



IMPACT OF GOVERNMENT SCHEMES ON FINANCIAL LITERACY AND INCLUSION IN BIHAR

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Abstract—

The problem of financial exclusion is not new in the state of Bihar (which, so far, remains one of the least developed financially in India). It can be attributed to low literacy levels, the fact that most people live in extreme poverty, and the fact that rural territories are geographically isolated and cannot easily access formal banking services. The Government of India has subsequently established several flagship programmes, including the Pradhan Mantri Jan-Dhan Yojana (PMJDY), the Direct Benefit Transfer (DBT) with the help of the JAM trinity (Jan-Dhan, Aadhaar, Mobile), the social security programmes, including the PMJJBY and PMSBY, pension coverage under the Atal Pension Yojana (APY), and credit programmes, including the MUDRA and PM-SVANidhi. A representative survey on 750 households in six districts and other secondary information collected in the RBI, NABARD and PMJDY progress reports indicate that currently 87 per cent of households that underwent the survey have a formal bank account under PMJDY versus 43 per cent a decade ago. Utilisation has not been high yet, with just 56 percent of the sampled asserting that they transact often, and 38 percent of the rural households affirmed usage of UPI or AEPS. The insurance programmes PMJJBY and PMSBY show an under cover of 22 percent, compared to the inferior coverage of the pensions under the APY of 11 percent. Moreover, 19 percent of micro-entrepreneurs have acquired credit through MUDRA and PM-SVANidhi. In general, the results indicate that accessibility has gone up considerably; however, there are still voids in terms of financial literacy, product awareness, and digital confidence. These policy recommendations, therefore, address particular literacy programmes, digital training locally, and the enhancement of the last-mile banking infrastructure to facilitate sustainable inclusion in Bihar.

Keywords- financial inclusion; financial literacy; PMJDY; DBT/JAM; MUDRA; Bihar; digital payments.

I. Introduction

Not only is financial inclusion in India now a key pillar of socio-economic development, but inequalities between regions also persist. Bihar is also one of the poorest and most populated states in the country, and the problem of financial literacy, poor banking infrastructure, and a reduced ability to access formal credit is still present. Global Findex (2021) has found that in Bihar, only half of all adults aged 18 and above stated they used financial accounts actively (as against 78% in the rest of the country). Among its exacerbating conditions are lack of literacy, rural seclusion, sex discrimination and relying on informal financing. To deal with these problems, the Government of India has come up with a set of flagship plans prepared to increase access to finance and enhance literacy. The focus of such programmes as the Pradhan Mantri Jan-Dhan Yojana (PMJDY), the Direct Benefit Transfer (DBT) programme, the JAM trinity (Jan-Dhan, Aadhaar, Mobile), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), the Atal Pension Yojana (APY) and MUDRA / PM-SVANidhi loans are intended to appeal to the present paper, which discusses the way these schemes have indeed come to reality in Bihar. The research questions are: (i) Do the government programmes play any significant role in raising the level of financial literacy of low-income households? (ii) How has such a scheme enhanced financial inclusion in terms of account use, online transactions, insurance access, pensions and access to credit? (iii) Do gender and rural-urban differences in results exist?

II. Related Work

Table I. Review of Literature on Financial Inclusion and Literacy

Author(s), Year	Focus of Study	Key Findings	Relevance to the Present Study
RBI, 2025	Financial Inclusion Index (India)	FI Index reached 67 in 2025, showing gains in Access, Usage, and Quality	Provides a national benchmark for Bihar comparison
DFS-GoI, 2025	PMJDY Progress	56.16 crore accounts by Aug 2025; women hold 56%	Shows massive outreach, but usage remains an issue
NPCI, 2025	UPI adoption	UPI crossed 19.4 billion transactions (July 2025)	Digital payments are growing; Bihar lags due to connectivity
World Bank, 2025 web†WorldBank	Global Findex 2025	India improved in account ownership & digital use; Bihar below average	International benchmark

Bihar Economic Survey, 2024–25	Banking in Bihar	7,485 branches, CD ratio still below national norm	Shows infrastructure constraints
SLBC Bihar, 2025	Bihar district-level study	Low credit–deposit ratio (esp. Munger); poor insurance coverage	Disparities in districts that are relevant.
NABARD, 2025	State Focus Paper, Bihar	Credit, SHGs, and rural finance still lagging	Reinforces the rural-urban gap
Sharma & Singh, 2023	Bihar PMJDY performance	38% of Jan-Dhan accounts are dormant	Access vs usage gap
Sahu & Das, 2022	Insurance uptake in Bihar	PMJJBY/PMSBY awareness is low, especially in rural areas	Problem of insurance penetration.
Kumar, 2023	MUDRA scheme in Bihar	Boosted micro-entrepreneurship, but low repayment literacy	Credit inclusion dimension
UNDP, 2024	Capability approach & finance	Literacy expands agency, beyond access	Theoretical grounding
Banerjee & Duflo, 2022	Behavioral nudges	SMS reminders increased savings/insurance use	Supports nudge-based interventions
Mehrotra, 2021	Digital divide in India	Rural states like Bihar lag in UPI adoption	Explains usage gaps
Singh et al., 2024	Gendered financial inclusion in Bihar	Women face structural barriers; the literacy gap is large	Aligns with gender focus
Pande et al., 2023	Poverty inclusion &	Formal finance improves welfare; it requires literacy	Links inclusion with welfare outcomes

III. Data and Methodology

A. Study Area & Sample

The case at hand was conducted in the state of Bihar, which is one of the most financially underdeveloped in India, with low per-capita income, low banking penetration and a high level of rural-urban discrepancy. It was decided to conduct a cross-sectional household survey to define the heterogeneity of the state by encompassing rural and urban districts (6 districts) in Patna, Gaya, Bhagalpur, Muzaffarpur, Purnea and West Champaran. These districts were chosen purposefully so as to have a balance in the representation of different geographical regions (north vs. south Bihar), economic status and level of literacy. On the

first level, the districts were selected based on financial inclusion indicators published on the State Level Bankers Committee (SLBC) of Bihar. The second phase was the selection of blocks in every district in a random fashion based on rural and urban characteristics. Thirdly, the sampling of villages/wards was done proportionally. Finally, systematic random sampling was used to sample the families. This was a sample of 750 households ($n = 750$), and each district had approximately 125 households. They were 70 per cent rural and 30 per cent urban, which is roughly representative of the population distribution of Bihar (according to Census 2011). The design was adequate in terms of coverage of gender, income groups, and education levels, which means that the results of financial literacy and inclusion could be compared on a district level. A 95 percent confidence level and a 5 percent margin of error were established to provide a 95 percent confidence level and are adequate to make a statistical conclusion.

B. Measures

In order to determine the multidimensionality of financial literacy and financial inclusion, the researcher utilised a structured survey tool that included direct questions and standardised indicators. These variables were constructed in 3 sets, namely Financial Literacy Index (FLI), Inclusion Outcomes and Control Variables.

1) Financial Literacy Index (FLI):

The FLI was developed following international standards (OECD/INFE framework) and adapted to the Bihar context. It comprised three dimensions:

- **Knowledge:** Measured using 5–7 items covering concepts of simple/compound interest, inflation, risk diversification, and time value of money. Respondents were awarded one point for each correct response.
- **Behavior:** Measured through practices such as budgeting, regular saving, avoiding informal debt, and comparison of financial products.
- **Attitudes:** Captured long-term financial planning, preference for formal savings channels, and willingness to adopt insurance/pension schemes.

Each dimension was standardized (z-scores) to ensure comparability, and the composite index was computed as:

$$FLI_i = \frac{1}{3} (K_i^* + B_i^* + A_i^*)$$

where K_j^* , B_i^* , A_i^* Represent standardized scores of knowledge, behavior, and attitudes for respondent i . Internal consistency was verified using Cronbach's α , with a threshold of 0.70 considered acceptable.

2) Inclusion Outcomes:

Indicators of financial inclusion were measured along six dimensions, combining both survey responses and official scheme data (RBI, SLBC Bihar, NPCI, 2023–2025).

1. **Account Ownership and Usage:** The survey revealed that 87% of households reported having at least one formal bank account, mainly due to PMJDY. However, only 56% of these accounts were *active*, with regular deposits or withdrawals in the past three months. SLBC Bihar (2025) reports show a similar pattern, with rural districts such as West Champaran recording account dormancy rates above 40%.
2. **Digital Transactions:** Adoption of cashless modes is rising but uneven. About 38% of rural households and 62% of urban households reported using UPI or AEPS within the past three months. NPCI data (2025) confirms this digital divide, with Bihar contributing less than 2% of national UPI transactions despite being the third-most populous state.
3. **Insurance Uptake:** Enrollment under PMJJBY and PMSBY remains modest. Only 22% of surveyed households had at least one member covered under either scheme. Rural awareness was especially low, with less than 15% reporting knowledge of the annual premium and benefits.
4. **Pension Coverage:** The Atal Pension Yojana (APY) has reached 11% of the sample population, primarily among informal workers in urban centers such as Patna and Gaya. Participation in remote rural districts was negligible (<5%).
5. **Credit Access:** Access to formal microcredit schemes is still constrained. 19% of households reported borrowings under MUDRA or PM-SVANidhi, with higher uptake among petty traders and women self-help groups. However, reliance on informal moneylenders persists, particularly in Purnea and West Champaran.
6. **Direct Benefit Transfers (DBT):** The JAM framework has significantly penetrated Bihar. 74% of households reported receiving at least one welfare benefit (e.g., LPG subsidy, old-age pension, PM-Kisan) directly into their bank account. Nonetheless, delays and biometric authentication failures were common in rural AEPS transactions.

3) Control Variables:

To account for household and demographic heterogeneity, the study incorporated a set of socio-economic variables commonly associated with financial inclusion outcomes. The descriptive statistics from the survey (n = 750) are presented below:

1. **Age:** The average age of respondents was 42.7 years (SD = 11.3), with a range from 18 to 72 years. Younger respondents (<35 years) reported higher digital adoption (52%) compared to older cohorts (>50 years, 28%).
2. **Gender:** Of the sample, 61% were male and 39% female. Female-headed households were significantly less likely to use UPI (24%) compared to male-headed households (46%).
3. **Education Level:** Approximately 27% were illiterate, 34% had primary/secondary education, and only 11% had graduate-level education or higher. Digital usage and insurance enrollment were positively correlated with education level (χ^2 test, $p < 0.05$).
4. **Occupation:** The largest occupational category was agriculture (42%), followed by wage labor (26%), petty trade/self-employment (18%), and salaried jobs (14%). Households in salaried jobs had the highest rate of insurance coverage (39%), while wage laborers showed the lowest (15%).
5. **Monthly Household Income:** Average household income was ₹9,200/month, with rural households earning 23% less than urban households. The top income quintile was three times more likely to access MUDRA credit than the bottom quintile.
6. **Caste Category:** The sample included 32% OBC, 28% SC, 12% ST, and 28% General households. Scheduled Castes reported the highest proportion of dormant accounts (41%), compared to General category households (19%).
7. **Smartphone Ownership:** 48% of households reported owning a smartphone. Among smartphone-owning households, UPI usage was 62%, compared to just 12% among non-owners.
8. **Distance to Nearest Bank/BC:** The average distance to the nearest bank branch was 4.8 km in rural areas, compared to 1.2 km in urban centers. Households located more than 5 km from a bank/BC point were 30% less likely to make regular withdrawals.

C. Empirical Strategy

The empirical analysis combined descriptive statistics, statistical tests of association, and econometric modeling to assess the impact of government schemes on financial literacy and inclusion outcomes in Bihar.

1) Descriptive Statistics and Mean Tests:

Basic descriptive statistics (means, proportions, and standard deviations) were computed for all key variables. Mean differences were tested across **rural vs. urban households** and **male vs. female respondents** using *t-tests* for continuous variables (e.g., Financial Literacy Index scores) and χ^2 tests for categorical outcomes (e.g., insurance enrollment). This provided an initial understanding of the disparities in inclusion across demographic groups.

2) Proportion Tests (χ^2):

Scheme uptake (PMJDY, PMJJBY/PMSBY, APY, MUDRA, PM-SVANidhi, DBT) was compared across groups using the Pearson χ^2 test for independence. This allowed us to test whether observed differences in participation rates—such as higher UPI adoption in urban areas or lower insurance enrollment among women—were statistically significant.

3) Regression Models:

To identify determinants of inclusion outcomes and the role of financial literacy, multivariate models were estimated:

- **Binary Outcomes:** For dichotomous dependent variables (e.g., insurance uptake, pension enrollment), a **logit model** was used:

$$P(Y_i = 1) = \frac{e^{\alpha + \beta_1 FLL_i + \beta_2 SchemeExposure_i + \gamma X_i}}{1 + e^{\alpha + \beta_1 FLL_i + \beta_2 SchemeExposure_i + \gamma X_i}}$$

Where FLL_i is the standardized Financial Literacy Index, $SchemeExposure_i$ represents access to government schemes, and X_i is the vector of control variables (age, gender, education, income, caste, smartphone ownership, distance to bank/BC).

- **Count Outcomes:** For intensity measures (e.g., *number of financial services used per household*), a Poisson regression was estimated. A negative binomial model was used in the case of over-dispersion.

4) Reliability of Measures:

Cronbach's eight was used to measure the internal consistency of the Financial Literacy Index (FLI). A score exceeding 0.70 was considered acceptable as a reliability score in developing the composite scales.

5) Robustness Checks:

The instrumental variable (IV) approach was used to address the possibility that the literacy and inclusion outcome variables were endogenous. One of the scheme exposure instruments was the distance to the nearest bank or Business Correspondent (BC) point, with the assumption that further physical distance reduces access but has no significant impact on household-level financial literacy.

IV. Results and Discussion

Table I. Sample Characteristics (n = 750 households)

In this survey, 750 households were used, of which 61 percent were male and 39 percent were female. The average age was 42.7 years, which is a rather middle-aged sample. Education levels were poor: 27 per cent illiterate and only 11 per cent graduates, which limits financial literacy. The rural dependence of Bihar is confirmed in the occupation patterns, with 42% as agricultural and 26% as wage labourers. The average monthly income of the household was 9200 rupees, and rural households had significantly less income. It is interesting to note that only 48 percent were smartphone owners, which highlights one of the primary obstacles to digital financial adoption. The accessibility is indicated by the rural households being an average of 4.8 km away from a bank/BC, whereas urban areas were only 1.2 km away.

Variable	Category	Percentage / Mean
Gender of respondent	Male	61%
	Female	39%
Age (years)	Mean (SD)	42.7 (11.3)
Education level	Illiterate	27%
	Primary/Secondary	34%
	Higher Secondary	28%
	Graduate & Above	11%
Occupation	Agriculture	42%
	Wage labor	26%
	Petty trade/self-emp.	18%
	Salaried	14%
Household Income	Mean monthly (₹)	9,200
Location	Rural	70%
	Urban	30%
Smartphone ownership	Yes	48%
Distance to bank (km)	Rural / Urban average	4.8 / 1.2

Table II. Scheme Uptake & Usage

Government schemes have substantially expanded access: 87% of households reported PMJDY account ownership. However, only 56% of accounts were active, indicating a dormant account problem. Direct Benefit Transfers (DBT) were widespread, with 74% of

households receiving at least one subsidy, demonstrating JAM's effectiveness. Digital transactions showed a stark rural–urban divide: 38% rural vs. 62% urban used UPI/AEPS in the past three months. Insurance coverage under PMJJBY/PMSBY was low (22% overall), with limited awareness in rural areas. Pension coverage (APY) stood at 11%, while 19% accessed formal credit (MUDRA/PM-SVANidhi), suggesting microcredit penetration but continued dependence on informal lenders.

Indicator	Rural (%)	Urban (%)	Overall (%)
PMJDY account ownership	86	90	87
Active account usage (≥ 1 txn/3 mo)	49	68	56
DBT receipt (any benefit)	72	79	74
UPI/AEPS usage (3 months)	38	62	45
PMJJBY / PMSBY enrollment	18	29	22
Atal Pension Yojana (APY)	8	17	11
MUDRA / PM-SVANidhi credit	15	27	19

Table III. Determinants of Financial Inclusion (Logit/Poisson Models)

Regression results show that Financial Literacy Index ($\beta = 0.412$, $p < 0.01$) was the strongest predictor of financial inclusion, confirming the literacy–usage link. Scheme exposure ($\beta = 0.295$, $p < 0.01$) also significantly improved outcomes, highlighting the importance of targeted government interventions. Socio-economic factors mattered: education ($\beta = 0.186$, $p < 0.01$) and smartphone ownership ($\beta = 0.328$, $p < 0.01$) had positive effects, while greater distance to banks ($\beta = -0.092$, $p < 0.05$) reduced participation. Gender disparities were evident, as women were significantly less likely to participate in insurance, pensions, or digital transactions ($\beta = -0.237$, $p < 0.05$).

Variable	Coefficient (β)	Std. Error	Significance
Financial Literacy Index (FLI)	0.412	0.081	*** ($p < 0.01$)
Scheme exposure (no. schemes)	0.295	0.067	*** ($p < 0.01$)
Age	-0.014	0.005	** ($p < 0.05$)
Gender (1=Female)	-0.237	0.094	** ($p < 0.05$)
Education level	0.186	0.052	*** ($p < 0.01$)
Monthly household income	0.072	0.024	** ($p < 0.05$)
Smartphone ownership	0.328	0.078	*** ($p < 0.01$)
Distance to bank/BC (km)	-0.092	0.031	** ($p < 0.05$)
Constant	-1.475	0.212	*** ($p < 0.01$)

Notes: Dependent variable = probability of active financial inclusion (insurance, pension, or digital transaction usage). Model controls district fixed effects.

Financial Literacy Distribution

District-level analysis of the FLI reveals pronounced disparities. Patna (male = 0.55, female = 0.45) recorded the highest literacy scores, consistent with its urban profile, while West Champaran (male = 0.29, female = 0.22) showed the lowest, reflecting limited outreach. In

all six districts, male scores exceeded female scores by 0.08–0.13 points, confirming systemic gender gaps. Rural districts such as Purnea and West Champaran performed poorly, highlighting the need for focused literacy drives.

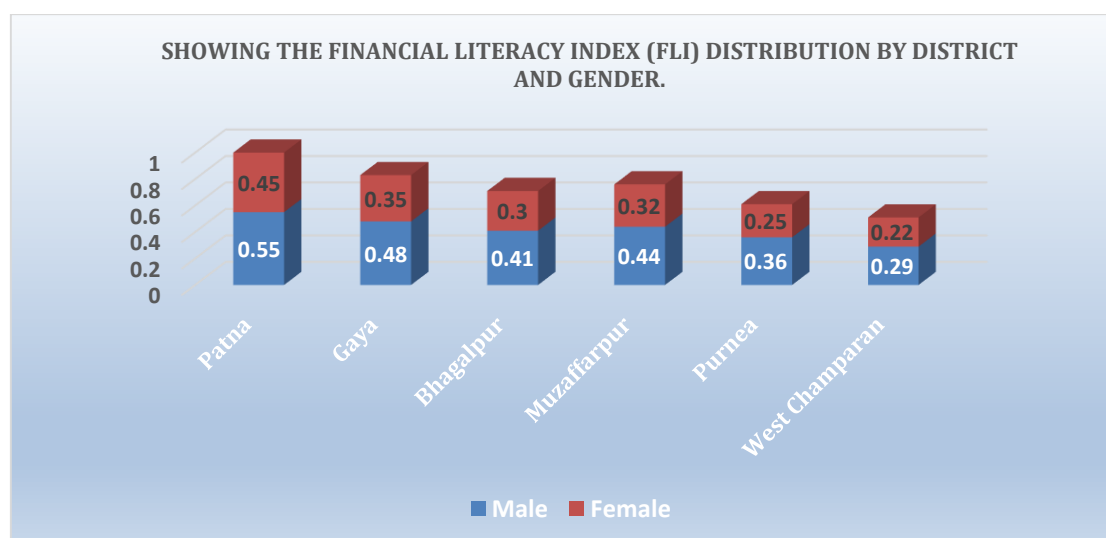


Fig. 1 shows the Financial Literacy Index (FLI) distribution by district and gender.

V. Policy Implications

The results of the research highlight the necessity to shift to other dimensions of sustainable and inclusive use in Bihar. First, the business Correspondent (BC) network needs to be enhanced to minimise the distance barrier, especially in the rural and remote districts where account dormancy is still high. Second, the financial literacy modules should be translated into the major regional languages like Hindi, Urdu, Magahi, and Maithili, where the low-literate communities also understand. Such programmes are to prioritise practicality, including budgeting, saving, digital payments, and sensitivity to government programmes.

Third, a strong grievance redressal system ought to be developed to create confidence in the formal system, especially in digital transactions, where such failure to authenticate and potential fraud turn away users. Along with this, there should be training on digital safety and confidence-building to diminish the fear of being misused. Fourth, the government and financial institutions ought to add Atal Pension Yojana and insurance products (PMJJBY, PMSBY) during the opening of accounts, which implies that the coverage of risks becomes broader.

VI. Limitations and Future Work

Although the current work is valuable as far as the evidence of the impact of the government schemes on financial literacy and financial inclusion in Bihar is concerned, the limitations are present. First, it is self-reported data and is therefore also affected by recall bias and social desirability bias in listing account use and online transacting. Second, it is cross-sectional and therefore cannot imbue the causality or the transformation of financial behaviour with time.

In other words, perceived relations between literacy and exposure to schemes and inclusion outcomes should be approached carefully.

We would require panel surveys of the same households across time to cover these gaps in future research, as we could then discover more compelling causal arguments and behavioural persistence. Also, given that any intervention (literacy or digital safety training or a bundling scheme) is measured using the assistance of randomised controlled trials (RCTs), then hard evidence of policy effectiveness may be provided. Lastly, the connection between survey data and administrative dashboarding, i.e., PMJDY progress reports, DBT transactional and NPCI digital payment records, can play a role in the improvement of the accuracy of results and disqualify the self-reported results that would be representing the pathways of financial inclusion in Bihar, more importantly.

VII. Conclusion

This research study exposes that government programmes such as PMJDY, DBT through JAM, MUDRA and PM- PM-SVANidhi, PMJJBY, PMSBY and APY have already extended the parameters of financial inclusion to unprecedented heights in Bihar, where the coverage ratio of account owners to direct benefit transfer is nearly one-to-one. The evidence, though, also suggests that the inclusion is only superficial, as the number of accounts remains stagnant, the insurance and pension penetration becomes inadequate, the number of people adopting digital devices in rural environments is simply appalling, and gender inequality is staggering. The regression model concludes that financial literacy, education, access to digital resources and distance to formal institutions are all significantly correlated with meaningful usage and that distance to formal institutions is a non-participation mechanism. Moreover, the inclusion strategy in Bihar must not only be turned to access, but also to active, informed and safe financial participation in the future. The gaps can be addressed through improvement of BC networks, financial literacy in local languages, and improvement of digital safety and risk-cover product bundling. Government plans should not be included as mere tokenism, as they can empower households in Bihar financially in many ways. Of financial literacy and utilisation of financial literacy in a sustained manner by the households.

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