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Does Financial Inclusion Outcome is Supporting Formal Borrowing among Individuals

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Abstract

This study examines whether financial inclusion outcomes support formal borrowing in South Asia using Global Findex microdata for 2,591 adults who reported borrowing. Formal borrowing is the dependent variable, while bank account ownership and mobile money account ownership are the main inclusion indicators. Logit models are estimated for the full sample and across gender and urban–rural groups. The results show that bank account ownership is strongly and consistently associated with a higher likelihood of formal borrowing. Mobile money accounts also support formal borrowing, but the effect is weaker and more evident among men and urban residents. Age, income, labour force status and country context further shape borrowing outcomes. Overall, financial inclusion promotes formal borrowing, but access alone is not sufficient. Policies must strengthen enabling conditions so that inclusion translates into meaningful engagement with regulated credit.

Keywords: Financial inclusion; Formal borrowing; Bank account ownership; Mobile money; South Asia

1. Introduction

Financial inclusion is now a key part of the global development agenda. Greater access to formal financial services is linked with better welfare, investment, and poverty reduction (Demirgüç-Kunt & Klapper, 2012; Bruhn & Love, 2014). At its core, it means owning and using a formal account to save, borrow, and manage risks. However, access is not equal across regions and groups. Gender, income, education, age, and location still shape who is included (Allen et al., 2016; Demirgüç-Kunt et al., 2015). In Pakistan and South Asia, women, poorer adults, and the less educated remain more excluded. Informal borrowing also remains widespread, despite rising account ownership (Ahmad & Rooh, 2022; Zulfiqar et al., 2016).

The regional borrowing profile shows that financial inclusion has not fully translated into formal credit use. In South Asia, about 65 percent of adults report borrowing, yet only around 15 percent borrow formally, while roughly 30 percent rely on semiformal sources and nearly 20 percent depend on family, friends, or other informal channels (Demirgüç-Kunt et al, 2025). This contrasts with East Asia and Pacific, where formal borrowing is closer to 30 percent, and Europe and Central Asia, where formal borrowing also represents a larger share of total borrowing. The South Asian pattern highlights a clear gap between rising account ownership and limited reliance on regulated credit, reinforcing the core question of whether financial inclusion outcomes genuinely support formal borrowing.

Earlier studies have discussed financial inclusion in South Asia, digital barriers in Pakistan, and cross-country trends (Asim et al., 2025; Shair et al., 2022; Shair et al., 2024). However, clear gaps remain. We still know little about how digitalisation turns into real financial behaviour, especially formal borrowing. Most evidence focuses on access, not on whether accounts actually lead to regulated credit use. This study examines whether bank accounts and mobile money accounts support formal borrowing in South Asia. It also explores differences by gender and location. The aim is to provide policy-relevant evidence on whether financial inclusion truly strengthens participation in formal credit markets or remains mostly symbolic.

2. Literature Review

Recent literature offers useful but still incomplete evidence on whether financial inclusion outcomes, such as bank account and mobile money account ownership, truly support formal borrowing. Cross-country studies show that financial inclusion indicators often capture both saving and borrowing access, yet movement from accounts to formal loans is not automatic. Pavón-Cuéllar (2019) shows that infrastructure, information, education, and stable income jointly shape saving and credit access. This indicates that account ownership and borrowing depend on shared structural conditions rather than a simple one-way link. Using Global Findex data, Ahmed et al. (2022) report wide inclusion variation across BRICS countries and note that formal credit use remains uneven even where account ownership is high. This suggests that stronger inclusion does not always guarantee deeper formal borrowing.

Country and regional studies refine this understanding. Valera, Lei, and Fong (2025) show for Southeast Asia that the determinants of account ownership, formal saving, and formal borrowing overlap but differ in strength. Income, employment, and education matter more for credit than for basic accounts. In Sub-Saharan Africa, Jama, Eshetu, and Ali (2025) find that institutional quality and macroeconomic stability shape inclusion, while informal borrowing remains high. Similarly, Obiora and Ozili report that informal borrowing is still above global averages in Nigeria and across the region despite inclusion progress. Micro-level evidence strengthens this argument. In Indonesia, Maulana and Nuryakin (2021) find that saving account ownership and better institutional access increase household borrowing probability. Vargas and Lahura (2022) show that greater financial development and inclusion reduce informality over time, suggesting that deeper finance may gradually replace informal borrowing. However, evidence from India by Mukhopadhyay (2016) warns that supply-side inclusion measures may overstate actual access. This supports the argument that account indicators alone cannot prove real borrowing engagement.

Digital finance and FinTech introduce new possibilities and risks. In Kenya, Kim and Duvendack (2025) find that digital credit increases access but may also lead to repayment stress and exclusion risks. Khan (2025) shows that mobile money improves enterprise access to bank and microfinance loans in Asia and Africa, implying complementarities between mobile inclusion and formal borrowing. Ngwenya (2024) highlights that alternative-data credit scoring can widen formal loan access. Smaoui (2025) shows that cultural contexts influence fintech-driven inclusion, although borrowing outcomes remain secondary in that study.

Distributional and gender inequalities remain important. Compaoré and Maiga (2025) find persistent gender gaps in Burkina Faso, including in credit-related inclusion. Balasubramanian et al (2019) show that women's asset ownership affects formal borrowing access. Hundie and Tulu (2023) show similar gender and structural barriers in

Ethiopia. Taken together, these studies suggest that bank accounts and mobile money accounts may be necessary for formal borrowing but are not always sufficient. Formal borrowing still depends on institutional quality, economic stability, gender equality, and social capability.

Overall, the literature shows that bank and mobile money accounts are important but not enough for formal borrowing. Formal credit improves when access, institutions, collateral, and stable income exist. Evidence from Indonesia, Southeast Asia, and Africa supports this. Yet informal borrowing still remains common, especially among poorer and female groups. This creates a clear gap and justifies examining whether financial inclusion truly leads to greater formal borrowing.

3. Econometric Model

To examine whether financial inclusion outcomes support formal borrowing, the study estimates a binary response model, as the dependent variable takes the value 1 if the individual borrowed from a formal financial institution and 0 otherwise. A logit specification is used.

$$FormalBorrowing_i = \alpha_0 + \alpha_1 BankAccount_i + \alpha_2 X_i + \varepsilon_i$$

Where $FormalBorrowing_i$= 1 if individual $i$borrowed formally; 0 otherwise, $BankAccount_i$= 1 if individual $i$owns a financial institution account; 0 otherwise. X_i= vector of control variables (age, gender, education, income, employment, residence, and country dummies), ε_i= error term. The definition of the variables used in the study is presented in Table 1.

This model evaluates whether owning a formal bank account increases the likelihood of borrowing from regulated financial institutions. A positive and significant coefficient α_1 indicates that having a bank account is associated with higher odds of formal borrowing. This helps assess whether financial inclusion, measured through account ownership, translates into meaningful engagement with formal credit markets rather than remaining a symbolic access indicator.

The model for the impact of mobile money account ownership on formal borrowing is as follow:

$$FormalBorrowing_i = \beta_0 + \beta_1 MobileMoneyAccount_i + \beta_2 X_i + \mu_i$$

Where $MobileMoneyAccount_i$= 1 if individual $i$owns a mobile money account; 0 otherwise. Other terms remain as defined above

This model examines whether mobile money inclusion supports formal borrowing. A positive and significant β_1 implies that mobile money users are more likely to borrow from formal institutions, suggesting digital inclusion may complement traditional financial systems. If the coefficient is weak or insignificant, it indicates that digital financial access alone may not strongly shift borrowing behaviour toward regulated credit.

Together, these models allow the study to compare the relative strength of traditional financial inclusion (bank accounts) and digital financial inclusion (mobile money accounts) in supporting formal borrowing. By including gender, urban–rural status, income, and country indicators in X_i, the models also help capture heterogeneity in access and usage. This framework makes it possible to evaluate whether financial inclusion initiatives meaningfully improve participation in formal credit markets or whether gaps persist across different population groups.

Table 1: ***Definition of Variables***

Variable	**Definition**	**Category / Coding**
Formal borrowing (Outcome variable)	Indicates whether the respondent borrowed from a formal financial institution during the past 12 months	1 = Yes, 0 = No
Financial institution account (Key explanatory variable)	Respondent owns an account at a bank or other regulated financial institution	1 = Yes, 0 = No
Mobile money account (Key explanatory variable)	Respondent owns a registered mobile money account	1 = Yes, 0 = No
Mobile phone ownership	Respondent owns a mobile phone	1 = Yes, 0 = No
Gender	Biological sex of respondent	1 = Male, 0 = Female
Age (years)	Respondent's age in completed years	Continuous (15–100)
Education	Highest education level completed	Primary or less = 1 if primary or below; Secondary = 1 if secondary; Tertiary or more = 1 if tertiary or above

Income quintile	Household income grouped into five quintiles	Q1 = Poorest … Q5 = Richest (binary indicators)
Residence	Location of respondent's residence	1 = Urban, 0 = Rural
Employment status	Participation in the labor market	1 = In the workforce, 0 = Out of workforce
Economy (Country dummies)	Country of residence	Bangladesh, India, Nepal, Pakistan, Sri Lanka (binary indicators)

4. Data source and descriptive statistics

4.1. Data source

This study uses micro-level data from the World Bank Global Findex Database, which provides internationally comparable measures of financial inclusion. The analysis focuses on South Asian economies, where borrowing patterns remain highly relevant for understanding financial behaviour. The sample includes 2,591 adults who reported either formal or informal borrowing during the reference period. This dataset allows examination of how bank account ownership and mobile money access relate to formal borrowing, while capturing individual, socio-economic, and country-level differences.

This analysis relies on micro-level data of the World Bank Global Findex Database colled in the period of 2024. The study is limited to South Asian region economies such as Bangladesh, India Nepal, Pakistan, and Sri Lanka. The sample of the study is consisting of 2,591 individuals after missing the observation of those who did not take loan either formal or informal institutions.

4.2. Descriptive Statistics

The descriptive statistics of the variables used in the study is presented in Table 1. The outcome variable, formal borrowing is not very high as only an approximation of 17 percent of the respondents have borrowed through formal financial institutions compared to almost 83 percent who have not. This already indicates that regulated credit is still limited to a big portion of people. Nevertheless, the access to financial services seems to be more robust, when considered through the account ownership. The percentage of people who are good financiers stands at around 66 percent who have an account with a financial institution whereas those who are not is at 34 percent. On the contrary, the proportion of those who have a mobile money account is only 22 percent, and it shows that digital financial inclusion in the region remains immature. The number of mobile phone owners is considerably greater, reaching approximately 77 percent, which implies that the common ground of digital finance is prevalent, even though the official implementation of mobile money is still small.

The sample demography is balanced as well since males and females are nearly equal in number. The mean age is approximately 37 years which is also an indicator of a population of working age that is pertinent to borrowing and financial choices. There is, however, low education levels. Over fifty percent of the respondents are either primary educated or less and approximately thirty nine percent are secondary educated with only about six percent having tertiary education. This can be of significant consequences to financial literacy, awareness and the capacity to deal with formal financial institutions effectively.

There is a distribution of income among all groups of income. Although the lowest quintile takes around 17 percent, groups that have higher incomes make a larger proportion of the sample. The distribution is useful in capturing the borrowing behaviour across the economic level. Residency wise, most of the respondents, almost 66 percent, are those living in rural regions, and 34 percent in urban areas. This puts emphasis on the need to comprehend financial access and borrow behaviour outside urban financial systems. Employment indicators reveal that approximately 58 percent of respondents are in the workforce with 42 percent not being in the workforce, which could also affect the borrowing capacity and access to credits.

Lastly, the sample is representative of the major South Asian economies. The highest percentage of the respondents is provided by India which is succeeded by Pakistan, Nepal, Bangladesh and Sri lanka. On the whole, the descriptive statistics indicate the existence of a situation when financial access by means of accounts and mobile connectivity is quite extensive, but formal borrowing is underrepresented. This is indicative of the bigger problem in South Asia, that access to financial services does not necessarily necessarily result in active and meaningful use of formal credit.

Table 2: ***Descriptive Statistics***

Variable	Category / coding	Obs.	Mean / share	Std. dev.	Min	Max
Formal borrowing	No	2,591	0.8271	0.3782	0	1
	Yes	2,591	0.1729	0.3782	0	1

Financial institution account	No	2,591	0.3400	0.4738	0	1
	Yes	2,591	0.6600	0.4738	0	1
Mobile money account	No	2,591	0.7769	0.4164	0	1
	Yes	2,591	0.2231	0.4164	0	1
Mobile phone ownership	No	2,591	0.2269	0.4189	0	1
	Yes	2,591	0.7731	0.4189	0	1
Gender	Female	2,591	0.4986	0.5001	0	1
	Male	2,591	0.5014	0.5001	0	1
Age (years)	Continuous	2,591	36.8043	13.9568	15	100
Education	Primary or less	2,591	0.5423	0.4983	0	1
	Secondary	2,591	0.3937	0.4887	0	1
	Tertiary or more	2,591	0.0641	0.2449	0	1
Income quintile	Q1 (poorest)	2,591	0.1698	0.3755	0	1
	Q2	2,591	0.1961	0.3971	0	1
	Q3	2,591	0.1872	0.3901	0	1
	Q4	2,591	0.2092	0.4068	0	1
	Q5 (richest)	2,591	0.2377	0.4258	0	1
Residence	Rural	2,591	0.6631	0.4728	0	1
	Urban	2,591	0.3369	0.4728	0	1
Employment	In the workforce	2,591	0.5770	0.4941	0	1
	Out of the workforce	2,591	0.4230	0.4941	0	1
Economy	Bangladesh	2,591	0.1297	0.3360	0	1
	India	2,591	0.4164	0.4931	0	1
	Nepal	2,591	0.1714	0.3769	0	1
	Pakistan	2,591	0.1876	0.3904	0	1
	Sri Lanka	2,591	0.0949	0.2932	0	1

4.3. Cross-tabulation

Table 3 has indicated the variation of formal borrowing and bank account ownership as well as the mobile money accounts. The trends are definite and rather educative towards the theme of the study. Formal borrowing amongst account holders is significantly more prevalent on the bank side. In the unbanked and those who do not take a bank account, only 84/881 persons report a formal borrowing, about 9.5 percent. On the other hand, of the people who have bank account, 364 of the 1,710 borrow formally, approximately 21.3 percent. It implies that the percentage of formal borrowers is over twice of banked persons. Meanwhile, the proportion of individuals borrowing formally continues to be very low, despite having an account, indicating that account ownership is beneficial, but not enough in itself.

In the case of mobile money, the trend is lower but weaker. Out of the people who do not have a mobile money account, 336 of 2,013 are those who have reported having borrowed formally, a percentage of approximately 16.7. Among people with a mobile money account, 112 of 578 borrow formally, approximated to be 19.4 percent. This variance is not as big as in the case of bank accounts, though it indicates a little greater level of formal borrowing among mobile money users.

In general, the cross-tabulation indicates that the results of financial inclusion, in particular, the bank account ownership, are linked to an increased probability of having formal borrowing. Nevertheless, the being of a high proportion of non-borrowers in all categories indicates that even financially included adults are not in actual credit. This confirms the notion that inclusion based on accounts is a requisite but other factors are probably required to propel people into routine and sustained use of formal loans.

However, the high share of non-borrowers in every group shows that many adults remain outside formal credit, even when they are financially included on paper. This supports the idea that inclusion through accounts is a necessary starting point, but additional factors are likely needed for individuals to move into regular and sustained use of formal loans.

Table 3: ***Cross-tabulation of outcome and key variables***

	No bank account	Bank account	Total	No mobile money account	Mobile money account	Total
Formal borrowing = No	797	1,346	2,143	1,677	466	2,143
	(90.5%)	(78.7%)	(82.7%)	(83.3%)	(80.6%)	(82.7%)
Formal borrowing = Yes	84	364	448	336	112	448
	(9.5%)	(21.3%)	(17.3%)	(16.7%)	(19.4%)	(17.3%)
Total	881	1,710	2,591	2,013	578	2,591

5. Results and Discussion

5.1. Bank account ownership and formal borrowing

The five model specifications in Table 4 are central for understanding how bank account ownership supports formal borrowing across different groups. Model 1 reports the relationship for the full sample and shows a strong and significant association between having a bank account and borrowing formally. Models 2 and 3 then split the sample by gender and confirm that this positive link holds for both women and men, with a slightly stronger effect for women. Models 4 and 5 repeat the exercise for urban and rural residents. The effect is larger in urban areas but remains significant in rural areas, where financial access is usually weaker. Together, these models show that the main result is not driven by a single group. They highlight important heterogeneity and make the findings more credible and more useful for targeted policy design.

The coefficient on bank account ownership in Table 4 is central for the study's main question. In all five models, the variable *Account Bank (Yes)* is positive and highly significant, which means that, holding other factors constant, individuals with a bank account are more likely to borrow from formal financial institutions than those without an account.

In the full sample (Model 1), the coefficient is 0.787. In a logit model, this is a log-odds effect. If we convert it to an odds ratio, it is roughly exponent of 0.787 which is approximately 2.20. In simple terms, adults with a bank account have a little more than twice the odds of formal borrowing compared to adults without an account, after controlling for age, gender, education, income, employment, residence, and country.

For women (Model 2), the coefficient is even larger at 0.905. This corresponds to an odds ratio of about 2.47. So, women who have a bank account are almost two and a half times more likely to borrow formally than women without an account, all else equal. This suggests that, for women, moving from unbanked to banked status is especially important for accessing formal credit.

In the case of men (Model 3), the coefficient is 0.710 which in turn means that the odds ratio is approximately 2.03. It remains huge and substantial. Male account holders are approximately twice more likely than men without an account to borrow formally. The impact is a little less than the female one, but the trend is still the same. This trend can prove the assumption that bank accounts benefit both sexes, but the relative advantage seems to be a little higher with females.

The urban-rural divide is homogenous. Urban areas (Model 4) have a coefficient of 1.067 which results in odds ratio of about 2.9. The rate of formal borrowings is nearly three times more in urban adults who own a bank account than in urban adults who do not. It is the biggest effect of all subgroups and the manifestation of the rich financial infrastructure and product provision of the cities, in which an account can be converted into credit relations more directly.

In rural (Model 5) the coefficient is 0.651 and odds ratio is approximately 1.92. Rural account holders will consequently nearly always be more predisposed to borrow formally than rural non-account holders. It is not as significant as in cities, yet it is sizeable and statistically significant. This demonstrates that despite weak financial infrastructure even the presence of a bank account is important in formal credit entry.

These coefficients, considered as a whole, convey a similar story. The ownership of the bank accounts is not an inconsequential or symbolical pointer. It is closely connected with formal borrowing in the entire sample and in the subgroups. Simultaneously, the fact that not all account holders are borrowing formally makes us remember that

accounts are needed but not enough. Nevertheless, the regression findings give a pure evidence that there is an improvement of involvement in formal credit that is backed by financial inclusion in the form of bank accounts but with significant variability in gender and location.

Bank account ownership increases the likelihood of formal borrowing for several practical and structural reasons. Having a bank account connects individuals directly to regulated financial institutions, where they become visible, recordable, and credit-assessable. Banks can track their transactions, savings, and financial behaviour, which helps reduce information barriers and builds trust in lending decisions. Account holders are also more aware of available products, repayment conditions, and financing channels, which improves confidence and encourages formal loan use. In addition, many formal loans require an active account for disbursement and repayment, making account ownership a basic entry point. As a result, banked individuals face fewer procedural barriers, have better documentation, and enjoy stronger eligibility, which collectively increases their likelihood of accessing formal credit.

Table 4: ***Estimate of logit regression model on the impact of bank account on formal borrowing***

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
VARIABLES	All	Female	Male	Urban	Rural
Account Bank (Yes)	0.787***	0.905***	0.710***	1.067***	0.651***
	(0.160)	(0.230)	(0.243)	(0.275)	(0.195)
Mobile (Yes)	0.235	0.111	0.556	-0.387	0.452**
	(0.151)	(0.179)	(0.340)	(0.289)	(0.183)
Female	-0.400***			-0.342	-0.436***
	(0.121)			(0.246)	(0.143)
Age	0.011***	0.011*	0.011*	0.008	0.013**
	(0.004)	(0.006)	(0.006)	(0.008)	(0.005)
Secondary education	0.015	-0.003	0.017	0.094	-0.011
	(0.126)	(0.176)	(0.185)	(0.239)	(0.151)
Tertiary education	0.381*	0.131	0.436	0.629*	0.100
	(0.219)	(0.398)	(0.277)	(0.330)	(0.307)
Income quintile q2	-0.062	-0.053	-0.063	-0.423	0.033
	(0.183)	(0.244)	(0.285)	(0.459)	(0.203)
Income quintile q3	-0.043	-0.061	0.003	-0.192	0.019
	(0.191)	(0.258)	(0.285)	(0.412)	(0.222)
Income quintile q4	0.244	0.021	0.516**	-0.025	0.368*
	(0.180)	(0.251)	(0.259)	(0.379)	(0.209)
Income quintile q5	0.342*	0.232	0.439*	0.269	0.308
	(0.177)	(0.250)	(0.257)	(0.359)	(0.215)
Urban	-0.192	-0.149	-0.178		
	(0.124)	(0.178)	(0.175)		
Out of labour force	-0.384***	-0.541***	-0.185	-0.363	-0.419***
	(0.125)	(0.159)	(0.204)	(0.237)	(0.151)
India	-0.996***	-1.223***	-0.873***	-0.177	-1.380***
	(0.182)	(0.268)	(0.258)	(0.318)	(0.223)
Nepal	-1.019***	-0.794***	-1.409***	-0.356	-1.355***

	(0.197)	(0.270)	(0.310)	(0.411)	(0.227)
Pakistan	-1.803***	-1.335***	-2.293***	-0.712*	-2.861***
	(0.252)	(0.341)	(0.386)	(0.378)	(0.447)
Sri Lanka	-0.339	-0.131	-0.703**	0.058	-0.554**
	(0.215)	(0.302)	(0.320)	(0.418)	(0.254)
Constant	-1.615***	-1.479***	-2.346***	-1.990***	-1.436***
	(0.292)	(0.387)	(0.522)	(0.573)	(0.356)
Observations	2,591	1,292	1,299	873	1,718
Pseudo R2	0.0745	0.0797	0.0868	0.0801	0.0932
N	2591	1292	1299	873	1718

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The other covariates in Table 4 help explain which individuals are more likely to borrow formally, beyond the effect of bank account ownership. The coefficient on mobile phone ownership is positive but not significant in the full sample and most subsamples, except for rural areas. In the rural model, the coefficient is 0.452 and significant at 5 percent. This suggests that, in rural South Asia, owning a mobile phone is associated with higher odds of formal borrowing, probably because it reduces information and communication barriers. In urban areas, the coefficient is negative and insignificant, which implies that in cities, phones alone do not systematically shift people into formal credit once other factors are controlled.

The female dummy is not only significant but also negative in the full sample and in the rural model. In the complete model, the coefficient is -0.400 implying that women are less likely to borrow formally as compared to men despite the accounts, income, education as well as country. The large scale is comparable in the rural landscapes. The urban model also shows a negative and non-significant coefficient indicating that the differences between genders in formal borrowing are higher in rural environment. This finding is in line with more extensive data that women have structural and social disadvantages to using formal credit.

The age has a minor but significant impact. The coefficient is significant and 0.011 in the full sample and the female and male models. This shows that the elderly are marginally more likely to borrow formally compared to the young with other things being kept constant. The impact is high in the rural but low in the urban areas. In general, there is an upward trend in the tendency to formal borrowing with age, which may be due to the fact that older people have more predictable incomes, assets, and credit scores.

In the case of education, formal borrowing in any specification does not exhibit a substantial impact of secondary schooling. The coefficients are low and near to zero. In the full and urban models, on the other hand, tertiary education represents a positive, although insignificant, effect. The coefficient of 0.381 in the entire sample indicates that tertiary educated people are more predisposed to formal borrowing and this association is a little bit stronger in cities. Tertiary education does not appear to be important in rural and gender-separated models, which can be due to low sampled respondents with a high level of education. In rural and gender-split models, tertiary education is not clearly significant, which may reflect small numbers of highly educated respondents in those subsamples.

The results for income quintiles point to a weak but generally increasing gradient. Compared to the poorest group (Q1), the coefficients for Q2 and Q3 are small and not significant. For higher quintiles, some effects emerge. In the male model, Q4 and Q5 are positive and significant, which indicates that richer men are more likely to borrow formally than poorer men. In rural areas, Q4 is positive and significant at 10 percent, suggesting that higher-income rural individuals are more able or more attractive to formal lenders. These patterns support the idea that formal credit access is easier for better-off households, but the income gradient is not very strong in every specification.

The urban residence dummy is negative in all models where it appears, but not statistically significant. This suggests that, after controlling for other characteristics and accounts, simply living in an urban area does not guarantee higher formal borrowing. Urban advantages may operate mainly through higher account ownership, higher income, and better education, which are already captured by other covariates.

The out of labour force variable is negative and significant in the full and rural models, and particularly for women. In the full sample, the coefficient of −0.384 indicates that those not in the workforce are less likely to borrow formally than those who are economically active. The association is stronger for women and for rural residents. This is intuitive: formal lenders often prefer clients with regular income or employment, so being out of the labour market reduces the chances of accessing formal loans.

The country dummies capture differences across South Asian economies relative to the omitted category (Bangladesh). All four country coefficients are negative in the full model, and most are highly significant. India, Nepal, and Pakistan show notably lower probabilities of formal borrowing than Bangladesh once individual characteristics and accounts are controlled. The negative coefficient of Pakistan is the highest at -1.803, which indicates that formal borrowing is especially low in the country relative to Bangladesh. The coefficient of Sri Lanka is negative but not significant in the entire model yet it becomes significant in selected subsamples. These findings indicate that national setting, such as financial systems and regulatory settings, continue to be very important to formal credit usage.

Put together these covariates demonstrate a steady trend. Older, banked, mobile-connected, higher-income, tertiary-educated, and economically active people are more likely to engage in formal borrowing, and women have distinct disadvantages, particularly in the rural context, and the South Asian countries. This supports the argument that financial inclusion outcomes exist in the context of wider socioeconomic and institutional limits and that disparities in gendering, revenues, employment, and country circumstances still determine those who are able to transform access into real formal borrowing.

5.2. Mobile money account ownership and formal borrowing

Table 5 has five model specifications which are significant in comprehending the role of digital financial inclusion, which is determined by mobile money account ownership, in facilitating formal lending among the various groups. Model 1 presents the entire sample outcome and indicates a positive relationship which is rather low between mobile money and formal borrowing. When the sample is divided by gender, Model 2 exhibits no significant effect among women whereas Model 3 exhibits a positive and significant effect among men, which means that digital financial access produces a positive effect among men in relation to formal credit utilization. The rural urban comparison is also pertinent. Models 4 and Model 5 indicate that there is no significant effect in the rural areas and significant positive effect in the urban areas, respectively. Combined, these models point to the fact that the support of mobile money in formal borrowing does not have a consistent shape. It seems to be more applicable to men and those living in urban areas, which implies that digital inclusion is not sufficient. Its usefulness is also contextual, financial infrastructure-based, and user-capability based and this will explain why mobile money is not always translating into formal credit.

Table 5 provides an appropriate understanding as to the association of digital inclusion and formal borrowing by the coefficient of ownership of mobile money accounts. In the whole sample (Model 1), the coefficient value is 0.262, which is significant at 10 percent. This is a log-odds effect in the logit. By odds ratio, it approximates exponent of 0.262 that is around 1.30. This means that, holding other factors constant, adults with a mobile money account have roughly 30 percent higher odds of borrowing formally than those without such an account. The effect is positive but modest, and weaker than the effect of bank account ownership in Table 4. This suggests that mobile money inclusion supports formal borrowing, but not as strongly as traditional bank accounts.

When we look at gender differences, the pattern becomes clearer. For women (Model 2), the coefficient is −0.121 and not statistically significant. This means that, after controlling for other characteristics, women with a mobile money account are not systematically more likely to borrow formally than women without one. For men (Model 3), the coefficient is 0.408, significant at the 5 percent level. The odds ratio corresponding is approximately exponent of 0.408 that is approximately 1.50. As such, in comparison to male non-mobile money users all other things being equal, male mobile money users have approximately half the odds of formal borrowing. This gender difference indicates that mobile money can be used more to bridge men and not women to formal credit, perhaps because of gender barriers to control of devices, decision making or perception by lenders.

Another way in which context is revealed is through the rural-urban divide. In rural regions (Model 4), the coefficient on the mobile money account ownership is -0.026 and is obviously not significant. This shows that there is no significant difference in the formal borrowing between rural adults with and without mobile money accounts at other variables held constant. Urban areas (Model 5) show an increasing coefficient of 0.643 which is significant at 5 percent level. The implied odds ratios of 0.643 (exponent of 0.643 is nearly 1.90) imply that the formal borrower among urban people who have a mobile money account is nearly two times that of formal borrower among urban people who do not have a mobile money account. This is a large effect and demonstrates that mobile money accounts can be significantly beneficial in complementing the use of formal credit in an urban environment, where financial infrastructure and digital ecosystems are more robust.

Combined, these coefficients indicate that mobile money ownership is not a universal cause of formal borrowing. Its effect is beneficial on the whole, but it is unevenly distributed among men and people living in urban areas. The correlation is low or nonexistent in rural environment and in females when other parameters are considered. This

suggests that digital financial inclusion with the help of mobile money can facilitate formal borrowing, and its success will be determined by more widespread social, gender, and infrastructural factors. Increasingly, it may not suffice to increase access to mobile money only to transfer all groups to stable formal credit relationships.

Mobile money account ownership can increase the likelihood of formal borrowing because it brings individuals closer to the financial system in practical and behavioural ways. Mobile money platforms provide a digital record of transactions, savings, and payments, which helps reduce information gaps for lenders and strengthens an individual's financial identity. Users also become more familiar with formal financial tools, which can build confidence and awareness of credit options. In many cases, mobile money serves as an entry point where people start with basic services and gradually move toward more advanced financial products, including loans. It also reduces distance, cost, and time barriers, particularly in urban settings, making it easier to connect with regulated lenders. Together, these factors make mobile money users more likely to engage with formal borrowing than those who remain outside the digital financial ecosystem.

For the impact of other covariates, Table 5 shows that several factors significantly shape the likelihood of formal borrowing alongside mobile money access. Mobile phone ownership has a positive and significant effect overall, especially in rural areas, suggesting that better connectivity supports formal credit use. Women show higher odds of formal borrowing in this specification, unlike in the bank-account model. Age has a small but positive effect across models, indicating that older individuals are more likely to borrow formally. Higher income groups, particularly the top quintiles, also show greater formal borrowing, and being out of the labour force consistently reduces it. Strong cross-country differences remain, with India, Nepal, and Pakistan showing significantly lower formal borrowing than Bangladesh, even after controls.

Table 5: ***Estimate of logit regression model on the impact of mobile money account on formal borrowing***

	(1)	(2)	(3)	(4)	(5)
VARIABLES	All	Female	Male	Rural	Urban
Mobile money account (Yes)	0.262*	-0.121	0.408**	-0.026	0.643**
	(0.149)	(0.271)	(0.195)	(0.198)	(0.251)
Mobile (Yes)	0.287*	0.212	0.581*	0.513***	-0.336
	(0.149)	(0.174)	(0.342)	(0.181)	(0.283)
Female	0.442***			0.442***	0.449*
	(0.122)			(0.143)	(0.249)
Age	0.013***	0.013**	0.015***	0.014***	0.012*
	(0.004)	(0.006)	(0.006)	(0.005)	(0.007)
Secondary education	0.021	0.052	-0.019	0.025	0.043
	(0.128)	(0.175)	(0.191)	(0.153)	(0.244)
Tertiary education	0.353	0.220	0.360	0.153	0.531
	(0.225)	(0.394)	(0.289)	(0.309)	(0.345)
Income quintile q2	-0.031	0.004	-0.049	0.064	-0.475
	(0.182)	(0.242)	(0.284)	(0.203)	(0.446)
Income quintile q3	-0.013	-0.020	0.007	0.065	-0.233
	(0.189)	(0.256)	(0.284)	(0.219)	(0.404)
Income quintile q4	0.252	0.070	0.476*	0.398*	-0.082
	(0.180)	(0.250)	(0.262)	(0.209)	(0.375)
Income quintile q5	0.363**	0.357	0.399	0.360*	0.204
	(0.179)	(0.252)	(0.261)	(0.217)	(0.356)
Urban	-0.215*	-0.183	-0.197		
	(0.122)	(0.174)	(0.174)		

Out of labour force	-0.419***	-0.576***	-0.210	-0.448***	-0.441*
	(0.125)	(0.158)	(0.205)	(0.151)	(0.234)
India	-0.571***	-0.654***	-0.551**	-1.005***	0.289
	(0.160)	(0.227)	(0.232)	(0.194)	(0.292)
Nepal	-0.734***	-0.463*	-1.178***	-1.140***	-0.061
	(0.189)	(0.256)	(0.299)	(0.216)	(0.427)
Pakistan	-1.876***	-1.482***	-2.354***	-2.959***	-0.785**
	(0.249)	(0.337)	(0.382)	(0.446)	(0.363)
Sri Lanka	0.093	0.313	-0.267	-0.253	0.766*
	(0.201)	(0.270)	(0.314)	(0.238)	(0.402)
Constant	-1.937***	-1.371***	-2.287***	-1.755***	-2.227***
	(0.303)	(0.374)	(0.523)	(0.371)	(0.567)
Observations	2,591	1,292	1,299	1,718	873
Pseudo R2	0.0658	0.0661	0.0836	0.0862	0.0721
N	2591	1292	1299	1718	873

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

6. Conclusion

The findings of this study show that financial inclusion outcomes do not automatically translate into formal borrowing, but they do play an important enabling role. Bank account ownership has a strong and consistent association with formal credit use across the full sample, as well as across gender and urban–rural groups. This indicates that being part of the formal banking system helps individuals connect with regulated lenders, improves eligibility, and strengthens financial engagement. Mobile money accounts also support formal borrowing, but their effect is weaker and more selective, with stronger relevance for men and urban residents. These patterns highlight that digital inclusion has potential, but its benefits are not yet evenly distributed.

At the same time, the results show that many structural and social constraints continue to shape borrowing behaviour. Gender gaps remain evident, particularly in rural contexts, and individuals outside the labour force face clear disadvantages in accessing formal credit. Education shows only limited influence, while income and country differences remain important. Overall, the study suggests that financial inclusion policies need to move beyond expanding accounts and focus more on enabling meaningful use, especially credit access. Strengthening institutional environments, addressing gender and rural disadvantages, and improving digital capability are essential for ensuring that inclusion leads to real financial empowerment rather than symbolic participation.

References

Ahmed, F., Dar, A. B., Farooq, U., & Sharma, R. L. (2023). Do Socio-economic Factors in the BRICS Explain Gender Gap in Financial Inclusion? *The Indian Economic Journal*, *71*(2), 386-405.

Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. M. (2012). Foundations of financial inclusion. *Policy Research Working Paper*, *6290*.

Balasubramanian, S. A., Kuppusamy, T., & Natarajan, T. (2019). Financial inclusion and land ownership status of women. *International Journal of Development Issues*, *18*(1), 51-69.

Bruhn, M., & Love, I. (2014). The real impact of improved access to finance: Evidence from Mexico. *The Journal of Finance*, *69*(3), 1347-1376.

Compaoré, E. D., & Maiga, B. (2025). Gender differences in unidimensional and multidimensional financial inclusion in Burkina Faso. *SN Business & Economics*, *5*(7), 88.

Demirgüç-Kunt, A., & Klapper, L. F. (2012). Measuring financial inclusion: The global findex database. *World bank policy research working paper*, (6025).

Demirgüç-Kunt, A., Klapper, L. F., Singer, D., & Van Oudheusden, P. (2015). The global findex database 2014: Measuring financial inclusion around the world. *World Bank Policy Research Working Paper*, (7255).

Hundie, S. K., & Tulu, D. T. (2023). Determinants of financial inclusion gender gap in Ethiopia: Evidence from decomposition analysis. *Cogent Business & Management*, *10*(2), 2238124.

Jama, A., Eshetu, F., & Ali, H. (2025). Drivers of financial inclusion in sub-Saharan Africa countries. *Cogent Social Sciences*, *11*(1), 2590235.

Khan, S. U. (2025). Mobile money and financial inclusion: International evidence from informal sector enterprises in Asia and Africa. *Journal of Asian Economics*, 102033.

Kim, M., & Duvendack, M. (2025). Digital credit for all? An empirical analysis of mobile loans for financial inclusion in Kenya. *Information Technology for Development*, *31*(3), 559-576.

Maulana, R., & Nuryakin, C. (2021). The effect of saving account ownership and access to financial institutions on household loans in Indonesia. *Bulletin of Monetary Economics and Banking*, *24*(3), 465-486.

Mukhopadhyay, J. P. (2016). Financial inclusion in India: A demand-side approach. *Economic and political weekly*, 46-54.

Ngwenya, M. (2024, November). Credit Scoring in Africa: Employing Logistic Regression on Alternative Data. In *2024 4th International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)* (pp. 1-6). IEEE.

Obiora, K. I., & Ozili, P. K. (2024). Comparative analysis of financial inclusion in Nigeria, sub-Saharan Africa, and the World. *Perspectives on Global Development and Technology*, *22*(3-4), 217-238.

Pavón Cuéllar, L. I. (2019). International financial inclusion: Multidimensional determinants of access to saving and credit. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu*, *37*(2), 401-425.

Smaoui, A. (2025). Culture and FinTech in Driving Financial Inclusion: Evidence from Saudi Arabia's Vision 2030. *Journal of Cultural Analysis and Social Change*, 1284-1299.

Valera, M. L. G., Lei, Z., & Fong, J. H. (2025). Determinants of financial inclusion in Southeast Asia. *Applied Economics*, *57*(20), 2533-2550.

Vargas, M. P., & Lahura, E. (2022). Financial development, financial inclusion and informality: new international evidence. *Global Economy Journal*, *22*(03), 2350007.

Zulfiqar, K., Chaudhary, M. A., & Aslam, A. (2016). Financial inclusion and its implications for inclusive growth in Pakistan. *Pakistan Economic and Social Review*, *54*(2), 297-325.