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**FINANCIAL INCLUSION IN
INDONESIA: DOES EDUCATION
MATTER?****Pratiwi Ira Eka**

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ABSTRACT. This study attempts to examine education as a critical proxy for financial inclusion in Indonesia using the Global Findex 2017 database from the World Bank survey. The results showed low financial inclusion in Indonesia, indicated by the low score of the financial inclusion index. Further analysis also suggests that education attainment significantly affects financial inclusion, whose indicators include the financial inclusion index (FII), account ownership, mobile or internet banking, and borrowing from financial institutions in the past 12 months. These four indicators show that financial inclusion increases with education. The findings confirm that highly educated people are considered financially included, and the great difference in educational level may create a significant gap in financial inclusion. Therefore, more people should attain higher education to increase financial inclusion and contribute to national development.

JEL Classification: G20,
G50, I29

Keywords: financial inclusion, education, Indonesia

Introduction

Financial inclusion is essential in micro and macro-level finance and economics (Hasan et al., 2022; De Koker and Jentzch, 2013) because it promotes growth and reduces inequality and poverty (Asuming et al., 2019; Kling et al., 2020, Swamy, 2014). It is a set of circumstances wherein working-class people have efficient and effective access to transparent services from formal financial institutional players at affordable prices (Lenka, 2019). Over the last few decades, the financial inclusion topic has attracted the attention of academics and development institutions aimed at providing strategies and recommendations for countries worldwide. Many previous studies have constructed appropriate indices to measure the financial performance of various countries.

Arora and Anand (2021) measured financial development at the sub-national level by constructing the Banking Development Index with three indicators, – deposits, credits, and population per bank branch. Svirydzenka (2016) also constructed the index of financial development, comprising nine indices summarizing developed financial institutions and markets based on depth, access, and efficiency. Furthermore, Sarma (2012) proposed an index of financial inclusion (IFI) as an alternative multidimensional index based on macroeconomic data on banking sector outreach. This index utilizes the dimensions of accessibility, availability,

and the use of banking services. Park and Mercado, Jr. (2015) constructed financial inclusion indicator to assess various macroeconomic and country-specific factors affecting financial inclusion for 37 developing Asian economies. In 2017, Goel and Sharma considered three dimensions of banking penetration and availability, including insurance accessibility.

Previous studies in Indonesia, a lower-middle-income country in Southeast Asia with a large population, mainly focused on the importance of financial inclusion accessibility in reducing poverty and inequality (Trinugroho et al., 2015; Sanjaya & Nursechafia, 2016; Umar, 2017; Refqi & Achmad, 2019; Abd. Majid et al., 2019; Hanivan & Nasrudin, 2019; Ali et al., 2020; MacHdar, 2020). For instance, they examined the impact of bank account ownership and credit or loans in banks or other financial institutions on household poverty. Therefore, the results' implications limit the recommendation to eliminate the barrier to financial service accessibility for households vulnerable to poverty. The studies ignored the factors influencing financial inclusion based on household characteristics.

Many studies mainly focus on the impact of financial inclusion at the macroeconomic or national, and regional levels. Erlando et al. (2020) stated that future studies should include various variables because national or macro data might not capture individual reality. However, several studies on financial inclusion at the household level neglected some other essential aspects (Sarma, 2012).

The survey by the Indonesia Financial Service Authority showed that the financial inclusion index increased from 67.8% in 2016 to 76.19% in 2019. This data describes Indonesia's condition, where most people have accessed various services provided by financial institutions to improve their well-being. However, the survey also revealed that Indonesians' financial literacy is still very low. The 2019 survey calculated that the financial literacy index was 38.03%, despite an 8.39% increase from 2016. Only 38 of 100 people have sufficient knowledge about financial services and products. In 2019, a study by Google, Temasek, and Bain & Company 2019 found that 92 million adults in Indonesia were unbanked. This is more than half the total adult population of 182 million people. Additionally, only 42 million adults access the financial service to get a bank account, credits or loans, and investment or insurance products (Kusnanda & Widowati, 2019).

According to Grohmann et al. (2018), good infrastructure and higher financial literacy are needed to make functional financial markets. People make better decisions when they are well-informed regarding financial services and products. High demand for financial services and products links to the need for financial inclusion, enhancing a country's financial system. However, there is a gap between financial inclusion and literacy in Indonesia, and this may indicate that the efforts by the government and authorities to improve the penetration and accessibility of financial products and services are not accompanied by increasing financial knowledge.

This study aimed to analyze the impact of education on financial inclusion in Indonesia using the latest micro-level data from the Global Findex 2017 Database. To our best knowledge, few studies have measured financial inclusion multidimensionally using micro-data. The dimension in this study was adopted from World Bank (2012), including access, usage, and quality to measure the individual financial inclusion index. Previous studies found a gap in the access and use of financial services. People with higher education are more likely to access and use financial products than those with lower education levels (Aterido et al., 2013; Agarwalla et al., 2015; Asuming et al., 2019; Ali et al., 2020; Ndoya et al., 2021). Therefore, this study may contribute to future literature measuring financial inclusion at the micro-level. The analysis could further help understand how individual education may improve financial inclusion. Therefore, the results provide policy implications for designing appropriate strategies for enhancing individual financial inclusion in Indonesia.

1. Literature review

1.1 The Financial Inclusion Concept

The concept of being financially inclusive has gained much attention in recent years from developed and developing countries. It significantly impacts development outcomes, such as reducing poverty and income inequality. The World Bank defined financial inclusion as individuals and businesses accessing valuable and affordable financial products and services that meet their needs. These include transactions, payments, savings, credit, and insurance services delivered responsibly and sustainably (World Bank, 2018). Although challenging, countries worldwide promote strategies and policies to achieve financial inclusion. Globalization also affects the demand of every individual, leading to the development of the financial system. It requires the improvement of the people's financial inclusion.

Regarding inclusiveness, potential users must easily access the available financial products and services (Sharma, 2012). Banks should provide facilities such as offices, branches, ATMs, and digital applications to answer customer needs. People may easily access financial services and products such as savings accounts but need to utilize them optimally due to social, economic, and political factors.

Many studies have examined finances, including its measurement, constraints, and impact on reducing poverty, increasing people's income, and promoting economic growth. Arora and Anand (2021) used the banking development index at the sub-national level with deposits, credits, and populations per bank branch indicators to measure financial inclusion. Other studies used the number of bank accounts, ATMs, commercial bank branches, and bank credits per 100,000 adults to calculate the financial inclusion index (Park & Mercado. Jr, 2015; Umar, 2017; Trinugroho et al., 2019; Vo et al., 2019; Lenka, 2021). However, this development of indicators measures financial inclusion at the macro level rather than at the individual or micro level.

Hu et al. (2021) developed new indicators of financial inclusion in the agricultural sector in rural areas and borrowed Sarma's (2008; 2016) methodology in calculating the financial inclusion index. However, the study only showed the impact of financial inclusion on the total agricultural factor productivity growth at the cross-regional level in China from 2009 to 2018. Goel and Sharma (2017) introduced three dimensions in calculating India's accessibility and usage of financial services. The indicators include banking penetration, availability, and access to insurance. Erlando et al. (2020) investigated the impact of financial inclusion on economic growth, poverty, and income inequality. The study also used the dimensions of accessibility, availability, and usability of financial services, each with only one variable.

Many studies construct financial inclusion based on its initial concept or definition. The three dimensions widely used to measure financial inclusion are availability, accessibility, and usage of financial services and products. These indicators mainly apply to macro- or national- or country-level data. Few countries may not provide the required data for the measurement. Therefore, the one financial inclusion model may only apply to some countries due to the lack of data. Several studies probably determined the indicators based on the data availability. Using indicators for each dimension reduces or causes the use of one indicator and may not capture the actual financial inclusion in a country comprehensively.

1.2 Education as a Driver for Financial Inclusion

Developing countries encounter numerous challenges like poverty, inequality, low-income distribution, and unemployment. In order to tackle these challenges, it is crucial to promote

financial inclusion. To ensure that low-income families have access to financial services, we need to eliminate any obstacles that may be preventing them from doing so. This means addressing issues such as limited resources, restricted job opportunities, and inadequate education. (Dawood et al., 2019; Guerra-Leal, 2021). Many studies have spotlighted the importance of individual characteristics such as gender, income, age, and education on financial inclusion, especially in low- and middle-income countries. Therefore, this study aimed to examine the importance of education in promoting financial inclusion.

The link between education and financial inclusion may be strongly intermediated by an individual's financial literacy. An increase in education level increases financial literacy, supporting financial inclusion. According to the Organization for Economic Co-operation and Development (OECD), financial literacy combines the awareness, knowledge, skills, attitude, and behavior necessary to make sound financial decisions and achieve individual financial well-being (OECD INFE, 2011). People with sufficient knowledge about finance make more prudent and valuable decisions. They diversify their investment, select banking products such as savings, credits, loans, and insurance products, and plan for retirement in advance (Baglioni et al., 2018).

Hussain et al. (2018) investigated the association between education level and access to finance. The study found that education positively affects individuals' financial knowledge and mediates their access to finance. Yoshino et al. (2017) also stated that education level positively relates to saving behavior and financial inclusion. Furthermore, Hasan et al. (2021) found that education significantly affects individuals' banking access. Educated people are equipped with the knowledge to select suitable financial products and services. People with higher education are more likely to open a bank account. Additionally, even lower-income but comparatively higher-educated people are more likely to open a microfinance account.

Lusardi and Mitchell (2014) stated that the controversy regarding the positive association between education and financial literacy might be driven by cognitive ability. According to Klapper et al. (2015), there is a 15% global gap in financial literacy among adults in primary, secondary, and tertiary education. This gap is even more prominent in major advanced countries. The striking differences in financial literacy between educational levels strongly relate to math skills and knowledge. These two factors are beneficial for understanding financial concepts.

1.3 Hypothesis

This study aimed to identify whether an individual's education level strongly predicts financial inclusion. The four financial inclusion variables used are Financial Inclusion Index (FII), account ownership, mobile or internet banking, and borrowing from financial institutions. The first hypothesis is that the individual's educational level significantly impacts the financial inclusion index. The second hypothesis is that the individual's educational level significantly impacts financial account ownership. The third hypothesis is that the individual's educational level significantly impacts mobile or internet banking use. The fourth hypothesis is that the individual's educational level significantly impacts borrowing from financial institutions. Literate people show more rational financial behavior and attitude than non-literate people (Baglioni et al., 2018). This could be reflected in the propensity to save (Kłopocka, 2018; Unnikrishnan et al., 2022), borrow money from banks (Roa et al., 2019), diversify investments, or plan for retirement (Lusardi & Mitchell, 2011; Brounen et al., 2016; Bongini & Cucinelli, 2019; Gallego-Losada et al., 2022). Therefore, individuals with higher educational levels are more likely to be financially included.

2. Methodological approach

2.1 Data

The financial inclusion index of each individual was measured by determining three dimensions based on the definition from the World Bank (2012), including access, usage, and quality. The access dimension is the financial institution's ability to provide services and products in regulatory, market, and technology environments. This dimension's indicator describes the penetration of financial services, such as the distribution of bank branches in rural areas. It also describes the potential barriers financial institutions face in delivering products and services or customer challenges, such as information and cost. The indicator comprises saving accounts, mobile and internet banking accounts, ATMs, and credit or loans. The usage dimension uses financial products and services over time, such as average savings balance and the number of transactions per account. The households' failure to use financial services or products does not mean they are unbanked. Also, access to financial institutions does not automatically imply financial inclusion. The indicator of usage dimension comprises the use of accounts for payments, accounts for receiving money, and usage for transfers. The quality dimension is the financial institution's capacity to meet customer needs. Therefore, it implies the variability of financial services and products available to customers to match their necessities. The indicator consists of basic health needs and business purposes.

This study used the Global Financial Inclusion (Global Findex) 2017 database from the World Bank survey through approximately 150,000 samples in 1,447 countries worldwide. A total of 1,000 respondents aged 15 and above were selected randomly.

The equal-weighted approach was employed to calculate the composite index of each dimension. This is because each dimension and indicator are equally critical. Since there were three dimensions, each was given equal weight ($1/3 = 0.333$), and each indicator was equally weighted. Therefore, saving accounts, mobile and internet banking accounts, ATMs, credit or loans, and credit cards were weighted $1/15$ each. The indicators of using accounts for payments, accounts for receiving money, and usage for transfers were weighted $1/9$ each.

In contrast, the indicators of basic and health needs and business purposes were weighted $1/6$ each. The further analysis employed the 0-1 scoring. A score of 1 was assigned when the individual was non-deprived and 0 otherwise. For instance, one was given when the individual has an account at a financial institution, or 0 when otherwise. The financial inclusion index was further aggregated using the additive aggregation method. Table 1 depicts the dimensions and indicators of financial inclusion.

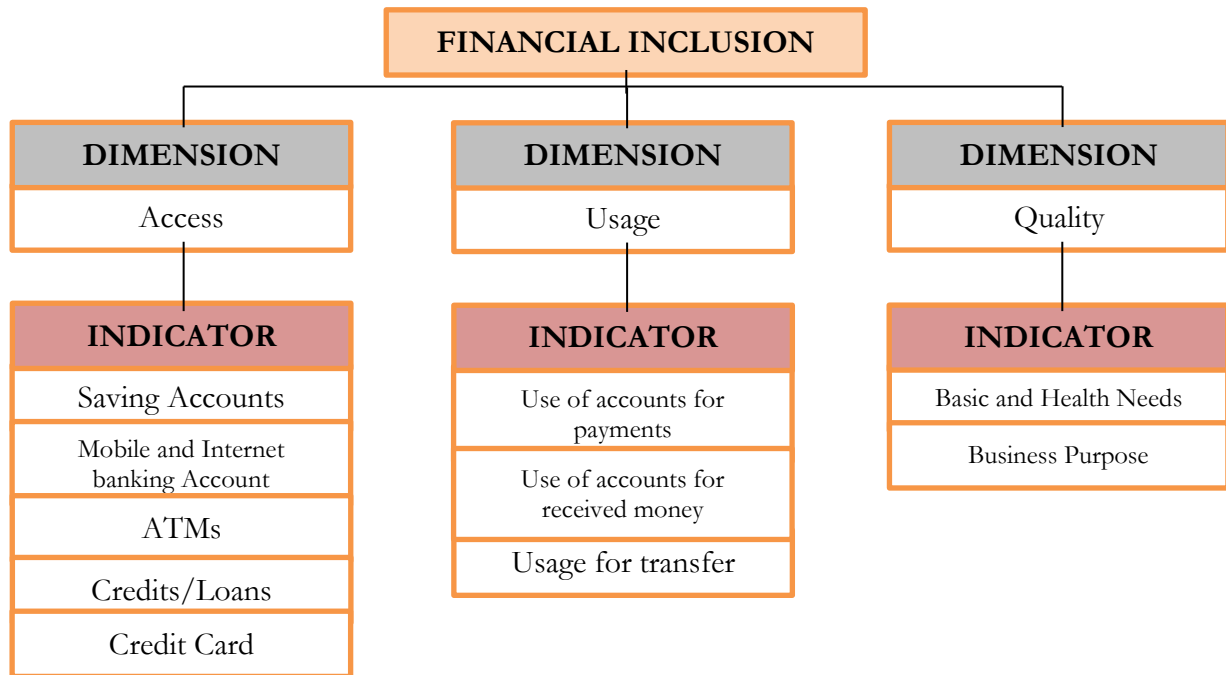


Figure 1. Dimensions of Financial Inclusion

Source: own compilation

Table 1. List of Dimensions, Indicators, Weights

Dimension	Indicator (Weight)	Non-Deprived if
Access (1/3)	1. Savings Account (1/15)	An individual has an account at financial institutions.
	2. Mobile and Internet Banking Account (1/15)	Individual has mobile or internet banking
	3. ATMs (1/15)	Individuals have an ATM or debit connected to an account with their name.
	4. Credit/Loans (1/15)	Individuals have lent money from financial institutions in the past 12 months.
	5. Credit Card (1/15)	Individuals have a credit card and personally have used a credit card in the past 12 months.
Usage (1/3)	6. Use of accounts for Payments (1/9)	Individuals personally made regular payments for electricity, water, or trash collection using a bank account or mobile phone.
	7. Use of accounts for Received Money (1/9)	Individuals personally receive money in their account through a bank or another type of formal bank or a mobile phone.
	8. Usage for Transfer (1/9)	Individuals personally use transfer services provided by financial institutions
Quality (1/3)	9. Business Purpose (1/6)	Individual has personally borrowing money from financial institutions for business purpose.
	10. Basic and Health Needs (1/6)	Individuals have personally borrowing money from financial institutions to provide basic health needs such as purchasing homes or land or for medical purposes.

Source: own compilation

2.2 Model and variables description

This study used four dependent variables to understand the impact of education on financial inclusion at the micro-level. This included account ownership (ACC), the use of mobile or internet accounts (MOB), borrowing from financial institutions (BOR), and the financial inclusion index (FII) as computed from the composite index. Logistic binary regression model (1) was employed for the first three dependent variables, while the latter variable was analyzed using a multiple linear regression model (2). This aimed to identify whether education drives financial inclusion in Indonesia. The model added other predictors as control variables, including gender, age, and income level. Previous studies found that females, older adults, and low-income variables are financially excluded. The study also used the employment status and ownership of citizenship identity, the basic requirements to access financial institutions. The estimation equations are as follows:

$$\text{Log} \left(\frac{P_i}{1-P_i} \right) = Z_i = \beta_0 + \beta_1 \text{EDU}_i + \beta_2 \text{INC}_i + \beta_3 \text{GENDER}_i + \beta_4 \text{AGE}_i + \beta_5 \text{EMP}_i + \beta_6 \text{ID}_i \quad (1)$$

$$\text{FII}_i = \alpha_0 + \alpha_1 \text{EDU}_i + \alpha_2 \text{INC}_i + \alpha_3 \text{GENDER}_i + \alpha_4 \text{AGE}_i + \alpha_5 \text{EMP}_i + \alpha_6 \text{ID}_i \quad (2)$$

Account ownership is a dummy variable with a value of 1 when the individual has an account at a financial institution and 0 otherwise. Similarly, the value of 1 was assigned for the use of a mobile or internet account when the individual uses a mobile or internet banking account to access the financial institution and 0 otherwise. For borrowing from financial institutions, the value of 1 was assigned when the individual borrowing money from financial institutions in the past 12 months and 0 otherwise. Table 2 illustrates the explanation of the variables used in this study.

Table 2. Variable Used in the Study

Variables	Explanation
Financial Inclusion (FII)	Continuous variable Financial Inclusion index
Access Dimension	Continuous variable The total score of the access dimension
Usage Dimension	Continuous variable The total score of the access dimension
Quality Dimension	Continuous variable The total score of the quality dimension
Account Ownership (ACC)	Dummy variable 1 when the individuals have an account at a financial institution, 0 otherwise
Borrowing (BOR)	Dummy variable 1 when the individuals have borrowing in the past 12 months from a financial institution, 0 otherwise
Mobile/Internet Banking Use (MOB)	Dummy variable 1 when the individuals use mobile or internet money to access the financial institution account, 0 otherwise
Educational (EDU)	Dummy variable
Completed Secondary	1 when the individuals complete a secondary level of education, 0 otherwise
Completed Tertiary and more	1 when the individuals complete a tertiary level of education and more, 0 otherwise

Income (INC)	Dummy variable
Second 20%	1 when the individuals belong to the second quantile, 0 otherwise
Middle 20%	1 when the individuals belong to the middle quantile, 0 otherwise
Fourth 20%	1 when the individuals belong to the fourth quantile, 0 otherwise
Richest 20%	1 when the individuals belong to the wealthiest quantile, 0 otherwise
Gender (GEN)	Dummy variable
	1 when the individuals are female, otherwise is 0
Age (AGE)	Continuous variable
	Age of the individual
Employment Status (EMP)	Dummy variable
	1 when the individuals are in the workforce, otherwise is 0
Ownership of Citizenship Identity (ID)	Dummy
	1 when the individuals had an ID, otherwise is 0

Source: own compilation

3. Conducting research and results

3.1 Descriptive Statistics

This study aimed to measure the individual financial inclusion index using a composite index. Three dimensions of financial inclusion, including access, usage, and quality, were computed using an equal-weighted approach and additive aggregation. Table 3 displays the descriptive statistics for the financial inclusion index and other study variables. It shows that Indonesia's financial inclusion is considerably low, indicated by the financial inclusion index mean of 0.156. Also, three dimensions have low scores, suggesting poor access, usage, and quality of financial institutions. Regarding account ownership, 52.9% of the respondents have accounts in financial institutions, but only 18% use mobile or internet banking, while 18.7% borrow from banks. This result supports Girón et al. (2022) and Demirgüç-Kunt et al. (2018), which found low access to financial institutions in developing and least-developed countries. Based on income and education, most respondents come from the middle-income level with secondary school education. Also, 60.7% of respondents are female, and around 63.6% are of working status. It is more likely that all respondents have citizenship identity, 6.5% may not have.

Table 3. Summary Statistics of the Variables

Variable	(N=1000)			
	Mean	SD	Min	Max
Financial Inclusion Index (IFI)	0.156	0.179	0	0.93
Access Dimension	0.059	0.073	0	0.33
Usage Dimension	0.044	0.078	0	0.33
Quality Dimension	0.052	0.095	0	0.33
Ownership of financial account				
Having an account at a financial institution	0.529	0.499		
Mobile/Internet Banking Account				
use mobile or internet money to access the financial institution account	0.180	0.384		
Borrowing from Financial Institution				
Borrowing in the past 12 months from financial institutions	0.187	0.390		
Education				

Completed Secondary	0.627	0.483		
Completed Tertiary or more	0.033	0.176		
Income				
Income (second 20%)	0.179	0.383		
Income (Middle 20%)	0.188	0.390		
Income (Fourth 20%)	0.196	0.397		
Income (Richest 20%)	0.268	0.443		
Gender				
Female	0.607	0.488		
Age	38.27	14.23	0	77
Employment Status				
In the workforce	0.636	0.481		
ID Ownership				
Having ID	0.935	0.246		

Source: Authors' Calculation

3.2 Robustness of financial inclusion index

The financial inclusion index used in this study is a composite index. To identify the robustness of the index, the initial financial index was reconstructed by omitting mobile or internet banking accounts, credit cards, use of account for payment, and use of the account. A Kendall's Tau-b and Spearman correlation coefficient were employed to estimate the association between financial inclusion and the reconstructed indices. The result showed that the indices are strongly and significantly related. The coefficient correlations of Kendall's Tau-b and Spearman's Rho are 0.852 and 0.946, respectively, indicating that the composite index is robust. Table 4 depicts the correlation between financial inclusion and reconstructed indices.

Table 4. Correlation Between Financial Inclusion Index and Reconstructed Index

Measures	Correlation Coefficient	p-value	No. of Obs.
Kendall Tau-b	0.852	0.000	1,000
Spearman's Rho	0.946	0.000	1,000

Source: Authors' Calculation

3.3 Determinants of financial inclusion in Indonesia

The computed financial inclusion index (FII) was used as a dependent variable to measure the impact of education on financial inclusion. The three other financial inclusion indicators used as dependent variables are account ownership at financial institutions (ACC), mobile or internet banking use (MOB), and borrowing from financial institutions (BOR). The analysis employed multiple linear regression (model 2) and logistic regression as the estimation model (model 1). Five control variables, including income, gender, employment status, age, and ID ownership, were also included. After testing the multicollinearity test, this study ensure that multi-collinearity was not an issue, indicating that the explanatory variables included in the regression model were independent each other. The Variance Inflation Factor (VIF) was below 1.97 and tolerance was above 0.57. Table 5 presents the multiple linear regression results with the financial inclusion index as a dependent variable.

In Table 5, education level significantly affects financial inclusion at 1% significance. Controlling for other variables, the result implies that individuals with secondary education have financial inclusion index about 0.096 points higher than those with primary education. Individuals that completed tertiary school have financial inclusion index about 0.277 points

higher than those with a primary level of education. This result shows that highly educated people are considered financially included. Also, a great difference in educational level may create a significant gap in financial inclusion. This finding corroborates previous studies highlighting the strong influence of education attainment on financial inclusion (Bhanot et al., 2012; Lusardi and Mitchell, 2014; Fungacova and Weil, 2015; Klapper et al., 2015; Sahoo et al., 2017). Many respondents are still uneducated, with 62.7% and only 3.3% having secondary and tertiary education, respectively. This means that around 40.6% of the respondents only stand below the primary education level. Education attainment associates with financial inclusion by improving knowledge. Skagerlund et al. (2018) showed the link between numeracy and cognitive reflection in attaining financial literacy. The results are line with Lusardi and Mitchell (2014), Klapper et al. (2015), Grohmann et al. (2015).

The findings show that the income of the middle (20%) and the richest (20%) significantly affects financial inclusion. Individuals in the middle 20% group or the richest 20% group are more likely to be financially included than those in the poorest 20% group. There is no difference in financial inclusion between men and women in Indonesia. However, individuals with working status have a higher financial inclusion index than the jobless. Age negatively and significantly influences financial inclusion. This indicates that financial inclusion reduces as people age, meaning that older adults are excluded financially.

Table 5. Determinant of Financial Inclusion Index

Independent Variables	Financial Inclusion Index	
	I	II
Education (Completed Secondary)	0.096*** (0.025)	0.066** (0.027)
Education (Completed Tertiary or more)	0.277*** (0.069)	0.229*** (0.069)
Income (second 20%)	0.054 (0.040)	0.049 (0.039)
Income (Middle 20%)	0.134*** (0.039)	0.124*** (0.039)
Income (Fourth 20%)	0.059 (0.039)	0.048 (0.039)
Income (Richest 20%)	0.154*** (0.037)	0.139*** (0.037)
Female	-0.015 (0.024)	0.006 (0.025)
Employment Status		0.111*** (0.026)
Age		-0.002*** (0.001)
ID Ownership		0.077 (0.052)
Constant	0.026 (0.035)	-0.007 (0.060)
Adjusted R2	0.055	0.083
F-statistics	8.315***	8.971***
Observation	1,000	1,000

Source: Authors' calculation. Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Reference or base group for education is those that completed primary education. Reference or base group for income is the poorest 20%. Reference or base group for female is male.

This study measured the relationship between education and three dimensions of financial inclusion, inclusion access, usage, and quality. The regression results in Table 6 show that education significantly influences the access and usage dimensions. Education level supports financial system accessibility because people with higher education have a higher score in the access dimension than those with only primary school education. Similarly, people with higher education attainment highly use financial products and services. These findings support Aterido et al. (2013), Agarwalla et al. (2015), Ghosh and Vinod (2017), Asuming et al. (2019, Ali et al. 2019, Hasan and Hoque (2021), Ndoya et al. (2021). Nevertheless, the analysis suggests no relationship between education and the quality dimension. To evaluate the quality dimension, two indicators were used to measure the financial institution's capacity to provide the customers' basic health and business needs. However, education level does not strongly predict the quality dimension.

Table 6. Determinant of Access, Usage, and Quality Dimension

Independent Variables	Access Dimension		Usage Dimension		Quality Dimension	
	I	II	III	IV	V	VI
Education (Completed Secondary)	0.040*** (0.005)	0.033*** (0.005)	0.022*** (0.005)	0.017*** (0.005)	0.006 (0.007)	0.000 (0.007)
Education (Completed Tertiary or more)	0.090*** (0.013)	0.080*** (0.013)	0.082*** (0.014)	0.074*** (0.014)	-0.004 (0.018)	-0.016 (0.018)
Income (second 20%)	0.005 (0.007)	0.005 (0.007)	0.006 (0.008)	0.006 (0.008)	-0.001 (0.010)	-0.003 (0.010)
Income (Middle 20%)	0.027*** (0.007)	0.025*** (0.007)	0.014* (0.008)	0.013 (0.008)	0.017 (0.010)	0.013 (0.010)
Income (Fourth 20%)	0.030*** (0.007)	0.028*** (0.007)	0.015** (0.008)	0.014* (0.008)	0.004 (0.010)	0.001 (0.010)
Income (Richest 20%)	0.045*** (0.007)	0.043*** (0.007)	0.039*** (0.008)	0.037*** (0.008)	0.011 (0.010)	0.005 (0.010)
Female	0.003 (0.004)	0.004 (0.005)	0.005 (0.005)	0.006 (0.005)	-0.008 (0.006)	-0.001 (0.006)
Employment Status		0.010** (0.005)		0.009* (0.005)		0.034*** (0.007)
Age		-0.001*** (0.000)		0.000*** (0.000)		0.000* (0.000)
ID Ownership		0.035*** (0.010)		0.022** (0.011)		0.026* (0.013)
Constant	0.006 (0.006)	-0.003 (0.011)	0.008 (0.007)	0.004 (0.012)	0.047*** (0.009)	0.019 (0.015)
Adjusted R2	0.162	0.184	0.083	0.093	0.001	0.045
F-statistics	28.600***	23.452***	13.898***	11.195***	1.163	4.649***
Observation	1,000	1,000	1,000	1,000	1,000	1,000

Source: Authors' calculation. Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Reference or base group for education is those who completed up to primary education. Reference or base group for income is the poorest 20%. Reference or base group for female is male.

This study estimated the affinity between education level and financial inclusion using account ownership at financial institutions, mobile or internet banking, and borrowing from financial institutions in the past 12 months. The logistic regression results in Table 7 show that education significantly determines account ownership at financial institutions, the use of mobile or internet banking, and borrowing in the past 12 months. These results support Soumare et al. (2016), Lyons and Kass-Hanna (2019), and Dar and Ahmed (2020). People with tertiary

education level are twice more likely to have accounts at financial institutions and 1.8 times more likely to use mobile or internet banking, significant at 1% and 5%, respectively. This is because they are financially literate and have sufficient knowledge than people below the primary education level. Moreover, people with secondary and tertiary levels of education are 0.4 and 0.7 times more likely to borrow from financial institutions in the past 12 months, significant at 10%. It is important to note that the borrowing values increases with employment status. At 1% significance, working people are 0.6 times more likely to get loans at financial institutions than the unemployed. This may imply that working people may have greater demands and be faced with the decision to borrow money from banks regardless of their education level, income, gender, and age. Basic literacy obtained at school is more likely to increase the understanding and knowledge of finance. However, other factors may critically contribute to further financial decisions (Taylor and Wagland, 2013).

Table 7. Determinant of Account Ownership, The Use of Mobile or Internet Banking, and Borrowing from Financial Institution

Independent Variables	Account Ownership		The Use of Mobile or Internet Banking		Borrowing from Financial Institution in the past 12 months	
	I	II	III	IV	V	VI
Education (Completed Secondary)	1.020*** (0.145)	0.933*** (0.154)	1.508*** (0.536)	0.992* (0.554)	0.469** (0.189)	0.455** (0.201)
Education (Completed Tertiary or more)	2.349*** (0.556)	2.187*** (0.560)	1.880*** (0.674)	1.357** (0.694)	0.815* (0.432)	0.725* (0.440)
Income (second 20%)	0.244 (0.231)	0.233 (0.234)	1.135 (0.826)	1.077 (0.835)	-0.299 (0.320)	-0.316 (0.323)
Income (Middle 20%)	0.816*** (0.227)	0.767*** (0.229)	1.223 (0.788)	1.353* (0.796)	0.502* (0.279)	0.421 (0.282)
Income (Fourth 20%)	0.780*** (0.225)	0.724*** (0.228)	1.683** (0.773)	1.773** (0.781)	0.460* (0.278)	0.388 (0.281)
Income (Richest 20%)	1.262*** (0.218)	1.185*** (0.220)	1.370* (0.758)	1.492** (0.766)	0.189 (0.272)	0.058 (0.275)
Female	0.150 (0.139)	0.220 (0.148)	0.045 (0.263)	-0.210 (0.288)	-0.004 (0.168)	0.153 (0.177)
Employment Status		0.352** (0.151)		0.010 (0.313)		0.610*** (0.198)
Age		-0.007 (0.005)		-0.052*** (0.013)		0.003 (0.007)
ID Ownership		0.928*** (0.330)		1.630 (1.096)		1.186* (0.621)
Constant	-1.36*** (0.395)	-2.126*** (0.388)	-4.213 (0.885)	-3.489** (1.398)	-2.012 (0.265)	-0.369 (0.674)
Nagelkerke R2	0.164	0.185	0.084	0.151	0.033	0.063
Wald	3.360	3.360	146.556	146.556	326.679	326.679
Observation	1,000	1,000	430	430	997	997

Source: Authors' calculation. Note: *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Reference or base group for education is those who completed up to primary education. Reference or base for income is the poorest 20%. Reference or base group for income is the poorest 20%. Reference or base group for female is male.

Conclusion

This study examined the critical role of education in enhancing financial inclusion in Indonesia using micro-level data from the Global Findex 2017 database. The results showed that Indonesia's financial inclusion is still low. It can be shown by the low score of the financial inclusion index. However, educational attainment significantly affects financial inclusion. The study used four indicators: computed financial inclusion index (FII), account ownership, mobile or internet banking, and borrowing from financial institutions in the past 12 months. The estimation models showed that financial inclusion increase with education. People with secondary education have financial inclusion index 0.096 points higher than those with primary education. Furthermore, people with tertiary education have financial inclusion index 0.277 points higher than those with primary education. It indicates that highly educated people are considered financially included. The significant difference in educational level may create a sizeable financial inclusion gap. Education could support the access and usage of financial institutions but does not affect the quality dimension. Moreover, education significantly determines account ownership at financial institutions, mobile or internet banking use, and borrowing from financial institutions in the past 12 months. Encouraging more people to attain higher education would increase financial inclusion and contribute to Indonesia's national development.

Some limitations of this research can be drawn as follows. First, the selection of indicators in each dimension and the equal weighting approach are arbitrary in nature. Thereby, another statistical method of weighting and aggregation may be applied for further research in order to identify the substantial indicators and measure the financial inclusion index in more detail. In addition, Second, since this study uses only individual level covariates, further research may be conducted by including macro-level variables to understand the financial inclusion in comprehensive way. Third, it is also may be more useful to estimates the financial inclusion in Indonesia based on location, such as rural-urban area, inter- or intra-regional, and inter- or intra-provincial, in order to identify the gap between areas or regions. Further investigation is needed to find out this case.

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