Journal of Informatics Education and Research
ISSN: 1526-4726
Vol 6 Issue 1 (2026)

Bridging the Digital Literacy Divide: A Comparative Assessment of Financial Fraud Prevention Interventions in Urban and Rural Rajasthan

Himanshu Sharma[1], CA (Dr.) Kamakshi Mehta[2], Dr. Renuka Kumawat[3], Dr. Subhabaha Pal[4]

[1] Research Scholar, Department of Management, Manipal University Jaipur, Rajasthan, India

[2] Associate Professor and Head, Department of Management, Manipal University Jaipur, Rajasthan, India

[3] Assistant Professor, Department of Management, Manipal University Jaipur, Rajasthan, India

[4] Assistant Professor (Selection Grade), Department of Management, Manipal University Jaipur, Rajasthan, India

Abstract

This comparative research evaluates the effectiveness of online financial literacy programs in reducing online financial fraud in both rural and urban settings in Rajasthan in a mixed-methods research design that controls 300 participants. These results shed light on significant differences in digital financial literacy 68.3% in urban locations and 42.7% in rural settings and differentiated intervention effectiveness scores (7.2/10 in the city and 4.8/10 in the country). Though risk of being exposed to fraud is also equal between these groups, the victimization rate is also twice as high in the rural cohort (37% compared to 18%). Regression analyses also indicate that 64% of the literacy variation is due to socioeconomic variables (such as education, income, and access to technology). Of vital importance is the fact that the data highlight the greater effectiveness of culturally modified interventions, specifically, vernacular language programs and community-based approaches in rural areas. The study also defines critical gaps in knowledge in relation to the area of fraud recognition as well as online security practices and reporting mechanisms. Subsequently, according to these evidence-based understandings, our proposal is context-specific intervention design, strategic infrastructure investments, multilingual content development, as well as multi-stakeholder partnerships development. These have the potential to align the digital divide and enhance fraud prevention capabilities among the region diverse population.

Keywords: Digital financial literacy, online fraud, urban-rural divide, cyber security, Rajasthan, intervention effectiveness

1.0 INTRODUCTION

Online financial literacy is defined as knowledge, skills and attitudes that people need to utilize digital financial services in a safe and efficient manner (Prasad et al., 2018). Digital transformation of India, which was driven by the 2016 demonetisation push and the wider Digital India program in general, not only led to a faster adoption of digital financial services but also opened the population to more advanced forms of online fraud. Rajasthan is one such unique setting where extreme urban-rural imbalance shapes digital infrastructure and digital literacy as well as is vulnerable to fraudulent activities. However, recent statistics and reports by the RBI (2023) show that only 27 per cent of Indians have a basic level of digital financial literacy, and rural populations have even worse problems at hand. According to the Cyber Crime Unit (2023), the number of online financial fraud cases in Rajasthan increased by 40 per cent between 2021 and 2023, mostly in phishing, identity theft and online payment fraud. High-profile cases are also another demonstration of the fact that loopholes in digital financial literacy still exist on learning levels. IIT Jodhpur (₹12 lakh loss), BITS Pilani (₹7.67 crore loss) and SGPGIMS Lucknow (₹2.81 crore loss) professors became victims of advanced digital arrest frauds (Times of India, 2024). These stories highlight the fact that even well-educated people are prone to psychologically manipulative scam and bravery; thus, defying the traditional beliefs about literacy as a barrier against scams.

2.0 REVIEW OF LITERATURE

2.1 Digital financial literacy

It is a development of the traditional financial literacy, where the learning of financial literacy is coupled with the skills in the field of technology. According to Prasad et al. (2018), the construct includes the knowledge, skills, and attitudes, which would be needed to use digital financial services safely and effectively. This definition does not limit itself to operational knowledge, given it introduces critical thinking on digital financial products, risk awareness and informed decision making in digital places. As stressed by Michael et al. (2010) to understand the key financial concepts such as mortgages, insurance, credit management, and taxation, and in the digital context, the idea should be further enhanced by a knowledge of a digital payment system, an online financial system security, the basics of cryptocurrencies, and digital fraud scenario recognition. Digital financial literacy interventions can be divided into two categories: digital games and educational videos.

2.2 Digital Financial Literacy Interventions

There are two types of interventions in digital financial literacy: digital games and educational videos. International scholarship presents a range of styles and results in different settings. A total of reviews carried out by Smith and Kumar (2022) show that having better digital literacy significantly decreased vulnerabilities to fraudulent activities on the Internet,

and more literate people were 60 per cent less likely to become a victim of a commonly indicated scheme. Verma and Patel (2023) studied the effects of community based workshops within urban communities and found significant enhancement of fraud detection and avoidance with effectiveness rates of 65-78 percent based on the intensity of the program. In assessing the role of digital literacy in reducing cyber fraud in urban countries, Patel and Singh (2023) found that well-designed programs significantly lowered the rates of larceny, and the community of participating communities reduced the number of cases of cyber fraud by 42 percent in two years.

2.3 Urban Rural Digital Divide.

The presence of the digital divide between the rural and urban population is a critical factor determining the digital financial literacy outcomes. The comparative analyses conducted by Sharma and Gupta (2021) have shown that urban programme have greater effectiveness because of their better infrastructure and level of engagement. City dwellers have the advantage of having better connectivity, access to devices, and high exposure to digital technology. Conversely, Joshi and Nair (2022) analyzed the issue of the rural areas with a focus on inadequate infrastructure, poor baseline literacy, insufficient educational facilities, and cultural impacts as the main issue. The study conducted by Kumar and Singh (2023) registered significant differences in the financial literacy of urban and rural communities, which had a direct effect on the ability to prevent fraud. Small-town inhabitants are most likely to lack the trust in digital platforms and instead use old-fashioned cash-based relations and in-person banking communication. The studies are getting more and more focused on the importance of local contextual adaptation of interventions. Gupta and Rao (2023) proved that mobile based programmes where the information is made available through either SMS or voice messages are more effective in reaching the rural people with low internet access as they got 73 cent per cent engagement rates as opposed to 45 cent per cent of web based platform. Mehta and Agarwal (2022) tested programmes with the use of local languages, cultural norms and regional-specific threats of fraud, and achieved 68 present per cent higher completion and 54 present per cent superior knowledge retention than the usual interventions. Cultural aspects (such as forces of trust, family systems, and language preferences) also have a high impact on the effectiveness of a programme especially in diverse areas like Rajasthan.

2.4 Research Gaps

In spite of the increased academic interest, there are still unaddressed weaknesses. A majority of studies that are available up to now are either urban or rural in nature with little to no comparative analysis. Empirical studies that explicitly relied on measuring the effect of digital financial literacy interventions in preventing online fraud in Rajasthan are lacking. The existing studies usually fail to adequately examine the interactions between socioeconomic factors, geographical differences and cultures and their impact on the efficiency of programmes. Most research tends to make blanket generalisation about the type of frauds and fails to investigate a certain mitigation of frauds using bespoke programmes. The views of the stakeholders are not usually incorporated in effectiveness assessments. Therefore, little data are available regarding the influence of different modalities of awareness and training on the result of fraud-prevention. This paper attempts to fill such gaps by conducting an extensive comparative study within the urban and rural Rajasthan settings. 2.6 Research Objectives This research will address the following research questions: (1) compare the effectiveness of interventions in urban versus rural settings in reducing online financial fraud; (2) determine the uniqueness of individual effects on fraud prevention with references to the geographic context of urban or rural location; (3) analyse how the regional, demographic, and socio-economic factors may affect the programme; (4) evaluate the effectiveness in reducing specific types of fraud and outline the main programme components; (5) test the functions of technology-accessible attitude, stakeholder attitudes, cultural conditions, and training strategies on the enhancement of interventions.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

A mixed-methods comparative research design was used in this study to thoroughly assess the effectiveness of digital financial literacy interventions among priority urban and rural Rajasthan. The mixed-method strategy was chosen due to its ability to deliver breadth using the quantitative method and depth using the qualitative insight to achieve the triangulation of the results and increase their validity. The comparative aspect helped as a systematic analysis of the similarities and differences in urban and rural settings, which directly served the objective of the research, which is to explain the contextual differences in intervention effectiveness. The cross-sectional study obtained data at one point and retro-recorded the experiences of the participants towards the interventions and the exposure of the participants to fraud.

3.2 Population and Sampling

The target population took into account varied groups of stakeholders concerned with or affected by the digital financial literacy intervention and online financial fraud in the state of Rajasthan. Stratified random sampling was used, with the stratification criteria being geographic location (urban or rural) and category of stakeholders. A sample of 300 was used with half of 150 would be urban and the rest 150 rural. Participants were categorized within each geographic stratum, in eight categories of stakeholders, namely: police officials (50 total: 25 urban, 25 rural), students (50 total: 25 urban, 25

rural), parents (50 total: 25 urban, 25 rural), NGO/civil society members (50 total. 25 urban, 25 rural), academicians/policymakers (50 total: 25 urban, 25 rural), cyber lawyers/experts (25 total. 13 This sampling design had a sufficient representation of different views; statistically powerful in terms of comparative analysis.

3.3 Data Collection Methods

They were collected using several methods: (1) Questionnaire based Survey: A validated 50-item questionnaire was used to conduct the survey of all 300 respondents and it consisted of five main sections including; demographics; digital financial literacy: a validated 50-item scale that measured; knowledge of digital services, fraud awareness, and security behaviours; experience with literacy interventions, including; participation history and perceived efficacy; online fraud exposure and fraud prevention behaviours; and social economic/technological access factors. (2) In-depth Interviews: The key stakeholders, namely including senior police officials, cyber experts, programme implementers, policymakers, and fraud victims were interviewed (n=25) using semi-structured interviews. (3) Focus Group Discussions: There were 10 FGDs (including five urban and five rural) of eight to ten participants, who engaged in discussion on community perceptions, adoption barriers, and cultural issues. (4) Case Studies: There were 15 detailed cases describing the cases of fraud victimisation, interventions that were successful and institutional response.

3.4 Data Analysis

Data in form of quantitative information was subjected to SPSS Statistics 27.0. The descriptive statistics gave an idea of sample characteristics and the important variables. Mean scores on digital financial literacy and ratings of intervention effectiveness between urban and rural groups were compared with independent-samples t -tests. Associations between Univariate variables (categorical) were tested using chi-square tests. Pearson correlation was used to compare variables that are continuous. The independent variables assessed included education, income, access to technology and participation in interventions using multiple regression as they were measured as having a combined effect on the outcomes in literacy and fraud-prevention. Interpretation of qualitative data through NVivo 12 with familiarisation, first coding, theme development, refinement, and interpretation within the context of the research were based on thematic analysis of qualitative data i.e. interviews, FGDs, and case studies.

Table 1: Sample Characteristics

Characteristic	Urban (n=150)	Rural (n=150)
Mean Age (years)	34.7 (SD=12.3)	37.2 (SD=14.1)
Gender (Male %)	58%	52%
Graduate+ Education	42%	18%
Mean Income (₹/month)	45,250	23,400
Smartphone Ownership	89%	63%
Internet Access	67%	34%

4. RESULTS

4.1 Digital Financial Literacy Levels

Digital financial literacy was assessed using an expansive, 50-item tool that covered the digital financial services knowledge, security measures and fraud awareness of security measures as well as practice of safe transactions. The mean score of the participants in the urban population was 68.3% with a standard deviation of 14.2 as compared to that of the participants in the rural population which was 42.7% with a standard deviation of 16.8 and this difference was highly significant ($t(298) = 13.82$, $p = 0.001$). The component analyses shed light on the different strengths and weakness patterns. Expertise with online payment systems was found with 72% urban and 48% rural, online banking security practices stood at 71% urban and 39% rural, fraud recognition awareness was reported at 73-urban and 38-rural and lastly, cryptocurrency knowledge had the widest gap (52-urban and 21-rural). The results of these studies emphasize the overall superiority of digital financial literacy among the urban cohorts, but need to emphasize the fact that both the target population groups have significant areas of improvement, including the areas that are in their infancy.

Table 2: Digital Financial Literacy Component Scores

Literacy Component	Urban %	Rural %	Gap
Digital Payment Systems	72%	48%	24%
Online Banking Security	71%	39%	32%
Fraud Recognition	73%	38%	35%
Cryptocurrency Knowledge	52%	21%	31%
Overall Score	**68.3%**	**42.7%**	**25.6%**

4.2 Fraud Exposure and Types

The analysis has shown that 38 percent of respondents in urban regions and 43 percent respondents in rural regions had been victims or targeted by online financial fraudulence within a span of two years. This did not pass the test of statistical significance (χ 2 = 1.23, p = 0.267), which showed similar exposure to the fraud between the two geographical locations. The rates of success of these attempts were, however, quite different. Out of the targets, urban respondents and rural respondents lost money because of fraud 18⁻ percent of times and 37 percent of that group lost money, respectively (2). A study of certain typologies of frauds showed that there were several interesting patterns. Fraud-targeted respondents 45 percent of whom lived in urban and 52 percent in rural areas reported phishing. Online payment scam was seen in 38 percent and 41 percent of urban and rural participants respectively. One in every 31 and 29% of urban and rural respondents experienced identity theft. Twenty-eight percent of respondents in urban areas, compared to 14 percent of rural ones, reported investment scams, and this also takes into account a relatively lower level of involvement with online investment projects among people in the rural locations. The social engineering scam affected 22 percent urban and 34 percent rural respondents, implying that there is an increased susceptibility to manipulation-based schemes in the rural setting.

Table 3: Prevalence of Fraud Types

Fraud Type	Urban %	Rural %
Phishing	45%	52%
Digital Payment Fraud	38%	41%
Identity Theft	31%	29%
Investment Scams	28%	14%
Social Engineering	22%	34%
Fraud Success Rate	**18%**	**37%**

4.3 Intervention Participation and Effectiveness

There were significant differences in the level of participation in digital interventions of financial literacy. In cities, 76% of the interviewed people took part in at least one of the programs, as opposed to a 48% rate of participation among the rural population (χ^2=24.68, p<0.001). An average number of interventions was 2.3 (SD= 0.4) among the urban participants and 1.1 (SD= 0.8) interventions among the rural participants. Effectiveness perceptions were calculated with 10-point scale and a mean of 7.2 (SD=1.8) was estimated as average effectiveness of urban learners and 4.8 (SD=2.1) as an average rating of rural learners which is statistically significant (t(220)=8.94, p<0.001). Indeed, aspects that form the basis of perceptual disparities are highlighted in qualitative findings. Urban respondents mentioned interaction format, applicable example, relevance of content, instructor proficiency, and follow-up as salient. The rural respondents noticed the barriers like language barrier, decreased local relevance, program timeline, clash of agrarian programs and lack of experiential learning.

Table 4: Intervention Type Effectiveness Ratings (1-10 scale)

Intervention Type	Urban	Rural
Interactive Workshops	8.4	6.2
Case-Based Learning	8.1	5.8
Local Language Programs	7.9	7.3
Community-Based Delivery	7.5	7.8
Online Courses	7.3	4.1
Bank Workshops	7.0	5.5
Government Campaigns	6.8	4.9
Overall Average	**7.2**	**4.8**

4.4 Socio-Economic Predictors of Digital Financial Literacy

The multiple regression analysis has presented a stringent analysis of the effect of predicting the outcomes of digital financial literacy at the level of socio-economic variables. The model in the analysis used four major predictors which include; the level of education, monthly household earnings, employment and access to technology. Findings revealed that education level became the strongest predictive variable with the highest standardized coefficient (β=0.42, $p<0.001$), meaning that one more step of the growth level of educational attainment was connected with an 8.3-percentage-point increase in literacy scores. The access to technology also proved to be a significant predictor of the relationship ($\beta = 0.38$, $p = 0.001$), with the participants who indicated that they have a reliable internet connection scoring 12.3 percentage points above the ones who do not have this access. Income on a monthly basis was also found to be a substantial factor (β=0.31, $p<0.001$),with each 10,000 rise in monthly income being associated with a 3.1-percentage-point increase in literacy. Arguably, working in the formal sector, rather than the informal sector, or the agricultural sector also foresaw better literacy levels (β=0.24, $p=0.002$). In total, this model explained 64 percent of the the digital financial literacy scores (R^2=0.64, $F(4,295)=131.2$, $p<0.001$), which highlights the strong impact of the socio-economic factors on the literacy scores.

Table 5: Regression Analysis - Predictors of Digital Financial Literacy

Predictor Variable	β	p-value	Impact
Education Level	0.42	<0.001	+8.3% per level
Technology Access	0.38	<0.001	+12.3% with access
Monthly Income	0.31	<0.001	+3.1% per ₹10K
Employment Sector	0.24	0.002	Formal > Informal
Model Statistics: $R^2 = 0.64$, $F(4,295) = 131.2$, $p < 0.001$			

4.5 Hypothesis Testing Summary

The research tested six primary hypotheses with empirical data. All hypotheses were supported by the findings except H6 which received partial support due to the cross-sectional design limiting assessment of recommendation implementation effects.

Table 6: Hypothesis Testing Summary

H	Statement	Result
H1	Urban interventions more effective than rural	SUPPORTED ($p<0.001$)
H2	Impact varies between urban/rural areas	SUPPORTED ($p<0.001$)
H3	Socio-economic factors influence effectiveness	SUPPORTED ($R^2=0.64$)
H4	Targeted components improve fraud mitigation	SUPPORTED ($p<0.001$)
H5	Technology, culture, training affect success	SUPPORTED (OR=4.8)
H6	Recommendations will improve effectiveness	PARTIALLY SUPPORTED

5. DISCUSSION

The 25.6-percentage-point urban-rural digital financial literacy gap is symbolic of the overall trends of digital inequality that infiltrate India; it is no longer just an issue of knowledge gaps, but also of inconsistent access to education and access to the technological infrastructure. The noticeably larger success rate of rural fraud (37 3 18) supports the conclusion that the literacy divide translates into tangible monetary losses, which confirms the results of Kumar and Singh (2023) and provides specific evidence of competency gaps, especially the 35 3 32 gap in fraud recognition and the 32 gap in online security practices. These findings have far reaching consequences on the financial inclusion policies and vulnerability to fraud because the same populations that require the availability of financial services probably are the least placed to use them in a sound way. Ineffectiveness differences in interventions (7.2/10 in urban areas, versus 4.8/10 in rural areas) demonstrate a systematic difference between what program is designed to do and what realities on the ground would actually have it be like, and do not represent mere differences among populations. Both programs with local languages had an 73 percent completion rate, and community-based delivery had 82 percent attendance rates compared to 48 percent in external workers, which further supports the findings of Mehta and Agarwal (2022) on the importance of cultural moderation. The significantly larger effectiveness of interactive workshops (8.4/10 urban, 6.2/10 rural) and case-based learning (8.1/10 urban, 5.8/10 rural) supports the constructivist theories of learning based on the active learning. However, it should be noted that the impressive rural performance of local-language programmemes (7.3/10) and community-based delivery (7.8/10) which result in impressing data prove that situationally designed designs can transcend contextual limits. There is also a strong predictive power of socio economic variables (R 2 = 0.64/=), which highlight that deprivation of digital literacy is a perpetrator of wider disparities. Education became the strongest predictor ($\beta = 0.42$) indicating that the digital proficiency is mediated by the existing scholastic competencies. In addition, the variable of access to technology operates as a gatekeeper variable internet access to rural population was 4.8 times more likely to engage in interventions, which means that development of infrastructure and literacy education should be developed in parallel. The effectiveness of programs is influenced by cultural aspects (such as trust mechanisms, family formations and language inclination). The fact that 67 per cent of females living in the rural areas needed the approval of their families in order to be able to attend programmes is an indication that the gender norms mediate access and thus the idea of family or community legitimized approach.

6. CONCLUSION & RECOMMENDATIONS

The study provides detailed evaluation of the digital financial literacy programs in rural and urban Rajasthan. There are still large gaps in literacy rates (68.3 10 urban versus 42.7 10 rural), intervention efficiency (7.2, 10 urban versus 4.8, 10 rural), and fraud prone (18 10 urban versus 37 10 rural). The awareness of social economic results describes 64 per cent of literacy variance, and the cultural influence and program structure play an enormous role. Existing interventions show disjunctures of conspicuities of effectiveness between contexts, that shows systematic program-context misalignment. This research paper has shown that properly crafted, culturally sensitive interventions can significantly reduce the risks of being a target of fraud, but it implies that to bring this potential to fruition requires a long-term investment of commitment to resolve underlying technological, educational, and economic resource disparities. Key Recommendations: (1) Establish alternative product formats based on urban/rural settings where the content is in the local language, delivered by the community; (2) Invest in rural digitalization as the condition of intervention success; (3) Develop coordination channels at the intergovernmental, financial, non-governmental and law enforcement; (4) Prefer learning formats with a high amount of interactivity and hands-on activity to information dissemination; (5) Have sustained engagement models that facilitate

constant fraud alerts as opposed to workshops which are single-hour; (6) Utilize relied upon community officers as program delivers in rural communities; (7) Integrate psychological intelligence on manipulation strategies and technical training; (8) Develop family based interventions by understanding community decision making patterns; (9) Multilingual support in local dialects other than Hindi translation; (10) Incorporate digital financial literacy culturally and within school curricula, in an effort to attain long-term presence.

REFERENCES

1. Cyber Crime Unit (2023). *Annual Cyber Crime Report 2023*. Rajasthan Police Department.
2. Gupta, A., & Rao, S. (2023). Digital financial literacy interventions in rural Rajasthan. *Rajasthan Economic Review*, 15(2), 234-256.
3. Joshi, A., & Nair, P. (2022). Digital literacy and financial fraud: A study of rural populations in India. *Journal of Rural Finance*, 18(3), 445-467.
4. Kumar, V., & Singh, N. (2023). Urban-rural divide in financial literacy and fraud prevention. *Economic Studies Journal*, 29(4), 678-701.
5. Mehta, R., & Agarwal, V. (2022). Assessing the impact of digital literacy on financial fraud prevention: Case studies from Rajasthan. *Indian Journal of Financial Research*, 14(2), 189-212.
6. Michael, H.E., Hill, R.R., & Perdue, G. (2010). School of study and financial literacy. *Journal of Economics and Economic Education Research*, 11(3), 29-37.
7. Patel, A., & Singh, M. (2023). The role of digital financial literacy in reducing cyber fraud in urban areas. *Urban Economics Journal*, 21(1), 78-95.
8. Prasad, H., Meghwal, D., & Dayama, V. (2018). Digital financial literacy: A study of households of Udaipur. *Journal of Business and Management*, 5(1), 23-32.
9. Reserve Bank of India (2023). *Annual Report on Financial Literacy 2023*. Reserve Bank of India Publications.
10. Sharma, P., & Gupta, S. (2021). Comparative analysis of financial literacy programs: Urban vs rural settings. *Rural Development Review*, 19(4), 567-589.
11. Smith, J., & Kumar, R. (2022). Digital financial literacy and fraud prevention: A review. *Journal of Financial Education*, 48(2), 234-256.
12. Times of India (2024). High-profile digital fraud cases in Rajasthan. Retrieved from https://timesofindia.indiatimes.com
13. Verma, S., & Patel, J. (2023). Evaluating digital financial literacy interventions in Rajasthan: An empirical study. *Rajasthan Journal of Financial Studies*, 12(1), 45-68.