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What Determines Financial Inclusion? Evidence from the ASEAN-5 Countries

(Apakah faktor yang menentukan keterangkuman kewangan? Bukti daripada Negara-negara ASEAN-5)

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ABSTRACT

This study intends to analyze the explanatory variables associated with financial inclusion. We draw on the individual-level data of the ASEAN-5 countries from the Global Findex and World Development Indicators databases. The study period is before the COVID-19 pandemic in 2017 and after the pandemic in 2021, and the sample comprises 10,072 observations. The factors and characteristics influencing financial inclusion, namely, age, income, education, employment, mobile ownership, distance to formal institutions, religious reasons, and trust in formal institutions, differ between the two periods and between the countries in the sample. The gender-related gap in financial inclusion in the ASEAN-5 countries has narrowed by 6% compared with that before the COVID-19 pandemic. The positive and negative relationships of gender and its impact on the determinants of financial inclusion before the pandemic are related to Hofstede's national culture theory, specifically the masculinity versus femininity dimension. In Indonesia and the Philippines, gender had a positive relationship with financial inclusion, but in Thailand, it had a negative relationship with financial inclusion before the pandemic. However, during the COVID-19 pandemic, gender was no longer a determinant of financial inclusion in the ASEAN-5 countries. This research provides a comprehensive analysis by conducting trend analysis and presents the regression results by using a probit regression model to analyze the components that may impact financial inclusion in the advanced and developing ASEAN-5 countries. This research uses difference-in-differences models for robustness testing.
The findings offer meaningful insights for policymakers, particularly the government, to gain a deep understanding of the changing key variables of financial inclusion across the ASEAN-5 countries.

Keywords: Financial inclusion; ASEAN-5; determinants

ABSTRAK

Kajian ini bertujuan untuk menganalisis faktor-faktor utama yang mempengaruhi keterangkuman kewangan. Kami menggunakan data individu dari negara-negara ASEAN-5 yang diperoleh daripada Global Findex dan pangkalan data WDI (World Development Indicators). Tempoh kajian merangkumi sebelum pandemik COVID-19 pada tahun 2017 dan selepas pandemik pada tahun 2021, dengan jumlah sebanyak 10,072 pemerhatian. Faktor dan ciri-ciri yang mempengaruhi keterangkuman kewangan (financial inclusion) berbeza antara dua tempoh tersebut dan antara negara dalam sampel, termasuk umur, pendapatan, pendidikan, pekerjaan, pemilikan telefon bimbit, jarak ke institusi kewangan formal, tujuan keagamaan, dan tahap kepercayaan terhadap institusi formal. Jurang keterangkuman kewangan berkaitan gender di rantau ASEAN-5 telah mengecil sebanyak 6% berbanding sebelum pandemik COVID-19. Kami juga mendapati bahawa hubungan positif dan negatif berkaitan gender dan kesannya terhadap penentu keterangkuman kewangan sebelum pandemik adalah berkaitan dengan teori budaya nasional Hofstede, khususnya dimensi maskuliniti versus femininiti. Di Indonesia dan Filipina, gender mempunyai hubungan positif dengan keterangkuman kewangan, manakala di Thailand, hubungan tersebut adalah negatif sebelum pandemik. Walau bagaimanapun, semasa pandemik COVID-19, gender tidak lagi menjadi penentu keterangkuman kewangan bagi negara-negara ASEAN-5.Kajian ini menyediakan analisis yang menyeluruh dengan menjalankan analisis tren dan membentangkan hasil regresi menggunakan model regresi probit, yang menganalisis komponen-komponen yang mempengaruhi keterangkuman kewangan di negara maju dan membangun dalam ASEAN-5. Kami juga menggunakan model Difference-in-Differences (DID) bagi tujuan pengujian kekukuhan. Penemuan kajian ini menawarkan pandangan yang bermakna kepada pembuat dasar, terutamanya pihak kerajaan, dalam memahami secara mendalam perubahan pemboleh ubah utama yang berkaitan dengan keterangkuman kewangan di negara-negara ASEAN-5.

Kata kunci: Rangkuman kewangan; ASEAN-5; penentu

JEL: G21, G28, N15, J10, P50, Z10
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INTRODUCTION

Since the financial crisis of 2008, financial inclusion has become an increasingly important topic of discussion. Financial inclusion is instrumental in decreasing poverty, improving well-being, and increasing financial risk awareness (Demirguc-Kunt et al. 2018). In addition, financial inclusion can drive economic growth (Angadi 2003; Sharma 2016) through the provision of financial services, such as savings, payment system facilities that can facilitate transactions, and effective risk management (Demirgüç-Kunt et al. 2013).

The Asian Development Bank (2020) defines financial inclusion as the process of making formal financial services and products available and accessible to all individuals. According to the World Bank (2022), since 2010, over 55 countries have dedicated themselves to achieving financial inclusion, with over 60 countries having developed or enhanced their national financial inclusion strategies. The period from 2011 to 2014 saw a rise in global bank account ownership from 51% to 62%, which suggests improved access to formal financial services, despite the significant gender and geographical disparities (Demirguc-Kunt et al. 2015; Demirgüç-Kunt & Klapper 2012). Thus, many studies and organizations have delved deeply into the factors contributing to financial inclusion.

At the ASEAN Summit 2023 held in Indonesia, it was mentioned that the ASEAN countries face significant challenges in addressing financial exclusion, particularly for users of small and medium-sized enterprises (SMEs; Tempo.co 2023). This is because SMEs are important in boosting the economic growth of the ASEAN countries. In Indonesia, SMEs contribute 61% to the GDP and create around 90%–97% of new job opportunities and thus help absorb the workforce in the country (Tempo.co 2023). In Thailand, over 3 million companies, or 99.7% of the total, are SMEs, and the remaining 0.3% are large enterprises (OSMEP 2015, 2018, 2019). This number is similar to that in Malaysia, where SMEs represent 98.5% of all businesses and contribute 37.1% to the country's GDP (Hashim et al. 2023).

This research focuses on identifying the essential factors shaping financial inclusion in the ASEAN-5 countries. This study selects this region to represent the diverse demographic conditions and different development levels across the ASEAN countries. Furthermore, this study on financial inclusion is conducted by using the ASEAN sample countries, because financial inclusion is an important target for the ASEAN countries by 2025 to reduce the average financial exclusion rate from 44% to 30% (ASEAN Indonesia 2023). This research utilizes data from the Global Findex and covers the period before (2017) and during the COVID-19 pandemic (2021) to investigate whether significant differences exist between the two periods.

This study adds to the academic discourse on financial inclusion by offering quantitative insights into the factors impacting financial inclusion in the ASEAN-5 countries, which have been relatively unexplored by previous research. Previous research on financial inclusion was conducted in various regions, such as Asuming et al. (2019), who explored the key factors affecting financial inclusion in Sub-Saharan Africa; Soumaré et al. (2016), who explored financial inclusion in Central and West Africa; and Trung and Quynh (2022), who examined Asia. Meanwhile, other researchers examined financial inclusion within the boundaries of individual countries, such as India (Dar & Ahmed 2020; Lotto 2018; Raichoudhury 2020), Tanzania (Lotto 2018), Kenya and Ethiopia (Bekele 2023), Nigeria (Ozili 2020) and Saudi Arabia (Shabir & Ali 2022).

The paper is divided into five sections. The first part focuses on the concept of financial inclusion. The second section reviews the literature, highlighting global trends and key factors influencing financial inclusion. Section three provides an overview of the data, variables, and econometric model employed in the study. The fourth section displays the research outcomes, and the concluding section discusses the implications and summarizes the study's conclusions

REVIEW OF RELATED LITERATURE

DEVELOPMENT AND TRENDS OF FINANCIAL INCLUSION

Global financial inclusion trends have evolved rapidly in recent years. Financial inclusion is defined as the ease with which people can access financial services (Ong et al. 2023). According to Demirguc-Kunt et al. (2017), the aggregate number of adults with a bank account in 2017 reached 69% of the total population, which is equivalent to approximately 515 million people. This statistic indicates the increasing trend in account ownership by 18% from 2011. Demirgüç-Kunt and Klapper (2012) found several indicators for measuring financial inclusion, including account ownership, savings and borrowing activities, and account usage frequency. The authors' research in 2011 showed that around 50% of adults aged 15 years or older in 148 countries possessed an account at an established financial institution.

Demirguc-Kunt et al. (2017), identified that women are facing structural inequality compared to men in the context of formal financial services, largely due to gender norms that limit their ability to enter into contracts, including setting up

accounts to manage their finances. In Indonesia, adults without accounts, both in financial institutions and banks, are typically from low-income households. In addition, the geographical distance between their residences and financial institutions is one of the obstacles they face. Approximately 33 percent of adults remain unbanked because of the long distances to financial institutions. On the other hand, in Malaysia, more than 70 percent of the population has had bank accounts since 2014. Furthermore, they have also been using their accounts for digital transactions, leading to a significant increase in digital transaction trends, albeit not on a massive scale. In the Philippines, bank account ownership is lacking for 41 percent of the population. Several individuals also mention that financial institutions in the city are too far away, hindering their access to financial services. The Philippines is also one of the countries where sending and receiving money is done primarily in cash through Over-the-Counter (OTC) services. Conversely, based on Demirguc-Kunt et al. (2017), more than 70% of Thai adults had bank accounts in 2014. Thai citizens have also been using their accounts for digital payments, with an overall increase of up to 62%.

Formal financial service access can contribute to economic growth, enhance stability, and support the long-term sustainability of a community (Ahiase et al. 2024). Allen et al. (2016) conducted a worldwide study on personal attributes and discovered that socioeconomic advantages such as wealth, education, age, employment, and urban residence can significantly increase the likelihood of individuals accessing, saving with, and borrowing from formal financial institutions. By contrast, Morgan (2014) observed that countries with a low-income population generally lack access to formal financial systems. Financial inclusion is viewed as a key factor for advancing economic development and alleviating poverty (Asuming et al. 2019). Kien et al. (2023) reinforced this idea further and stated that the development of financial inclusion is a primary goal for emerging countries because it can improve the economy and ultimately reduce poverty.

DETERMINANTS OF FINANCIAL INCLUSION

Financial inclusion broadly pertains to individuals' participation in established financial services. Financial inclusion is related to having an account at a formal financial institution (Zins & Weill 2016). Individual socioeconomic traits, such as gender, age, education level, income, and workforce involvement, and the geographic setting, may significantly impact financial inclusion. Aterido et al. (2013) found that women have a lower probability than men to participate in formal financial services primarily because of gender norms that hinder their ability to enter into contracts, including opening an account to manage their income (Demirgüç-Kunt et al. 2013).

Apart from that, the lack of other family members with accounts plays a role in financial inclusion (Le et al. 2019). According to Le et al. (2019), women with bank accounts are significantly fewer in number compared to men in developing countries. Conversely, Allen et al. (2016) found that individuals aged 25 to 64 are more prone to have accounts with formal financial institutions than those aged 65 and above, both in developed and developing nations. This occurs because the elderly often hesitate to engage with formal financial services because of their lack of familiarity with them (Fungáčová & Weill 2015). The primary issues for the elderly in accessing financial services are distance, costs, and trust (Zins & Weill 2016).

The demographic that is most likely to save money is the working-age population, which is typically aged 25–64 years (Soumaré et al. 2016). The working-age population has an income, which allows them to save and can access lending services from financial institutions (Soumaré et al. 2016). Le et al. (2019) found that in countries with a middle-to-high-income population, this can positively affect the advancement of financial inclusion.

Conversely, Ghosh and Vinod (2017) demonstrated that, for women, financial inclusion may be hindered by low levels of income and education. In developing countries, highly educated individuals generally have an account, whereas those with basic or low levels of education do not (Allen et al. 2016). Furthermore, Allen et al. (2016) argued that individuals with low-to-middle income, young individuals, and those residing in rural areas typically struggle economically and thus have limited participation in formal financial services. Rural and low-income populations face barriers to digital technology usage because of their limited digital literacy and poor network connectivity (Ong et al. 2023). Soumaré et al. (2016) found that, among women residing in a rural area, the frequency of using an account at a formal financial institution tends to be low. Therefore, this research focuses on individual characteristics that can influence financial inclusion.

METHODOLOGY

DATA

This study utilizes individual-level microdata from the Global Financial Inclusion (Global Findex) database for 2017 and 2021, which are sourced from the World Bank (Demirguc-Kunt et al. 2018; Demirgüç-Kunt et al. 2022). The Global Findex database consists of data provided by the World Bank gathered through surveys. The database encompasses over 200 indicators from survey data from approximately 150,000 individuals in more than 144 countries (2017 database) and approximately 145,000 individuals in 139 countries (2021 database), representing approximately 97% of the global population. We select two database periods for comparison: before the COVID-19 pandemic in 2017 and after the COVID-19 pandemic in 2021. We also draw on the WDI database for the infrastructure data.

The survey respondents are chosen based on specific criteria: individuals aged 15 years or older who are civilians and do not reside in an institution. The data indicators to be collected are structured based on the standardized questionnaires

distributed in the surveyed countries, making the data indicator comparison across the nations easy. In this study, we limit the data to our primary research focus, that is, the ASEAN-5 countries, namely, Indonesia, Malaysia, the Philippines, Singapore, and Thailand, which resulted in 10,072 observations.

DEPENDENT VARIABLES

In this study, there are three dependent variables, all of which are dummy variables used as measures of financial inclusion (*FINCLUSION*), including *ACCOUNT*, *SAVED*, and *BORROWED*. We have defined these three financial inclusion measurement variables by the definitions provided in the microdata codebook for individual-level data from the Global Findex (World Bank 2021). The variable *ACCOUNT* is defined as having a value of 1 if the respondent has a bank or financial institution account and/or a debit card, while it has a value of 0 if the respondent does not have an account. The variable *SAVED* is assigned a value of 1 if, in the past year, the respondent has saved their money either through a financial institution, mobile money, savings groups other than with family members, or for other reasons, where a value of 0 signifies that the respondent did not engage in saving money during the past year. Lastly, the variable *BORROWED* is given a value of 1 if, in the past year, the respondent borrowed money either individually or with others with a bank or financial institution, or through a mobile account from family or friends, or from other informal group savings, or for other reasons, while it has a value of 0 if the respondent did not borrow money in the past year.

EXPLANATORY VARIABLES

Several variables are incorporated into the analysis as the explanatory inputs. First, *GENDER* is a dummy variable that represents the respondent's gender. For the *GENDER* variable, female and male are represented as 1 and 0, respectively. Second, *AGE* is continuous data that provides the respondent's age in years based on the Global Findex database. Third, *EDUCATION* is another categorical variable indicating the respondent's level of education. The *EDUCATION* variable takes on a value of 1 if the respondent is a graduate or has not completed primary school, 2 if the respondent has completed middle school or higher, and 3 if the respondent is a college graduate or higher. Fourth, the *INCOME* variable indicates the income group or the wealth level of the respondent. *INCOME* is divided into five levels that is, the poorest, second, middle, fourth, and richest. Fifth, *EMPLOYMENT* is a dummy variable that reveals whether or not the respondent is part of the workforce. The employed respondents are given the value of 1, whereas the unemployed respondents are assigned the value of 2. We use the *MOBILE* (Nyarko et al. 2023) and *FAR* variables as a proxy for infrastructure. Moreover, the financial inclusion determinants may be influenced by culture (Anyangwe et al. 2022); therefore, we use several variables as a proxy for culture, namely, *RELIGION* and *TRUST*. Detailed information on the explanatory and outcome variables explored in this study is summarized in Table 1.

ECONOMETRIC MODEL

We employ the following economic modeling framework to determine the determinants of financial inclusion in the ASEAN-5 countries:

$$FINCLUSION = \alpha + \beta_1\, GENDER + \beta_2\, AGE + \beta_3\, EDUCATION + \beta_4\, INCOME + \beta_5\, EMPLOYMENT + \varepsilon, \quad (1)$$

Where *FINCLUSION* represents financial inclusion, which serves as the dependent variable and is quantified by using three indicators, namely, *ACCOUNT*, *SAVED*, and *BORROWED*; *GENDER* indicates the respondent's gender; *EDUCATION* reflects the respondent's level of education; *INCOME* shows the respondent's wealth group; and *EMPLOYMENT* signifies the respondent's employment status. We use a probit regression model to analyze this econometric specification, given that our dependent variable is dichotomous (Agresti 2006; Efobi et al. 2014). In addition, the regression analysis employs robust standard errors, which can mitigate potential biases that may affect the regression results (Wooldridge 2016).

TABLE 1. Variable definitions

Variable	Description
ACCOUNT	The number of respondents who have bank accounts, either in formal financial institutions or mobile accounts, or possess a debit card. Value 1 if yes, and 0 if they do not have one.
SAVED	The number of respondents who saved money in the past year, either in formal financial accounts, mobile accounts, savings groups outside of their family, and so on. Value 1 if yes, value 0 if no.
BORROWED	A variable representing respondents who had borrowed funds in the past year, either from formal financial accounts, mobile accounts, family or friends, or other sources. Value 1 if yes, value 0 if no.
GENDER	Survey respondents' gender. Value 1 if female, value 2 if male.
AGE	A group variable ranging from 0 to 4 denotes the respondent's age in years: 0 for respondents aged 15-24 years, 1 for respondents aged 25-34 years, 2 for respondents aged 35-44 years, 3 for respondents aged 45-54 years, and 4 for respondents aged 55 years and above.
EDUCATION	An education level category variable. Value 1 if a graduate or did not complete primary school, value 2 if a middle school or higher graduate, and value 3 if the respondent is a college graduate or higher.
INCOME	An income group category variable. The variable is divided into 5 quintiles, including the poorest, poorer, middle, richer, and richest categories.
EMPLOYMENT	A dummy variable indicates whether the respondent is part of the workforce or not. The variable is marked as 1 for employed individuals and 0 for those who are not.

FINSTITUTION	A binary variable taking the value of 1 if the respondent has an account with a formal financial institution (bank, microfinance institution, or cooperative) or holds a debit card, and 0 if they do not.
DIGPAYMENT	A categorical variable assigned a value of 1 if the respondent used a debit card, credit card, or mobile money to make purchases at physical or online stores in the past year.
MOBILE	A specific country variable that indicates mobile subscribers per 100 people as a proxy for digital infrastructure in the country.
FAR	A binary variable, taking a value of 1 if the respondent does not have an account for reasons other than the formal institution's distance, and 0 otherwise.
TRUST	A binary variable assigned a value of 1 if the respondent does not have an account due to distrust in the formal institution, and 0 otherwise.
RELIGION	A binary variable takes a value of 1 if the respondent is without an account for non-religious reasons, and 0 otherwise.

RESULTS AND DISCUSSION

DESCRIPTIVE STATISTICS

Before conducting regression analysis, we display the research's descriptive statistics, which can be seen in Table 2, to understand the data distribution within the study. This entails evaluating each variable by looking at its mean, standard deviation, as well as its minimum and maximum values. In addition, we provide the correlation analysis results in Table 3 to detect the presence of multicollinearity symptoms. If high correlations are found among variables, it can potentially introduce bias into the regression analysis results.

TABLE 2. Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min.	Max.
ACCOUNT	10,072	0.759	0.428	0	1
SAVED	10,072	0.677	0.468	0	1
BORROWED	10,072	0.497	0.500	0	1
FEMALE	10,072	1.510	0.500	1	2
AGE	10,072	2.075	1.416	0	4
EDUCATION	10,072	1.938	0.686	1	3
INCOME	10,072	3.170	1.433	1	5
EMPLOYMENT	10,072	0.689	0.463	0	1
MOBILE	10,072	145.945	17.337	112.398	171.415
FAR	10,072	0.898	0.302	0	1
RELIGION	10,072	0.974	0.160	0	1
TRUST	10,072	0.228	0.420	0	1

Table 1 reveals that the dependent variable *FINCLUSION* is measured with the dummy variables *ACCOUNT, SAVED*, and *BORROWED*. *ACCOUNT* has a mean of 0.759 and a standard deviation of 0.428, which range from 0 to 1. This result suggests that about 76% of the population has an account at a formal financial institution or a mobile service, which is a relatively high percentage. *SAVED* shows a mean of 0.677 and a standard deviation of 0.468, which indicates that roughly 68% of the population saved money with a formal financial account, a mobile account, or a savings group. Meanwhile, *BORROWED* has a mean of 0.497 and a standard deviation of 0.500, which signifies that around 50% of the population borrowed money from a formal financial institution, a mobile account, or informal sources, such as their family and friends.

The other independent variables include *FEMALE*, *AGE, EDUCATION, INCOME*, and *EMPLOYMENT*. Based on Table 1, the *FEMALE* variable has an average of 1.510, the standard deviation is 0.500, and it ranges from 1 to 2. It means that the majority of respondents are female. Next is the variable *AGE*, which has an average value of 2.075, and a standard deviation equal to 1.416, with a minimum value of 0 and 4 a maximum value. This reveals that the respondents' average age in the study is a range of 35-44 years old, or adult age. The variable *EDUCATION* has an average value of 1.938 and a minimum value of 1 with a maximum value of 3. This means that the majority of respondents are middle school or higher graduates. Next is the variable *INCOME*, which has an average value of 3.170, and its value varies from 1 to 5. This means that the average respondent falls into the category of a group with a moderate income. The last variable is *EMPLOYMENT*, which has an average value of 0.689, and it ranges between a minimum of 0 and a maximum of 1. This means that the research respondents are either part of the workforce or employed. It also shows that the average number of mobile subscribers (*MOBILE*) in ASEAN-5 is 146 per 100 people. Then, the rest of our variables, *FAR, RELIGION*, and *TRUST*, the data indicate that, on average, respondents in ASEAN-5 do not face issues with distant formal institutions, are not influenced by religious reasons for not having an account, and generally trust formal institutions in their respective countries.

Table 3 also indicates that the data used in this study are free from multicollinearity problems. The correlation test revealed that several variables have low correlations, below 0.7, which means that they do not need to be separated during regression analysis as they do not introduce bias.

TABLE 3. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) FEMALE	1								
(2) AGE1	0.0261	1							
(3) EDUCATION	-0.0226	-0.2693	1						
(4) INCOME	0.0251	-0.0799	0.3344	1					
(5) EMPLOYMENT	0.0218	-0.0563	0.1917	0.1508	1				
(6) MOBILE	0.0503	0.1039	-0.0555	0.0267	0.0767	1			
(7) FAR	0.0239	0.0313	0.1618	0.1173	0.0459	0.1564	1		
(8) RELIGION	0.0077	0.0096	0.0936	0.0481	0.0181	0.1231	0.2707	1	
(9) TRUST	0.0046	-0.0851	-0.2247	-0.128	-0.1383	-0.1835	-0.403	-0.1029	1

TREND ANALYSIS

Before conducting regression analysis, our study involved a trend analysis to investigate the aspects of financial inclusion in the ASEAN-5 countries, which are depicted in Figures 1 to 3. Figure 1 highlights the distribution of accounts based on account ownership type. We divided the account ownership types based on gender from three financial inclusion indicators and then divided them into periods before and during the COVID-19 pandemic. It is apparent that, over the period before the COVID-19 pandemic, male individuals had fewer account ownerships compared to females. However, during the pandemic, the number of male account owners improved and exceeded that of female account owners. Additionally, having a financial account was the dominant financial inclusion indicator, surpassing indicators such as *SAVED* and *BORROWED*. In the period before the pandemic, 2,023 financial accounts were owned by females in the ASEAN-5 region, compared to only 1,540 owned by males. During the same period, females tended to be more dominant in saving and borrowing money. The situation changed during the COVID-19 pandemic, with males becoming more predominant in financial aspects such as account ownership, saving money, and borrowing money compared to females. The decrease in the number of female accounts is related to the fact that approximately 31% of females are more likely to have inactive accounts than males (Kelly 2022).

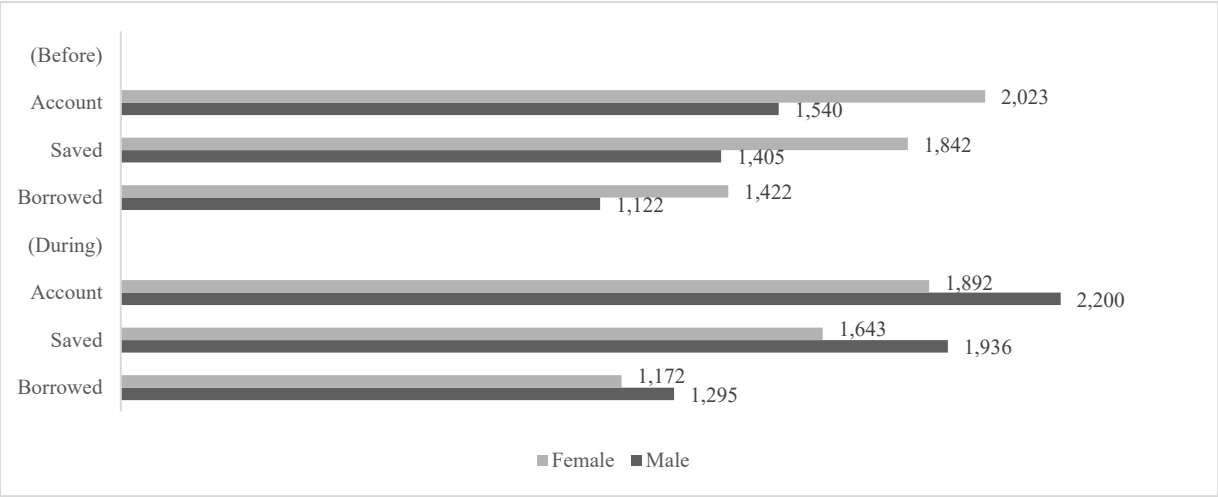

FIGURE 1. Number of accounts by account ownership type

Figure 2 displays account ownership based on each country, categorized by gender and the COVID-19 pandemic period. It can be seen in the figure that Singapore has the highest account ownership, which is not surprising given that Singapore has a financial inclusion index among the highest in the other four countries, with a 98% account ownership coverage among adults (Demirgüç-Kunt et al. 2022). Thailand ranks second in account ownership, followed by Malaysia, Indonesia, and the Philippines. Furthermore, it can be observed that, overall, during the pandemic, the number of male account owners in the ASEAN-5 countries experienced an increase, nearly equalizing the number of female account owners, thus significantly reducing gender inequality. The gap in account ownership between genders in ASEAN-5 countries has diminished from a 13.5% gap to 7.5%, marking a 6% decrease during the COVID-19 pandemic. This is confirmed by the World Bank's report in 2021, which reported a decrease in the gender imbalance in account ownership from 9% to 6% in emerging economies, resulting from engagement with digital financial services (World Bank 2022a). Empirical evidence from Lu et al. (2024) shows that digital financial inclusion significantly improves financial well-being and helps households alleviate poverty. Moreover, digital instruments such as mobile money further enhance financial inclusion, especially among farmers, by facilitating their daily transactions (Abdul-Majid et al. 2024).

Figure 3 provides information on account ownership by age group in each of the ASEAN-5 countries. We divide the age groups into six categories to offer detailed insights into financial inclusion among the respondents of different ages. The age of the individuals with a financial account varies in each country. In Singapore, which has the highest financial inclusion penetration, over 90% (P.J. Morgan 2022) of account ownership is dominated by individuals in the 35–44-year age group, with a small percentage of account ownership being attributed to the 15–24-year age category. Similarly, in Thailand and Indonesia, the majority of account ownership can be attributed to the 35–44-year age group. Meanwhile, in Malaysia and the Philippines, the dominant account ownership age group is 25–34 years. A small percentage of account ownership can be attributed to the age category of 65–99+ years, which applies to Indonesia, the Philippines, and Malaysia. This finding aligns with reports from the OECD, indicating that, in most countries, account ownership, particularly bank and savings accounts, is predominantly held by young people, rather than older people (OECD 2020).

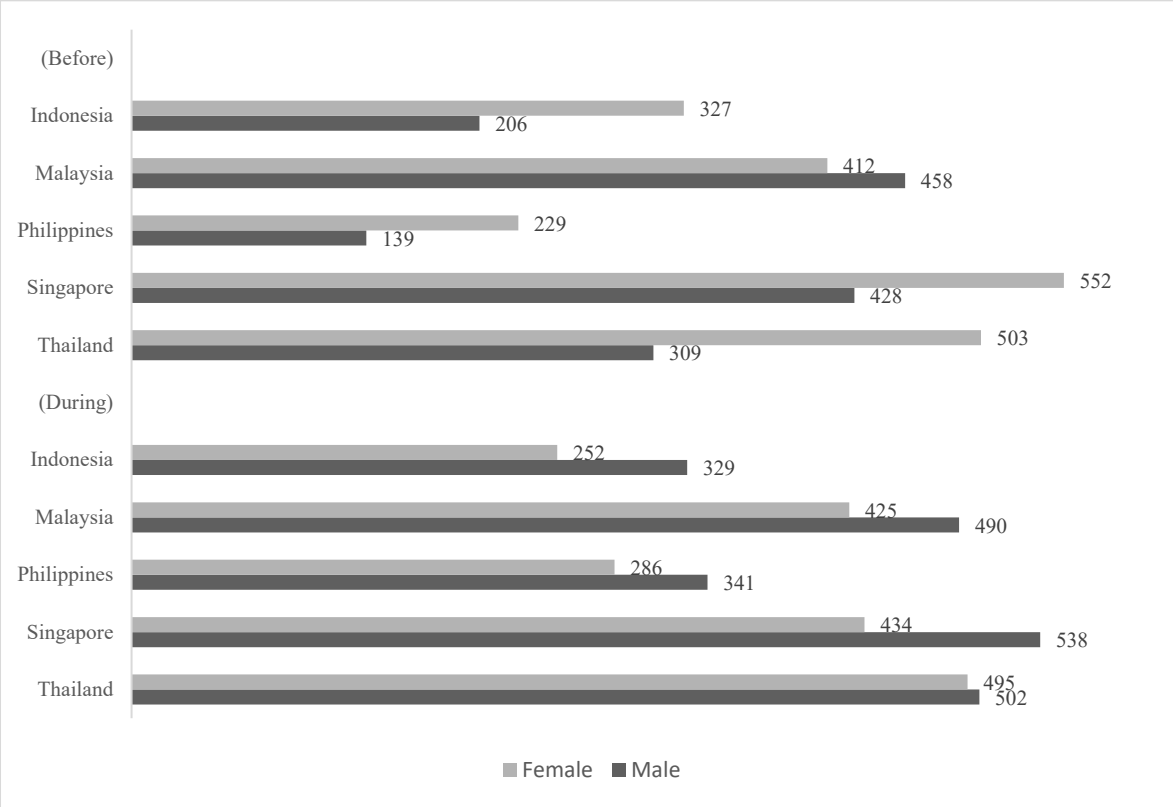

FIGURE 2. Account ownership by country

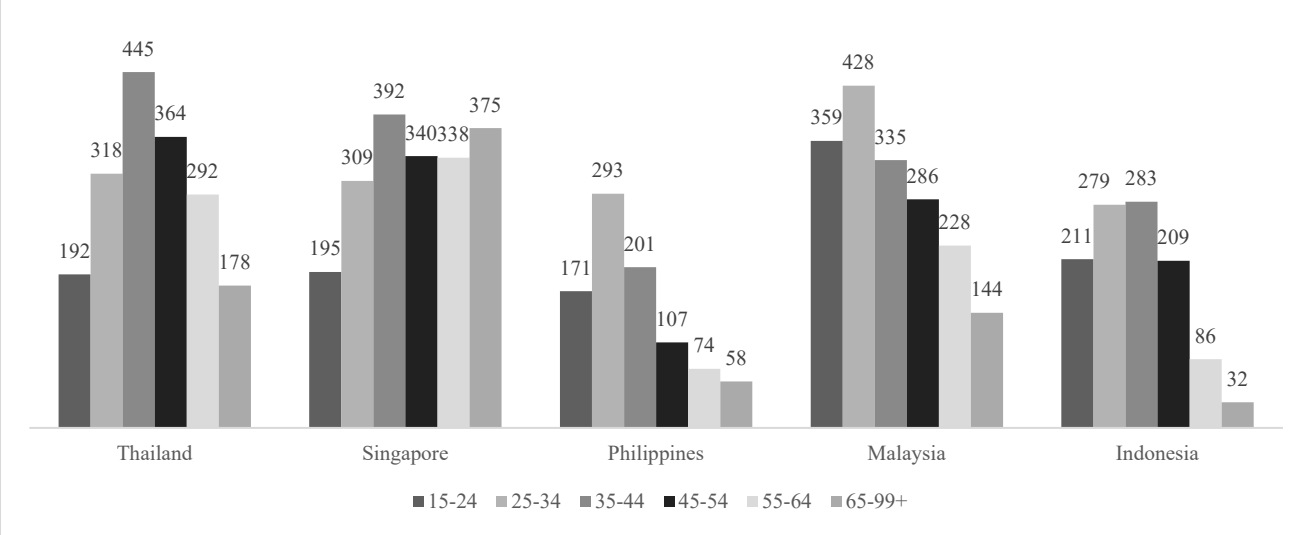

FIGURE 3. Account ownership by age category

BASELINE REGRESSION

Probit regression analysis is conducted to examine the primary factors influencing financial inclusion across the ASEAN-5 region. The statistical findings from the regression analysis are detailed in Table 4. *FINCLUSION* is the dependent variable that measures financial inclusion by using three indicators. The regression results, with *ACCOUNT* as the independent variable, are shown in Column (1). Column (2) uses SAVED, and Column (3) uses *BORROWED* as the indicator.

The results indicate that the *GENDER* variable is insignificant as a determinant of financial inclusion for all models, including *SAVED* and *BORROWED*. This implies that, overall, the population's habits of possessing an account or engaging in saving activities (*SAVED*) and borrowing money (*BORROWED*) through financial accounts in formal financial institutions or mobile accounts in ASEAN-5 countries are not significantly influenced by gender. This finding confirmed the insights gained from the trend analyses, indicating a contraction of gender inequality in financial inclusion among ASEAN-5 countries. This narrowing of gender gaps may be attributed to the increasingly technological advancements in the financial

sector, helping individuals access financial services more easily (Breza et al. 2021; Demir et al. 2022; Demirguc-Kunt et al. 2018).

TABLE 4. Baseline regression

	(1)	(2)	(3)
FINCLUSION	*ACCOUNT*	*SAVED*	*BORROWED*
GENDER	0.0129	0.00577	0.0320
	(0.30)	(0.21)	(1.24)
AGE (25–34 years)	0.221***	0.00736	0.249***
	(3.12)	(0.16)	(5.87)
AGE (35–44 years)	0.0727	-0.143***	0.257***
	(1.06)	(-3.10)	(6.00)
AGE (45–54 years)	0.0483	-0.136***	0.160***
	(0.65)	(-2.82)	(3.57)
AGE (55+ years)	-0.0632	-0.302***	-0.160***
	(-0.94)	(-6.55)	(-3.70)
INCOME (Poorer)	0.0368	0.137***	0.00414
	(0.54)	(3.08)	(0.09)
INCOME (Middle)	0.0800	0.248***	0.118***
	(1.19)	(5.62)	(2.74)
INCOME (Richer)	0.216***	0.426***	0.0993**
	(3.03)	(9.48)	(2.32)
INCOME (Richest)	0.272***	0.523***	0.109**
	(3.91)	(11.54)	(2.54)
EDUCATION	0.336***	0.290***	0.198***
	(8.50)	(12.14)	(8.94)
EMPLOYMENT	0.304***	0.334***	0.402***
	(9.58)	(11.16)	(13.77)
MOBILE	0.0114***	0.00416***	0.00258**
	(6.00)	(3.11)	(1.97)
FAR	0.941***	0.00194	-0.0409
	(11.12)	(0.04)	(-0.83)
RELIGION	0.673***	0.125	-0.0832
	(4.43)	(1.45)	(-0.96)
TRUST	-2.213***	-0.524***	-0.191***
	(-46.18)	(-13.88)	(-5.08)
_CONS	-2.862***	-1.163***	-1.043***
	(-8.60)	(-5.14)	(-4.71)
N	10,072	10,072	10,072
Country fixed effects	Yes	Yes	Yes

Note: This table provides the probit regression results by using Equation (1). The dependent variable is *FINCLUSION* (*ACCOUNT, SAVED, BORROWED*). Refer to Table 1 for the definition of the variables. Each regression includes the country effects and the robust standard errors, shown in parentheses. The significance levels are represented by ***, **, and *, corresponding to 1%, 5%, and 10%, respectively.

The next variable is *AGE*. All the age categories significantly influence the inclusive financial account variable, with a 1% level of significance. This finding demonstrates that ownership of a formal or a mobile account varies across the age categories. For *ACCOUNT*, the significant determinant is the respondents aged 24–34 years. Meanwhile, the other age groups are involved in *SAVED* activities, as shown by the negative significance of *SAVED*. Surprisingly, the respondents in all the age categories, except those in the 55 years or older group, borrowed money in the past year, with the result being significantly positive at the 1% level. Conversely, we observe the opposite trend in the 55 years or older age category, which is not involved in borrowing money from formal institutions or mobile money. This finding is similar to that of Dar and Ahmed (2020), who investigated the developing country of India.

INCOME shows varying results for each quintile and dependent variable. For account ownership (*ACCOUNT*), the groups in the richer and richest economic quintiles are significant determinants, with positive significance at the 1% level. The results indicate that income level, particularly the poorest and poorer categories, is associated with financial access constraints. Furthermore, all the income categories are involved in saving money in the past year in formal institutions and mobile money services. However, borrowing money is limited to the middle-income or higher category. According to the empirical findings of Forrester and Reames (2020), low-income households typically require a high credit score to obtain loan approval.

The other determinant variables, such as *EDUCATION* and *EMPLOYMENT,* consistently show significant results at 1% in all three models, making them key aspects of financial inclusion in the ASEAN-5 nations. As education levels rise, individuals' financial literacy will improve, which will ease their access to financial services. Our research findings correspond to those of Asuming et al. (2019). *EMPLOYMENT* also demonstrates positive significance for the three dependent variables of financial inclusion. We observe a similar pattern in *MOBILE*, for which all the models show significance, indicating that mobile-related infrastructure is important for financial inclusion. However, the cultural proxy variables vary significantly across the three models. Distance to formal institutions matters to having an account, but is not significant for *SAVED* and *BORROWED* activities. We observe a similar trend in the religious factors, which are significant only in the *ACCOUNT* dependent variable model. Furthermore, trust in formal institutions contributes significantly to financial inclusion. Specifically, a lack of trust in the formal institutions in a respondent's country can negatively impact their financial inclusion.

FURTHER ANALYSIS BY COUNTRY: BEFORE AND DURING COVID-19

To further identify the factors, we conduct a regression analysis by dividing the data into two periods, that is, before and during the COVID-19 pandemic, and analyze them by country to examine the determinants that may vary across the countries (Table 5). We focus on the *ACCOUNT* dependent variable because it has more significant determinants compared with the other variables, based on our baseline regression results. Table 5 shows that *GENDER* acted as a key driver of financial inclusion in Indonesia, the Philippines, and Thailand before the COVID-19 pandemic. In Indonesia and the Philippines, the female respondents positively influenced financial inclusion. However, the results of Thailand reveal a negative relationship, suggesting a different pattern.

Our findings may be explained by Geert Hofstede's national culture theory (Hofstede 2011), particularly the masculinity versus femininity dimension (Figure 4). Hofstede measured this dimension on a scale from 1 to 100, with high scores indicating masculine societies and those that value competitiveness and ambition and low scores reflecting feminine societies, which emphasize cooperation and caring for others.

Hofstede's latest data (version 2015 12 08) showed that Thailand has the lowest masculinity score among the ASEAN-5 countries, indicating a feminine cultural orientation. This result may explain the negative association between *GENDER* and the variable of interest, namely, financial inclusion, in Thailand and suggest that male participation is necessary for promoting financial inclusion. Indonesia also leans toward feminine values, ranking second after Thailand. By contrast, the Philippines has the most masculine culture among the ASEAN-5 countries. Despite this finding, female participation remains important in Indonesia and the Philippines for supporting financial inclusion.

In addition to our findings on *GENDER* before the pandemic, the influence of G*ENDER* on financial inclusion appears to diminish during the COVID-19 period. This supports our baseline findings, indicating that *GENDER* is no longer an element shaping or influencing financial inclusion. One possible explanation is the advancement of digitalization, allowing individuals to access financial services through their mobile devices. The lack of significance during the pandemic period may be because the gender gap between men and women had decreased, given that the Covid-19 pandemic catalyzed the utilization of digital finance, making financial services accessible to anyone (Baker et al. 2020), along with the benefit of digital financial adoption, especially digital payments (World Bank 2022b). However, in our models, we could not include the infrastructure variable (*MOBILE*) in the regression due to collinearity with country-specific factors. The same issue occurred with the *FAR* and *RELIGION* variables for certain countries, such as Singapore (for both periods) and Malaysia (for the during period only).

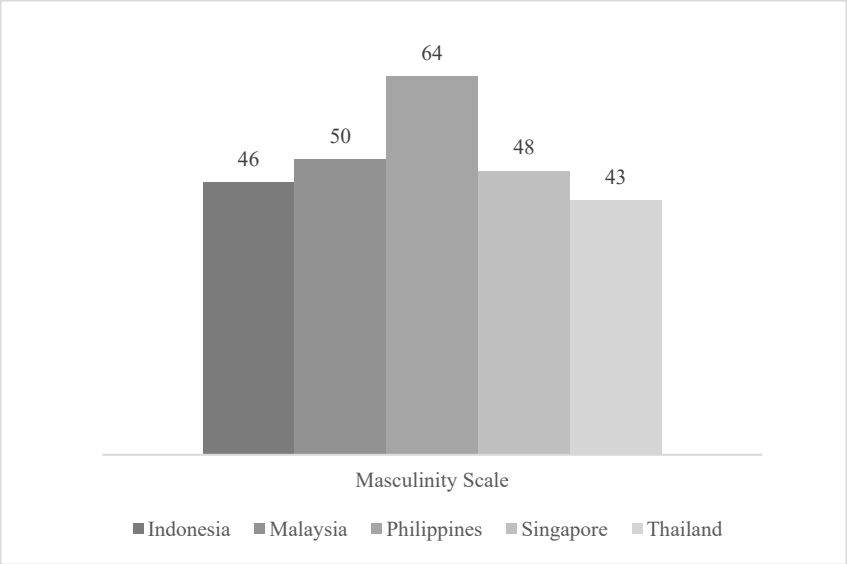

FIGURE 4. Masculinity dimension of national culture by Hofstede

TABLE 5. Further analysis by country before and during the COVID-19 pandemic

	BEFORE					DURING				
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Indonesia	Malaysia	Philippines	Singapore	Thailand
GENDER	0.255**	0.0989	0.428***	-0.269	-0.343**	-0.114	0.280	-0.00861	0.264	0.384
	(2.18)	(0.64)	(3.55)	(-0.61)	(-2.19)	(-0.97)	(0.85)	(-0.08)	(0.74)	(1.48)
AGE	-0.0523	0.113**	-0.0505	-0.210	-0.0292	-0.0759*	0.275**	-0.0229	-0.0313	-0.0407
	(-1.19)	(2.15)	(-1.21)	(-1.51)	(-0.39)	(-1.82)	(2.19)	(-0.53)	(-0.27)	(-0.43)
INCOME (Poorer)	0.130	-0.349	0.267	8.682***	0.103	-0.0194	0.400	-0.169	0.0260	0.0809
	(0.71)	(-1.35)	(1.37)	(10.59)	(0.54)	(-0.09)	(1.06)	(-0.95)	(0.06)	(0.20)
INCOME (Middle)	0.340*	-0.169	0.410**	9.388***	0.00748	-0.174	1.059***	-0.0370	0.354	-0.219
	(1.92)	(-0.68)	(2.18)	(12.38)	(0.04)	(-0.92)	(2.66)	(-0.22)	(0.99)	(-0.53)
INCOME	0.529***	-0.0982	0.430**	3.814***	0.204	-0.212	0.288	0.410**	0.529	0.0557

(Richer)										
	(2.92)	(-0.37)	(2.23)	(12.10)	(0.87)	(-1.13)	(0.47)	(2.30)	(1.27)	(0.10)
INCOME	0.433**	-0.378	0.862***	-0.0746	0.572**	-0.0464	0.880***	0.592***	0.202	-0.860***
(Richest)										
	(2.50)	(-1.54)	(4.54)	(-0.11)	(2.24)	(-0.27)	(2.77)	(3.41)	(0.56)	(-2.74)
EDUCATION	0.314***	0.528***	0.262**	0.166	0.113	0.149	1.614***	0.353***	0.742**	0.262*
	(2.79)	(4.41)	(2.52)	(0.68)	(0.62)	(1.35)	(3.96)	(3.62)	(2.50)	(1.84)
EMPLOYMENT	0.400***	0.483***	0.199	0.0323	0.0548	0.251**	0.555	0.251**	-0.645	0.329
	(3.36)	(2.91)	(1.61)	(0.06)	(0.32)	(2.07)	(1.60)	(2.22)	(-1.50)	(1.03)
FAR	0.489***	1.696***	1.380***		2.534***	0.648***		0.767***		0.119
	(2.83)	(5.01)	(6.28)		(4.15)	(3.52)		(5.44)		(0.22)
RELIGION	0.192	1.128***	0.975***		-1.031	0.457		0.231		0.993
	(0.54)	(2.58)	(3.25)		(-0.86)	(1.13)		(0.97)		(0.69)
TRUST	-2.184***	-2.358***	-2.124***	-12.30***	-3.153***	-2.316***	-4.839***	-1.502***	-3.644***	-2.236***
	(-19.49)	(-12.28)	(-16.30)	(-24.03)	(-13.84)	(-21.17)	(-8.91)	(-14.73)	(-7.72)	(-6.36)
_CONS	-0.826*	-2.352***	-2.996***	3.236***	0.554	0.220	-1.603*	-0.799**	1.579**	0.434
	(-1.65)	(-3.77)	(-6.56)	(5.45)	(0.49)	(0.44)	(-1.87)	(-2.33)	(1.98)	(0.29)
N	1,000	1,004	1,000	1,000	1,000	1,062	1,000	999	1,000	1,007

Note: This table provides the probit regression results. The dependent variable is *FINCLUSION* (*ACCOUNT*). Refer to Table 1 for the definition of the variables. The robust standard errors are shown in parentheses. The significance levels are represented by ***, **, and *, corresponding to 1%, 5%, and 10%, respectively.

AGE shows a significant positive effect before and during the COVID-19 pandemic, only in Malaysia. However, during the pandemic, Indonesia exhibited a significant negative relationship with AGE, suggesting that older individuals were less likely to engage with financial inclusion. The INCOME variable for the poorer category appeared to be a determinant of financial inclusion only in Singapore, indicating that financial inclusion efforts in Singapore reached the lower-income population. The same pattern applied to the middle-richer category. However, during the pandemic, INCOME was no longer a significant driver of financial inclusion in Singapore, implying that financial access had improved for all income groups. In Malaysia and the Philippines, *INCOME* was significant for the upper-income categories, which suggests that the wealthy individuals were prominently engaged in financial inclusion activities. By contrast, Thailand shows a negative relationship, which indicates the considerable participation of lower-income groups in financial inclusion activities.

Before the pandemic, the education level was a key determinant of financial inclusion in Indonesia, Malaysia, and the Philippines, which indicates that individuals with a high education level were likely to access financial services. In Thailand, education was also a determinant during the pandemic, though the significance was weak at the 10% level. Employment status also varied across the countries as a determinant, including in Indonesia, Malaysia, and the Philippines.

FAR demonstrates a clear positive connection with financial inclusion, which implies that distance to formal financial institutions did not deter individuals from having a financial account. This finding could be attributed to the accessibility of mobile financial services, making physical distance irrelevant before and during the pandemic. Similarly, *RELIGION* was significant only before the pandemic. Religious reasons can typically explain why individuals do not have a formal financial account. However, our dependent variable covers formal and mobile accounts, which may explain why religious reasons for not engaging in financial inclusion activities were insignificant during the pandemic. Supporting this notion, McKinsey et al. (2023) expressed that the COVID-19 pandemic played a significant role in boosting digital transactions. By April 30, 2020, individuals worldwide had increased their use of mobile banking applications (Statista 2024). Furthermore, trust in formal institutions is a significant negative variable that affected financial inclusion before and during the pandemic.

ROBUSTNESS CHECKS

We conduct robustness tests to ensure the stability of our results (Table 6).

TABLE 6. Robustness checks

	(OLS) *FINSTITUTION*	(LOGIT) *FINSTITUTION*	(OLS) *DIGPAYMENT*	(LOGIT) *DIGPAYMENT*
GENDER	0.000840	0.0212	-0.000618	-0.0182
	(0.18)	(0.24)	(-0.06)	(-0.22)
AGE (25–34 years)	0.0326***	0.571***	0.0290*	0.154
	(4.14)	(4.08)	(1.66)	(1.14)
AGE (35–44 years)	0.0221***	0.449***	-0.0181	-0.199
	(2.81)	(3.26)	(-1.04)	(-1.48)
AGE (45–54 years)	0.0196**	0.339**	-0.0501***	-0.539***
	(2.25)	(2.24)	(-2.71)	(-3.75)
AGE (55+ years)	0.0201**	0.224*	-0.182***	-1.530***
	(2.51)	(1.65)	(-9.84)	(-10.89)
INCOME (Poorer)	0.00477	0.0861	0.0257	0.0914
	(0.54)	(0.59)	(1.42)	(0.64)
INCOME (Middle)	0.00698	0.0789	0.0502***	0.348***
	(0.84)	(0.57)	(2.87)	(2.58)
INCOME (Richer)	0.0158*	0.252*	0.111***	0.765***
	(1.93)	(1.69)	(6.31)	(5.65)
INCOME (Richest)	0.0239***	0.385***	0.144***	1.043***
	(3.04)	(2.73)	(8.01)	(7.64)
EDUCATION	0.0311***	0.688***	0.140***	0.994***
	(8.11)	(8.36)	(15.25)	(14.39)
EMPLOYMENT	0.0226***	0.409***	0.0941***	0.639***
	(3.90)	(4.26)	(7.27)	(6.48)
MOBILE	0.00161***	0.0189***	0.0129***	0.0794***

	(5.22)	(4.83)	(24.18)	(18.76)
FAR	0.213***	2.404***	0.0459***	1.152***
	(13.31)	(10.96)	(3.05)	(3.76)
RELIGION	0.217***	1.553***	0.0442	0.529
	(6.39)	(4.38)	(1.59)	(0.84)
TRUST	-0.704***	-4.514***	-0.206***	-2.009***
	(-69.67)	(-40.41)	(-14.80)	(-11.39)
_CONS	0.132**	-6.106***	-1.919***	-16.32***
	(2.32)	(-8.80)	(-23.03)	(-18.08)
N	10,072	10,072	5,068	5,068
R-squared		0.723		0.464

Note: This table provides the OLS (Columns 1 and 3) and logit regression (Columns 2 and 4) results. The dependent variables are *FINSTITUTION* and *DIGPAYMENT*. Refer to Table 1 for the definition of the variables. Each regression includes the country effects and the robust standard errors, shown in parentheses. The significance levels are represented by ***, **, and *, corresponding to 1%, 5%, and 10%, respectively.

First, we use *FINSTITUTION* and *DIGPAYMENT* as the dependent variables. Second, we conduct regressions by using OLS. To address the weakness of the linear probability problem, we also employ a logit regression model (Wooldridge 2016). The robustness test findings align with our baseline regression results. Specifically, *GENDER* remains insignificant as a determinant of financial inclusion in the ASEAN-5 countries, which suggests no significant disparities between men and women in financial inclusion. *AGE* is a significant determinant, except in the logit model, with *DIGPAYMENT* as the dependent variable (Column 4). Similarly, the income level groups consistently show that the upper-middle-income group is the most significant factor for financial inclusion in ASEAN-5. Furthermore, both higher educational attainment and being employed are consistently and positively significant at the 1% level across all models. The remaining variables, including *MOBILE, FAR, RELIGION*, and *TRUST*, remain consistent with the baseline regression results.

OTHER ROBUSTNESS CHECKS

We also conduct additional robustness tests by using difference-in-differences (DID) models for several reasons. First, we test whether differences exist between the pre-pandemic and pandemic periods in the ASEAN-5 countries. Second, we use the models to test whether our explanatory findings for *GENDER* are robust.

We generate time variables by using two periods: before and during the COVID-19 pandemic. Then, we create the treatment group, with the ASEAN-5 countries coded as 1 and the non-ASEAN-5 countries coded as 0. We compare the non-ASEAN-5 country group by using Sub-Saharan Africa as the comparison group, because the region has made an effort to promote women's participation in financial inclusion activities (World Bank 2024). The comparison further supports our second reason for using the models.

The results show that the COVID-19 pandemic played a pivotal role in advancing financial inclusion. However, we observe a significant negative effect in *SAVED*, which indicates that, during the pandemic, individuals reduced their savings activities. We observe a positive connection between the ASEAN-5 variable and financial inclusion, notably in *ACCOUNT* and *SAVED,* but not in *BORROWED*. In our examination of the interaction variable (*DID*), we observe its negative effect on *ACCOUNT* and *BORROWED*. Conversely, the variable contributes positively to *SAVED*. The results suggest that, during the COVID-19 pandemic, saving activities were more pronounced than the other types of activities. Furthermore, the *GENDER* variable is found to be a significant determinant for *SAVED* but not for *ACCOUNT* ownership and the *BORROWED* determinant.

TABLE 7. Other robustness tests: DID models

	(1) *ACCOUNT*	(2) *SAVED*	(3) *BORROWED*
TIME (Before–During Pandemic)	0.0620***	-0.0101***	0.0558***
	(20.35)	(-2.86)	(15.15)
ASEAN5	0.0568***	0.0415***	0.00742
	(11.68)	(5.91)	(0.99)
DID	-0.0265***	0.0290***	-0.102***
	(-4.18)	(3.08)	(-9.90)
GENDER	0.00346	0.0137***	0.00213
	(1.26)	(4.20)	(0.62)
AGE (25–34 years)	0.0456***	0.0343***	0.0546***
	(12.04)	(7.86)	(11.85)
AGE (35–44 years)	0.0409***	0.0198***	0.0475***
	(9.79)	(4.02)	(9.14)
AGE (45–54 years)	0.0339***	-0.00273	0.000536
	(7.03)	(-0.47)	(0.09)
AGE (55+ years)	0.0525***	-0.0341***	-0.0882***
	(11.29)	(-6.01)	(-15.07)
INCOME (Poorer)	0.0406***	0.0504***	0.0423***
	(8.33)	(8.72)	(7.15)
INCOME (Middle)	0.0563***	0.0839***	0.0543***
	(11.88)	(14.88)	(9.36)
INCOME (Richer)	0.0774***	0.126***	0.0656***
	(16.79)	(22.91)	(11.56)
INCOME (Richest)	0.103***	0.164***	0.0592***
	(23.03)	(30.82)	(10.64)
EDUCATION	0.137***	0.0969***	0.0410***
	(54.75)	(32.65)	(13.05)

EMPLOYMENT	0.0931***	0.166***	0.139***
	(29.74)	(44.83)	(36.15)
FAR	0.201***	0.0370***	-0.00457
	(45.91)	(7.94)	(-0.97)
RELIGION	0.165***	0.0526***	-0.00511
	(21.71)	(6.70)	(-0.64)
TRUST	-0.437***	-0.164***	-0.0743***
	(-134.64)	(-45.47)	(-20.10)
_CONS	0.0121	0.161***	0.313***
	(1.17)	(14.28)	(26.76)
N	80,893	80,893	80,893
R-squared	0.391	0.132	0.391

Note: This table provides the DID regression results. The dependent variable is *FINCLUSION* (*ACCOUNT, SAVED, BORROWED*). Refer to Table 1 for the definition of the variables. Each regression includes the country effects and the robust standard errors, shown in parentheses. The significance levels are represented by ***, **, and *, corresponding to 1%, 5%, and 10%, respectively.

CONCLUSION

For ASEAN countries, the majority of which are developing nations, achieving financial inclusion is a serious goal due to its numerous benefits. Consequently, many national leaders have committed to this objective to decrease financial exclusion, primarily among micro, small, and medium-sized enterprises (MSMEs), which is fundamental to the nation's economic advancement. To create effective strategies for advancing financial inclusion, exploring the determinants of financial inclusion is essential. Although earlier literature shares many common determinants of financial inclusion, each region has unique characteristics that need to be investigated concerning the development of financial inclusion.

This study investigates the key determinants of financial inclusion in the ASEAN-5 countries, aiming to compare the periods before and during the COVID-19 pandemic. We discovered that the features and factors affecting financial inclusion changed between these periods and varied across each country. Prior to the pandemic, women were more actively involved in financial inclusion metrics, such as owning accounts, saving, and borrowing. Changes occurred during the COVID-19 pandemic period, during which men dominated all categories of financial inclusion. We also found that in advanced countries like Singapore, the majority of account ownership is held by older individuals, unlike in developing countries (Indonesia, Malaysia, Philippines, Thailand). Notably, in all ASEAN-5 countries, gender inequality in financial inclusion has decreased from 13.5% to 7.5%. Furthermore, our findings show that the positive and negative links between gender and financial inclusion determinants before the pandemic are connected to Hofstede's national culture theory, particularly the masculinity versus femininity dimension.

Furthermore, our regression results indicate that age, education level, income level, employment status, mobile infrastructure, the distance of financial institutions, religious purposes, and trust in formal financial institutions are influencing factors of financial inclusion among the ASEAN-5 countries. However, individuals in the Middle to Higher income categories are more disposed to financial inclusivity than those in the poorer and poorest groups. Gender no longer appears to be a determining factor in financial inclusion due to reduced gaps. However, the trend analysis indicates that women's role in financial inclusion is decreasing, especially during COVID-19. This can be reflected in the decreasing number of accounts from women. Giving trust from formal institutional finance to their citizens is an essential factor in achieving financial inclusion, as we test both before and during the pandemic, and the results remain consistently significant.

The findings of our research have implications in two main areas. First, for governments aiming to increase financial inclusion, such as in Indonesia, financial authorities like the Financial Services Authority (Otoritas Jasa Keuangan—OJK) can target women to encourage greater participation in financial activities. This can be achieved by providing education on digital payment systems to support entrepreneurship. Our findings show that women in Indonesia and the Philippines needed greater participation before the pandemic. Although gender was not a significant determinant during the pandemic, their involvement remains crucial for advancing financial inclusion. In addition, banks and financial technology industries should also focus on making financial services easier for low-income and disadvantaged people to access. Lastly, the Ministry of Social Affairs can use government transfer programs to improve financial access and support people's welfare. Although the inequality between men and women in financial inclusion is shrinking, the government should continue to offer financial education, especially to women, to guide them in managing financial services wisely and effectively.

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