IOSR Journal Of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 17, Issue 1 Ser. 2 (Jan. – Feb. 2026), PP 14-24
www.Iosrjournals.Org

Evaluating The Post-Pandemic Shifts In Financial Inclusion Among Farmers In Lunglei District Of Mizoram

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Abstract
The study interrogates the shifting landscape of financial inclusion among farmers in Lunglei district, Mizoram, in the shadow of the COVID-19 pandemic. Deploying a rigorously stratified sample and drawing on field data from 320 respondents across four development blocks of the Lunglei District of Mizoram, the analysis traces both the architecture and the erosion of financial agency in agrarian life. By contrasting pre- and post-pandemic indicators—spanning banking access, credit, insurance, and digital transactions—this work reveals not just numerical declines, but the deeper fault lines of marginality, adaptation, and resilience.
The Wilcoxon Signed-Rank methodology documents a pronounced contraction: formal credit recedes, savings and insurance falter, and active engagement with financial institutions narrows. While digital modalities expand in reach, their adoption remains unequal and often superficial. acute, Informal finance rushes to fill the breach left by retrenching institutions. Qualitative narratives, woven alongside statistical evidence, illuminate both the burdens of exclusion and the adaptive strategies rural households deploy in the face of adversity.
The paper advances a critique of policy overreliance on account-opening metrics and urges holistic strategies: hybrid service delivery, tailored credit guarantees, gender-intentional inclusion, and capability-building that resonates with local realities. Ultimately, the findings foreground an inescapable truth—financial inclusion is not an endpoint, but a process marked by fragility and possibility, where resilience is won or lost at the intersection of institution and everyday life.
Keywords: *Financial Inclusion, COVID-19 Impact, Rural Finance, Mizoram, Farmers*

Date of Submission: 03-01-2026 Date of Acceptance: 13-01-2026

I. Introduction

Financial inclusion today stands not merely as a policy ambition but as a moral and developmental imperative—a continuum that bridges the aspirations of distributive justice with the mechanics of credit, savings, and insurance (Sarma, 2008; Allen et al., 2016). In agrarian societies such as India, where livelihood and land remain deeply intertwined, the democratisation of financial access is central to sustaining growth with equity. Rural citizens must engage with financial institutions as empowered participants, not passive recipients of charity, using the framework of financial inclusion to claim their rightful access to credit, savings, and insurance.

Well before the onset of the COVID-19 pandemic, India had been successfully extending the frontiers of inclusion. Government reforms, digitisation, and the reach of Jan Dhan–Aadhaar–Mobile linkages had begun transforming financial transactions into participatory experiences rather than procedural rituals (Demirgüç-Kunt et al., 2022). Yet, the pandemic's arrival in late 2019 revealed how fragile this progress remained. What began as a public health crisis quickly assumed the dimensions of a systemic economic rupture—severing supply chains, immobilising markets, and rendering invisible the rural producers whose resilience had fed the nation (Reardon et al., 2021).

Nowhere was this fracture more palpable than across India's northeastern hills. In Mizoram, whose verdant landscapes conceal a dispersed population and limited physical infrastructure, entire communities found themselves negotiating between subsistence and survival (State Rural Livelihood Mission Mizoram, 2021). The banking infrastructure, sparse even in calmer times, faltered under restrictions, leaving farmers with constrained access to both institutional credit and informal credit networks. Markets froze; mobility vanished; and digital

platforms—heralded as the future of inclusive finance—remained limited to those few familiar with their language and devices (Narayan & Pande, 2021; Tay, 2022).

Financial inclusion, in principle, performs dual function in rural life: it equipes farmer to venture forward and protects them from the recoil of uncertainty. Access to credit expands investment capability; insurance cushions shocks of climate and crop; and formal savings weave stability into seasonal income cycles (Sarma, 2008). The government's welfare thrusts—PM-Kisan, PM-JDY, and other social safety nets—stand as important tributaries in this landscape, channelling liquidity to vulnerable households (Mukherjee & Roy, 2025). But the pandemic tested these systems as never before, constraining both distribution and trust in formal mechanisms.

The push toward digital inclusion during COVID-19 proved as revealing as it was necessary. While contactless financial systems ensured continuity in remittances and welfare distribution (Demirgüç-Kunt et al., 2022), rural India—and Mizoram in particular—confronted barriers of connectivity, technical familiarity, and social confidence (Asamoah et al., 2023; Gupta & Das, 2024). Thus, inclusion after the pandemic could no longer be reduced to the number of bank accounts opened; it demanded capacity, comprehension, and credibility in the everyday financial behaviour of rural people.

Contemporary scholarship from South Asia provides converging testimony. Narayan and Pande (2021) observe that credit disruptions deepened income insecurity, while Ojong et al. (2021) highlight the remarkable adaptability of micro-enterprises amid collapse. Aboagye et al. (2021) articulate a policy architecture of resilience—comprising liquidity support and credit guarantee schemes—that may guide India's recovery frameworks. Quantitative lenses such as Sarma's (2008) 'Index of Financial Inclusion', along with robust nonparametric assessments like the Wilcoxon Signed-Rank Test (Saplioglu, 2022), lend statistical clarity to what is essentially a human story of adaptability under constraint.

Yet, a curious silence persists around the Northeast. Despite its diversity and promise, the region remains underrepresented in the national discourse on inclusive finance. Mizoram—with its culture of community cooperation, smallholder agrarian structure, and reformist developmental ideals—forms an instructive case in this regard (Bhattacharya & Singh, 2023). Lunglei district, the largest and agriculturally most diverse, provides both the empirical foundation and the interpretive frame for the inquiry.

The study, therefore, seeks to examine how the pandemic altered financial inclusion dynamics among farmers in Lunglei, with four interrelated objectives:

1. To measure structural shifts in access, usage, and quality of financial services before and after COVID-19;
2. To map rural disparities between villages possessing banking facilities and those without;
3. To assess the role of digital adoption as a mechanism of financial resilience;
4. And to position these findings within the broader policy discourse on sustainable rural finance in Mizoram.

In doing so, the work does not merely quantify decline—it interrogates the nature of resilience itself. "By integrating empirical analysis with contextual insights, the study hopes to contribute meaningfully to the conversation on bridging institutional finance and rural welfare. For Mizoram, and for hill economies like it, the question is no longer whether financial inclusion can transform lives, but whether it can endure disruption and still reach the people who need it most.

II. Review Of Literature

The concept of financial inclusion, while now a staple of development discourse, remains contested: is it merely access to banking infrastructure, or the substantive use of formal financial services to enable economic agency? The literature, both global and regional, offers evolving answers—answers shaped by the tensions between institutional ambition and everyday realities.

At the international level, Sarma (2008) sets the empirical stage with the Index of Financial Inclusion, combining banking penetration, service availability, and usage patterns. This composite measure, now widely adopted, provides a framework for tracking progress beyond account opening. Allen et al. (2016) deepens the conversation by linking financial inclusion not only to individual empowerment, but also to aggregate poverty reduction and gender equity—reminding us that financial inclusion is both cause and consequence of broader development.

The World Bank's Findex Report (Demirgüç-Kunt et al., 2022) frames financial inclusion as a global imperative, documenting gains in digital payment adoption but signalling persistent divides—urban/rural, rich/poor, male/female—that survive even the most ambitious reforms. Their bottom line: inclusion is shifting, but exclusion is obstinate.

In the context of COVID-19, global studies from Reardon et al. (2021) and Narayan & Pande (2021) confirm the pandemic's role as both disruptor and revealer: credit flows shrink, informal finance surges, risk amplifies, and state interventions strain against new and old constraints. Tay (2022) and Aboagye et al. (2021) turn the lens to digital frontiers, arguing digital finance is as much about infrastructure and trust as technology—those excluded from networks remain invisible to databases.

Drawing closer to home, the North East region of India—Mizoram in particular—shows all the complexity of frontier ecosystems. Mizoram's financial landscape is defined by hilly terrain, dispersed households, and patchy infrastructure (State Rural Livelihood Mission Mizoram, 2021). NABARD's State Focus Paper (2021–22) and World Bank (2021) studies both highlight the deficit: population per bank branch remains far above the national average; cooperative societies, while present, face liquidity and management limitations; microfinance institutions show promise but lack scale.

Bora (2020) maps the region's financial inclusion index, ranking Mizoram in the "low inclusion" bracket despite government efforts. Lalnunmawia (2015) and Vanlalmuana (2020) dissect rural and cooperative banking performance: rising membership, erratic deposit mobilization, inconsistent credit-deposit ratios—symptoms of institutional effort meeting structural constraint.

Insurance and credit form the backbone of agricultural resilience, yet uptake in Mizoram lags persistently. Mandal (2005) warns that geographic fragility and climatic uncertainty have rendered hill agriculture a risky business; cooperative and commercial banks hesitate, informal lenders fill the gap. Sarkar et al. (2025) document credit disbursement rates for agriculture stuck below 50% of annual plan targets—systemic barriers that pandemic disruption only compounds.

Evolving policy approaches confront old myths and new opportunities. SHG and JLG models offer localized credit linkage; DBT and PM-JDY move liquidity faster but do not replace relationship banking. Mukherjee & Roy (2025) capture the double-edged nature of digital welfare: speed of transfer increases, but exclusion is multiplied by each documentation and literacy hurdle.

Recent empirical work, including the Reserve Bank of India (2018) and Mizoram-specific reports, clarify the local picture: financial literacy remains patchy, usage of formal services remains segmented, and interventions rarely reach the "chronically excluded." Gender dimensions compound these patterns—women farmers, often invisible to formal account statistics, face barriers in collateral, documentation, and basic recognition by institutional actors.

The literature thus converges on a central tension: financial inclusion is both a deeply technical task—requiring robust infrastructure, capable institutions, and sophisticated products—and an irreducibly social one, shaped by trust, familiarity, and the rhythms of rural life. The pandemic amplified what was already brittle. Solutions, therefore, must be designed as bridges between the ambition of inclusion and the reality of exclusion—bridges built from data, from dialogue, and from deep engagement with local practice.

It is in this dialogue—between theory and field, past and present—that the present study situates itself.

III. Methodology

The present inquiry rests upon primary data collection across Lunglei district of Mizoram—a geographically representative locale encapsulating the region's demographic diversity, agricultural patterns, and institutional finance landscape. The choice of Lunglei is deliberate: with a cultivator population exceeding 62,000 (Census 2011) and distinct variations in banking infrastructure across its four development blocks, the district offers sufficient statistical power and contextual richness for examining pandemic-induced shifts in financial inclusion.

Sample and Sampling Strategy

A stratified random sample of 320 farmers was drawn, employing a 95% confidence level at 5% margin of error—a threshold appropriate for population-based survey research. The stratification was twofold: first, by rural development block (Lunglei, Lungsen, Hnahthial, and Bunghmun); second, by village banking infrastructure status (presence or absence of a functioning branch). This design permits dual comparative analysis—across geographic zones and across villages with differential access to formal financial institutions.

Table 1: Sample Distribution by RD Block and Banking Facility

RD Block	Villages with Bank Branch	Respondents	Villages without Bank Branch	Respondents	Total per Block
Lunglei	1	40	2	40 (20+20)	80
Lungsen	1	40	2	40 (20+20)	80
Bunghmun	1	40	2	40 (20+20)	80
Hnahthial	1	40	2	40 (20+20)	80
Total	**4**	**160**	**8**	**160**	**320**

Source: Primary Data

From each block, one village with bank branch and two without were selected via simple random sampling. This yielded 160 respondents from villages with banking facilities and 160 from those without—a balanced design minimizing sampling bias while preserving representativeness.

Eligibility criteria were straightforward: respondents must be residents of Lunglei district, engaged in cultivation or agricultural labour as primary livelihood. This ensured consistency with the study's agricultural focus and capacity to recall pre-pandemic financial behaviour across an approximate seven-year span.

Data Collection Instruments

Survey instruments were adapted from the OECD financial inclusion toolkit and the Reserve Bank of India's framework for assessing rural financial literacy. The questionnaire captured multiple dimensions: banking access (account ownership, branch proximity, frequency of transactions), credit behaviour (formal and informal sources, loan purposes, repayment history, application rejections), insurance participation (crop, livestock, government-backed schemes), savings practices (frequency, modalities, amounts), digital financial services (mobile banking usage, awareness of payment systems, receipt of government benefits), and engagement with welfare schemes (PM-Kisan, PM-JDY, others).

The instrument was drafted in English, translated into Mizo with community input, minor refinements were made following feedback—particularly regarding insurance terminology, which required simplification and contextualization for farmers unfamiliar with formal insurance language.

Data Collection Timeline

The study benefits from a fortuitous convergence of timing and opportunity. Pre-pandemic data were collected during 2014–2016 as part of a prior investigation into rural financial patterns in Lunglei district, focusing on baseline financial inclusion dynamics among farming households. The onset of COVID-19 presented an unexpected analytical opportunity: as the acute phase of the pandemic subsided and field access became feasible, the earlier dataset served as a valuable temporal benchmark.

During 2021–2023, the research team returned to the same pool of respondents, utilizing identical instruments and methodological protocols to capture post-pandemic financial behaviours and institutional engagement patterns. To ensure continuity and safety amid ongoing health concerns and logistical constraints, all respondents were contacted and interviewed through telephonic interaction. This remote modality allowed for systematic follow-up with the original cohort, maintaining data integrity despite the challenges of restricted physical mobility.

This longitudinal design provides distinct analytical advantages. Pre-pandemic data offer genuine baseline measurements, eliminating the memory bias that can compromise studies relying on retrospective recall. The post-pandemic wave, conducted when mobility and economic activity had largely normalized, captures the settled effects of disruption rather than the immediate chaos of lockdown periods.

The seven-year interval between data collection waves also permits the observation of longer-term behavioural adaptations and institutional responses—changes that might remain invisible in shorter-term impact assessments. The documented financial strategies of farmers, having weathered both normal volatility and pandemic shocks, reveal patterns of resilience and vulnerability that speak to deeper structural dynamics within rural financial systems.

Enumeration Process and Researcher Engagement

The approach to enumeration in this study balanced personal immersion with context-driven pragmatism. For the pre-pandemic wave (2014–2016), face-to-face interviews were conducted by both the principal researcher and a cadre of trusted local friends, each residing in the relevant villages. This blended model facilitated cultural fluency and respondent comfort, especially for sensitive questions related to credit and savings, and ensured that geographical coverage did not come at the expense of rapport or ethical rigor.

The post-pandemic phase (2021–2023), however, was marked by a methodological shift—necessitated and enabled by prior groundwork. Having established relationships and meticulously archived the mobile numbers of every respondent from the initial wave, the author personally conducted all interviews directly by telephone. This mode allowed for comprehensive follow-up during a period when household visits remained logistically or epidemiologically problematic, and ensured data continuity across the full sample. Calls were scheduled for times convenient to respondents, with conversations adapted to the limitations and opportunities of remote engagement: focused, respectful, and structured to preserve both depth and privacy.

Verbal informed consent was reaffirmed during each call, and assurances of anonymity and confidentiality remained foundational. The author’s direct dialog with every respondent in the post-pandemic window offered not just logistical efficiency, but a textured understanding of financial behaviours in a changing landscape—alive to nuance, reflective of lived experience, and rigorously systematic.

Analytical Framework

The Wilcoxon Signed-Rank Test was employed as the primary analytical tool—a nonparametric procedure well-suited to paired ordinal data where normality assumptions may not hold. This choice reflects the

reality that financial inclusion measures, while ordered (e.g., "no access," "limited access," "regular access"), frequently exhibit skewed distributions in rural populations. The test yields a Z-statistic and associated p-value, indicating whether median differences between paired observations (pre- and post-pandemic) are statistically significant (Saplioglu, 2022).

Secondary analysis incorporated descriptive statistics, cross-tabulations by block and banking status, and calculation of Sarma's (2008) Index of Financial Inclusion—a composite measure combining access, availability, and usage dimensions. Cronbach's alpha coefficients were computed for multi-item scales to assess internal consistency and reliability. All statistical procedures were executed using SPSS 27.0, with significance threshold set at $p < 0.05$. The Index of Financial Inclusion (IFI) proposed by Sarma (2008) captures the multidimensional nature of inclusion by integrating three dimensions: **access**, **availability**, and **usage** of financial services. This index ranges from 0 (complete exclusion) to 1 (complete inclusion), providing a composite measure that reveals holistic financial engagement beyond mere account ownership.

The construction of the IFI follows a four-step procedure:

Step 1: Dimension Level Normalization

Each dimension i is first normalized to a dimension index d_i using the formula:

$d_i = w_i \times (A_i - m_i / M_i - m_i)$

where:

- A_i = Actual observed value for dimension i,
- m_i = Minimum observed value for dimension i,
- M_i = Maximum observed value for dimension i,
- w_i = Weight assigned to dimension i, with $\sum w_i = 1$.

This ensures all dimensions lie in the interval $[[0, w_i]$, respecting their relative importance. The choice of minimum and maximum values is empirical, allowing adaptability to sample-specific distributions.

Step 2: Composite Index Calculation via Normalized Inverse Euclidean Distance

The overall IFI for a respondent j*j* is computed as the normalized inverse Euclidean distance from the ideal point $I = (w_1, w_2, w_3)$: $IFI_j = 1 - \sqrt{\sum_i (w_i - d_{ij})^2} / \sqrt{\sum_i w_i^2}$

- Here, d_{ij} is the dimension index of the j^{th} respondent in dimension i.
- The denominator $\sum_i w_i^2$ normalizes the distance ensuring the IFI lies between 0 and 1.
- 1 minus the normalized Euclidean distance reflects closeness to ideal inclusion (higher is better).

Step 3: Interpretation and Application

The IFI thus constructed is a continuous measure reflecting the position of each respondent relative to perfect inclusion. It allows comparison across time (pre- and post-pandemic), population subsets, and geographic regions. It is especially useful for capturing nuanced shifts in composite financial dimensions and for identifying exclusion pockets despite superficial account ownership.

IV. Results

Respondent Profile and Descriptive Overview

Table 2: Demographic Characteristics of Respondents (N=320)

Characteristic	Category	Frequency	Percentage
Gender	Male	251	78.4%
	Female	69	21.6%
Age Group	30 years and below	26	8.1%
	31-40 years	75	23.4%
	41-50 years	84	26.3%
	51-60 years	73	22.8%
	61+ years	62	19.4
Education	No formal education	24	7.5%
	Primary	113	35.3%
	Middle	86	26.9%
	Secondary	67	20.9%
	Higher Secondary	20	6.3%
	Graduation and above	10	3.1%
Primary Crop	Rice	158	49.4%
	Maize	87	27.2%
	Field Pea	75	23.4%

Source: Primary Data

The composition of this sample reveals a landscape distinctly masculine yet not entirely male-dominated, instructively so. Of 320 respondents, 251 (78.4%) are men and 69 (21.6%) are women. This gender skew, while significant, warrants careful interpretation. It does not denote women's absence from farming but rather their statistical underrepresentation in formal landholding and decision-making roles—a reflection of institutional and social patterns rather than actual agricultural participation. Women's invisible labour in livestock, horticulture, and household food production remains substantial even where formal enumeration captures fewer voices.

The age profile presents a population in transition yet rooted in experience. The youngest cohort—those aged thirty and below—comprises merely 8.1%, suggesting that youth are departing agriculture or diversifying their economic portfolios. The economically vibrant middle years, from thirty-one to fifty, form the demographic core: 23.4% in the thirty-one to forty bracket and 26.3% between forty-one and fifty. Together, they represent half the sample and embody the productive energy upon which agricultural systems depend. The older strata—those aged fifty-one to sixty (22.8%) and beyond sixty (19.4%)—constitute over 42% of respondents, a telling reminder that Lunglei's farming is increasingly an occupation of maturity. This demographic weight of experience carries implications for technological adoption, risk appetite, and institutional engagement.

Educational attainment, carefully parsed, reveals a more nuanced reality than formal schooling classifications suggest. While 7.5% report no formal schooling, functional literacy is substantially higher across the sample. The vast majority of those without formal education—nearly all—possess basic reading and writing capability, acquired through informal channels, community practice, or self-directed learning. This distinction is crucial: formal schooling metrics often obscure the practical literacy that enables farmers to navigate agricultural markets, interpret government notices, and engage with financial documentation. The modal category remains primary education (35.3%), indicating that while exposure to formal schooling has become nearly universal, depth of educational attainment remains shallow. Middle school completion (26.9%) marks a secondary plateau, followed by secondary (20.9%), higher secondary (6.3%), and tertiary education (3.1%). This distribution—concentration at primary and middle levels, thinning toward higher education—signals sufficient baseline literacy for basic financial comprehension and administrative engagement, yet insufficient technical sophistication for seamless digital technology adoption. The tension between everyday practical literacy and specialized digital fluency, latent in these figures, emerges starkly in the financial inclusion dynamics explored later.

Cropping patterns remain traditional, anchored in both ecology and habit. Rice dominates (49.4%), the staple grain around which Mizo agrarian life has revolved for generations. Maize, at 27.2%, and field pea, at 23.4%, provide complementary security and modest cash income. This trinity—rice, maize, legume—reflects an agricultural strategy attuned to both subsistence and marginal commercialization, a balancing act that characterizes hill farming communities across the Northeast.

Taken together, these demographic dimensions constitute not merely a table of characteristics but a sociological portrait—a community aging into agriculture, functionally literate yet educationally modest, capable in local contexts yet searching for pathways beyond subsistence. Understanding this portrait is prerequisite to comprehending both the financial structures that exclude these farmers and the resilience that sustains them despite exclusion.

Table 3: Financial Inclusion Indicators - Pre-COVID vs Post-COVID

Indicator	Pre-COVID (2014-16)	Post-COVID (2021-23)	Change	% Change
Bank Account Ownership	198 (61.9%)	203 (63.4%)	+5	+2.53%
Active Bank Usage	109 (34.1%)	94 (29.4%)	-15	-13.76%
Formal Credit Access	102 (31.9%)	80 (25.1%)	-22	-21.57%
Informal Credit Usage	94 (29.4%)	132 (41.3%)	+38	+40.43%
Crop Insurance Enrolment (PMFBY)	0	0	0	0
Regular Savings	146 (45.6%)	96 (30.0%)	-50	-34.25%
Digital Banking Usage	48 (15.0%)	125 (39.1%)	+77	+160.42%

Indicator	Pre-COVID (2014-16)	Post-COVID (2021-23)	Change	% Change
PM-Kisan Enrolment	N/A	187 (58.4%)	N/A	N/A
Direct Benefit Transfer Receipt	N/A	206 (64.4%)	N/A	N/A

Source: Primary Data

Bank Account Ownership: Modest Expansion, Shallow Engagement

Between 2014–16 and 2021–23, bank account ownership in Lunglei's farming population edged up modestly from 61.9% to 63.4%, reflecting a stabilization of nominal access but limited deepening of financial integration. The increase of 2.53% in ownership is less illuminating when juxtaposed with the contraction in active bank usage, which fell from 34.1% to 29.4%. This decline of nearly 14% in active engagement signals that while more farmers held formal accounts, fewer sustained regular transactions, an erosion attributable to pandemic-induced mobility constraints and operational disruptions at banking facilities. The data intimate a widening gap between formal account enumeration and meaningful participation.

Formal Credit Access: Contraction Amid Rising Informality

Formal credit access declined sharply from 31.9% of respondents pre-pandemic to 25.1% post-pandemic—a 21.57% reduction that underscores institutional retrenchment or demand contraction amid economic uncertainty. Concurrently, informal credit reliance ballooned from 29.4% to 41.3%, a staggering 40.43% surge that mirrors the withdrawal of institutional credit and the resiliency of local, often predatory, financiers in filling the vacuum. This pattern echoes broad South Asian dynamics while revealing localized vulnerabilities in northeast India's hilly agroecology.

Insurance Enrolment: The Absent Shield Against Risk

Crop insurance enrolment under PMFBY stands at precisely zero—both before and after the pandemic—a stark indicator not of decline but of systemic non-implementation. This absence is not accidental but institutional, rooted in a cascade of tender failures, prohibitive premium rates, and administrative inertia spanning nearly a decade. Mizoram's experience with PMFBY reads as a chronicle of persistent frustration: tenders floated and rebid, insurance companies unwilling to participate or quoting exorbitant premiums ranging from 45% to 55%, and state-level committees repeatedly rejecting bids due to financial unsustainability and non-compliance with operational requirements.

From Kharif 2017 onward, repeated attempts to operationalize the scheme foundered. Bidders either failed to materialize, quoted non-uniform and inflated premiums across districts, or lacked the requisite infrastructure presence. Electoral cycles interrupted procurement timelines; revamped guidelines introduced multi-year contracts and revised subsidy sharing (90:10 for Northeast states), yet implementation remained elusive. Even when administrative approvals were secured and crop data compiled, rigid seasonal cut-off dates rendered actual rollout impossible (Agenda note for SLCCI, 2024).

The result is comprehensive exclusion from risk-mitigation instruments precisely when climatic volatility and market uncertainty demand their presence most acutely. Farmers in Lunglei—and across Mizoram—navigate agrarian life entirely unshielded by formal insurance, relying instead on precarious self-insurance through savings depletion, asset liquidation, or recourse to informal credit at punitive rates.

This void is not merely a data point; it represents a policy failure with compounding consequences for household resilience, investment behaviour, and long-term agricultural sustainability. The nominal budgetary provision of Rs. 5 lakh for crop insurance in 2024–25 underscores the scheme's continued marginalization. Without urgent reform—including realistic premium calibration, enhanced insurer participation incentives, and streamlined administrative processes—crop insurance will remain an institutional chimera rather than an operational reality for Mizoram's farming communities**.**

Savings Behaviour: Decline Reflecting Cash Constraints

Regular savings behaviour contracted profoundly during the pandemic, slipping from 45.6% pre-COVID to 30.0% post-COVID—a 34.25% decline indicative of income shocks and precautionary dissaving. Less saved and less frequently deposited, farmers retreated from formal savings channels, exacerbating their vulnerability. This contraction accentuates the fragile financial buffers that rural households maintain against shocks.

Digital Banking Usage: Rapid Expansion, Unequal Adoption

Digital financial engagement underwent a dramatic surge, leaping from 15.0% to 39.1%, a 160.42% increase energized by pandemic-driven push toward contactless transactions and welfare delivery. Yet this growth must be read with caution; adoption remains concentrated among younger, male, and better-connected farmers, with predominant use limited to basic functions such as balance inquiry and government benefit receipt rather than expansive financial activity.

Welfare Schemes: Widespread Reach Amid Institutional Hurdles

Government welfare initiatives garnered substantial penetration, with PM-Kisan enrolment at 58.4% and direct benefit transfer (DBT) receipts at 64.4% post-pandemic. These schemes have functioned as crucial lifelines during crisis. Nevertheless, their efficacy remains circumscribed by uneven delivery, documentation challenges, and exclusion of marginalized groups—conditions warranting continued policy refinement and monitoring.

This layered interplay of measured advancements and stark retrenchments paints a nuanced tableau of financial inclusion's transformation under pandemic conditions—a tableau that combines resilience, regression, and uneven modernization across Lunglei's agrarian communities.

Financial Inclusion Index: Composite Assessment

Sarma's Index of Financial Inclusion (2008) was calculated for each respondent across three dimensions: access (presence of formal financial accounts), availability (frequency of service provision near the respondent), and usage (transactional behaviour). The index ranges from 0 (complete exclusion) to 1 (complete inclusion).

Table 5: Sarma's Index of Financial Inclusion Calculation

Component	Weight	Pre-COVID Score (Normalised)	Post-COVID Score (Normalised)
Banking Access (d1)	0.33	0.48	0.45
Banking Usage (d2)	0.33	0.39	0.31
Service Quality (d3)	0.34	0.36	0.29
Overall Index	1.00	**0.41**	**0.33**

Source: Calculaated from Primary Data

Pre-pandemic, the sample mean index stood at 0.41 (SD = 0.09), with a median of 0.39. This places Lunglei's farmers in the "moderate financial inclusion" category—neither extensively integrated nor entirely excluded, but decidedly less included than urban or agriculturally advanced rural regions. Post-pandemic, the mean declined to 0.33 (SD = 0.11)—a statistically significant drop of 19.5% ($t = -3.212$, $p < 0.001$).

Table 6: Block-wise Comparison of Financial Inclusion Changes

RD Block	Pre-COVID Mean Index	Post-COVID Mean Index	Change	Sig.
Lunglei	0.43	0.36	-0.07	**
Lungsen	0.39	0.31	-0.08	***
Bunghmun	0.40	0.32	-0.08	***
Hnahthial	0.42	0.35	-0.07	**

Note: ** indicate statistical significance at the 1% level ($p < 0.01$), meaning there is less than a 1% probability that the observed difference occurred by chance.

*** signify statistical significance at the 0.1% level ($p < 0.001$), indicating even stronger evidence against the null hypothesis and an even lower probability of chance occurrence.

Source: Calculated from Primary Data

Block-level variation was instructive. Lunglei Block (the most urbanized and road-connected) showed a pre-pandemic index of 0.43, declining to 0.36 post-pandemic (a 16.3% decrease). Lungsen Block (more remote) began at 0.39, falling to 0.31 (a 20.5% decrease). The differential impact suggests that remoteness intensified pandemic-induced exclusion—villages without physical infrastructure suffered more than those with marginal but present banking access

Inclusion Index and Wilcoxon Signed-Rank Test

Table 4: Wilcoxon Signed-Rank Test - Detailed Ranks

Rank Type	N	Mean Rank	Sum of Ranks	Interpretation
Negative Ranks (Post < Pre)	42	28.50	1197.00	Decline in financial inclusion
Positive Ranks (Post > Pre)	14	28.50	399.00	Improvement in financial inclusion
Ties (Post = Pre)	264	-	-	No change in financial inclusion
Total	320	-	-	-

Source: Calculated from Primary Data

The paired analysis of financial inclusion changes across the 320 respondents yielded the following distribution:

- **Negative Ranks** (respondents with lower post-pandemic inclusion): 42 respondents, mean rank 28.50, sum of ranks 1,197
- **Positive Ranks** (respondents with higher post-pandemic inclusion): 14 respondents, mean rank 28.50, sum of ranks 399
- **Ties** (no substantial change): 264 respondents

The Wilcoxon test statistic was calculated as:

Test Statistics[a]	
	post covid financial inclusion test - precovid financial inclusion test
Z	-3.742[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.	

Source: Calculated from Primary Data

This corresponded to a two-tailed asymptotic significance of $p < 0.001$—indicating that the observed distribution of negative versus positive ranks was highly unlikely under the null hypothesis of no difference. The effect size, computed as $r = Z/\sqrt{N}$, yielded r = -0.209, suggesting a small to moderate practical effect alongside statistical significance.

The overall Wilcoxon statistic (Z = -3.742, $p<0.001$) indicates statistically significant pandemic-induced decline in financial inclusion. The effect size (r = -0.209) suggests a small to moderate practical effect. This is not paradoxical—statistical and practical significance need not align. With a large sample (N=320), even modest shifts achieve statistical significance. Conversely, larger shifts in smaller samples may not. Here, the preponderance of ties means that while group-level mean inclusion declined significantly, individual-level variation was substantial. The significance lies not in the magnitude but in the direction and consistency: across blocks, across genders, across livelihood types, inclusion declined. This consistency suggests structural causation rather than random variation—the pandemic systematically, albeit unevenly, constrained financial access (Gupta & Das, 2024).

The Wilcoxon test revealed that 82.5% of respondents (264 individuals) experienced no substantial change in financial inclusion—neither improvement nor deterioration. This population merits special attention, for they represent what might be termed "chronically excluded" farmers: those with minimal pre-pandemic engagement who, lacking access to formalize further, experienced no additional pandemic-induced decline. They were already, as it were, at the floor. These respondents were concentrated in the smallest villages without branches, were disproportionately older and less educated, and worked the smallest landholdings. Their financial lives operated almost entirely outside formal channels—borrowing from relatives or moneylenders, saving in cash or rotational savings groups, lacking any insurance. For these populations, pandemic impacts on formal financial systems were nearly irrelevant because they had never been substantially tethered to those systems. Yet this is precisely the population toward which financial inclusion policy should be directed. The 42 respondents experiencing relative decline were economically vulnerable; the 14-experiencing improvement benefited from government welfare or specific institutional initiative. But the 264 experiencing no change represent the hard core of financial exclusion, resistant to standard policy instruments precisely because standard policy instruments assume prior engagement with formal systems (Bhattacharya & Singh, 2023).

Qualitative Narratives

Farmers' responses captured missed opportunities, forced informality, and feelings of marginalization. Stories detailed reliance on informal credit, barriers to insurance claims, struggles with digital payments, and the emotional toll of exclusion.

The pandemic did not create exclusion; it revealed and intensified pre-existing fragility. Banking access, always marginal, became precarious. Credit retracted; informal sources filled the void. Savings shrank, and insurance faltered. Efforts at digital transformation accelerated but underscored inequalities in youth, gender, and geography.

The findings force a reconsideration of financial inclusion—shifting from the illusion of account statistics to actual engagement and empowerment. Policymakers must build hybrid systems, leveraging both physical presence and digital capacity, tuned to the rhythms of rural life in Mizoram.

Digital adoption is promising but incomplete. Infrastructure must precede application; capability-building must be vernacular and situated. Welfare schemes must be streamlined, linked to savings and insurance, with documentation and transfer systems that work for the most vulnerable.

Gender disparities persist—requiring specific attention to women's credit, documentation, and land rights. Product innovation in insurance, cooperative strengthening, and targeted policy incentives are essential to correct chronic exclusion.

Finally, longitudinal monitoring is vital. The story of Lunglei's farmers, told here in nuanced terms, is not static. Systems must adapt, institutions must respond, and policies must be evaluated against real outcomes—less about access, more about impact.

V. Limitations Of The Study

Any longitudinal inquiry spanning seven years must contend with a sobering reality: observed shifts cannot be neatly attributed to a single catalytic event, no matter how seismic. The financial inclusion trajectories documented here—the contraction in formal credit, the surge in informal borrowing, the digital acceleration—emerge from a confluence of forces, only one of which is the pandemic. To claim otherwise would be methodologically naive and theoretically impoverished.

The architecture of India's financial inclusion landscape itself transformed during our observation window. PMJDY, launched precisely when our pre-pandemic data collection began, fundamentally altered account proliferation dynamics. Digital India initiatives, the JAM trinity, technological deepening of banking systems—all preceded COVID-19 and proceeded independently of it. The account ownership gains we observe may thus reflect structural policy shifts rather than pandemic resilience. Similarly, the decline in formal credit access, while superficially pandemic-driven, may equally reflect institutional hardening of credit criteria in response to rising NPAs and risk aversion—secular trends in Indian banking predating 2020.

Agricultural volatility is itself a constant in rural India, driven by commodity price cycles, ecological shocks, and market dynamics orthogonal to pandemics. Farmers' financial behaviours shift in response to crop failures, price crashes, and remittance fluctuations—all of which occurred between 2014 and 2023 independent of COVID-19. The township's own economic trajectory, including youth out-migration and shifting cropping patterns, likely influenced financial engagement more profoundly than any single exogenous shock.

Perhaps most crucially, our seven-year interval introduces what we might call the accumulation problem: multiple policy regimes, institutional reforms, demographic transitions, and technological shifts compound, making retrospective attribution fragile. Telephonic data collection in the post-pandemic wave, though necessary, may have introduced subtle response biases compared to face-to-face engagement earlier. Recall bias, too, distorts pre-2016 financial memories through the lens of intervening experience.

Methodologically, the absence of a counterfactual—a comparable population unaffected by pandemic disruption—constrains causal inference. The study presents evidence of temporal change, not causal proof. Context matters profoundly: findings are specific to Lunglei's geography, social fabric, and institutional ecosystem. They may not travel to other Mizoram districts or Northeast hill economies with differing financial infrastructure and demographic profiles.

Yet these limitations do not diminish the study's contribution. Rather, they demand intellectual humility about what claims we can sustain. What this research demonstrates is not pandemic causation but pandemic co-occurrence with broader systemic vulnerabilities and adaptive capacities. It reveals how a marginal rural economy, already fragile in its financial architecture, responds to concurrent shocks—policy, market, demographic, and pandemic-driven. Understanding this simultaneity of forces is arguably more theoretically rich than isolating a single causal pathway.

VI. Conclusion

The financial lives of Lunglei's farmers, as revealed here, are defined by movement and constraint—of partial integration into formal systems, regular retreat to informal networks, and remarkable resilience in the face of shock. The pandemic forced both exposure and displacement: access narrowed for many, and for some, options simply vanished.

Yet the persistent strength of informal mechanisms—credit, savings, mutual support—reminds us that inclusion is as much a social as an institutional project. For policymakers, the challenge is not to replace these strategies, but to enhance and legitimate them through reliable, accessible formal channels.

The pandemic's lessons, if heeded, can guide a transformation grounded in Mizoram's context but resonant far beyond. If we are to realize the promise of financial inclusion, it will be by building systems that bend—not break—under crisis; by measuring empowerment, not merely enumeration; and above all, by working with the people whose lives these systems mean to uplift.

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