Determinants Of Financial Inclusion Among Farmers: Evidence From Lunglei District, Mizoram, India

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Abstract
Financial inclusion is a critical driver of economic development, particularly in rural areas where access to formal financial services remains limited. This study examines the determinants of financial inclusion among farmers in Lunglei district, Mizoram, India, using primary data from 320 farmers. A comprehensive set of non-parametric techniques is applied, including Chi-square tests, Spearman rank correlations, Mann–Whitney U tests, and Kruskal–Wallis H tests, to analyse the influence of nine key variables: availability of banks, educational level, distance to the nearest bank, participation in self-help groups (SHGs), financial literacy, household income, age, family size, and reliance on informal moneylenders.

The results reveal significant associations between financial inclusion and several factors. Educational level shows the strongest positive association (ρ = 0.417, p < 0.001), explaining approximately 17.39% of the variance in financial inclusion, while distance to the nearest bank exhibits a moderate negative association (ρ = −0.443, p < 0.001). Participation in SHGs (ρ = 0.234, p < 0.001) and household income (ρ = 0.411, p < 0.001) also show positive effects. By contrast, financial literacy and family size are not significantly associated with inclusion levels, challenging conventional assumptions. Overall, the findings highlight the importance of educational attainment, physical access to banking, income enhancement, and community-based institutions in promoting financial inclusion in remote rural settings such as Lunglei district.

Keywords: *Financial inclusion; rural finance; farmers; educational attainment; banking infrastructure; self-help groups; Mizoram.*

I.   Introduction

Financial inclusion, defined as the process of ensuring that individuals and businesses have access to useful and affordable financial products and services—such as transactions, payments, savings, credit, and insurance—delivered responsibly and sustainably (Srivastava, 2024), has emerged as a critical factor in fostering economic growth and reducing poverty. The issue is particularly salient in rural areas where access to financial services is constrained by geographical barriers, inadequate infrastructure, and socioeconomic vulnerabilities.

For farmers, who constitute a substantial share of the rural workforce, access to formal financial systems can influence not only income but also risk management, investment decisions, and overall socioeconomic empowerment. Emerging evidence suggests that improved access to financial services contributes to income growth, more resilient financial behaviour, and broader empowerment within rural communities (Li, 2025; Marus et al., 2020). The rapid expansion of financial technology, combined with enabling government policies, has further accelerated access, although persistent gaps in digital literacy and infrastructure continue to limit inclusion in many regions (Priyadarshi, 2025; Akhtar, 2014).

India, with its large agricultural sector employing nearly half of the workforce, provides a particularly compelling context for examining financial inclusion dynamics. Since 2014, initiatives such as the Pradhan Mantri Jan Dhan Yojana (PMJDY) have substantially expanded access, facilitating the opening of more than 460 million bank accounts (NABARD, 2024). However, significant disparities remain between urban and rural areas and across states. The northeastern region, including Mizoram, is characterized by difficult terrain, sparse

and scattered settlements, limited infrastructure, and distinct cultural and ethnic contexts, all of which complicate the delivery and uptake of formal financial services (Singh et al., 2023).

Lunglei district in southern Mizoram is a predominantly rural and agricultural economy that exemplifies these challenges. Farmers in the district often face long distances to bank branches, low levels of formal education, and continued reliance on informal financial systems. At the same time, community-based initiatives such as Self-Help Groups (SHGs) are present and potentially powerful conduits for financial inclusion. Understanding how structural factors (such as distance and banking infrastructure), individual characteristics (such as education, income, age, and financial literacy), and community institutions (such as SHGs) jointly shape financial inclusion is essential for designing effective, context-sensitive policy interventions. Recent studies have identified several potential determinants of financial inclusion. Educational attainment and financial literacy are considered crucial enablers, as they enhance individuals' ability to understand and utilize financial products effectively (Datta & Singh, 2019). Physical accessibility to financial institutions, measured by proximity to banking facilities, has been shown to significantly influence financial inclusion levels (Beck, Demirgüç-Kunt, & Martinez Peria, 2007). Additionally, participation in community-based financial initiatives such as self-help groups (SHGs) has been associated with improved financial literacy and inclusion among rural populations (Chliova et al., 2015).

However, the relative importance and interaction effects of these factors may vary significantly across different geographical and socioeconomic contexts. This study aims to fill this gap by providing empirical evidence from Lunglei district, examining how various socioeconomic and infrastructure-related factors determine financial inclusion levels among farmers.

Against this backdrop, the present study investigates the determinants of financial inclusion among farmers in Lunglei district. Specifically, it examines how nine socioeconomic and infrastructure-related factors—availability of banks, educational level, distance to the nearest bank, SHG participation, financial literacy, household income, age, family size, and reliance on informal moneylenders—are associated with levels of financial inclusion. By focusing on an understudied yet policy-relevant region, the study aims to contribute empirical evidence that can inform more targeted and effective strategies for rural financial inclusion.

II. Literature Review

Theoretical Framework

The theoretical foundations of financial inclusion draw from multiple streams of economic development theory, each offering unique insights into the mechanisms through which access to financial services contributes to economic development and poverty reduction. The foundational work of McKinnon (1973) and Shaw (1973) on financial liberalization provided early theoretical frameworks for understanding how financial market development could stimulate economic growth through improved capital allocation and increased savings mobilization.

More recent theoretical developments have emphasized the importance of financial inclusion as a distinct concept that goes beyond simple financial market liberalization. Financial inclusion theory suggests that access to formal financial services is influenced by both supply-side factors (availability and accessibility of financial institutions) and demand-side factors (awareness, affordability, and appropriateness of financial products) (Allen et al., 2016). The theoretical framework for this study draws upon Sarma's (2012) multidimensional approach to financial inclusion, which considers accessibility, availability, and usage dimensions.

Determinants of Financial Inclusion

Educational Level and Financial Literacy: Among the most influential factors shaping financial inclusion is educational attainment, which consistently shows a strong positive association with access to and use of financial services (Khandelwal, Vajjala, & Tagat, 2025). This underscores the potential of educational interventions in reducing exclusion. On the supply side, physical distance from banking institutions and the adequacy of financial infrastructure remain persistent barriers, particularly in remote and underserved regions— a trend echoed in broader studies across developing economies (Chhatre et al., 2023; Suresh Govindapuram et al., 2023). Education has been consistently identified as a key determinant of financial inclusion. Higher educational levels are associated with better understanding of financial products and greater propensity to engage with formal financial institutions (Grohmann, Klühs, & Menkhoff, 2018). Research by Singh et al. (2023) provides compelling evidence for the role of education in enhancing financial inclusion, demonstrating that educational level showed significant relationships with financial inclusion outcomes. However, the relationship between formal education and practical financial literacy may not always be straightforward, particularly in rural contexts where traditional financial practices prevail. Recent cross-national research examining education and financial inclusion found that while education generally promotes financial inclusion, the effects vary significantly across different socioeconomic groups (Nature, 2025). For high-income

populations, lower levels of education appear sufficient for effective financial participation, while marginalized groups require at least upper-secondary education to achieve meaningful benefits.

While the importance of financial literacy is widely acknowledged, its direct impact on inclusion outcomes varies considerably across regions and demographic profiles. This variation points to the need for more targeted, context-sensitive financial education initiatives (Khandelwal et al., 2025; Reddy, 2025.). In parallel, the expansion of digital financial services offers promising avenues to bridge longstanding geographic and infrastructural divides. Tools such as mobile banking and online platforms are increasingly enabling rural populations to participate in the formal financial ecosystem (See, 2025; Priyadarshi, 2025). Financial literacy often mediates the effectiveness of schooling and formal knowledge in promoting inclusion, with financially literate farmers shown to have a higher probability of accessing formal credit and investment products (Akande, 2023).

Banking Infrastructure: The physical presence of banking facilities significantly influences financial inclusion. Studies have shown that proximity to bank branches enhances financial service usage, particularly in rural areas where transportation costs and time constraints are significant barriers (Barboni, Cassar, & Wydick, 2019).

Participation in SHGs: Participation in Self-Help Groups (SHGs) has emerged as a particularly effective strategy to foster financial inclusion. SHGs not only encourage saving and credit access but also play a critical role in strengthening financial agency among women and marginalized communities (Emerald, 2024; Dar, 2020). Self-help groups and other community-based financial initiatives have been recognized as important mechanisms for enhancing financial inclusion, particularly among women and marginalized populations (Banerjee et al., 2015). These institutions provide not only financial services but also financial education and social support. India's Self-Help Group (SHG) movement represents one of the world's most extensive experiments in community-based financial inclusion, with over 12 million groups serving more than 142 million households as of 2024 (Economic Times, 2023). The SHG model has attracted significant academic attention due to its unique approach to financial inclusion, which combines savings mobilization, credit provision, and social empowerment within community-based institutional frameworks. Research by Singh et al. (2023) in Mizoram found that membership of Self-Help Groups, credit linkage of such SHGs, and credit availed from SHGs were among the factors identified for testing their effect on financial inclusion and financial literacy. The study highlights several key advantages of the SHG model: SHGs leverage existing social networks and trust relationships to overcome information asymmetries that typically plague formal lending relationships, provide financial education and capacity building within culturally appropriate frameworks, and create intermediate institutions that can interface effectively with formal banking systems while maintaining community ownership and control.

Socioeconomic Factors: Income levels, age, and family size have been identified as important correlates of financial inclusion. Higher-income households typically have better access to financial services, while the relationship between age and financial inclusion often follows a non-linear pattern (Demirgüç-Kunt, Klapper, & Singer, 2017).

Studies show that age significantly influences financial inclusion. Allen et al. (2016) found that younger and older groups have lower inclusion levels, with middle-aged individuals more likely to use formal accounts. Honohan and King (2012) similarly noted that younger populations face barriers due to limited financial literacy and unstable income. In India, Kumar and Mishra (2021) reported a strong correlation between age and financial inclusion, with middle-aged respondents showing higher participation. Sarma and Pais (2011) also stressed the importance of age-related factors in cross-country inclusion patterns. Likewise, Ramakrishnan and Natarajan (2020) observed that middle-aged individuals are most financially included, while younger and older groups face greater challenges.

Recent studies highlight a strong link between income and financial inclusion. Demirguc-Kunt, Klapper, and Singer (2017) found that wealthier households are more likely to access formal financial services, a pattern also noted by Zins and Weill (2016) in Africa. Kumar and Mishra (2021) showed in South Asia that financial inclusion both depends on and helps reduce income inequality. In India, Sahu and Geetanjali (2018) and Ghosh (2013) identified income as a key factor in rural and marginalized communities, while Beck and Brown (2015) emphasized that higher-income households in transition economies are significantly more likely to use banks.

Studies show that family size significantly influences financial inclusion. Bhandari (2020) found that larger households in India are more financially excluded due to resource constraints, while Demirguc-Kunt, Klapper, and Singer (2017) observed a similar global trend. Tripathi and Sinha (2021) reported that in rural India, bigger families face reduced savings and investment capacity. Sarma and Pais (2011) also highlighted

family size as a key factor in cross-country analyses, and Diniz, Birochi, and Pozzebon (2012) noted that larger households in remote areas often face logistical barriers to banking.

Contextual Factors in Northeast India

The northeastern region of India presents unique challenges for financial inclusion due to geographical isolation, ethnic diversity, and distinct cultural practices. Previous studies have highlighted the role of traditional institutions and informal financial systems in these regions (Saikia & Das, 2017). Singh et al. (2023) provides crucial regional context for North-Eastern India, noting that Mizoram, despite being the second-most literate state in India, was the second-least financially literate state according to NCFE (2013). This paradox highlights the disconnect between general literacy and financial literacy, emphasizing the need for targeted interventions. The study's finding that 32% of respondents were not aware of any financial products except savings bank accounts, and 20% reported lack of knowledge of basic payment options, underscores the significant financial literacy gaps in the region.

III. Methodology

Study Area and Sample

This study was conducted in Lunglei district, Mizoram, India, a predominantly rural district where agriculture is the primary economic activity. The district's geographical characteristics, including hilly terrain and scattered settlements, present typical challenges for financial service delivery in rural areas. A structured random sampling approach was used to select 320 farmers from across the district. The sample size was determined based on statistical power calculations to ensure adequate representation and reliable statistical inference. Farmers were selected from various villages, ensuring geographical diversity within the district. The sampling frame was constructed using village-level data from the 2011 Census of India, supplemented with updated information from district administrative records and NABARD's banking outlet database. Villages were initially classified into two primary strata based on banking infrastructure presence: villages with banking facilities and villages without such facilities.

The final sample consisted of 320 farming households equally distributed between the two strata: 160 households from villages with banking facilities and 160 households from villages without banking facilities. This sample size was determined through power analysis calculations designed to detect moderate effect sizes with 80% power and 95% confidence levels for key statistical tests.

Data Collection

Primary data were collected through structured interviews using a pre-tested questionnaire. The questionnaire was developed based on extensive literature review and pilot testing in similar contexts. Data collection was conducted by trained enumerators familiar with the local language and customs, ensuring accuracy and cultural sensitivity.

Variable Measurement

Dependent Variable:

Table 1: Operational definition and measurement scale of dependent variable

Variable	Measurement Scale	Levels	Measurement Basis
Financial Inclusion	Ordinal (5 categories)	1=Financially excluded 2=Low Financial Inclusion 3=Moderate Financial Inclusion 4= High Inclusion 5=Full Inclusion	Sangheeta's (2011) financial inclusion index

The dependent variable, financial inclusion, was measured using Sangheeta's (2011) financial inclusion index, categorizing farmers into five levels: financially excluded (1), low financial inclusion (2), moderate financial inclusion (3), high financial inclusion (4), and full financial inclusion (5). This multidimensional measure considers various aspects of financial service usage including savings, credit, insurance, and payment services.

Independent variables:

Table 2: Operational definitions and measurement scale of independent variable

Variable	Measurement Scale	Levels	Measurement Basis
Availability of banks in village	Binary (2 categories)	1=No bank 2=Bank present	Presence of banking facility in the village
Educational level	Ordinal (6 categories)	1=Illiterate 2=Primary School 3=Middle School	Formal educational attainment

		4= High School 5=Higher Secondary School 6=Bachelor's degree and above	
Distance to nearest bank	Ordinal (5 categories)	1 = less than 1 km 2=1-3 km 3=3-5 km 4=5-7 km 5= more than 7 km	Physical distance to nearest banking facility
Participation in SHGs	Binary (2 categories)	1=No participation 2=Participation	Membership in SHGs
Financial literacy level	Ordinal (3 categories)	1 = poor 2= fair 3= sound	Financial knowledge assessment
Household income	Ordinal (5 categories)	1 = 5000 and below 2= 5001 – 10,000 3= 10,001 – 15,000 4= 15,001 – 20,000 5= more than 20,000	Monthly household income brackets
Age of respondents	Ordinal (5 categories)	1 = 30 years and below 2= 31- 40 years 3= 41 – 50 years 4= 51 – 60 years 5= 61 and ABOVE	Age group classification
Family size	Ordinal (5 categories)	1 = 1- 3 members 2= 4-6 members 3= 7-9 members 4= 10-12 members	Number of household members
Borrowing from informal money lenders	Binary (2 categories)	1=No borrowing 2= Borrowing from informal sources	Dependence on informal credit sources

Nine key independent variables were examined:
1. Availability of banks in village: Binary variable (1 = no bank, 2 = bank present)
2. Educational level: Six categories from illiterate (1) to bachelor's degree and above (6)
3. Distance to nearest bank: Five categories from less than 1 km (1) to more than 7 km (5)
4. Participation in SHGs: Binary variable (1 = no participation, 2 = participation)
5. Financial literacy level: Three categories (poor, fair, sound)
6. Household income: Five income brackets from ≤₹5,000 (1) to >₹20,000 (5)
7. Age of respondent: Five age groups from 30 years and below to 61 years and above
8. Family size: Four categories from 1-3 members (1) to 10-12 members (4)
9. Borrowing from Informal money lenders:*Binary variable (1 = no borrowing, 2 = borrowing from informal sources)

Statistical Analysis
Given the ordinal nature of the financial inclusion variable and the mixed measurement levels of the independent variables, non-parametric statistical methods were primarily employed. The analysis included:
- Descriptive statistics to characterise the sample
- Chi-square tests of independence to examine associations between categorical variables
- Fisher's exact tests where expected cell counts were small
- Spearman rank correlations for associations between ordinal variables
- Mann–Whitney U tests for comparing two independent groups
- Kruskal–Wallis H tests for comparing more than two independent groups

To complement p-values and assess the practical significance of findings, standardized effect sizes were reported:
- For Chi-square tests, Cramer's V was used.
- For Spearman correlations, the magnitude of ρ and the proportion of variance explained (ρ^2) were interpreted.
- For Mann–Whitney U tests, effect size r was calculated as $|Z|/\sqrt{N}$ and interpreted using conventional benchmarks (0.10 = small, 0.30 = medium, 0.50 = large).
- For Kruskal–Wallis H tests, eta squared η^2H was calculated using the formula

$$\eta^2H = (H-k+1)/(N-k),$$ where H is the Kruskal–Wallis statistic, k is the number of groups, and N is the total sample size. Values of approximately 0.01, 0.06, and 0.14 were interpreted as small, medium, and large effects, respectively.
All analyses were conducted using SPSS software, with statistical significance set at $p < 0.05$.4. Results

Sample Characteristics

The sample consisted of 320 farmers with diverse socioeconomic backgrounds. The majority (269 farmers, 84%) were classified as having low financial inclusion, while 48 (15%) had moderate inclusion. Two farmwers were financially excluded while only one farmer achieved high financial inclusion, and none reached full inclusion, indicating substantial room for improvement in financial inclusion levels.

Regarding educational attainment, 113 farmers (35.3%) had primary education, 86 (26.9%) had middle school education, and 67 (20.9%) completed high school. Only 10 farmers (3.1%) had bachelor's degrees or higher, reflecting the rural educational profile.

Distance to banking facilities was a significant constraint, with 190 farmers (59.4%) living more than 7 km from the nearest bank. However, 178 farmers (55.6%) participated in SHGs, indicating active community-based financial engagement.

Key Determinants of Financial Inclusion

Table 3: Statistical Results Summary

Factor	Relationship with Financial Inclusion	Statistical Significance	Strength of Association	Variance Explained
Educational Level	Strong Positive (Higher education = Better inclusion)	Highly Significant (p < 0.001)	Strong (Cramer's V = 0.342)	17.39% (Educational level explains 17% of inclusion differences)
Distance to Nearest Bank	Strong Negative (Farther bank = Lower inclusion)	Highly Significant (p < 0.001)	Moderate (Cramer's V = 0.289)	19.63% (Distance explains 20% of inclusion differences)
Participation in Self-Help Groups (SHGs)	Moderate Positive (SHG participation = Better inclusion)	Highly Significant (p < 0.001)	Moderate (Cramer's V = 0.238)	5.48% (SHG participation explains 5% of differences)
Household Income	Strong Positive (Higher income = Better inclusion)	Highly Significant (p < 0.001)	Very Strong (Cramer's V = 0.54)	16.9% (Income explains 17% of inclusion differences)
Age of Respondent	Weak Negative (Older age = Lower inclusion)	Significant (p = 0.001)	Weak (p = -0.190)	3.61% (Age explains 4% of inclusion differences)
Dependence on Informal Money Lenders	Negative (Informal borrowing = Lower inclusion)	Significant (p = 0.023)	Small to Moderate (estimated)	~3% (Estimated 3% of inclusion differences)
Banking Infrastructure	Moderate Positive (Bank in village = Better inclusion)	Significant (p = 0.002)	Moderate (Cramer's V = 0.220)	4.84% (Banking infrastructure explains 5% of differences)
Financial Literacy	No relationship (Surprising finding)	Not Significant (p = 0.908)		
Family Size	No relationship	Not Significant (p = 0.949)		

Educational Level: The analysis revealed a strong positive association between educational level and financial inclusion. The Pearson Chi-square test yielded χ^2 = 112.321, df = 15, p < 0.001, with Cramer's V = 0.342, indicating a moderate to strong association. Spearman rank correlation showed ρ = 0.417, p < 0.001, with educational level explaining approximately 17.39% of the variance in financial inclusion (R^2 = 0.174).

The Kruskal-Wallis test (H = 80.894, p < 0.001) confirmed significant differences across educational groups, with higher education levels consistently associated with better financial inclusion. The standardized effect size for this test, based on Kruskal–Wallis eta squared, was η^2 = 0.242, indicating a large effect. This implies that educational level accounts for about 24% of the variance in financial inclusion ranks, with higher educational attainment consistently associated with better financial inclusion.

Distance to Nearest Bank: A significant negative relationship was found between distance to banks and financial inclusion. The Chi-square test (χ^2 = 80.415, df = 12, p < 0.001) with Cramer's V = 0.289 indicated a moderate association. Spearman correlation revealed ρ = -0.443, p < 0.001, suggesting that approximately 19.63% of variance in financial inclusion is explained by distance to banking facilities.

The Mann-Whitney U test (U = 10806.50, Z = -3.797, p < 0.001) confirmed that farmers living closer to banks have significantly higher financial inclusion levels, with moderate effect size (r = -0.212).

Participation in Self-Help Groups: SHG participation showed a positive association with financial inclusion. The Chi-square test yielded χ^2 = 18.111, df = 3, p < 0.001, with moderate effect size (Cramer's V = 0.238). Spearman correlation was ρ = 0.234, p < 0.001, indicating that SHG participation explains approximately 5.48% of variance in financial inclusion.

Notably, no SHG participants were financially excluded, while some non-participants were, suggesting that SHG participation may prevent financial exclusion.

<u>Household Income</u>: A significant positive relationship was found between income and financial inclusion. The Chi-square test (χ^2 = 373.460, df = 9, p < 0.001) with large effect size (Cramer's V = 0.54) indicated a strong association. Spearman correlation showed ρ = 0.411, p < 0.001, with income explaining approximately 16.9% of variance in financial inclusion.

<u>Age of Respondent</u>: While the overall Chi-square test was not significant (χ^2 = 16.138, df = 12, p = 0.185), the linear-by-linear association test revealed a significant negative trend (p = 0.001). Spearman correlation showed ρ = -0.190, p = 0.001, indicating that age explains approximately 3.61% of variance in financial inclusion, with older respondents tending toward lower inclusion levels.

<u>Dependence on Informal Money Lenders</u> : Dependence on informal money lenders was negatively associated with financial inclusion. Fisher's exact test revealed p = 0.023, indicating that borrowers from informal sources were more likely to have lower financial inclusion levels. Ordinal logistic regression confirmed that non-borrowers had significantly higher odds of achieving better financial inclusion (p = 0.024). Informal Money Lenders shows a 3% negative impact on financial inclusion.

<u>Banking Infrastructure</u>: The presence of bank branches in villages showed a significant positive association with financial inclusion (χ^2 = 15.323, df = 3, p = 0.002), with moderate effect size (Cramer's V = 0.220). Villages with banks had higher mean ranks for financial inclusion (172.96) compared to villages without banks (148.04), confirmed by Mann-Whitney U test (p < 0.001). Banking Infrastructure contributes a meaningful 4.84% of variance in financial inclusion.

<u>Financial Literacy</u>: Contrary to expectations, financial literacy showed no significant association with financial inclusion levels (χ^2 = 2.124, df = 6, p = 0.908). This surprising finding challenges conventional assumptions about the relationship between financial knowledge and inclusion.

Family Size: No significant relationship was found between family size and financial inclusion (χ^2 = 3.347, df = 9, p = 0.949), with Fisher's exact test confirming this result (p = 0.784).

IV.   Findings

Key Findings and Implications

This study provides comprehensive evidence on the multifaceted nature of financial inclusion determinants among farmers in rural India, with a specific focus on Lunglei district in Mizoram. Among the variables examined, educational level and household income emerged as particularly important predictors of financial inclusion, alongside physical access to banking and participation in SHGs.

Educational attainment is the single strongest predictor of financial inclusion in the sample. Both Chi-square and correlation analyses show that higher levels of schooling are associated with significantly better inclusion outcomes, and the Kruskal–Wallis effect size indicates that education has a large impact on the distribution of financial inclusion ranks. These findings are consistent with global and Indian evidence underscoring the role of education in enhancing financial capability and engagement with formal financial institutions (Grohmann et al., 2018; Singh et al., 2023).

Distance to the nearest bank and the presence of banking infrastructure also play a critical role. Farmers living farther from bank branches tend to have lower levels of inclusion, and villages without banking facilities exhibit poorer outcomes than those with a bank. These patterns reinforce earlier work highlighting geographic proximity as a robust predictor of account ownership and use (Beck et al., 2007; Park & Mercado, 2018). At the same time, the results suggest that alternative delivery channels, such as banking correspondents or digital financial services, could be particularly valuable in overcoming the physical access constraints that characterize Lunglei district.

Participation in SHGs exerts a moderate but meaningful positive effect. Notably, none of the SHG participants in the sample are completely financially excluded, suggesting that SHGs function as an effective safeguard against total exclusion from formal financial services. This aligns with national and international evidence pointing to the potential of community-based groups to promote savings, credit access, and wider empowerment, especially among women and marginalized households (Banerjee et al., 2015; Seward et al., 2017; Economic Times, 2023).

Household income is strongly and positively associated with financial inclusion, indicating that better-off households are more likely to access and use formal financial services. While this relationship is not surprising and echoes findings from numerous settings (Demirgüç-Kunt et al., 2017; Zins & Weill, 2016; Kumar & Mishra, 2021), it has important policy implications. Interventions that raise farm incomes—through higher productivity, improved market access, or diversification—are likely to have indirect benefits for financial inclusion as well.

The relationship between age and financial inclusion is weaker but still noteworthy. Middle-aged farmers tend to be more financially included than both younger and older groups, suggesting a life-cycle pattern whereby experience, income stability, and accumulated assets facilitate engagement with formal finance (Allen et al., 2016). Reliance on informal moneylenders is negatively associated with financial inclusion, indicating that farmers who borrow informally are less likely to be integrated into the formal financial system, a pattern documented in other Indian and international contexts as well.

One of the most striking and counterintuitive findings is the absence of a significant association between measured financial literacy and financial inclusion. This challenges the common assumption that improvements in financial literacy automatically translate into higher usage of formal financial services. Instead, it suggests that structural factors—such as physical access, income constraints, and the strength of community-based institutions—may be more decisive in the rural Mizoram context. Similar complexities in the literacy–inclusion relationship have been observed elsewhere (Singh et al., 2023; Morgan & Long, 2020; Koomson et al., 2020), even though broader cross-country and national evidence generally supports a positive link (Grohmann et al., 2018; NCFE, 2019; Khandelwal et al., 2025).

Taken together, the findings underline that financial inclusion in Lunglei district is shaped by a combination of individual characteristics (education, income, age), structural conditions (distance and banking infrastructure), and community-level institutions (SHGs), while formal financial literacy alone does not appear sufficient to ensure meaningful inclusion.

V.   Conclusion And Policy Implications:

This study has examined the determinants of financial inclusion among 320 farmers in Lunglei district, Mizoram, using a multidimensional index of financial inclusion and a suite of non-parametric statistical methods. The results show that financial inclusion levels in the district remain low overall, with most farmers clustered in the lower inclusion categories. Within this context, educational level, distance to banking facilities, household income, SHG participation, banking infrastructure, age, and reliance on informal moneylenders all play distinct roles in shaping inclusion outcomes.

The strongest and most consistent predictor is educational attainment, which exerts a large standardized effect on financial inclusion ranks and explains a substantial share of the variance in inclusion levels. Distance to the nearest bank and the availability of banking infrastructure also matter greatly, underscoring the importance of reducing physical access barriers in hilly and sparsely populated regions such as Lunglei. SHG participation provides an important protective mechanism against complete exclusion, while higher incomes are associated with deeper engagement in formal financial activities. In contrast, neither financial literacy (as measured in this study) nor family size shows a significant relationship with financial inclusion, indicating that knowledge alone, in the absence of enabling structures and incomes, may not be sufficient to drive inclusion.

The study contributes to the literature by providing empirical evidence from an understudied region and by highlighting a nuanced and context-dependent relationship between financial literacy and financial inclusion. It also underscores the importance of traditional and community-based institutions—particularly SHGs—in complementing formal banking efforts in remote rural areas.

The findings suggest several policy implications:
- **Education-focused interventions**: Strengthening general education, as well as targeted adult education and farmer-oriented training, is likely to yield substantial gains in financial inclusion. Programs that integrate basic financial concepts into existing education and extension activities may be particularly effective.
- **Banking infrastructure and outreach**: Reducing distance to formal financial services remains critical. This may involve expanding physical branches where feasible, but also increasing the presence of business correspondents, mobile banking units, and agent networks that can deliver services closer to remote villages.
- **Leveraging SHGs and community institutions**: Given their role in preventing complete exclusion and facilitating access, SHGs should continue to receive institutional support, capacity-building, and linkage with banks and other formal financial institutions. Ensuring quality, transparency, and good governance within SHGs is essential for sustaining their impact.
- **Income-enhancing strategies**: Policies that raise agricultural incomes—through improved productivity, better market access, and diversification into higher-value activities—can indirectly promote financial inclusion by increasing the demand for and capacity to use formal financial products.
- Addressing dependence on informal moneylenders: While informal credit may remain important in the short term, policies should aim to expand affordable and flexible formal credit options that can gradually substitute for high-cost informal borrowing, thereby deepening formal inclusion.

Finally, the results highlight the importance of designing financial inclusion strategies that are sensitive to local context. In regions such as Lunglei, where geography, culture, and existing community structures shape

financial behaviour, a one-size-fits-all approach is unlikely to be effective. Instead, a coordinated set of interventions addressing education, infrastructure, income, and community institutions is needed to achieve sustained and meaningful improvements in rural financial inclusion.

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