively.

Table 2 Descriptive statistics

Variables	Notation	Obs.	Mean	SD	Min	Max
Dependent Variable						
Return on Assets (%)	ROA	558	1.39	2.15	-16	6.28
Independent Variables (FINC)						
Access						
Number of debit card	DC	558	59,682	9,220	43,713	74,620
Number of credit card	CC	558	6,470	1,390	6,193	6,654
Number of accounts	ACCOUNT	558	5,790	1,007	4,371	7,462
Availability						
Number of bank branches	BRANCH	558	12	0.69	11.23	12.57
Number of ATM	ATM	558	39.21	0.89	37.86	40.29
Usage						
Credit card transaction	CCTR	558	1.59	0.19	1.25	1.87
Debit transaction	DCTR	558	3.86	0.32	3.30	4.26
Control Variables						
Bank Size	LogSize	558	16.81	1.53	13.11	21.07
Net Interest Margin	NIM	558	6.27	27.39	-59.03	645
Cost to Income Ratio	CIR	558	86.25	18.06	48.41	167.90
Loan Deposit Ratio	LDR	558	108.24	70.25	51.68	598.84

Notes: Please see Table 1 for variable explanation and measurements.

Empirical results and discussion

Table 3 displays the regression analysis results using the fixed effects (FE) method. As aforementioned earlier, financial inclusion used three dimensions: access (displayed in columns (1)-(3)), availability (columns (4) and (5)), and usage (columns (6) and (7)). Overall, the researchers could see that financial inclusion positively affected bank profitability in three different dimensions of financial inclusion. The use of credit card—CC (access dimension), number of branches—BRANCH (availability), and number of debit card transactions—DCTR (usage dimension) were positively and significantly related to bank profitability proxied by ROA. Overall, this study's finding supports the proposed hypothesis and the prior studies.

Table 3 Regression results

	ACCESS			AVAILABILITY		USAGE	
	CC (1)	DC (2)	ACCOUNT (3)	BRANCH (4)	ATM (5)	CCTR (6)	DCTR (7)
FINC	0.113*** (3.54)	-0.002*** (-3.99)	-0.0208*** (-4.36)	0.388*** (4.29)	0.0676 (1.44)	0.260 (1.23)	0.506*** (3.77)
LogSize	0.127 (0.88)	0.208 (1.39)	0.279 (1.81)	0.293 (1.87)	-0.104 (-0.78)	-0.0858 (-0.65)	0.108 (0.77)
NIM	0.000363 (0.22)	0.000590 (0.36)	0.000623 (0.39)	0.000724 (0.45)	0.000426 (0.26)	0.000327 (0.20)	0.000518 (0.32)
CIR	-0.063*** (-27.48)	-0.062*** (-27.36)	-0.0628*** (-27.58)	-0.063*** (-27.64)	-0.063*** (-27.25)	-0.063*** (-27.11)	-0.062*** (-27.41)
LDR	0.000710 (1.60)	0.000725 (1.64)	0.000823 (1.86)	0.000870 (1.95)	0.000530 (1.19)	0.000487 (1.09)	0.000676 (1.53)
CONS.	-2.751 (-0.72)	4.383 (1.82)	3.200 (1.29)	3.200 (1.29)	5.849* (2.10)	7.779*** (3.43)	2.933 (1.12)
<i>N Obs.</i>	558	558	558	558	558	558	558
<i>N bank</i>	93	93	93	93	93	93	93
<i>R-sq</i>	0.7140	0.7066	0.6961	0.6934	0.6975	0.7004	0.7157

Notes: The table provides the fixed effects (FE) regression result for equation (1), with robust standard errors clustered at the firm levels. Financial inclusion (FINC) was measured by the three dimensions: access (columns (1)-(3)), availability (columns (4)-(5)), and usage (columns (6)-(7)). The dependent variable was bank profitability proxied by ROA. Please see Table 1 for the definition of each variable presented in this regression Table. *, **, and *** denotes significance in 10%, 5%, and 1% levels, respectively.

The positive sign of CC means that the bank's profitability might increase when the number of credit cards increases. This finding is similar to David et al. (2016) and Issaka Jajah et al. (2020). The more people have credit cards, the more people have complete access to bank services, especially for payment. Having a credit card is not as easy as having a debit card, and not all people can get credit cards since the bank must verify the customer profile first. However, once people have a credit card, it could significantly contribute to the bank's income (fees income) since credit card subscription and fees are substantially higher than a debit card.

The more branches in an area (proxied by 100,000 adults) also positively impacted the bank's profitability. Although this study focused on an emerging country, the researchers discovered similar findings to the previous study conducted in a developed market. Kumar et al. (2022) stated that the existence of bank branches contributes to banks' profitability. The result also aligns with Ahamed and Mallick (2019). They mentioned that the number of bank branches and the increase of customers are interdependent, leading to increased deposits, loan portfolios, and risk diversification. Also, expanding the bank branch network then plays an essential role in generating bank revenue. Thus, a bank can enhance its performance through branching by penetrating underserved locations while improving financial inclusion (Shihadeh & Liu, 2019).

Moreover, the bank's ROA positively and significantly influenced the debit card transaction (DCTR). It can be interpreted as account holders with high-frequency usage can support banks' growth, especially in generating profits. In this regard, debit card transaction requires a high volume of cash in advance of good trade relative to the credit card transaction, which can save some amount by delaying payment (David et al. 2016). The financial transaction is usually done through a formal financial institution, for instance, a bank, where they can generate profit from transaction costs within debit card usage (Choi, 2019). In other words, the increase in the frequency of debit transactions would significantly assure the bank's revenue because the banks can generate a significant sum of money from the transaction cost and other related fixed costs.

Indeed, from Table 3, the researchers also found some anomalies. Two variables showed a negative sign: the number of debit cards—DC and the number of bank accounts—ACCOUNT. In this case, debit cards are deemed a payment method linked directly with the bank account (Sik & Lee, 2010), which might not directly affect banking profitability. Debit card holders have only utilized it as an alternative way to substitute cash usage, for instance, to minimize and avoid carrying cash to be more secure and convenient. On the other hand, a credit card is a payment instrument. Therefore, the increase in debit cards and bank accounts in this study did not significantly affect bank profitability because these two represent the intermediation role of the bank.

This paper also revealed two variables with no significant impact on bank performance. First, column (5) shows that ATMs did not significantly impact performance. Kumar et al. (2022) support this finding since the presence of ATMs is not necessarily contributing to bank profits. Moreover, the development of mobile and internet banking in Indonesia may replace or reduce the use of ATMs, where customers can do transactions and payments remotely. In addition, Kondo (2020) argues that the ATM service is only an alternative service to minimize the waiting line of the customer at the teller of banks' branches. Second, in column (6), CCTR did not significantly impact bank performance. In this case, credit cards are not popular in Indonesia, and Indonesian customers still prefer debit card transactions. This study's findings are similar to the other study indicating that credit card transactions were lower in many countries such as 1% in France, 1% in Netherland, 2% in Germany, and 2% in Austria (David et al., 2016).

Regarding bank-level control variables, this study's results disclosed that bank size (SIZE) had no significant relationship with bank profitability. Under the promotion of financial inclusion, bank size might not be the main key factor in driving profitability. The researchers also uncovered that net interest margin (NIM) was not correlated with bank profitability. This result suggests a negative sign for the cost-to-income ratio (CIR), suggesting that banks can lower the operating cost to mitigate their return volatility and ameliorate operation activities (Ahamed et al., 2021). Thus, the increase in the cost-to-income ratio may reduce the banks' profitability. Also, the empirical result showed that the loan deposit ratio (LDR) did not impact the banks' profits.

Conclusion

This paper aims to examine the influence of financial inclusion at the country level on bank-level profitability, particularly on commercial banks in the Indonesian context. The researchers found strong evidence of the link between financial inclusion and bank profitability. Specifically, the researchers uncovered that country-level financial inclusion in three categories (access, availability, usage) could significantly improve bank profitability. This result is robust in various measurements of financial inclusion.

The study findings provide a significant implication for the banking industry and the central bank, particularly in Indonesia, in crafting a new policy. In this case, the banks are the key players in promoting inclusive finance and the main actors in attaining the sustainable development goal of providing accessibility and availability of financial services and product for all. At the same time, the bank would have the opportunity to increase its profitability and extend its market share. Therefore, commercial banks can understand the specific aspect of financial inclusion that needs to be facilitated in improving their business activities, such as adding more branches or giving customers rewards to increase their debit card transactions.

Moreover, this study's empirical result is strong and can be used by policymakers or practitioners. However, it has to be noted that due to the sample limit, i.e., Indonesian commercial banks, the result of this study cannot be generalized in a broader or cross-country context. It might be applicable for emerging economies with similar characteristics to Indonesia if it needed to be brought into a broader view. In addition, the result might not be similar to the Islamic banks' context since Islamic banks were excluded from the sample. Therefore, investigating the impact of financial inclusion for only Islamic banks but using a cross-country sample might be a good avenue for future research agenda.

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