THE MICROFINANCE REVIEW

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★ **Digital Finance, Digital Lending, Community driven Agri-Value Chain Finance and Tech Enabled Financial Services**

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Aims and Objectives

The aim of the Journal is to promote studies on issues related to the financial inclusion and microfinance sectors in India and abroad in order to sensitise the policy makers, donors, researchers and others who are associated with the sectors. The journal proposes to identify key problems and encourage debate on financial inclusion and issues such as socio-economic empowerment, institutional arrangements and innovations in microfinance products with special focus on rural stakeholders.

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★ **Digital Finance, Digital Lending, Community driven Agri-Value Chain Finance and Tech Enabled Financial Services**

CONTENTS

Digital Transformations in Financial Services: Assessing Financial and Digital Literacy in Eastern Madhya Pradesh

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A study of 20,000 respondents from 10 districts in the eastern Madhya Pradesh reveals variations in financial literacy and digital financial services awareness levels across these districts, and also indicates that they are influenced by socio-economic dynamics.

Abstract

The objective of this study is to assess the factors influencing financial literacy (FL) and digital financial literacy (DFL) in the eastern districts of Madhya Pradesh (MP). The chosen districts for the survey on financial literacy in eastern MP offer a wide variety of economic activities, demographic compositions, infrastructure accessibility, and geographical diversity. The study used the OECD/INFE framework to measure the FL and DFL. It also used logistic regression to measure the factors influencing FL and DFL. The National Centre for Financial Education (NCFE) is the national institution which measures the statewide FL once in every five years, however, there is no study available to measure the district-wise scores in the state. This study measures FL and DFL in 10 eastern districts of MP, and it is the first of its kind. The findings of the study will help in making district level strategies to improve the access and usage of financial services in the state.

1. Introduction

In the contemporary landscape, characterised by the widespread accessibility of increasingly sophisticated financial products, the importance of financial literacy (FL) is paramount. The proliferation of bank accounts and credit facilities, facilitated by government initiatives aimed at expanding financial inclusivity, underscores the necessity for individuals to possess adequate financial knowledge (Global Partnership for Financial Inclusion, 2020). A failure to grasp fundamental financial concepts can lead to significant financial repercussions. Individuals

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lacking financial literacy may incur higher interest rates of loans, higher transaction costs, and higher levels of indebtedness, primarily due to a lack of understanding of interest compounding (Lusardi and Tufano, 2015). Moreover, such individuals often find themselves predisposed to increased borrowing and smaller savings (Stango and Zinman, 2009).

Conversely, the benefits of financial literacy are manifold. Proficiency in financial matters significantly enhances one's ability to plan and save for retirement effectively (Lusardi and Mitchell, 2014). Furthermore, financially literate investors demonstrate a greater propensity to mitigate risks through portfolio diversification – a practice that involves allocating funds across multiple investment vehicles (Abreu and Mendes, 2010).

Along with financial literacy, digital financial literacy/services (DFL/DFS) are also crucial for the consumer to make informed decisions, as most of the financial services are available digitally. The DFL is a multi-dimensional concept which integrates financial literacy, financial capability and digital literacy (Alliance for Financial Inclusion, 2021). Morgan *et al.* (2019) suggested to include a standardised set of questions based on DFL to be included in the surveys of the Organisation for Economic Co-operation and Development (OECD) and its International Network on Financial Education (INFE) and the World Bank to examine the status of DFL amongst countries along with FL. The DFL could provide people with the necessary financial literacy and digital competence, enabling them to avoid illogical behaviour, develop the foresight to carefully assess economic conditions, and build confidence in seeking out the right financial counsel (Andreou and Anyfantaki, 2021; Kanungo and Gupta, 2021). The policy document on digitisation and financial literacy (OECD, 2018) emphasised the need to identify and promote effective initiatives that enhance digital and financial literacy in the light of the unique characteristics, advantages and risks of DFS and channels.

Strengthening financial education in the country is one of the key developmental priorities of the Government of India and the four financial sector regulators, namely, Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority of India (IRDAI) and Pension Fund Regulatory and Development Authority (PFRDA). Financial literacy promotes financial inclusion by enabling customers to make well-informed decisions that benefit their financial well-being (National Strategy of Financial Education 2020-2025). The financial inclusion (FI) and financial literacy (FL) are the two important pillars of development policy worldwide. The INFE/OECD defined FL as a combination of financial awareness, knowledge, skills, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being (OECD, 2018).

An inclusive financial system is needed to reduce extreme poverty and inequality, to boost the shared prosperity and to promote sustainable development goals (Demirguc-Kunt *et al*. 2008). Studies in the literature show that FL plays an important role in achieving the goal of FI. The FL is also needed for utilisation of formal banking services and other government promoted welfare schemes. A lack of financial education

excludes them from availing financial services and results in financial exclusion. To reduce the financial exclusion, it is important that the population must be financially and digitally literate.

Scenario of Financial Literacy (FL) and Digital Financial Literacy (DFL)

The assessment of FL is crucial for evaluating the effectiveness of the financial education initiatives and understanding the financial well-being of individuals and communities. According to the Global Financial Literacy Survey conducted by Standard & Poor's in 2014, only one in three adults worldwide is financially literate, with 3.5 billion adults, mostly in developing countries, lacking FL (Klapper *et al*. 2015). In India, despite an 80% literacy rate, FL stands at just 27% (National Centre for Financial Education, 2019). The FL in urban and rural areas is 33% and 24%, respectively, with even lower rates among students (26%), agricultural labourers (13%), and homemakers (16%). In eastern Madhya Pradesh (MP), FL is at 24%, which is below the national average, with over 75% of the population not understanding basic financial concepts. This underscores the need for all institutions, including exchanges and SEBI, to enhance efforts to promote FL across the country.

The year 2016 marked a turning point in India's DFS with the launch of the Unified Payment Interface (UPI). Before UPI, Prepaid Payment Instruments (PPI) were predominant. The UPI has since become the cornerstone of India's digital payment revolution, rapidly growing it share from an 11% of retail payments in February 2021 to 22% by February 2023. In 2023, UPI transactions surpassed 10,000 crore, with over 60% year-on-year growth in transaction volume and a 40% increase in transaction value, which touched ₹182.84 lakh crore (BFSI, 2023). India now accounts for 46% of global digital payments, largely due to UPI's success (Finshot, 2024). UPI is also in use in 12 other countries.

India's DFS ecosystem is rapidly evolving, driven by government initiatives like Digital India, Aadhaar-enabled services, and the push for cashless transactions. Despite this progress, challenges such as digital literacy, cybersecurity and interoperability remain. The National Payments Corporation of India (NPCI), established under the Payment and Settlement Systems Act of 2007, has significantly advanced DFS development and adoption. This study examines the FL and DFL in eastern Madhya Pradesh, where only 24% of the population is financially literate. It is the first study in the state to explore FL and DFL at an individual level, starting with 10 eastern districts, with plans to expand to other districts in the future.

2. Literature Review

Studies show that FI and FL complement each other; the latter is an important demand side determinant of the former. The capacity to comprehend and apply a variety of financial abilities, such as investing, budgeting and personal financial management,

in day-to-day regular life is known as FL. The OECD (2018) defined three crucial components of FL, namely, financial knowledge, financial attitude and financial behaviour. Financial knowledge involves understanding basic financial concepts like interest, inflation and the time value of money. Financial attitude reflects one's economic and non-economic beliefs, influencing behaviours such as saving, investing and managing money effectively.

The S & P Global Financial Literacy Survey is a worldwide survey to measure FL to assess basic knowledge of four fundamental concepts in financial decision making: knowledge of interest rates, interest compounding, inflation and risk diversification. On average, 55% of adults in the major advanced economies are financially literate. In contrast, in the major emerging economies, on average, 28% of adults are financially literate. Disparities exist among these countries, too, with rates ranging from 24% in India to 42% in South Africa (Klapper *et al.* 2015).

According to Morgan (2022), the national financial education programmes should be expanded to include DFL. This includes measures that address the need to close the DFL and FL gaps that affect underprivileged populations like women, the impoverished, those living in rural areas, and micro, small and medium-sized businesses. The G20 High-Level Policy Guidelines on Digital Financial Inclusion offer policy options to bridge financial inclusion gaps for youth, women and SMEs through DFS, ensuring everyone can benefitting from digital innovations (Global Partnership for Financial Inclusion, 2020).

The emergence of fintech companies provided a shot in the arm to the rapid expansion of DFS, particularly post COVID-19 pandemic. Hartanto (2022) iterated to improve consumer protection and supervision of government on DFS providers. Studies also emphasised the need to improve the DFL among students so that they could have knowledge on usage of financial products and services at an early age and utilise services on a daily basis (Hayati and Syofyan, 2021; Ravikumar *et al.* 2022).

Financial exclusion among underprivileged groups, especially indigenous people, is due to a lack of financial knowledge and fear of using financial services (Nanda, 2019). Studies highlight factors such as poverty, lack of education, discrimination and inadequate infrastructure contributing to the financial exclusion of tribal communities, thereby, emphasising the need for FL and DFL programmes for both consumers and financial sector officials (Nanda and Samantha, 2018; Braunstein and Welch, 2002; Houston, 2010; Morgan, 2022; Lyson and Kass-Hanna, 2021).

Though there are lot of discussions about the importance of FL, DFL and DFS, the fact that the majority of people lack basic education is a big source of concern. According to Huston (2010), the inability to grasp financial products with their complex characteristics is a fundamental worry that must be addressed before any FL strategy or programme aimed to educate the people. In a similar spirit, Lusardi *et al.* (2013) stated that the impoverished and uneducated masses' main problems are lack of access to financial

resources and a lack of awareness of financial goods, their usefulness and utilisation. As a result, basic financial education and digital financial education should be two sides of the same coin when it comes to integrating FL on a digital platform.

Various countries around the world took initiatives to promote DFS. The Philippines is one of the first countries that took the initiative for digital payments in its nascent stage in 2001. The M-Pesa model of Kenya is famous in the world for its widespread reach and effectiveness for extending financial reach and inclusion among the poor. Following is a list of some digital payment initiatives in various countries given in Table 1.

Table 1: Country-wise Digital Financial Services Initiatives

Country	Initiative
Kenya (2007)	M-pesa
Ghana (2009)	Mobile money
Tanzania (2008)	Mobile money
Bangladesh (2011)	bKash
Thailand (2017)	Prompt Pay and Common QR
Uganda (2010)	Mobile Money
Philippines (2001)	SMART Money
India (2016)	BHIM-UPI, *99#, e-Rupee, UPI-lite, CBDC

Source: Author's Compilation.

The above review of studies reveals that FL and DFS play an important role in the development of inclusive financial systems. The DFS, which has strong bearing on the access and usage of services, thus, plays a crucial role in expanding financial inclusion all around the world and fulfilling the objective of SDGs. At national level, the National Centre for Financial Education (NCFE, an organisation dedicated to measure the FL status in the states) conducted a survey to know the status of FL in the states. However, NCFE did not cover DFS in their survey. The NCFE (2019) showed that Madhya Pradesh had a FL score 24%. The MP government on the occasion of International Women's Day (8 March, 2023) announced that FL would be a compulsory subject for women in 10th onwards classes. This shows the importance of FL in day-to-day life to make informed decisions about investment and other things. However, there is no such study is available at district level to gain deeper insights of the status of FL in the state.

3. Objectives

This study is an initiative to know the status of FL and DFL/S for informed policy decisions. The FL and awareness of DFS are crucial not only for household heads and earning members but also for young students, housewives and every adult in the family. The FL plays a vital role in decision-making and autonomy. Therefore, the present study was conducted to assess the FL and DFS awareness amongst different individuals. More specifically, the objective of this study is to assess the status of FL and DFL in eastern Madhya Pradesh and identify the factors which influence the level of FL and DFL in the state.

4. Research Methodology

The study was conducted in 10 eastern districts of Madhya Pradesh. As many as 20,000 representative samples of respondents belonging to the age group of 18-79 years were considered. The 10 districts have 59 blocks, and from every block a sample of 350

was taken to have a fair representation. In that sense the total sample for these 59 blocks would be 20,650. However, 650 samples were removed due to incomplete information.

The Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis (AIGGPA) is a think tank of Madhya Pradesh Government and situated in Bhopal. The AIGGPA is running two programmes, namely, the Chief Minister's Young Professional Development Programme (CMYPDP) and Chief Minister's Youth Internship Programme (CMYIP). Under CMYPDP, 52 fellows are appointed in each district, and they work in close coordination with district administration. Similarly, to reach out the grassroots, CMYIP programme was started to train the youth on various public policy issues. Under CMYIP, 30 interns are appointed by the state government in each block to reach out to the grassroot population. The study used these young fellows to collect the data. Due to this robust network of human resources, it was possible to collect a huge sample of 20,000 in 59 blocks. Multiple rounds of training were provided to make them familiar of the concepts of financial and digital literacy.

The guidelines provided by the RBI for assessing FL and DFS scores emphasise numeric skills and individual assessment. Consequently, the study developed a questionnaire schedule focused on individual-level evaluation. The survey was administered between November and December 2023.

Profile of Sample Districts

The census profile of all the sample districts is given in Table 2. Here we can clearly see that male population is more than the female population, and maximum population belong to rural areas. The average literacy rate of these districts is more than 65%.

Table 2: Census Profile of Sample Districts

District	Total Population	Blocks	Male (%)	Female (%)	Literacy (%)	Urban (%)	Rural (%)	SC (%)	ST (%)
Shahdol	1,066,063	5	50.65	49.35	66.67	20.6	79.4	8.4	45.4
Anuppur	749,237	4	50.6	49.4	67.88	27.4	72.6	9.9	47.8
Singrauli	517,197	3	52.05	47.95	64.79	42.6	57.4	12.8	32.6
Sidhi	1,127,033	5	51.09	48.91	64.43	8.3	91.7	11.5	27.8
Rewa	2,365,106	9	51.79	48.21	71.62	16.7	83.3	16.2	13.2
Dindori	704,524	7	49.95	50.05	63.9	4.6	95.4	5.6	64.7
Mandla	1,054,905	9	49.79	50.21	66.87	12.3	87.7	4.6	57.9
Satna	2,228,935	8	51.93	48.07	72.26	21.3	78.7	17.9	14.4
Katni	1,292,042	6	51.23	48.77	71.98	20.4	79.6	12.1	24.6
Umaria	644,758	3	51.28	48.72	65.89	17.1	82.9	9.0	46.6

Source: Census of India, 2011.

The chosen districts for the survey on financial literacy in eastern Madhya Pradesh indicate a variety of economic activities, demographic compositions, infrastructure accessibility, and geographical diversity. Singrauli district stands as a hub of mining activity, while Katni, Rewa and Satna thrive on agricultural pursuits as well as a modest level of mining and industrial development. On the other hand, the tribal districts such as Mandla, Dindori, and Anuppur are comparatively less industrialised and mainly dependent on

the agriculture. By examining FL across these varied economic landscapes, the survey aims to unravel how different economic contexts influence financial behaviours and knowledge. The demographic landscape present in these districts, encompassing diverse ethnicities, languages and socio-economic strata, underscores the importance of tailoring financial education initiatives to cater to the specific needs and preferences of various communities. Further, the varying levels of infrastructure development and access to financial services, ranging from more established industrial centres like Katni to remote areas like Anuppur, provide an opportunity to delve into the pivotal role of infrastructure in fostering FL. By embracing this geographical diversity, the survey seeks to capture a comprehensive picture of FL levels, rooted in the complex interplay of socio-economic conditions and demographics prevalent across eastern Madhya Pradesh.

Research Methods

The study has used a standard methodology followed by OECD/INFE framework, NCFE survey of financial literacy and S&P Global Financial Literacy Survey (2014). The study has prepared a structured interview schedule comprising the questions on financial and digital literacy. To measure the FL, 11 questions were asked on simple and compound interest, inflation and risk diversification, financial planning, financial behaviour, attitude towards investment, and credit scores. Further, the study also used correlation to find the association between variables and logistic regression to measure the factors influencing FL and DFL.

The equation for the logistic regression is given below:

$$\text{logit}(p) = \log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k$$

where:

- p represents the probability of the binary outcome (usually coded as 1 for success or presence, and 0 for failure or absence).
- logit (p) is the natural logarithm of the odds ratio, also known as the log-odds or logit function.
- β_0 is the intercept term.
- $\beta_1, \beta_2, \ldots..\beta_k$ are the coefficients associated with each predictor variable $X1, X_2, \ldots, X_k$, respectively.
- $X_1, X_2, \ldots..,X_k$ are the predictor variables. Age, gender, social class, education, residence, occupation, monthly income and income frequency are used as the independent variables in this study.

Scoring Mechanism

The study used scoring mechanism to decide the FL score of each district. To measure financial numeracy, all questions are numerical, hence all the correct answers have been allocated one mark and incorrect answers zero. However, to measure financial behaviour,

questions were asked on the scale of 1 to 5 (Strongly agree (1), Agree (2), Neutral (3), Disagree (4) And Strongly disagree (5)). All the correct answers were given one mark and incorrect with zero. If anyone score nine marks out of 11 questions (80% score), he/she is considered as financially literate. The study used OECD and NCFE mechanism to decide the final score of individuals; both the institutions had used more than 70% score as a criterion to be financially literate.

Similarly, the scoring mechanism is also used in deciding whether an individual is digitally financial aware or not. A total six questions have been used in deciding the score on awareness of DFS. The questions were based on awareness on fishing and spyware, cyberfraud reporting mechanism, banking lokpal scheme, and secrecy of one time passwords (OTP) and other financial details. Every correct answer was awarded one mark and incorrect answer with zero marks. If any respondents answered five questions correctly, he/she is assumed to be aware about the usage of DFS/L.

5. Results and Discussion

The analysis covers demographic profile of the sample data, district wide financial literacy and digital literacy scores. The further analysis also presents the factors influencing financial literacy and digital literacy in the eastern districts of Madhya Pradesh.

Demographic Profile of the Sample

Table 3 presents the demographic analysis of the sample data which shows that gender imbalance mainly due to an excess of male population at a high 64.1%. Madhya Pradesh is an agrarian state, where more than 70% of the population resides in rural areas, and 21.3% of the population is tribal. As most of the population is in rural areas, this study considered maximum sample (94%) from the rural areas. Similarly, age group data shows that 52.16% population of this survey belong to youths followed by age group of 30-39 years; 40-49 years and others. A large proportion of the sample belongs to younger age groups between 18 and 29, who are considered as the early age workforce of the state. The state has one of the youngest populations in the country, and so more focus was given to the young population.

In so far as the social background is concerned, the maximum respondents belong to other backward community (OBC) category, which is consistent with the broader trend observed at the state level. The education profile indicate that the share of graduates is maximum (25%) followed by 12th standard (20.96%); but 22% of sample population have no formal education. The college education of the respondents was analysed separately (in logistic regression) for under graduate (UG) and post graduate (PG) levels to avoid any biases. The PG and above was used as a reference category as the highest level of education.

The occupation category shows that the maximum population was employed in informal sector, especially in agriculture sector, construction and as daily wage labourers, followed by formal sector (government and private sector employee). About 18.77% population are students as the largest survey sample was in the age bracket of 18-29 years. The monthly income-data of the respondents shows that 35.65% population is earning less than ₹5,000 due to their informal job setup, wherein 26.55% is earning in the range of ₹5,000 to ₹15,000. A meagre population of 6.42% belong to high income class group; earning between ₹15,000 and ₹30,000, and 2.36% earn in between ₹30,000 and ₹75,000. However, 28.71% of the population is not earning, as students form a large proportion of the surveyed. The analysis indicate a diversity in the sample data, which is suitable for the study.

Table 3: Demographic Profile of Respondents

Parameter	Indicators	As % to the Total
Gender	Male	64.10%
	Female	35.85%
	Others	.05%
Age group (in years)	18-29	52.16%
	30-39	23.04%
	40-49	14.10%
	50-59	6.27%
	60-69	2.66%
	70+	1.76%
Social class	General	24.73%
	Other Backward Community	38%
	Schedule Caste	14.96%
	Schedule Tribe	22.31%
Education	Post graduate and above	13.65%
	Under graduate	25.22%
	12th	20.96%
	10th	18.05%
	No education	22.12%
Occupation	Informal sector	44.77%
	Formal sector	15.47%
	Students	18.77%
	Housewives	12.69%
	Retired	0.48%
	Other	7.81%
Monthly income (₹)	Less than 5.000	35.64%
	5,000-15,000	26.55%
	15,000-30,000	6.42%
	30,000-75,000	2.36%
	More than 75,000	0.32%
	No Income	28.71%

Source: Author's Compilation.

District FL Score in Eastern Madhya Pradesh

The FL has been measured in percentage term; the range is 0 to 100%. If any district is closer to 100%, that district is regarded to be highly financially literate, and vice versa. Figure 1 presents FL percentage score across various districts in eastern Madhya Pradesh, alongside an average for the entire region. Districts like Singrauli, Rewa and Sidhi exhibit relatively

Figure 1: Financial literacy in the Districts of Eastern Madhya Pradesh
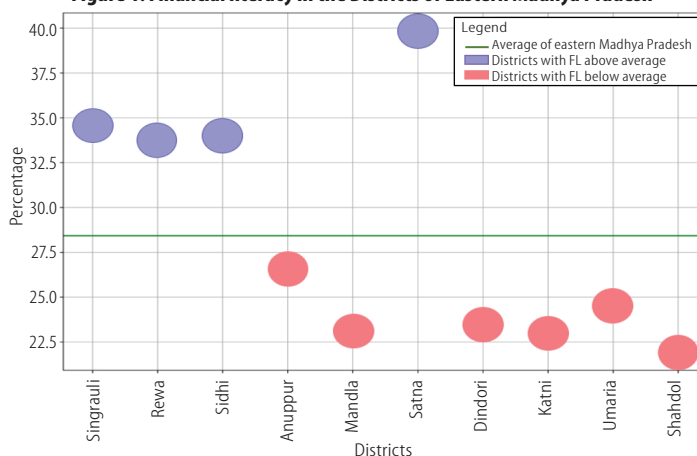
higher levels of FL, ranging from 33.91% to 34.66%. Satna stands out with the highest percentage of FL at 39.94%. Mandla, Dindori, Katni, Umaria, Anuppur report lower percentages, ranging from 22.34% to 26.49%, whereas Shahdol district records the lowest percentage of FL at 21.83%. These variations underscore the localised nature of FL levels within eastern Madhya Pradesh. The regional average for FL stands at 28.42%, which is higher than state and national average of 23% and 27%, respectively (NCFE-NFLIS, 2019).

District DFS Score in Eastern Madhya Pradesh

Figure 2 provides insights into the level of awareness related to DFS across various districts of eastern Madhya Pradesh. Singrauli emerges as the district with the highest percentage of engagement with DFS at 66.78%, followed by Rewa and Sidhi. On the other hand, Shahdol district records the lowest percentage at 39.17%, suggesting a comparatively lower level of awareness regarding DFS. Katni, Umaria and Dindori also reflect lower level of awareness related to DFS. With the awareness levels ranging between 50% and 52%, Satna, Mandla and Anuppur districts revolve around the regional average of 51.40%.

Figure 2: Digital Financial Service Awareness in the Districts of Eastern Madhya Pradesh
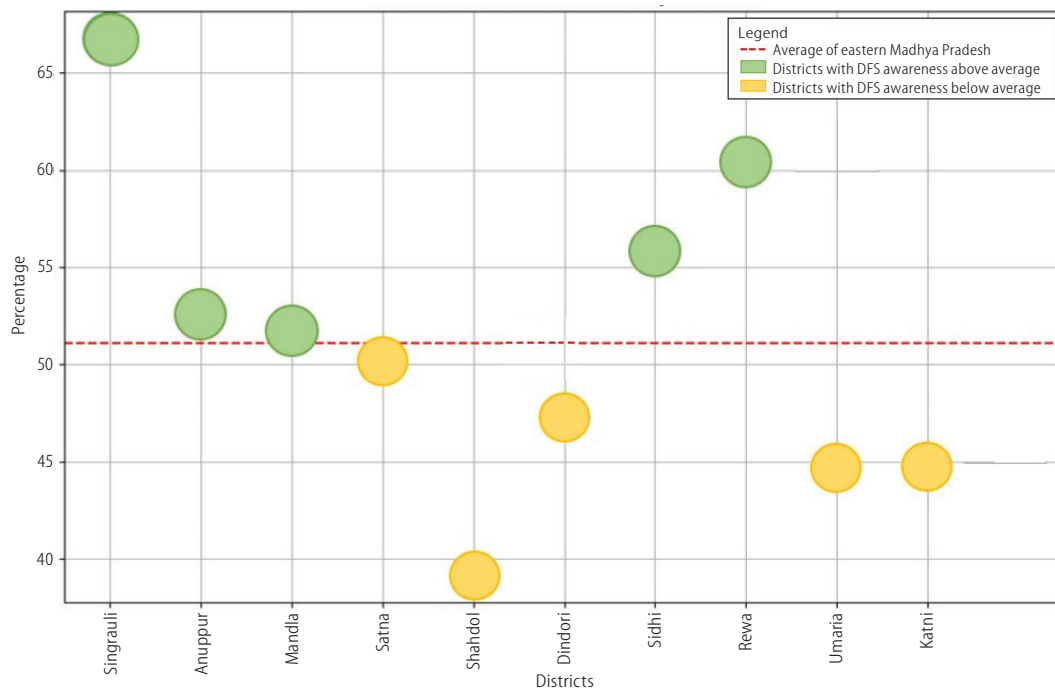
Factors affecting Financial Literacy

The logistic regression analysis reveals several key factors influencing FL in the eastern region of Madhya Pradesh (Table 4).

Age has a notable impact, especially with regard to the elderly population. Elders aged 60-69 years have decreased odds of FL compared to those aged 18-29 years. They are 28% less likely to be financially literate. The likelihood of being financially literate further declines in the older age group of 70 years and above, as they are 46.7% less likely to have FL compared to young adults. Gender also plays a significant role, with females showing nearly 21% less likelihood of having FL compared to males. Social class exhibits that individuals in the general category have better odds of being financially literate compared to those in OBC, SC and ST categories. Individuals belonging to OBC and SC categories are 14.5% and 18.3%, respectively, less likely to have FL compared to individuals from general category. The tribal population's chances of being financially literate are twice as bad compared to the OBC population. They are 32.3% less likely to be financially literate. Education, like social class, also emerges as a strong predictor, with higher levels of education correlating positively with FL. With an increase in education levels, the likelihood of FL also increases. Individuals with no formal education are 79.8% less likely to have FL compared to individuals with education levels

Table 4: Factors Affecting Financial Literacy

Variable	Odds Ratio	P value	95% CI	
Age group (in years)				
18–29 ®	1		–	–
30–39	0.935	0.150	0.854	1.024
40–49	0.965	0.543	0.860	1.083
50–59	0.906	0.225	0.773	1.063
60–69	**0.720	0.014	0.554	0.935
70 and Above	***0.532	0.001	0.371	0.765
Sex				
Male ®	1		–	–
Female	***0.793	0.000	0.732	0.860
Other	0.923	0.915	0.211	4.041
Social Class				
General ® 1	1		–	–
Other Backward Community	***0.855	0.000	0.788	0.928
Schedule Caste	***0.817	0.000	0.732	0.913
Schedule Tribe	***0.677	0.000	0.612	0.749
Education				
Post Graduate and Above ®	1		–	–
Under graduate	***0.718	0.000	0.652	0.790
12th	***0.471	0.000	0.423	0.525
10th	***0.366	0.000	0.324	0.414
No Formal Education	***0.212	0.000	0.183	0.245
Residence				
Rural ®	1		–	–
Urban/Semi-urban	***1.306	0.000	1.142	1.492
Occupation				
Informal ®	1		–	–
Formal	***1.256	0.000	1.119	1.410
Student	***1.214	0.001	1.085	1.359
Housewife	**0.839	0.020	0.723	0.973
Retired	0.994	0.980	0.626	1.580
Others	1.049	0.479	0.919	1.198
Monthly Income				
Less than ₹ 5,000®	1		–	–
₹ 5,000 to ₹15,000	***1.346	0.000	1.231	1.472
₹15,000 to ₹30,000	***1.510	0.000	1.315	1.735
₹30,000 to ₹75,000	***1.782	0.000	1.441	2.205
More than ₹75,000	*1.708	0.053	0.994	2.937
No Income	1.018	0.741	0.914	1.135
Income Frequency				
Daily ®	1		–	–
Weekly	0.864	0.166	0.702	1.063
Monthly	1.031	0.617	0.914	1.164
Irregular	*1.106	0.093	0.983	1.244
Any Other	1.023	0.727	0.900	1.163

Note: p < 0.1, p < 0.05, p < 0.01 represented by *, **, *** respectively.
Source: Authors' estimates.

of PG or higher. The place of residence influences FL with individuals in urban and semi-urban areas displaying greater odds of FL compared to rural residents. Occupation type also matters with formal employment and student status positively impacting FL compared to individuals engaged in an informal setup. Persons engaged in formal sector are 25% more likely to be financially literate. On the other hand, housewives are 16% less likely to have FL than people engaged in informal occupations. Income level further reinforces the importance of socio-economic factors, with higher incomes positively associated with FL. Individuals with a monthly income between ₹5,000 and ₹75,000 have an increased likelihood ranging between 36% and 78% of having FL compared to people earning less than ₹5,000 a month.

Factors Affecting Digital Financial Literacy

Awareness and literacy regarding DFS and related knowledge in eastern Madhya Pradesh are determined by several influencing social and economic elements (Table 5).

The odds of having awareness about DFS decrease, as age increases. Compared with young adults aged 18-29 years, all other age groups have significantly lower odds of awareness. People aged 50 years and above are nearly 55% less likely to have awareness about DFS and related security measures. Individuals belonging to

Table 5: Factors affecting Digital Financial Literacy

Variable	Odds Ratio	P value	95% CI	
Age Group (in years)				
18-29 ®	1		–	–
30-39	***0.874	0.001	0.806	0.949
40-49	***0.731	0.000	0.661	0.809
50-59	***0.557	0.000	0.484	0.642
60–69	***0.553	0.000	0.447	0.684
70 ans Above	***0.526	0.000	0.401	0.690
Sex				
Male ®	1		–	–
Female	***0.786	0.000	0.730	0.847
Other	*3.470	0.099	0.791	15.217
Social Class				
General ®	1		–	–
Other Backward Community	***0.869	0.001	0.802	0.941
Schedule Caste	***0.760	0.000	0.686	0.841
Schedule Tribe	*0.924	0.095	0.843	1.014
Education				
Post Graduate and Above ®	1		–	–
Under Graduate	***0.784	0.000	0.706	0.870
12th	***0.519	0.000	0.465	0.579
10th	***0.407	0.000	0.362	0.458
No Formal Education	***0.241	0.000	0.211	0.274
Residence				
Rural ®	1		–	–
Urban/Semi-urban	0.950	0.457	0.829	1.088
Occupation				
Informal ®	1		–	–
Formal	1.031	0.593	0.921	1.155
Student	***1.330	0.000	1.195	1.481
Housewife	**0.855	0.012	0.756	0.967
Retired	0.970	0.888	0.631	1.491
Others	1.057	0.371	0.936	1.195
Monthly Income				
Less than ₹ 5,000®	1		–	–
₹ 5,000 to ₹15,000	1.020	0.647	0.938	1.108
₹15,000 to ₹30,000	***1.331	0.000	1.159	1.528
₹30,000 to ₹75,000	**1.292	0.021	1.039	1.606
More than ₹75,000	1.191	0.544	0.678	2.091
No Income	***0.844	0.001	0.767	0.930
Income Frequency				
Daily ®	1		–	–
Weekly	0.970	0.730	0.818	1.151
Monthly	1.055	0.343	0.945	1.177
Irregular	***0.698	0.000	0.629	0.774
Any Other	***0.743	0.000	0.662	0.833

Note: p < 0.1, p < 0.05, p < 0.01 represented by *, **, *** respectively.
Source: Authors' estimates.

the age groups of 30-39 and 40-49 years are 12.6% and 27%, respectively, less likely to have awareness. Gender shows a significant impact as well with women being 20% less likely to be aware of DFS and related security measures compared to their male counterparts. Social class shows a significant influence on awareness related to DFS in eastern Madhya Pradesh. Compared to the general category, people belonging to OBC and SC categories are 13% and 24%, respectively, less likely to have awareness regarding DFS. However, education emerges as a much stronger social predictor. Higher odds of awareness are observed with higher levels of education. Lack of formal education results in a 75% lesser likelihood of having awareness related to DFS compared to people with education levels of PG and above. Similarly, education only till the 10th and 12th levels means nearly 60% and 49%, respectively, less likelihood of being aware of DFS and related knowledge. Place of residence, be it rural or urban, does not have any significant association with awareness related to DFS. Students in eastern Madhya Pradesh have a 33% higher awareness of DFS compared to people involved in the informal sector in the region. On the other hand, housewives are nearly 15% less likely to have awareness. Income of an individual also establishes a significant relation with DFS. Higher income levels are associated with higher odds of awareness; monthly earnings between ₹30,000 and ₹75,000 increase the likelihood of awareness by nearly 30% compared to people earning less than ₹5,000 per month. Conversely, people with no income are 16.6% less likely to have awareness. Irregularity in income also reduces the odds of awareness by 31.2% compared to people with regular income.

Several factors have different levels of influence on both FL and awareness about DFS. Education and gender are the common elements that are strongly associated with both the phenomena. While social class plays stronger role in determining financial literacy, it is age which has stronger influence in case of awareness about DFS. Overall, these findings underscore the complex interplay of demographic and socio-economic factors in shaping FL level and awareness regarding DFS in the eastern parts of Madhya Pradesh. Further to understand the association between FL and DFL/S, correlation analysis has been done (Table 6). The correlation coefficient between FL and DFS is 0.3383. This correlation coefficient indicates that there is a tendency for individuals who are more financially literate to also have greater awareness and engagement with DFS.

Table 6: Correlation between FL and DFS

Variables	Financial Literacy	Digital Financial Services
Financial Literacy	1	0.3383
Digital Financial Services	0.3383	1

Source: Authors' estimates.

6. Conclusion and Way Forward

The objective of this study is to examine the level of FL and DFS in the eastern districts of Madhya Pradesh and identify the factors which affect the FL and DFS. The findings highlight significant variations in FL and DFS awareness across different districts,

emphasising the localised nature of these phenomena within the region. The average FL level in the eastern district is 28.42% and average DFS level is 51.40%. The logistic regression analysis sheds light on the multifaceted determinants of FL and DFS awareness, revealing the intricate interplay of demographic and socio-economic factors. Notably, education and gender consistently demonstrate strong associations with both FL and DFS awareness, underlining their pivotal roles in shaping financial capabilities. The importance of higher education is evident in its strong correlation with higher odds of both FL and DFS. Nevertheless, prioritising efforts to enhance FL from a young age becomes increasingly relevant in light of the digitisation trend and the need for early preparedness among upcoming generations and young adults for engaging with financial services. The importance of understanding of financial components and services in day-to-day life has been highlighted in the literature. Irrespective of gender, attaining FL is essential. However, women, who often play a pivotal role in household financial management, tend to lack the necessary literacy regarding financial services. The study underscores that being female is associated with decreased odds of possessing this vital FL and DFS. Recent developments by financial institutions, coupled with digital innovations, have significantly enhanced and streamlined access to financial services. The younger population in eastern Madhya Pradesh, being more technologically adept, demonstrates a clearer understanding of the evolving landscape of financial service delivery. However, the elderly population has not experienced the same exposure to DFS, and this has been compounded further by lower levels of general literacy during their formative years. Given the importance of financial management and easy access to services for social security and well-being in later stages of life, it is imperative to prioritise separate initiatives aimed at improving the understanding of financial services among the elderly population. Eastern Madhya Pradesh encompasses several tribal districts, and the study indicates that these communities are falling behind in terms of FL. There is a pressing need for more targeted and community-specific efforts to enhance understanding of financial services, particularly among marginalised groups.

The positive correlation coefficient between FL and DFS awareness suggests a symbiotic relationship between these two variables. Individuals with higher FL tend to exhibit greater engagement with DFS, indicating the complementary nature of financial knowledge and technology adoption. This trend is exemplified by the districts of Rewa, Sidhi and Singrauli, which form a cluster in eastern Madhya Pradesh, leading in both FL and DFS awareness. Shahdol and Umaria form a small cluster with low scores in both FL and DFS. Average digital literacy in the region is more than the average of financial literacy. The overall findings suggest strong disparities are caused on the basis of social class, gender, education as well as occupation and income in the eastern Madhya Pradesh; while it also shows the smaller clusters formed within the region depicting different

levels of FL and DFL. The research underscores the importance of targeted interventions aimed at enhancing FL and promoting DFS awareness, particularly among marginalised groups and regions with lower literacy levels. Policymakers, financial institutions and educational stakeholders can leverage these insights to design tailored initiatives that address the specific needs of eastern Madhya Pradesh, ultimately fostering greater financial inclusion and empowerment within the region. Further in future, the scope of the study can be expanded and include an in-depth analysis of respondents' access to information and communication technology (ICT), mobile devices and computers, specifically focusing on DFL. This would involve evaluating the availability, usage patterns and barriers faced by different demographic groups to better understand the impact of access to ICT on DFL outcomes.

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Evaluating the Performance of Gujarat State Cooperative Agriculture & Rural Development Bank Ltd. in Empowering Rural Communities through Agricultural Credit – Branch Managers' Perspectives

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and Arun Mangesh Tallur****

The computerisation of agriculture and rural development banks could revolutionize the rural credit delivery process and, thereby, improve access to digital finance, enhance agricultural productivity and promote rural development.

Abstract

The cooperative banking system emerged to facilitate credit access in rural areas, prioritising cooperation and upliftment of low-income individuals. Specifically in India, these banks emphasise providing agricultural loans to farmers at affordable rate of interest. This study examines the decade-long performance of the Gujarat State Cooperative Agriculture & Rural Development Bank Ltd. (GSCARDB), and evaluates the impact of its credit disbursed, primarily on Gujarat's farming community. It analyses borrower challenges with reference to the credit facilities, defaults in loan repayment, and the socio-economic status of beneficiaries' post-credit disbursement.

The research primarily centers on the perceptions of branch managers regarding GSCARDB's performance. As many as 30 branch managers were interviewed using structured questionnaires, focusing on their views on the bank's operations, interest rates, impact on farmers, overall service rating, satisfaction levels, and suggestions for improvement. The research employed various established scales, including five-point important and satisfaction scales, as well as a five-point Likert scale (ranging from 'Strongly Disagree' to 'Strongly Agree').

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Data analysis encompassed reliability tests, descriptive analysis, correlation tests, and hypothesis testing techniques such as t-tests and Chi-Square tests. A comprehensive literature review was undertaken to gain deeper insights into GSCARDB's performance and contributions.

1. Introduction

The primary aim of cooperative banks is to provide agricultural loans and other forms of rural credit, particularly to the small and marginal farmers and low-income individuals, at affordable rates to enhance farming and allied activities. Loans are broadly categorised into short, medium, and long-term. Farmers encounter various issues in accessing alternative avenues for agricultural credit. This study intends to highlight specific challenges in the bank's lending and recovery processes by assessing perceptions of the branch managers of GSCARDB. The GSCARDB, also known as *Kheti Bank*, was established in 1951 at Rajkot, operating across the then Saurashtra region, now part of Gujarat. It is a part of Long-Term Cooperative Credit Structure (LTCCS) offering term loans in rural sector in 16 states/UTs, of which 13 are currently functional.

The GSCARDB's role in meeting farmers' investment credit needs has seen a decline with respect to term loans. This coupled with the declining number of farmers due to urbanisation, education and employment necessitates this study in order to facilitate improvements in the functioning of the GSCARDB.

2. Research Objectives

This study basically aims to evaluate GSCARDB's qualitative and quantitative lending aspects. Further it aims:
1. To analyze GSCARDB's growth, performance, structure, and challenges in Gujarat.
2. To understand Branch Managers' perceptions of GSCARDB.
3. To propose recommendations based on study findings to enhance the bank's functioning.

3. Research Design

This study sets out a hypothesis that there is no significant difference in perception levels among branch managers regarding GSCARDB. For the purpose of analysis, this study relies on both primary and secondary data. The primary data were collected by administering a questionnaire to branch managers of 30 GSCARDB branches, spread over six districts across Gujarat which are selected using stratified random sampling. The questionnaire covered demographics, loan purposes, difficulties in lending, loan schemes and GSCARDB's policies using 5-point scales and Likert scales. Initial steps involved data cleaning, reliability testing, and normality checks to ensure the validity of

subsequent statistical analyses. The secondary data for 10 financial years (2010-11 to 2019-20) was gathered from various reports.

4. Loan Sanction Stages in GSCARDB

Past studies have highlighted GSCARDB's role, challenges in credit availability, socio-economic impacts and reasons for poor loan recovery. The Figure 1 depicts various stages involved in loan sanction at GSCARDB.

Figure 1: Diagrammatic Representation of Stages in Loan Sanctioning
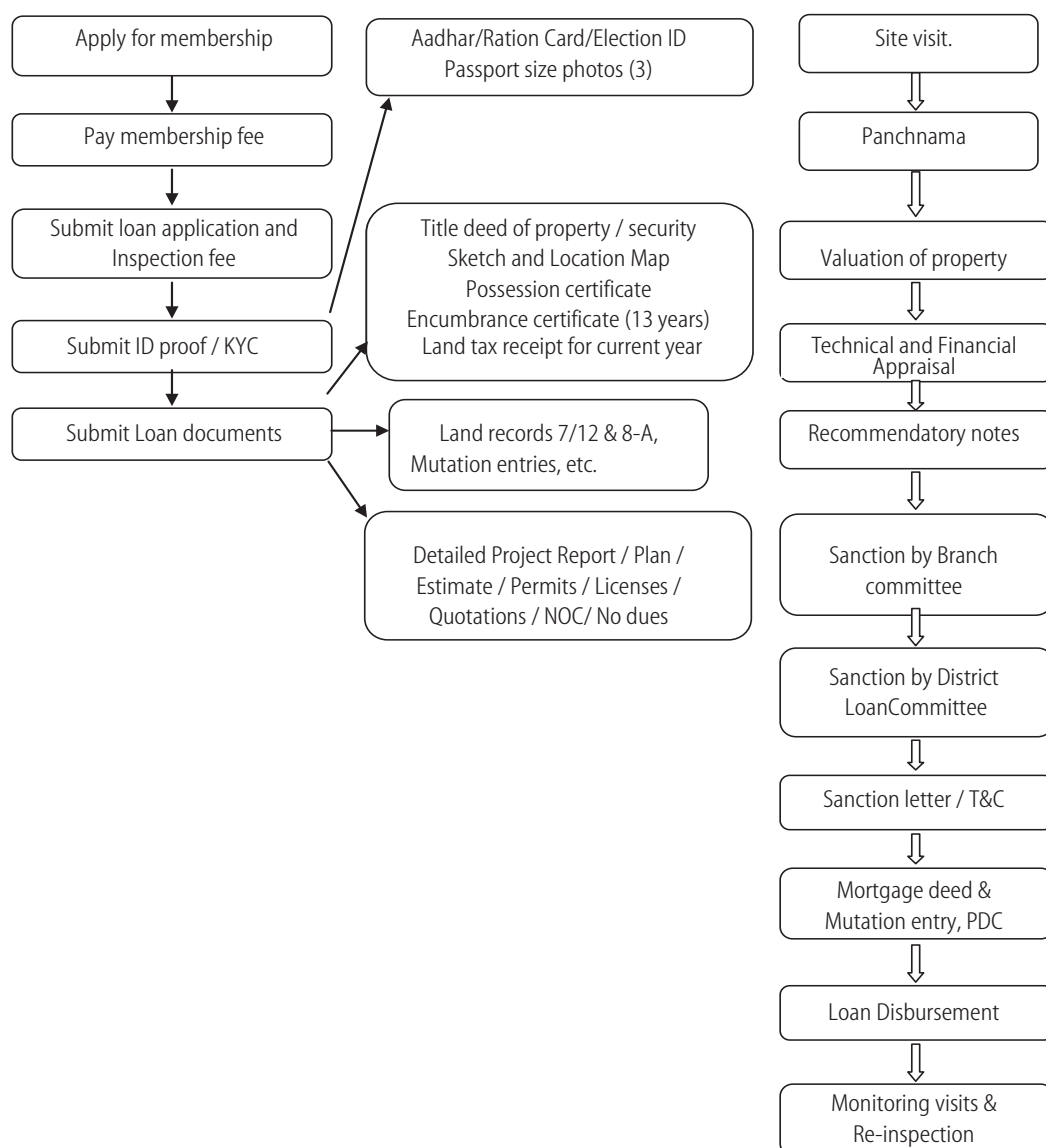
5. GSCARDB's Performance Analysis

5.1 Organisational Structure

The bank has a unitary structure, managed by an elected Board of Directors. Its registered office is situated on Ashram Road in Ahmedabad, Gujarat, with its head office overseeing 176 branches across Taluka (block) headquarters of the state. Seventeen district offices operate under the head office, facilitating the provision of short-term 'Cash Credit Loan', medium Term 'Krishi Vikas Loan', and various long-term loans through branches.

5.2 Financial Position

As of 31 March 2024, the bank had 2.93 lakh members/shareholders with a share capital contribution of ₹53 crore. Notably, it holds a reserve fund of ₹650 crore and loan outstanding at ₹834 crore. The bank has consistently achieved an 'A' Audit Class rating since 2011-12. The bulk of its profit comes from interest on loans and income from investments. Dividend is regularly paid to members. The bank reported its highest gross profit of ₹106 crore in 2022-23 and highest net profit of ₹64 crore in 2023-24, with all branches recording profits. Net non-performing assets (NPA) of the banks is 0% since 2022-23,

5.3 Loan Disbursement and Recovery Trends

The bank's lending pattern encompasses long-term and medium-term loans for agriculture, allied sectors and the non-farm segment. Loan disbursement, recovery and overdue have experienced fluctuations, with loan outstanding showing a reducing trend in recent years. Credit disbursements and recovery have seen a decline in the last four years, with variations in credit disbursed, outstanding loans, recovery of dues, overdue and recovery percentages. The highest yearly recovery of ₹283 crore and loan disbursement of ₹374 was recorded in 2022-23. Total loan disbursed by the bank between 1951 and 2024 is ₹5,194 crore.

5.4 Challenges Faced by GSCARDB

The bank encounters several challenges, including absence of level playing field with other banks, low recovery, high gross NPAs, limited deposit mobilisation, lack of skilled staff, shortage of personnel, weak internal control systems, resource constraints, non-computerisation, absence of interest subvention scheme of the Government of India/state government, and various other operational limitations. The bank struggles to maintain consistent growth in lending and loan outstanding besides facing challenges in sustaining viability. The GSCARDB navigates multiple challenges while striving to sustain its operations and viability in a competitive multi-agency rural lending market.

6. Major Findings

The study collected primary data by administering questionnaires to managers from 30 branches, five each from six districts in Gujarat. These districts include Mehsana, Sabarkantha, Panchamahal, Surat, Surendranagar and Junagadh.

6.1 Profile of Respondents

Most of the respondents belong to the age group of 46 years and above (Chart 1). They constitute about 60% of the total sample of 30 branch managers. They generally belong to general category (64%). Nearly one fourth (23%) belonged to other backward community (OBC), and 10% to scheduled caste (SC) category (Chart 2). In so far as education background is concerned, 83% of the respondents are graduate and the remaining 17% are post graduates (Chart 3). More than two third (66.7%) of respondents have already completed 21 or more years of service (Chart 4).

Chart 1: Age Profile of Respondents
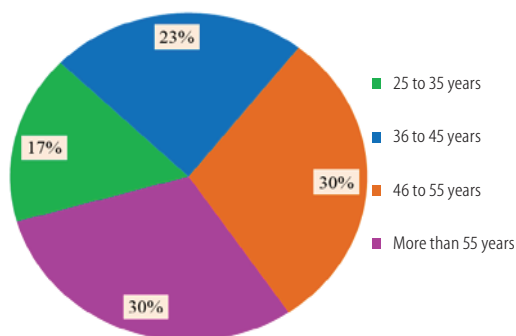
Chart 2: Social Category of Respondents
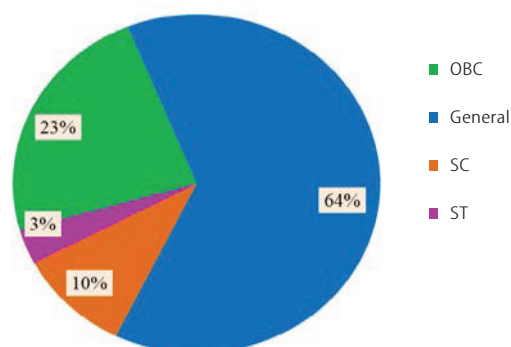
Chart 3: Education Level of Respondents
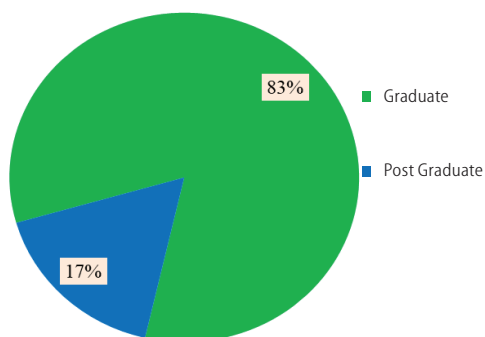
Chart 4: Total years of Service Experience of Respondents
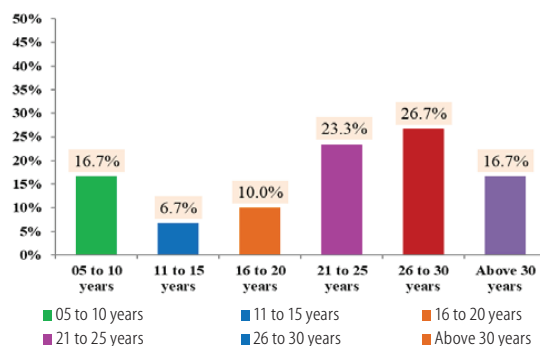
6.2 Branch Managers' Perspectives: Loan/Credit Preferences and Challenges

According to the branch managers of selected branches, various loan products cater to diverse needs of borrowers, as elucidated below:

1. Krishi Vikas Loan (KVL): Widely adopted for its convenient repayment structure, renewal options, and simplified procedures. The three-year term with six half-yearly installments supports agricultural input needs.
2. Social Debt Loan: Requires minimal documentation, serves various social expenses, and offers a comfortable five-year tenure with half-yearly instalments.

3. Cash Credit Loan: Despite higher interest rates, this option provides speedy approval, annual installments, and manageable documentation, attracting borrowers due to its yearly renewal and minimal paperwork.

4. Animal Husbandry: Supports animal purchase, providing regular income through cooperatives and allied activities.

5. Rural Housing Loan: Facilitates construction or repair of houses with simplified documentation, catering to farmers living on their farms.

6. Farm Mechanisation: Enables purchase of farm machinery like power tillers, tractor and implements enhancing agricultural operations and generating supplementary income through renting.

7. Non-Farm Sector Loan: Diversified loan purposes with available subsidies, aiding borrowers in reducing loan burdens.

8. Irrigation Purpose Loan: Supports irrigation infrastructure development, contributing to enhanced agricultural production.

9. Vehicles Loan: Secured loans for two or four-wheelers, mini-transport vehicles etc.

6.3 Challenges in Lending

Branch managers encounter various challenges in the lending process, as listed below:

1. Approval Process: Involves multiple stages, requiring clearance from both the Branch Committee at the taluka level and the District Loan Committee at the district level, causing delays in sanctioning and disposal of loans.

2. Staff Shortage: A limited workforce handles all operations required for loan processing, causing delays and backlogs.

3. Lengthy Procedures: The loan approval procedure is lengthy affecting timely disbursement of loans.

4. Valuation Issues: Land valuation calculations are based on average values from Sub-Registrar's records of sale deeds which often result in farmers not being able to secure loans matching their credit needs.

5. Interest Rates: Higher interest rates on short-term loans of GSCARDB compared to crop loans from other banks, affecting competitiveness.

6. Lack of Government Support: No interest subvention from the government on any loan given by GSCARDB, adding to the financial burden on borrowers.

7. Documentation Requirements: Extensive document requirements, especially pertaining to land ownership/records, pose challenges, besides difficulties in obtaining consent of owners for signing mortgage deeds.

8. Access and Restrictions: Branches lack loan approval powers and there are restrictions based on purpose of loan or village-wise recovery levels. This prevents customers/ farmers from accessing loans from the bank.

9. Additional Costs: Stamp duty on non-farm sector loan documents adds an extra financial burden on borrowers.

10. Non-availability of Banking Facilities: Agriculture and rural development banks (ARDBs), not being banks, cannot provide other services and products like cheque books, demand drafts, Credit Information Bureau India Limited (CIBIL) facility, deposit insurance, transfer of funds through National Electronic Funds Transfer (NEFT)/Real Time Gross Settlement (RTGS) and savings bank accounts.

11. Accessibility Issues: Inconvenience of travelling as GSCARDB branches are located at the taluka headquarters, unlike branches of other banks available nearer to customers.

12. Disbursement Structure: Loans for certain purposes are disbursed in instalments, causing inconvenience to borrowers.

6.4 Post-Disbursement Engagement

Branch Managers engage in proactive practices post-disbursement of loans:

1. Maintaining Live Contacts: Regular follow-up visits ensure ongoing communication with borrowers, sustaining higher loan quality by ensuring accountability and awareness.

2. Assessing Loan Impact: In-depth understanding of utilisation of credit and its impact on borrowers helps in addressing their problems and needs.

3. Timely Repayments: Follow-up visits encourage responsible borrowing and timely repayments.

4. Inspection and Monitoring: Thorough checks on loan utilisation through post-disbursement visits ensure utilisation of funds for their intended purpose. This prevents misuse or underutilisation of credit availed.

5. Gauging Satisfaction and Benefits: Understanding borrowers' satisfaction levels and tangible benefits derived from the loan facility helps to improve service quality based on feedback.

6. Preventing Default: Constant follow-up visits significantly reduce the risk of borrowers defaulting, mitigating circumstances that might lead to repayment challenges.

7. Addressing Challenges: Identifying and addressing specific circumstances causing repayment hurdles helps to maintain a positive lending experience of borrowers.

7. Recovery Position and Recommendations

7.1 Branch Managers' Views on Recovery Position

About 34% of the respondent branch managers described the loan recovery as 'very good' (Chart 5) and 20% of branch managers reported it as 'good'. Around 23% of them expressed satisfaction, and another 23% indicated an average level of loan recovery.

Chart 5: Recovery Position

Legend:
- Average (Upto 25%)
- Satisfactory (26% to 40%)
- Good (41% to 60%)
- Very Good (Above 60%)

Values: 23%, 23%, 20%, 34%
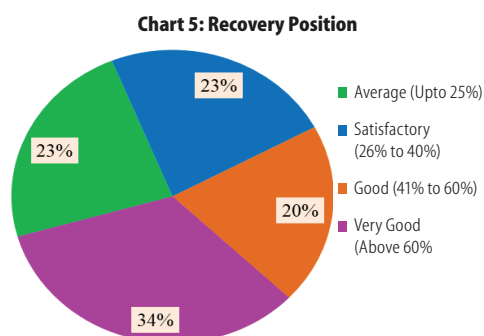
7.2 Recommendations for Loan Scheme Modifications

1. Loan Disbursement: Review and streamline approval processes, adjust instalment frequencies and delegate sanctioning powers to branch managers.
2. Criteria Revision: Fix loan limits based on land valuation, consider borrowers' repayment capacity and reduce down payment requirements.
3. Operational Efficiency: Reduce committee meeting durations, revise land-holding requirements and review loan policies annually.

8. Branch Managers' Recommendations for Strengthening GSCARDB

1. Operational Issues: Simplify loan approval procedures and adopt a yearly review of loan policies.
2. Improve Accessibility: Provide doorstep services and initiate short-term credit products to farmers.
3. Technological Upgrading: Digitise operations, implement credit reports, and offer interest subvention on crop loans.
4. Empowerment: Grant approval powers to branch committees, reduce interest rates, and streamline documentation.
5. Create Awareness and Market: Publicise bank schemes and credit products through various media, focus on customer relationships, and enhance bank's infrastructure.
6. Modernisation: Implement management information systems, improve internal controls, and recruit competent/skilled staff.
7. Customer-Centric Services: Function as advisory centers for farmers, introduce attractive/flexible fixed deposit schemes and strengthen internal checks.

Addressing these challenges and incorporating suggested improvements could enhance GSCARDB's efficiency in lending, recovery and policy implementation, and meet the diverse needs of its borrowers.

9. Bank Managers' Perceptions of GSCARDB's Loans and Performance

As mentioned above, a questionnaire was used to capture the branch managers' perception of GSCARDB loans and performance. Response obtained on various parameters through Likert scale were used to test the following hypothesis. The Likert scale utilised in the study employed a five-point rating system: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The average values of each statement from 30 respondents were compared with a value of 4 (indicating agreement among managers with the perception statement).

Null Hypothesis (Ho): There is no significant difference between the 'Better Level of Perception' and 'Agreed Level Perceptions' on GSCARDB among the Branch Managers.

Alternative Hypothesis (H1): There is a significant difference between the 'Better Level of Perception' and 'Agreed Level Perceptions' on GSCARDB among the Branch Managers.

This study employed a one-sample test of mean values, using a t-test for each perception statement. Prior to conducting the t-tests, the normality assumptions of the variables were assessed. Skewness values were calculated for each statement, falling within an acceptable range (-2 to +2) for data normality, ranging between -1.40 and +1.30.

Table 1: Perceptionsof Branch Managers on GSCARDB's Loan Performance

	Statements	Mean	Std.Dev	SE Mean
1.	GSCARDB provides finance for medium term and long-termfor rural poor and weaker sections	4.23	0.679	0.124
2.	GSCARDB adopts appropriate diversification in loan portfolio	4.23	0.430	0.079
3.	Loan polices are revised by the GSCARDB appropriate time	4.17	0.834	0.152
4.	Pre sanction visits are done by branches of GSCARDB	4.27	0.691	0.126
5.	Post disbursement follow up is done by branches of GSCARDB	4.40	0.498	0.091
6.	Contribution of 5% share by borrowers is nominal and not very high	4.23	0.817	0.149
7.	Loan procedure of GSCARDB is quite simple	3.67	1.213	0.221
8.	Security requirements of GSCARDB for providing loans are appropriate	4.57	0.504	0.092
9.	Stamp duty on registration of property to be mortgaged is appropriate	3.57	1.073	0.196
10.	Loans are given timely without delay by GSCARDB	3.83	0.874	0.160
11.	GSCARDB advances more than 70%t loans to small and marginal farmers	3.60	0.968	0.177
12.	GSCARDB adopts better appraisal system for sanctioning the loans	4.33	0.661	0.121
13.	Lower rate of interest in charged on loans	3.47	1.167	0.213
14.	Sufficient loan amount is sanctioned by GSCARDB to borrowers	4.07	0.828	0.151
15.	Borrowers of GSCARDB are free to purchase agricultural machinery, etc. from firms of their own choice	4.23	0.898	0.164
16.	Cash Credit loans schemes provide appropriate support to meet the interim credit needs of the borrower	4.50	0.509	0.093
17.	Borrower members prefer to borrow loans from GSCARDB	3.93	0.785	0.143
18.	Sufficient support is given to branches by GSCARDB head office	4.43	0.504	0.092
19.	GSCARDB is not facing any competition with other banks	3.20	1.064	0.194
20.	Political interference does effect working	3.27	1.230	0.225
21.	GSCARDB adopts modern technologies and computerisation	2.90	1.398	0.255
22.	Adequate funds are made available to branches by GSCARDB for issuing loans	4.33	0.661	0.121
23.	Training programmes are amended time to time to provide guidance to employees about loan policies of the bank	4.13	0.776	0.142
24.	GSCARDB helps in reducing dependence from money lenders/ commission agents	4.10	1.029	0.188
25.	Adequate staff is available at GSCARDB (sanction)	2.70	0.988	0.180
26.	Easy repayment schedule is adopted by GSCARDB	3.87	1.008	0.184
27.	Rebate on loan instalment gives incentives for regular repayment of loans	4.40	0.563	0.103
28.	Legal actions are taken timely by branches against wilful defaulters	4.17	0.747	0.136
29.	Loan settlement schemes enhanced the recovery position of branches	4.20	0.761	0.139
30.	Deposit mobilisation scheme of the GSCARDB is running effectively and successfully	4.20	0.664	0.121

Table 2: Branch Managers' Perception of Loan Performance: t-test Results

Perceptions	Mean (out of 5)	Test Value =4 Agree Level, Sig level =0.05					
		T Value	Degrees of freedom (n-1)	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
1. GSCARDBprovides finance formedium term and long-term for rural poor and weaker sections	4.24	1.882	29	0.070	0.233	-0.02	0.49
2. GSCARDB adopts appropriate diversification in loan portfolio	4.23	2.971	29	0.006	0.233	0.07	0.93
3. Loan polices are revised by the GSCARDB at appropriate time	4.17	1.095	29	0.283	0.167	-0.14	0.48
4. Pre sanction visits are done by branches of GSCARDB	4.27	2.112	29	0.043	0.267	0.01	0.52
5. Post disbursement follow up is done by branches of GSCARDB	4.40	4.397	29	0.001	0.400	0.21	0.59
6. Contribution of 5% Share by borrowers is nominal and not very high	4.23	1.564	29	0.129	0.233	-0.07	0.54
7. Loan procedure of GSCARDB is quite simple	3.67	-1.505	29	0.143	-0.333	-0.79	0.12
8. Security requirements of GSCARDB for providing loans are appropriate	4.57	6.158	29	0.001	0.567	0.38	0.75
9. Stamp duty on registration of property to be mortgaged is appropriate	3.57	-2.213	29	0.035	-0.433	-0.83	-0.03
10. Loans are given timely without delay by GSCARDB	3.83	-1.044	29	0.305	-0.167	-0.49	0.16
11. GSCARDB advances more than 70 per cent loans to small and marginal farmers	3.60	-2.262	29	0.031	-0.400	-0.76	-0.04
12. GSCARDB adopts better appraisal system for sanctioning the loans	4.33	2.763	29	0.010	0.333	0.09	0.58
13. Less rate of interest in charged on loans	3.47	-2.504	29	0.018	-0.533	-0.97	-0.10
14. Sufficient loan amount is sanctioned by GSCARDB to borrowers	4.07	0.441	29	0.662	0.067	-0.24	0.38
15. Borrowers of GSCARDB are free to purchase agricultural machinery etc.from firms of their own choice	4.23	1.424	29	0.165	0.233	-0.10	0.57
16. Cash Credit loans schemes provide appropriate support to meet the interim credit needs of the borrower	4.50	5.385	29	0.001	0.500	0.31	0.69
17. Borrower members prefer to borrow loans from GSCARDB	3.93	-0.465	29	0.645	-0.067	-0.36	0.23
18. Sufficient support is given to branches by GSCARDB Head office	4.43	4.709	29	0.001	0.433	0.25	0.62
19. GSCARDB is not facing any competition with other banks	3.20	-4.120	29	0.001	-0.800	-1.20	-0.40
20. Political interference does effect working	3.27	-3.266	29	0.003	-0.733	-1.19	-0.27
21. GSCARDB adopts modern technologies and computerisation	2.90	-4.309	29	0.001	-1.100	-1.62	-0.58
22. Adequate funds are made available to branches by GSCARDB for issuing loans	4.33	2.763	29	0.010	0.333	0.09	0.58
23. Training programmes are amended time to time to provide guidance to employees about loan policies of the bank	4.13	0.941	29	0.354	0.133	-0.16	0.42
24. GSCARDB helps in reducing dependence from money lenders/ commission agents	4.10	0.532	29	0.599	0.100	-0.28	0.48
25. Adequate staff is available at GSCARDB (sanction)	2.70	-7.208	29	0.001	-1.300	-1.67	-0.93
26. Easy repayment schedule is adopted by GSCARDB	3.87	-0.724	29	0.475	-0.133	-0.51	0.24
27. Rebate on loan instalment gives incentives for regular repayment of loans	4.40	3.890	29	0.001	0.400	0.19	0.61
28. Legal actions are taken timely by branches against wilful defaulters	4.17	1.223	29	0.231	0.167	-0.11	0.45
29. Loan settlement schemes enhanced the recovery position of branches	4.20	1.439	29	0.161	0.200	-0.08	0.48
30. Deposit mobilisation scheme of the GSCARDB is running effectively and successfully	4.20	1.649	29	0.110	0.200	-0.05	0.45

As reported in Table 1 and 2, branch managers of GSCARDB significantly and positively perceive the bank's operations and initiatives. They affirm the following:

1. GSCARDB's security requirements for loans are appropriate.
2. Cash credit loans effectively support borrowers' credit needs.
3. Branches receive adequate support from GSCARDB.
4. Postdisbursement follow-ups are consistently conducted.
5. Loan interest rebates incentivise regular repayments.
6. GSCARDB employs a robust appraisal system for loan sanctions.
7. Sufficient funds are available for branches to issue loans.
8. Pre-sanction visits are part of GSCARDB's procedure.
9. GSCARDB has implemented appropriate loan diversification strategies.

Additionally, the branch managers hold higher agreement levels (though not statistically significant) regarding the following perceptions:

1. GSCARDB is financing medium and long-term loans to rural poor and weaker sections.
2. The 5% borrower contribution towards share capital is nominal and manageable.
3. Borrowers are free to purchase agricultural machinery from their preferred firms/dealers.
4. Deposit mobilisation scheme of GSCARDB operates effectively.
5. Loan settlement schemes have positively impacted branch recoveries.
6. Branches promptly take legal action against willful defaulters.
7. GSCARDB revises loan policies at appropriate intervals.
8. Training programs need periodic review for staff development.
9. GSCARDB contributes to reduce dependence on money lenders/commission agents.
10. Sufficient loan amounts are sanctioned by GSCARDB to borrowers.

Branch managers' views on business development/diversification as follows:

1. Introduction of new long-term loan products:
    – Agricultural value chain financing.
    – Rural tourism financing.
    – Financing water and energy-saving projects.
    – Non-conventional purposes like education loans and life events.
    – SCARDB may select additional products based on local needs and demand.
2. Introduction of short-term credit products:
    – Cash credit limits for long-term borrowers.
    – Kisan gold loan.
    – Cluster-based working capital loan to small traders.
    – Consumer durable, vehicle, and personal loans.
    – Encouraging crop loans through seasonal agriculture operations (SAO) refinance of NABARD.

3. Initiation of non-credit services:
    – Offering e-stamping, insurance products, safe deposit services.
    – Transformation of branches into multi-service centers involving various activities.

10. Branch Managers' Action Plan for Business Development

        The action plan revolves around:
1. Computerisation and resource mobilisation.
2. Recovery strategies and overdue reduction.
3. Network expansion and cluster-based lending.
4. Human resource development.
5. Strengthening publicity and public relations.
6. Database enhancement and governance improvements.
7. Policy support from the government and its agencies.

11. Major Findings of the Study

   This study offers a comprehensive overview of the GSCARDB's role in agricultural development in Gujarat, evaluating its effectiveness, challenges, and potential areas for improvement. The findings of the study indicate several significant aspects, as follows:
– Between 2017-18 and 2019-20, GSCARDB experienced a rise in profits and number of shareholders, alongside increased demand and recovery. While there was an upsurge in loan overdue, it has subsequently reduced.
– GSCARDB faced challenges in maintaining high level of deposits and consistent lending. Issues such as low level of recovery of loans, high gross NPAs, sluggish loan growth, and limited deposit mobilisation posed obstacles.
– Branch managers' perceptions highlighted positive aspects such as GSCARDB's appropriate security measures for loan sanctioning, effective cash credit loan schemes for meeting borrowers' needs, adequate support measures from the head office, and post-disbursement follow-ups. Branch managers have had significantly favourable perceptions regarding loan processes, meeting borrower needs and providing support to branches.
– Improvements in GSCARDB's financial position resulted in enhanced loan utilisation, leading to increased yields, income, savings, social status and acquisition of new assets by the borrowers. Challenges faced by borrowers included high interest rates, land security requirements and inadequate loan amounts.
– Positive indicators such as high service ratings, increased satisfaction levels and a strong desire among borrowers to avail future loans suggest ongoing efforts by GSCARDB management to enhance services across branches. Moreover, defaulters' willingness to repay loans reflects effective branch-level recovery measures.

– Suggestions for improvement include increasing brand awareness and accreditation ratings, offering advanced farming techniques to farmers, simplifying loan procedures for improving borrower understanding, enhancing staff computer skills to expedite loan processes and ensuring competitive interest rates. Special incentives could be considered to defaulters to encourage repayment of defaulted loan instalments.

– Recommendations also include periodic review of loan policies, revising accounting policies, embracing core banking solutions for branch computerisation, introducing doorstep loan facilities for farmers and streamlining documentation requirements.

In essence, these findings underscore opportunities for GSCARDB to enhance and broaden its operations, improve borrower experiences and expectations, and bolster its financial standing through strategic improvements in policies, technology and customer-centric initiatives.

12. Conclusions

The GSCARDB, with its significant contributions, is integral to Gujarat's rural lending landscape. The NABARD's long-term refinance support positively impacted GSCARDB and other cooperative banks. The bank has a comprehensive loan policy for agricultural and other purposes. Loan appraisal and rectification processes generally take 2-3 weeks for specific loans. Commendable loan repayment practices are observed among GSCARDB borrowers. Effective loan utilisation results in increased yield, income, and improved living standards. However, external factors beyond the bank's control significantly impact loan utilisation. Borrowers express high satisfaction, indicating willingness to avail credit repeatedly. Although defaulters exhibit their willingness to repay loans, the bank still face challenges arising from large overdues from loan defaulters. Expanding branch network in rural areas could enhance services to farmers and the business growth.

13. Suggestions for Recasting GSCARDB/SCARD Banks

1. Urgent Structural Reforms: Expand existing structures like GSCARDB and enable establishment of multi-state ARDBs to coverstates which have no such credit structure.
2. Professionalise Management: Provide comprehensive education and training for staff, elected management and members.
3. Strengthen Financial Foundations: Focus on reinforcing owned funds, including share capital and reserves.
4. Enhance Lending Capacities: Augment funds for lending operations through refinance, deposits and borrowings from other agencies.
5. Diversify Loan Portfolios: Address total credit needs by investing in rural infrastructure and promoting climate-resilient agriculture.

6. Technology Integration: Connect startups and Agri-tech with small farmers for better resource utilisation.

7. Improve Loan Recovery: Establish links between credit and processing units/marketing agencies.

8. Expand Service Offerings: Offer insurance products, agency services, and non-core financial services to farmers and other borrowers.

9. Support Non-Productive Needs: Extend credit for essential life purposes like education, healthcare and housing.

10. Flexible Loan Offerings: Provide various loans for different needs based on repaying capacity, encouraging prompt repayment.

11. Multi-State Conversion: Strong SCARDBs might consider transforming into multi-state ARDBs to cater to neighbouring states' long-term credit needs of farmers and others in the rural sector.

12. Collaborative Action Plans: Develop and implement state-specific action plans to improve long-term rural financing operations.

13. Government Support: Extend various governmental facilities and schemes to borrowers of SCARDBs.

14. Strengthen Branch Committee Functions: Sensitise branch committees about the need to ensuretimely loan repayments.

15. Standardised Working: Adopt common by-laws and provisions in cooperative societies actsfor uniformity in ARDBs' functioning.

14. General Recommendations

1. Legislative Amendments: Amend ARDB/Cooperative Acts to remove constraints/restrictions and enable banks to adopt better lending practices and ease of doing business.

2. Security Flexibility: Allow non-land securities and diverse forms of collateral for ARDB loans.

3. Risk Mitigation: Implement credit guarantee schemes or National Farm Assets Insurance Scheme to address credit risks.

4. Service Diversification: Enable ARDBs to extend non-credit services, expanding their scope beyond conventional lending.

5. Innovation in Expansion: Encourage innovative network expansion and establish low-cost contact points for enhanced outreach.

6. State Support: State Governments should facilitate various support mechanisms for ARDBs' borrowers.

7. Investment Opportunities: Allow ARDBs to invest in debt instruments and operate in money market/mutual funds for diversification.

8. Fund Allocation: Ensure separate allocations of funds at lower interest rates for ARDBs under different financial programmes meant for rural poor and farmers.
9. Market Access: Encourage market access to ARDBs through independent ratings and uniform accounting standards.

These suggestions aim to revitalise SCARDBs, augmenting their capacity to meet the diverse financial needs of rural communities effectively.

15. Operational Issues

1. Supervisory Control: Ensure SCARDBs exercise better control over branches in unitary structure and over Primary Credit Agriculture and Rural Development Banks (PCARDBs) in federal structure while maintaining the existing structural pattern in different states.
2. Unitary Structural Model: Advocate for a unitary structure with elected committees at the branch level, facilitating state-wide operation of post-banking licensing.
3. Rationalised Network: Rationalise branch/PCARDBs based on viability norms proposed by National Cooperative Agriculture & Rural Development Banks Federation (NAFCARD)/NABARD.
4. Manpower Assessment: Evaluate required manpower at all levels to meet the existing business volume and future expansion plans.
5. Human Resource Policies: Formulate human resource (HR) policies for ARDBs, similar to the process for Short Term Cooperative Credit Structure (STCCS).
6. Professional Recruitment: Mandate recruitment through professional agencies for various cadres in ARDBs across all states.
7. Capacity Building Programs: Launch relevant certificate courses and training programs for ARDB personnel, supported by financial assistance.
8. Financial Inclusion: Extend the national financial inclusion programme to include ARDBs, broadening their reach and impact.
11. Mortgage Enforcement: Implement measures to ensure the enforceability of land mortgages and securing departmental support for recovery.
12. Political Support: Sensitise political leadership to endorse prompt loan repayment measures for ensuring meeting of credit needs of farmers effectively.
13. Collaborative Support: Issue model guidelines for loans and recovery, appoint technical staff to enhance loan processes and communication channels with borrowers.
14. Fair Practice Code: Adhere to a fair practice code for lenders and transparency in stipulating loan terms and conditions.
15. Financial Literacy Programs: Undertake financial literacy programmes and advisory services to improve borrowers understanding of financial matters.

16. Governance Reforms: Encourage reforms by state and central governments to optimise the sector's performance.

17. Research Scope Expansion: Undertake research studies in banks to understand socio-economic impacts of credit, loan utilisation, repayments and changes in living standards of borrowers.

18. Long-Term Credit Expansion: Strengthen long term cooperative credit structure (LTCCS) financially to meet the long-term credit needs of agriculture effectively and for enhancing capital formation in agriculture.

19. Scope for Future Research: Expand scope of studies by including more respondents, diverse stakeholders, and additional variables, enabling a comprehensive assessment of progress and impact of credit and services over a time period.

16. Digitisation of ARDBs through Computerisation: Transforming the LTCCS

The ARDBs are pivotal in India's cooperative sector, providing essential financial services and credit to farmers and rural communities. Despite their significance, many ARDBs still rely on manual processes, hindering efficiency and limiting their ability to effectively serve their members. The traditional manual operations, including paper-based recordkeeping and loan processing, are time-consuming, error-prone, and lack scalability, thereby, restricting access to modern banking services and impeding agricultural and rural development.

Under the leadership of the Prime Minister and the Minister of Co-operation, the Government of India has prioritised the strengthening of cooperatives, including the LTCCS. Recognising the necessity of modernisation in the competitive banking landscape, the Ministry of Cooperation sanctioned a centrally sponsored project in November 2023 aimed at enhancing the functioning of cooperatives through information technology (IT) interventions, specifically the computerisation of all ARDBs in the country. This initiative is set to bring numerous benefits, such as increased efficiency, expedited loan disbursement, reduced transaction costs, enhanced transparency and the establishment of a digital ecosystem for long-term cooperative credit institutions. The computerisation of ARDBs would improve operational efficiency, standardise accounting practices, enhance lending, recovery, and resource raising processes, and elevate service quality and product delivery to expand outreach and achieve desired growth in long-term finance for farmers.

The process of computerising ARDBs involves the adoption of IT systems and digital infrastructure to streamline banking operations. This includes implementing core banking solutions, digital payment systems, mobile banking applications, and online banking platforms. By digitising their processes, ARDBs can enhance efficiency, accuracy, and customer service while extending their services to underserved rural areas.

Challenges and considerations to be faced by SCARDBs for computerisation and digitisation:

1. Bridging the Digital Divide: Efforts must be made to ensure that all farmers and rural communities have access to digital banking services by addressing infrastructure constraints, promoting digital literacy and providing affordable internet connectivity in rural areas.

2. Integration with Existing Systems: Careful planning and effective coordination with state authorities are essential to seamlessly integrate new digital systems with existing infrastructure and legacy systems.

3. Data Security and Privacy: Robust cyber security measures are crucial to protect customer data, prevent cyber-attacks and build trust in digital banking services.

4. Human Resource Issues and Capacity Building: Training initiatives on digital financial services, including financial literacy, digital literacy and cyber security awareness, are necessary to equip ARDB staff with the skills to operate digital systems effectively.

Impact of the digitisation on the LTCCS:

1. Improved Access to Finance: Computerisation will enhance access to finance for farmers and rural communities, enabling them to apply for loans and conduct financial transactions conveniently from their villages.

2. Enhanced Agricultural Productivity: Farmers can leverage digital tools for informed decision-making on agricultural practices, leading to improved productivity and farm incomes.

3. Streamlined Loan Processing: Digitalisation would streamline loan processing, reducing paperwork and processing time while improving the efficiency of credit delivery in the agricultural sector.

4. Risk Mitigation: Real-time data analytics and monitoring capabilities provided by digital systems would enhance risk management practices, strengthen the stability of the cooperative sector and reduce non-performing assets.

5. Capacity Building: Investment in capacity building initiatives to train staff and members on digital banking services would empower farmers and rural communities to maximise the benefits of digital financial services.

6. Enhanced Financial Inclusion: Computerisation would help extend banking facilities to remote areas, enabling access to financial services and government schemes.

The computerisation of ARDBs has the potential to revolutionise the LTCCS by improving access to digital finance, enhancing agricultural productivity, and promoting rural development. By embracing digitalisation, ARDBs could modernise their operations, empower farmers and rural communities, improve transparency and contribute to the socio-economic growth of rural India. Overcoming challenges such as the digital divide, data security, integration issues, and capacity building would be crucial to realise the full benefits of computerisation in the LTCCS.

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Impact of Stree Nidhi on Credit Flows – A Case Study from the Indian Microfinance Sector

– M Srikanth* and Prakash Singh**

Research suggests that households/enterprises having free access to microcredit do better economically since it facilitates income generation and leads to better financial decisions. As many poor households do not have free access to formal financial institutions, the role of community-owned microfinance institutions such as Stree Nidhi is critical in the development discourse.

Abstract

In this study, we examine how the digital financial inclusion programme of Stree Nidhi, a state-sponsored microfinance institution (MFI) affects the borrowers' household income. Our analysis is based on primary data collected from 603 self-help group (SHG) women members of Stree Nidhi comprising 303 respondents from Andhra Pradesh and 300 from Telangana. The analysis reveals that access to microcredit positively improves households' income. The study finds the loan from Stree Nidhi, age of SHG woman, self-employment of the woman and her spouse, and the education level (both primary and secondary) of her spouse significantly increase their household incomes. One notable finding is that if an SHG member's spouse is self-employed or has a pre-existing business, their household income tends to be higher than that of others. Using technology for credit delivery makes Stree Nidhi model unique in terms of swift, low-cost, borrower-friendly and next-generation community-based organization model. As such, this state-sponsored MFI model is worthy of emulation by other states and even other nations.

1. Introduction

Poverty alleviation, gender equality, decent work and economic growth are among the government's key objectives in many countries, especially in developing economies, to achieve sustainable development goals (SDGs). Various development programmes are designed and implemented by the governments to achieve these goals. Microfinance is one of the potential intervention instruments to achieve these objectives. Microfinance

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helps to reduce poverty by creating livelihoods (income generation) and increases access to financial services such as savings, credit and insurance (Demirguc-Kunt *et al.*, 2017; Aker *et al.*, 2014). When poor households participate in a microfinance programme for a long time, it enables them to establish nano/micro-enterprises that enhance their income and consumption levels, and eventually improve their quality of life (Pitt and Khandker, 1998).

In the Indian context, although banks did facilitate financial inclusion by offering many financial services meant for the poor, efforts were not sufficiently aligned with the needs of the rural poor. Hence, they did not yield the intended results (Bhaskar, 2013). To address this challenge, the National Bank for Agriculture and Rural Development (NABARD) promoted the self-help groups (SHGs) in 1987 and formally launched the Self-Help Group-Bank Linkage Programme (SHG-BLP) in 1992. Women are the primary beneficiaries of the SHG-BLP, with a record of high repayment rates. Microfinance programmes through the SHG lending model demonstrated a positive association with the women's empowerment and poverty reduction (Hulme and Maitrot, 2014).

However, the growing microfinance businesses resulted in the involvement of private players who levied high-interest rates (Taylor, 2011), consequently leading to suicide, debt trap, etc., thus, questioning the model's sustainability (Zeller and Meyer, 2002) and its efficacy in poverty reduction. This environment also led to state-sponsored microfinance schemes to ensure credit availability to poor borrowers without profit motive.

In this context, the erstwhile Government of Andhra Pradesh (AP) established *Stree Nidhi* Credit Cooperative Federation Limited (Stree Nidhi) in September 2011. These visionaries of development finance launched Stree Nidhi to provide digital microfinance to poor SHG women well before the COVID-19 period. Stree Nidhi aimed to offer safe, affordable, instantaneous and user-friendly credit to the SHGs, especially to many financially excluded women borrowers. The government established Stree Nidhi as an alternative source of credit to curb the threat from local credit sharks and money lenders (Ballem et al., 2013). As Stree Nidhi extends finance to SHG women based on their individual household livelihood plan (HLP), that can be leveraged by encouraging women's participation in entrepreneurial activities. Further, since most of these enterprises are home-based, women can earn while working. Since Stree Nidhi essentially relies on the BLP of each SHG borrower while granting loans, the contribution of an SHG woman and her spouse makes a big difference in enhancing the income-generating capacity of the household. Further, the education level of SHG members and their spouses is considered while granting loans. This is very important to analyse spousal relationships and entrepreneurship development in the context of microfinance and its impact on the SHGs (Ahmad et al., 2020). The intervention and functioning of Stree Nidhi make a solid case to examine how borrowings from Stree Nidhi affect the members' household income. As such, a microfinance programme like Stree Nidhi is a perfect catalyst for achieving sustainable and inclusive growth in a country like India.

The most significant feature of the Stree Nidhi model is its use of digital platform (an electronic tab to fill up the loan application), which facilitates hassle-free and instantaneous grant of loans. As a result, it saves members' loss of livelihoods (daily wages) associated with a visit to the bank to obtain loans. Another critical feature of Stree Nidhi is its insurance coverage that protects the member's family or the SHG from any liability in the event of default/death of a borrower. With financial support from the state governments, Stree Nidhi levies lower interest rate on its loans, unlike 'for-profit micro finance institutions (MFIs)', which charge exorbitant interest rates. Besides, Stree Nidhi shares a portion of its interest income with the SHGs and the federations to strengthen the ecosystem of the stakeholders (Stree Nidhi, 2020).

Lower interest rate improves the repayment of loans and enables higher profitability of the SHG borrowers (Hulme and Maitrot, 2014). While evaluating the lending operations of an MFI in a research study based in Hyderabad, Banerjee *et al.* (2015) and Reddy (2017) argue that not-for-profit microfinance lending coupled with an affordable rate of interest may have a highly positive impact on the poor.

In view of the aforementioned, the study focused on the following aspects: (i) how SHG households enhance their income by engaging themselves in micro-enterprises, and (ii) how the Stree Nidhi MFI model provides women borrower-friendly micro-credit and helps in overcoming poverty. To our knowledge, very few studies have measured the antecedents that enhance the income generation capabilities of SHG-women borrowers through micro-enterprises.

2. Review of Literature and Conceptual Framework

2.1 Review of Literature

Microfinance plays a vital role in human development. It enables poor households to fulfil their most basic needs, improves their economic conditions, and promotes empowerment, gender and other social equity (Banerjee *et al.*, 2015). Some researchers (Holcombe, 1995; Hossain, 1988; Khandker, 1998; Schuler et al., 1997) found that microfinance made a positive contribution towards poverty alleviation. Other scholars showed the flip side of microfinance and argued that it crippled the prospects of the poor (Adams and von Pischke, 1992; Buckley, 1997; Hulme, 2000; Montgomery, 1996; Rogaly, 1996; Wood and Sharrif, 1997). However, other studies found that the impact of microfinance varied considerably from region to region, and was highly context-specific (Anderson *et al.*, 2002; Mosley and Hulme, 1988; Mosley, 2001). The 'Graduation approach' advocated by Hashemi and De Montesquiou (2011) aimed at moving the 'ultra-poor' away from extreme poverty by promoting the acquisition of assets besides enhancing incomes through a combination of microfinance, livelihoods and social security (UNHCR, 2014).

Introduction of the SHG-BLP in India facilitated cash credit limit and term loans from the banks. In case of mature SHGs, which have received multiple doses of credit from banks,

the members may require higher amount of loans for purchase of capital assets over time. This would result in sanction of term loans by banks to these groups in addition to cash credit limit (NABARD, 2019a). However, SHG borrowers continued to approach informal sources for credit in case of inadequacy of loan amount. Further, top-up loan from the banks under the SHG-BLP in case of any (medical) emergency was a rare phenomenon. Most banks were disbursing loans to the SHGs during the last quarter of every financial year to meet their credit targets rather than fulfilling the actual financial needs of the SHG members. As such, more than half of rural households are still out of the ambit of institutional credit (NABARD, 2019b).

It is interesting to note that 'for-profit' MFIs stepped in to make quick and efficient disbursements of small loans where the formal financial system still lagged. Access to private equity and mission drift (shift in focus from serving the poor borrowers to chasing profits) of the MFIs made them exploitative (Nair, 2010; Shah *et al.*, 2007; Sriram, 2010). Hence, the priority of the MFIs gradually shifted towards financial sustainability rather than lending to the genuine poor (Quinones and Remenyi, 2014). Some even believed there was no difference between informal moneylenders and 'for-profit MFIs' (Reddy, 2017). The growth of MFIs ultimately led to multiple lending, exorbitant interest rates, coercive recovery practices (Satish, 2015), eventual debt trap, and, in extreme cases, even suicide of the borrowers. To stop such draconic practices of the MFIs, the erstwhile Government of Andhra Pradesh regulated the operations of MFIs through the issuance of an ordinance in October 2010, which resulted in the cessation of their lending operations in the state (Stree Nidhi, 2016). Therefore, to address various credit requirements of women, the Government of Andhra Pradesh promoted Stree Nidhi in collaboration with Block/Town Level Federations of SHGs. Studies have identified microcredit as the crucial determinant of a household's income, creation of assets and livelihoods. Swain and Varghese (2008) empirically showed that longer association with SHGs led to creation of household assets by the members.

The existing literature suggests that several factors affect the household's income, such as borrowers' age, association with the lending institution, education, consumption, expenditure, etc. Hulme and McKay (2005) advocate that lifestyle and health play a crucial role. The grade of SHG is vital in determining the income of households (Kumar, 2016). SHG member and their spouse jointly control their savings (Kato and Kratzer, 2013), making the spouse's education strongly correlate with the member's earnings, spending, and savings. A long association of poor households with microfinance programmes resulted in financial education, better healthcare, empowerment of women, enhancement of wages, and creation of sustainable livelihoods (Khandker and Samad, 2014; Hashemi *et al.,* 1996; MkNelly and Dunford, 1999; Pitt *et al.*, 2003).

2.2 Conceptual framework

The existing literature establishes that financial inclusion leads to higher income for the poor and, eventually, poverty reduction. Microfinance acts as a channel for

financial inclusion by enabling the poor to access finance timely and at an affordable interest rate (Figure 1).

Figure 1: Microfinance to Higher Income to Financial Inclusion

Inputs	Activities	Outputs	Outcome	Goal
1.Microfinance from Stree Nidhi to SHG women **2.**Credit-plus inputs namely handholding, and mentoring support and imparting financial literacy by Stree Nidhi through community resource persons	**1.**Membership in SHG/Stree Nidhi **2.**Regularactivities of SHGs: **i.** Meetings **ii.** Savings **iii.** Record keeping **iv.**Internal lending **v.** Repayment of loans **3.** Maintenance of good credit score	**1.** Establishment of nano, micro & small enterprises by SHG households **2.** Acquisition of movable and immovable assets by SHG households **Indicators of outputs:** **i.** Value of movable and immovable assets possessed by SHG households. **ii.** Number of micro & small enterprises established **Means of Verification:** **i.**Utility bills of the households. **ii.** License/ registration number of enterprises	Generation / enhancement of incomes by SHG households **Indicators of outcomes:** Creation of sustainable livelihoods for SHG households **Means of Verification:** **i.**Financial capital **ii.** Human capital **iii.**Physical capital **iv.**Natural capital **v.** Social Capital	Financial inclusion of SHG households **Indicators of goals:** Frequent use of formal financial products/ services: **i.** Savings **ii.** Credit **iii.** Insurance **iv.** Pension **v.** Remittances **Means of Verification:** Verifying statements of bank accounts and other financial statements of SHGs

Source: Authors design based on review of literature.

Choice of work and its effect on their living environment links the households' financial, physical, and other resources to their income, health and wealth. Hence, the absence of access to finance will hurt the households' income directly and indirectly. The direct effect runs through lack of opportunity and higher cost of capital, indirectly through its impact on health and wealth by affecting their capacity to generate income. Access to finance through MFIs can help overcome social and economic constraints by providing impetus to micro-entrepreneurship, facilitating financial risk management by improving savings and income, and creating employment (Demirgüç-Kunt and Klapper, 2013). So, we hypothesize that:

$H_{1:}$ *Loan from Stree Nidhi does not influence members' household income.*

Microfinance intervention becomes more prudent and fruitful (better loan repayment and utilisation) as the duration of association increases, resulting in higher income for the members (Samer *et al.*, 2015; Jarita and Zainal, 2020). Studies also indicate that microfinance loans help alleviate poverty through self-employment and income generation opportunities for women and the rural poor (Armendáriz, 2009; Iqbal *et al.*, 2015; Kumar, 2016; Amin *et al.*, 2003). Though microfinance beneficiaries typically tend to be women, the

member's spouse plays a crucial role in decision-making (Hirut *et al.*, 2012). Since spouses play an essential role in the decision-making and income generation activities of the SHG members, the impact of the member's and her spouse's education level on the household income needs to be measured. Thus, we hypothesize:

H_{2a}: *Member's self-employment does not affect the household income of the SHG member.*

H_{2b}: *Self-employment of the spouse of a member does not affect the household income of the SHG member.*

Welfare outcomes through microfinance programmes are much diversified, such as women empowerment, education, health, etc. Members with higher education tend to have more assets than members without education (Augsburg *et al.*, 2012; Swain and Varghese, 2008). McKay (2009) found that members' education level helped them accumulate assets and enhanced income. Therefore, we hypothesize that:

H_{3a}: *Primary education of self and spouse does not affect the member's household income.*

$H_{3b:}$ *Secondary education of self and spouse does not affect the member's household income.*

The impact of financial inclusion programmes and the social status of the households are firmly connected. Hence, many welfare programmes were tailor-made to empower and uplift socially disadvantaged groups by providing financial products (such as loans with low-interest rate, subsidies, etc.). Further, research shows that financial inclusion has a significant and positive relationship with human development (Kodan and Chhikara, 2013; Unnikrishnan and Jagannathan, 2015; Datta and Singh, 2019). Additionally, studies reveal that microfinance is a reliable tool for income enhancement, especially among female clients of socially excluded groups (Sinha, 2012). Hence, we hypothesize as follows:

H_4: *Social status does not impact the SHG member's household income.*

3. Data and Empirical Strategy

The study uses primary data collected from 603 SHG women borrowers of Stree Nidhi, consisting of 300 from Telangana and 303 from Andhra Pradesh. Using a stratified multi-stage random sampling procedure, we selected our sample borrowers from ten districts, that is 5 districts each from Telangana and Andhra Pradesh. These districts were selected based on high, medium and low human development index ranks (HDI). The sampling framework of the study is shown in Box 1.

Box 1: Sampling Framework of the Study

Sample States: Andhra Pradesh & Telangana
✓　　Five districts (representing high, medium, and low ranks in HDI) are sampled from each state
✓　　From each district, three blocks are randomly selected
✓　　From each block, one gram panchayat (only the GP which had more than 10 credit linked SHGs) is randomly selected
✓　　From each GP, 10 SHGs are randomly selected
✓　　From each SHG, 2 members are randomly interviewed
So Total Sample Size = 2 States * 5 Districts * 3 blocks * 1 GP * 10 SHGs * 2 members = 603 SHG members

3.1 *Economic and Social Background of the Respondents:*

Table 1 provides the summary statistics of the households surveyed. As per Table 1, the average monthly household income of Stree Nidhi's borrowers in Andhra Pradesh and Telangana is ₹23,549, with a standard deviation of ₹15,446. Hence, the average monthly household income of SHG borrowers in the study states ranges from ₹8,103 to ₹38,995. The borrowers of Stree Nidhi received an average loan amount of ₹51,036, and they had been associated with Stree Nidhi for around 45 months (3.75 years). SHG borrowers in Telangana received a 31.61% higher average loan amount of ₹58,042 than borrowers of Andhra Pradesh. The overall mean age of the respondents is 38 years. More than half of the respondents (53.57%) are self-employed in tailoring, handicrafts, provision stores, dairy, backyard poultry, etc.

Interestingly, self-employment is more pronounced among the borrowers of Stree Nidhi in AP (60.07%) than in Telangana (47%). Of the 603 respondents, 21.06% belong to the general category, 11.28% are from Scheduled Caste (SC)/Scheduled Tribe (ST), and 67.66% are from backward communities. While 15.42% of the respondents received education up to the 5th standard, 57.21% had 6th standard and above education, whereas more than one-fourth of the sample borrowers (27.37%) were not literate. The survey data reveals that SHG borrowers with superior (Grade A) credit ratings usually get extended Stree Nidhi credit (95.36%).

Table 1: Descriptive Statistics of the Sample

Continuous Variables	Total (N = 603)	Andhra Pradesh (N = 303)	Telangana (N = 300)
Average household income per month (₹)	23,549	22,019	25,094
	(15,446)	(14,600)	(16,133)
Average loan amount (₹)	51,037	44,101	58,042
	(32,011)	(15,284)	(41,583)
Average association with Stree Nidhi (months)	44.72	30.06	59.52
	(29.02)	(24.15)	(25.83)
Average age of the respondent (years)	38.03	38.69	37.36
	(9.03)	(9.46)	(8.53)
Categorical Variables			
Respondents having self-employment (%)	53.57	60.07	47.00
Respondents with education level between 1stand5th standard (%)	15.42	19.8	11.00
Respondents with education level of 6th standard and above (%)	57.21	54.79	59.67
Respondents belonging to social category: General (%)	21.06	29.37	12.70
Respondents belonging to social category: Other backward community (OBC) (%)	67.66	62.38	73.00
Respondents belonging to social category: Scheduled Caste/ Scheduled Tribe (SC/ST) (%)	11.28	8.25	14.30
Respondents belonging to grade "A'SHG (%)	95.36	92.41	98.33

Note: Figures in parentheses represent the standard deviation.
Source: Field survey and authors' calculations.

3.2 Model specificatons

Based on the review of the literature and conceptual framework, we identified independent variables to evaluate the nexus between credit from Stree Nidhi and the SHG households' income. Subsequently, we specified the following regression model to examine the impact of credit from Stree Nidhi on the member's household income:

$$lincome_i = \alpha_0 + \alpha_1 lloan + \alpha_2 lage + \alpha_3 selfemp + \alpha_4 eduprim + \alpha_5 edusec \\ + \alpha_6 social\ category\ scst + \alpha_7 social\ category\ obc + \alpha_8 eduprim\ spouse \\ + \alpha_9 edusec\ spouse + \alpha_{10} selfemp\ spouse + \alpha_{11} familytype + \varepsilon_i$$

$$... (1)$$

Where *income* is the log transformation of the ith household's total income and the dependent variable in our model. *Lloan* is the log of the total loan amount received by the member from Stree Nidhi. *Lage*re presents the member's age with log transformation. To control the effect of the employment of the member on the family income, we introduced *selfemp*, which is a dummy variable, and it takes a value of 1 if the member is self-employed; 0 if otherwise; similarly, to capture the member's education we used *eduprim* and *edusec as* dummy variables. We introduced 2 more dummy variables to measure the impact of the member's social category, *social category scst and social category obc*. These variables are assigned a value of 1 if the member belongs to a particular social; 0 if otherwise. Further, to moderate the effect of education and employment of the spouse combined family on the family income, we introduced dummy variables, namely, *eduprim spouse, edusec spouse* and *selfemp spouse*. The variable captures whether the member comes from a joint or nuclear family.

It is also possible that the district, block and village level attributes also influence the relationship between members' household income and loan amount. Hence, we used the respective fixed effect model.

4. Results and Discussion

We ran a baseline regression to test whether Stree Nidhi's loans to SHG women leads to enhancement of their household incomes. We also used the test for multicollinearity, and the results suggest that there is no multicollinearity problem in the model. Estimation results suggest that the SHG members engaged in self-employment have a higher household income of 13% than their counterparts. Additionally, if the member's spouse is self-employed/has a pre-existing business, their household income is higher by 12% than others. Thus, the hypotheses H2a and H2b are rejected.

Table 2: Results of Baseline Regression
Dependent Variable: Household Income

Variables	(1)	(2)	(3)
Log loan from Stree Nidhi	0.006	0.045	0.044
	(0.043)	(0.046)	(0.046)
Log Age	0.260*	0.189	0.195
	(0.136)	(0.141)	(0.142)
Social class (OBC)	0.044	-0.052	-0.052
	(0.073)	(0.079)	(0.079)
Social class (SC/ST)	0.073	-0.066	-0.063
	(0.108)	(0.116)	(0.116)
Self-employed (Self)	0.100*	0.128*	0.129**
	(0.058)	(0.062)	(0.063)
Primary education (Self)	0.035	0.055	0.060
	(0.098)	(0.097)	(0.096)
Secondary education (Self)	0.090	0.108	0.108
	(0.085)	(0.090)	(0.090)
Self-employed (Spouse)	0.117**	0.105*	0.109**
	(0.053)	(0.054)	(0.054)
Primary education (Spouse)	0.197**	0.203**	0.203**
	(0.097)	(0.097)	(0.096)
Secondary education (Spouse)	0.127*	0.134*	0.134*
	(0.073)	(0.073)	(0.074)
Family type	0.082	0.060	0.058
	(0.056)	(0.056)	(0.057)
Constant	8.126***	7.956***	8.173***
	(0.669)	(0.695)	(0.676)
R^2 adjusted	0.135	0.178	0.179
N	457	457	457
District fixed effect	Yes	No	No
Block fixed effect	No	Yes	No
Village fixed effect	No	No	Yes

Note: *p< 0.10, **p< 0.05, ***p< 0.01 represent significance levels; Standard errors are in parenthesis.
Source: Authors' estimates.

The coefficients of the variables such as primary as well as secondary education of SHG women are statistically insignificant. The coefficient of the variables related to the spouse's education level is positive and statistically significant. Thus, the results establish the importance of education at least partially in improving household income and hence we partially reject hypotheses H_{3a} and H_{3b}. With regard to the variable social category, the coefficient is statistically insignificant. Hence, we do not see enough evidence to reject the hypothesis H_4. At the same time, we found no statistically significant relationship between members' age, family type, and household income. In the baseline model, the coefficient of the variable loan is insignificant, perhaps due to the endogeneity issue.

4.1 Addressing endogeneity and conducting robustness check

Endogeneity indicates that the member from a household having relatively higher income/assets may obtain a higher loan amount, and hence that household may engage in activities that can generate higher family income. As such, this endogeneity will

lead to biased coefficients. To overcome this problem, we re-run the model using the simultaneous equation variable method. Later, we used the Lewbel instrument variable method for the robustness check. The result of robustness of the model is presented in Table 3.

Table 3: Model Using Simultaneous Equation Variable Method (Robustness Check)
Dependent Variable: Household Income

Variables	(1)	(2)	(3)
Log loan from Stree Nidhi	0.036*	0.04	0.035
	(0.019)	(0.065)	(0.065)
Log age	0.268**	0.288***	0.292***
	(0.11)	(0.11)	(0.11)
Social class (OBC)	0.005	-0.057	-0.058
	(0.065)	(0.069)	(0.068)
Social class (SC/ST)	0.035	-0.06	-0.051
	(0.093)	(0.095)	(0.095)
Self-employed (Self)	0.11**	0.104**	0.106**
	(0.053)	(0.052)	(0.052)
Self-employed (Spouse)	0.147***	0.136***	0.14***
	(0.05)	(0.049)	(0.049)
Primary education (Self)	0.07	0.095	0.103
	(0.077)	(0.074)	(0.074)
Secondary education (Self)	0.094	0.141**	0.143**
	(0.068)	(0.067)	(0.067)
Primary education (Spouse)	0.18**	0.204**	0.201**
	(0.084)	(0.082)	(0.082)
Secondary education (Spouse)	0.132**	0.141**	0.137**
	(0.062)	(0.061)	(0.061)
Family type	0.098	0.075	0.076
	(0.05)	(0.048)	(0.048)
Constant	7.775***	7.656***	8.419***
	(0.499)	(0.846)	(0.67)
District fixed effect	Yes	No	No
Block fixed effect	No	Yes	No
Village fixed effect	No	No	Yes
Observations	595	595	595
R-squared	0.172	0.251	0.255
Underidentification tests-Cragg-Donald N*CDEV Wald statistic	526.899	529.020	2.059
Weak identification test-Cragg-Donald Wald F-statistic	402.325	325.870	0.662

Note: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$ represent significance levels; Standard errors are in parenthesis.
Source: Authors estimates.

The coefficient of the variable loan from Stree Nidhi remained significant and positive. We also found that the coefficient of the variable 'secondary education of the member' is positive and statistically significant. Thus, the results suggest that the income level of the members with higher education is significantly higher, thereby endorsing the robustness of the regression results. Our results are in line with the findings of Banerjee *et al.* (2015) and suggest that the not-for-profit microfinance lending

model coupled with an affordable rate of interest may have a considerable positive impact on the poor.

5. Policy Implications and Conclusions

It is evident from the study results that the self-employment of SHG women and their spouses plays a significant role in enhancing their household incomes. Therefore, policymakers should encourage women's participation in economic activity by helping them establish micro/small enterprises. Additionally, scaling up of Stree Nidhi and linking it with the SHG-BLP under various government programmes will help achieve SDG1 (no poverty), SDG5 (gender equality), and SDG8 (decent work and economic growth). Further, it is emphasized that initial handholding of the SHGs is needed to facilitate access to technical knowhow through constant training and capacity building, apart from providing market linkages through cluster-based livelihoods. As the education level (primary and secondary) of spouses of SHG members significantly improves their household income, Stree Nidhi and other lending agencies may factor this in their loan appraisal.

As the results show that the affordable microfinance received from Stree Nidhi significantly increases the household income of SHG households, low-cost community-owned MFIs may be encouraged to reach the last mile in financial inclusion. Further, exploring collaboration between Stree Nidhi and banks will be worthwhile under the co-lending approach. Stree Nidhi's fintech model has better loan origination capability and lower operating costs, and banks have deeper pockets for grant of higher loan amounts to SHG members.

Based on the results, we conclude that access to microcredit from Stree Nidhi helps the SHG women member households to break the vicious cycle of poverty (reaching SDG1 through SDG5) and catapult them to a higher income trajectory. Therefore, credit plus services may be offered to SHG women by banks/MFIs like Stree Nidhi. Our results have policy implications for all the stakeholders, namely, policymakers, banks, MFIs, SHGs, SHG-promoting institutions, etc. Essentially, this study helps institutions in launching tailor-made credit programmes for different borrowers.

Our study provides a directional nudge to identify borrowers' characteristics that can better impact lending outcomes. While the first step could be the identification of borrowers based on their demographic characteristics, and subsequently, these borrowers may be educated about microcredit schemes. Results of the study make a strong case for policy intervention to introduce skill development programmes and to emphasize education enhancement to maximise the return from the digital microfinance initiative like Stree Nidhi. Further, action could be directed towards empowering borrowers much before the granting of loans, thereby, improving the effectiveness of the lending. It will be a good idea to carry out future research studies with the help of randomised control trials or by creating longitudinal data to improve the results by controlling for counterfactuals.

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Measuring Service Quality of Selected Microfinance Institutions: A Gap Score Analysis

– Aisha Badruddin*

There are gaps between what the clients perceive and expect of service quality and what microfinance institutions (MFIs) actually provide to their clients. Service quality is distinct from and strongly correlated with consumer satisfaction. And so, the MFIs should focus more on all dimensions of service quality in order to achieve a greater degree of their clients' satisfaction.

Abstract

This paper makes an attempt to assess the quality of service being provided by microfinance institutions (MFIs). A sample of 600 clients was taken from the four MFIs, namely, Margdarshak (MARG), BMC, Shikhar and Spandana. The primary data has been collected using questionnaire based on SERVQUAL model for identifying the gap between the customers' perception and expectation about the service quality of MFIs. The result of the analysis reveals a mean gap in service quality amongst the MFIs on the dimension of tangibility, reliability, responsiveness, assurance and empathy.

1. Introduction

The search for a sustainable way to deliver financial services to the rural poor led to two distinct approaches to extension of microfinance in Uttar Pradesh; one, Self-Help Group – Bank Linkage Programme (SHG-BLP) and, two, microfinance institution (MFI) (NABARD, 2021). According to Sa-Dhan, microfinance is 'the provision of thrift, credit, and other money-related services and products in minimal amounts to the poor in rural, semi-urban, and urban areas in order to enable them to increase their income levels and improve their living standards' (Sa-Dhan 2016: p 6). According to FinDev Gateway, 'Microfinance is the offering of financial products and services to low wage earners. It alludes to a future in which low-income families have constant access to high-quality and affordable financial services to fund income-generating activities, create resources, balance utilisation, and protect against risks. Initially associated with

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microcredit—small loans to unsalaried borrowers with virtually no guarantees—the term has since evolved to include a wide range of financial products such as savings, insurance, payments, and remittances'[1]. The Consultative Group to Assist the Poor (CGAP, 2003) describes microfinance as 'a credit methodology that utilises effective collateral substitutes to convey and recuperate short-term working capital advances to micro-entrepreneurs'.[2] Microfinance, as defined by Asian Development Bank, is the 'offering of financial services such as loans, deposits, payment services, money transfers, and insurance to low-income households and microenterprises' (Asian Development Bank, 2000: p 2) The probe on notable Fintech developments, the contribution of technology in microfinance delivery models, critical financial inclusion distribution technologies, and technological challenges found that the shift from traditional financial institutions to mobile/e-banking is advantageous in terms of better outreach and delivering quality services (Badruddin, 2017: p 963).

1.1 Understanding Service Quality Gap

The quality of service along with the satisfaction level of customers provides innovative approaches for improving facilities in order to gain a competitive advantage in the microfinance segment. Service quality appears to have an impact on an organization's competitiveness (Sun and Im, 2015). MFIs may outperform rivals by offering services in a better manner (Wagner and Winkler, 2013). However, each of the MFIs must be cautious while offering services, as they offer identical services to clients. They must consistently enhance their service quality (Habib and Jubb, 2015). The MFIs need to devise new tactics to please their clients, if they are to remain competitive in the industry. Mengi (2009) compared customers' perceptions of MFI service quality and found that clients were happier with the service quality of MFIs, especially responsiveness and assurance were the most essential aspects of customer happiness. Guha and Choudhury (2013) found that empathy and assurance had the biggest impact on client satisfaction in Malaysia's microfinance business. Munusamy *et al.*, (2010) found a strong, direct and negative association between virtual MFI service usage and loyalty, but a favourable relationship between customer satisfaction with the level of service. They also observed an inverse positive correlation between service convenience and satisfaction with service quality.

By using a survey of 623 clients off our selected MFIs and the structure equation model (SEM), this paper empirically analyzes the correlations among measures of service quality and customer satisfaction. For an understanding of service quality, two fundamental tenets of service and quality ought to be addressed first. A service is an intangible act performed by a specific individual for a different one in return for something of value with no ownership shift (Tamilselvei, 2016; Kotler and Keller, 2009). A service provider's primary goal is to meet the needs of its customers, which eventually leads to satisfaction. As a result, when it comes to selecting a service, buyers prioritise quality. Service needs to be defined and seen from the perspective of the consumer. Satisfied clients are critical in business, since consumers are the recipients and ultimate evaluators of service quality

(Edvardsson, 1998). Quality can be defined differently depending on the perspective, focus and context (Sower and Fair, 2005; Wicks and Roethlein, 2009; Agbemabiese *et al.,* 2015). The concept of quality alludes to a service's set of qualities and attributes that enable it to satisfy its consumers' demands (Kotler *et al.*, 2002). Quality refers to how well a service satisfies a customer's demands (Anabila *et al.*, 2022). It may also be described as the size and trajectory of the difference between customer expectations and their perceptions (Parasuraman *et al.*, 1985).

The concept of service quality has gone through numerous iterations and stages of refinement in the literature. The three service quality components include physical quality, interaction and corporate quality (Lehtinen and Lehtinen, 1982). Grönroos (1984) saw service quality in terms of functionality, technology and reputation. Additional conceptualizations included the five-components, namely, internal organisation, corporate image, physical system support, employee-customer contact and degree of customer satisfaction (Leblanc and Ngyen, 1988). The nine components proposed by Garvin (1987) included performance, features, reliability, durability, service, conformance, reliability, response and esthetics. Parasuraman *et al.* (1985) developed five service quality characteristics known as SERVQUAL for services: tangibility, assurance, empathy, and responsiveness. Parasuraman *et al.* (1988) improved the SERQUAL model for evaluating service quality. Despite various challenges of validity (Carman, 1990), conceptualising (Cronin and Taylor, 1992) and operational focus (Naik *et al.*, 2010), the model is still the most pertinent and robust paradigm in modern service quality research (McCollin *et al.*, 2011; Saraei and Amini, 2012). The SERQUAL model remains the most potent, valid, reliable and desirable form in the existing research (Rodrigues *et al.*, 2011). The private sector's service quality output is determined by the three E's (efficiency, effectiveness and equity), as well as client perception, expectations and satisfaction. The idea of service quality begins with an understanding of client expectations and the extent to which the perceived service satisfies them. A gap is created when perceived service falls short of expectations. The gap model of service quality is based on analysing the way the gap occurs, and how it might be bridged (Odayor, 2003).

The purpose of the study is to assess the quality of services being provided by MFIs in the state of Uttar Pradesh and recommend best practices.

Hypothesis:

The central hypothesis is to determine if there is a significant variation in the distribution of service quality attributes among sample MFIs. The alternate hypotheses are formulated as follows:

H_1: Distribution of tangibility differs significantly across the sample MFIs.
H_2: Distribution of responsiveness differs significantly across the sample MFIs.
H_3: Distribution of reliability differs significantly across the sample MFIs.
H_4: Distribution of assurance differs significantly across the sample MFIs.
H_5: Distribution of empathy differs significantly across the sample MFIs.

1.2 Scope of the Study

The study informs MFIs about the service quality gap as perceived and expected by its clients. The findings would help MFIs to know the quality of services they are providing to their clients. The study identifies the characteristics of service excellence that are most important for clients. The study focuses on the target audience of financial inclusion programme so as to help MFIs to adopt business models accordingly. Thus, the study would contribute to a better understanding of the role and performance of MFI model in delivering microfinance services to those who are financially excluded from the formal financial sector due to lack of collateral.

2. Research Design

2.1 Sampling Technique

The sampling technique used is non-random convenience sampling for collection of primary data. The population constituted MFIs having operations in the state of Uttar Pradesh. The data was collected in 2018-19 with the help of respective MFI's field officers. The sampling frame constitutes clients belonging to Margdarshak (MARG), BMC, Shikhar and Spandana. The brief profile of sample MFIs is shown in Table 1. The sample MFIs are chosen from different categories based on client outreach, i.e., tiers. The three different tiers as classified by Sa-dhan are Tier I (> 2.5 lakhs), Tier II (0.5 lakhs - 2.5 lakhs) and Tier III (< 0.5 lakhs). A sample of 600 clients was taken from these MFIs, that is, 150 clients from each MFI.

Table 1: Profile of Sample Microfinance Institutions

MFI	Legal Form	Tier	No. of Active Borrowers (in Lakh)	Product and Services Offered	Year of Establishment	Operating In States
Spandana Sphoorty Financial Ltd.	NBFC-MFI	I	23.50*	JLG Loans-Micro Lending, Individual Loans	2003	Andhra Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Puducherry, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, WestBengal
Bhartiya Micro Credit (BMC)	SEC.8 CO.	II	1.07**	Loan types include income generating, daily??, rickshaw, sewing machine, and business correspondent.	2008	Andaman & Nicobar, Bihar, Gujarat, Madhya Pradesh, Uttar Pradesh
Margdarshak Financial Services Ltd.	NBFC-MFI	II	2.49**	Micro Credit	2013	Uttar Pradesh, Bihar, Haryana, Uttarakhand
Shikhar Microfinance Pvt. Ltd.	NBFC-MFI	III	0.42*	Micro Credit, Micro Insurance	2009	Delhi, Haryana, Uttar Pradesh

Notes: *as on 31st March 2022;and **as on 31st March 2020.
Source: Sa-dhan, MFI Directory 2020 and 2022.

2.2 Questionnaire

The primary data was collected using questionnaire based on SERVQUAL scale consisting of 22 questions on five dimensions relating to perception and expectations of clients in each version. The five dimensions includes tangibility, reliability, responsiveness, assurance and empathy. The SERVQUAL model, established by Parasuraman *et al.*, (1985, 1986, 1988, 1991, 1993, 1994; Zeithaml *et al.*, 1990), is a widely used service quality measuring methodology. The SERVQUAL questionnaire has become the primary tool adopted to assess consumer perceptions of service quality. It has five general dimensions of the variables, as listed below.

(1)   Tangibles: Physical facilities, equipment and people appearances.

(2)   Reliability: The capacity to provide the given service consistently and precisely.

(3)   Responsiveness: A willingness to assist customers and deliver timely service.

(4)   Assurance: Employees' knowledge and capacity to inspire trust and confidence. It encompasses expertise, civility, credibility and security.

(5)   Empathy: The firm's caring and customised attention to its clients.

The Table 2 and Figure 1 shows the construct design of SERVQUAL Model used for data collection. The measurement score takes 1 as strongly disagree to 4 as neutral and 7 as strongly agree.

Table 2: SERVQUAL Construct

Dimension	Item	Construct	Measurement Score
TANGIBILITY	T1	"Modern looking equipment".	1 2 3 4 5 6 7
	T2	"Visually appealing physical facilities"	1 2 3 4 5 6 7
	T3	"Neat appearing employees"	1 2 3 4 5 6 7
	T4	"Visually appealing materials (pamphlets or statements) associated with the service"	1 2 3 4 5 6 7
RELAIBILITY	RL5	"Deliver service at promised time"	1 2 3 4 5 6 7
	RL6	"Sincere interest in solving problem."	1 2 3 4 5 6 7
	RL7	"Perform the service right the first time."	1 2 3 4 5 6 7
	RL8	"Provide the service at the promised time"	1 2 3 4 5 6 7
	RL9	"Insist on error free records."	1 2 3 4 5 6 7
RESPONSIVENESS	RS10	"Tell exactly when services will be performed."	1 2 3 4 5 6 7
	RS11	"Give prompt service"	1 2 3 4 5 6 7
	RS12	"Always willing to help"	1 2 3 4 5 6 7
	RS13	"Never too busy to respond"	1 2 3 4 5 6 7
ASSURANCE	A14	"Instills confidence"	1 2 3 4 5 6 7
	A15	"Safe transactions"	1 2 3 4 5 6 7
	A16	"Consistently courteous employees."	1 2 3 4 5 6 7
	A17	"Employees have the knowledge to answer clients' queries."	1 2 3 4 5 6 7
EMPATHY	E18	"Pay individual attention."	1 2 3 4 5 6 7
	E19	"Convenient operating hours."	1 2 3 4 5 6 7
	E20	"Give clients personal attention."	1 2 3 4 5 6 7
	E21	"Clients' best interest at heart."	1 2 3 4 5 6 7
	E22	"Understand the specific needs of their clients."	1 2 3 4 5 6 7

Source: Author's estimates.

Figure 1: SERVQUAL Construct
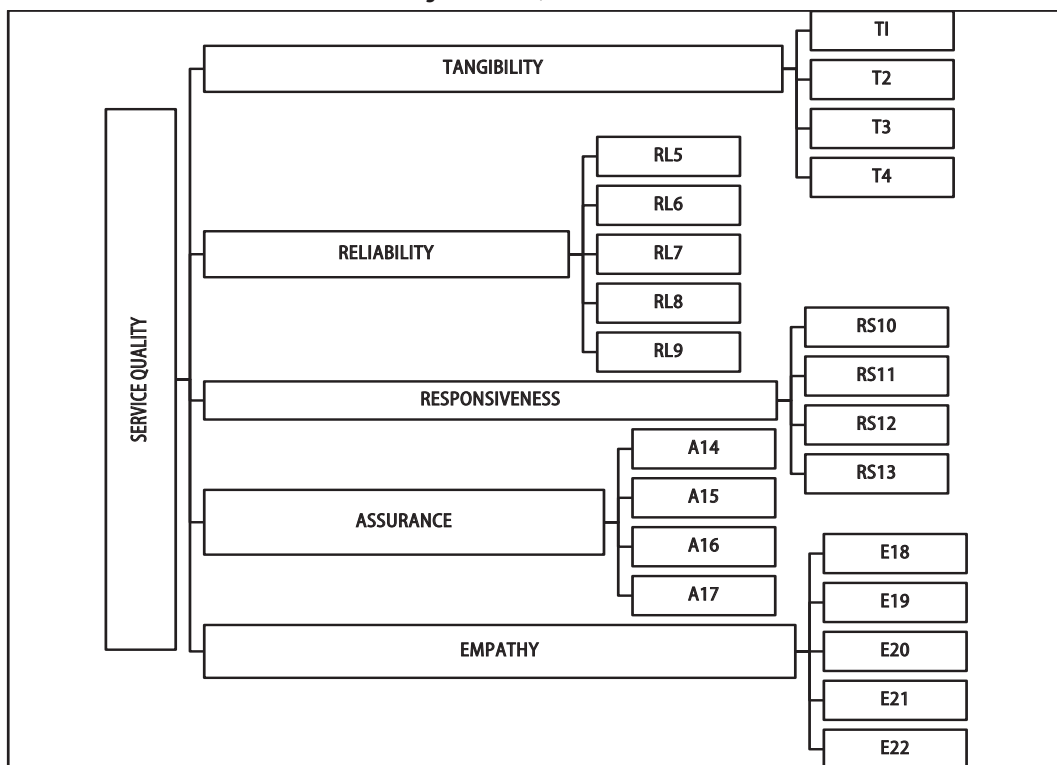
2.3 Statistical Test

For the analysis of primary data, the non-parametric k independent sample Kruskal Wallis test has been applied because the assumption of normality is not satisfied and the dependent variable is measured on scale. The demographic profile of respondents was analyzed using frequency analysis. Further descriptive statistics on SERVQUAL dimensions for sample MFIs were calculated separately for perception, expectation and gap scores.

3. Analysis and Discussion

3.1 Profile of Respondents

The demographic profile of respondents based on their age group, education level and annual income were analyzed using frequency analysis.

Most of the clients (i.e., 50.3%) are from the age group of 34-41 years, 33.8% in age group of 26-33 years and 12% are from age group of 42-47 years and 3% in below 26 years (Table 3).

Table 3:Age Group of Respondents

Agre Group	Frequency	Percent	Valid Percent	Cumulative Percent
26-33	203	33.8	33.8	33.8
34-41	302	50.3	50.3	84.2
42-47	77	12.8	12.8	97.0
Below 26	18	3.0	3.0	100.0
Total	600	100.0	100.0	

Source: Author's estimates.

Most of the respondents are not highly educated (Table 4). It is found that 60.3% of the respondents can only sign as learned in group training provided by the MFIs. About 36.7% of respondents had primary education. A meager percentage of the respondents have completed higher secondary, inter-mediate and under graduation.

A majority of the respondents (56.5%) have annual income in the range of ₹25,000–₹50,000 (Table 5). About 37.5% of respondents have annual income less than ₹25,000. About 5.5% of respondents have annual income between ₹50,001 and ₹75,000. And only 3 out of 600 respondents have annual income above ₹75,000.

Table 4:Education Level of Respondents

Education level	Frequency	Percent	Valid Percent	Cumulative Percent
Can Sign Only	362	60.3	60.3	60.3
Higher Secondary	6	1.0	1.0	61.3
Intermediate	6	1.0	1.0	62.3
Primary	220	36.7	36.7	99.0
Under Graduate	6	1.0	1.0	100.0
Total	600	100.0	100.0	

Source: Author's estimates.

Table 5: Annual Income of Respondents

Annual Income (in ₹)	Frequency	Percent	Valid Percent	Cumulative Percent
25,000 - 50,000	339	56.5	56.5	56.5
50,001 - 75,000	33	5.5	5.5	62.0
Above 75,000	3	.5	.5	62.5
Below 25,000	225	37.5	37.5	100.0
Total	600	100.0	100.0	

Source: Author's estimates.

3.2 Reliability and Validity Analysis (Cronbach Alpha)

The SERVQUAL scale's reliabilityas rec-ommended by Parasuraman *et al.*, (1988) and the internal consistency of the five di-mensions of the scale were analyzed using Cronbach alpha for dimensions individually on all versions of SERVQUAL, namely, per-ception, expectation and gap scores (differ-ence between perception and expectation). Internal consistency measures for every single dimension correspond to or exceed the suitable threshold of 0.70 indicated in the scientific literature (Quansah, 2017). The Cronbach alpha on all dimensions of expec-tation, perception and gap score is quite higher than the standard value of 0.7. The overall coefficients of reliability of percep-tion (0.968), expectations (0.796), and gap (0.925) scales are also higher than standard value and hence deemed acceptable. It dem-onstrates that the respondents had a better grasp of the queries, resulting in more con-sistency in the replies. Table 6 represents

Table 6: Reliability and Validity Analysis (Cronbach Alpha)

Dimension	Item	Number of items	Expectation (E)	Perception (P)	Gap (P-E)
Tangibility	T1	4	0.917	0.784	0.877
	T2				
	T3				
	T4				
Reliability	RL5	5	0.837	0.951	0.943
	RL6				
	RL7				
	RL8				
	RL9				
Responsiveness	RS10	4	0.951	0.967	0.966
	RS11				
	RS12				
	RS13				
Assurance	A14	4	0.976	0.922	0.922
	A15				
	A16				
	A17				
EMPATHY	E18	5	0.934	0.947	0.946
	E19				
	E20				
	E21				
	E22				
Overall		22	0.796	0.968	0.925

Source: Author's estimates.

that the Cronbach alpha values are greater than 0.7, indicating that all five dimensions show a good measure of service quality.

3.3 Test of Normality

Kolmogorov-Smirnova and Shapiro-Wilk tests are used to determine the normalcy of the dataset. The results of the test in Table 7 shows that p<0.05 in both the tests on tangibility, responsiveness, empathy, reliability and assurance dimension. Hence, it is concluded that the data is non-normally distributed.

Table 7: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Tangibility	0.111	600	0.000	0.970	600	0.000
Responsiveness	0.219	600	0.000	0.737	600	0.000
Empathy	0.286	600	0.000	0.784	600	0.000
Reliability	0.206	600	0.000	0.777	600	0.000
Assurance	0.130	600	0.000	0.850	600	0.000

Note: a Lilliefors Significance Correction
Source: Author's estimates.

3.4 Service Quality Gap

As the data set features one nominal variable and one measurement variable, one-way ANOVA is typically applied. However, if the measurement variable fails to fulfil the normality assumption of one-way ANOVA, the parametric method is not applicable, and ANOVA cannot be employed. The non-parametric approaches established for the k-samples require no assumptions beyond continuous populations, consequently they are usable under any situation. Hence, non-parametric Kruskal Wallis test is used to study the variation across sample MFIs on different dimensions of SERVQUAL.

The mean gap scores across sample MFIs are reported in Table 8. On tangibility dimension, Spandana has the highest rank followed by MARG, and Shikhar has the lowest rank. On responsiveness dimension, the lowest rank is for BMC and the highest in Shikhar. BMC and MARG have lower ranks on empathy dimension, and Shikhar and Spandana have higher ranks. On reliability dimension, BMC has the lowest rank and Shikhar has the highest rank. Spandana is highly ranked on the assurance dimension and BMC lowly ranked.

Table 8: Mean Rank of Gap Score of Sample MFIs on SERVQUAL Dimensions

Dimension	MFI	N	Mean Rank
Tangibility	MARG	150	356.65
	BMC	150	301.81
	Spandana	150	432.37
	Shikhar	150	111.17
Responsiveness	MARG	150	218.56
	BMC	150	187.11
	Spandana	150	368.40
	Shikhar	150	427.93
Empathy	MARG	150	198.80
	BMC	150	173.48
	Spandana	150	418.28
	Shikhar	150	411.44
Reliability	MARG	150	217.23
	BMC	150	179.60
	Spandana	150	338.56
	Shikhar	150	466.60
Assurance	MARG	150	219.33
	BMC	150	173.43
	Spandana	150	494.07
	Shikhar	150	315.17

Source: Author's estimates.

The chi-square test reveals that p-value is 0.000 and this is less than 0.05 on all dimensions of SERVQUAL (Table 9). Hence, null hypothesis is rejected in all cases at 0.05 level of significance. It implies that all sample MFIs differ significantly on tangibility, responsiveness, empathy, reliability and assurance dimension. Therefore, the post hoc analysis is conducted to identify the pair of MFIs which differs significantly across the categories.

Table 9: Chi-Square Test: Test Statistics[a,b]

	TANGIBILITY	RESPONSIVENESS	EMPATHY	RELIABILITY	ASSURANCE
Chi-Square	284.914	221.492	302.489	267.582	301.934
df	3	3	3	3	3
Asymp. Sig.	0.000	0.000	0.000	0.000	0.000

Note: a. Kruskal Wallis Test; b. Grouping Variable: MFI
Source: Author's estimates.

3.5 Multiple Comparisons across Sample MFIs

- The pairwise comparisons of MFI on tangibility dimension are conducted because at least two samples appear to differ significantly according to the significance test. Table 10 reveals significant tangibility-related differences between Shikhar and BMC, Shikhar and MARG, Shikhar and Spandana, BMC and MARG, BMC and Spandana, and MARG and Spandana.
- Tests on the reliability dimension demonstrates that the pair BMC-MARG does not differ significantly, whereas the other pairs differ significantly.
- With regard to responsiveness dimension, all pairs differ significantly except BMC-MARG that shows only a little variation.
- On empathy dimension, differences in the pairs of BMC-MARG and Shikhar-Spandana are minimal, whereas all other pairs exhibit significant differences.
- Pair comparison also reveals little variation between the pair of BMC-MARG on assurance dimension, whereas all other pairs had significant differences on the same dimension.

4. Recommendations

On tangibility dimension, Spandana has the highest positive mean gap whereas Shikhar has the lowest mean gap. The MFIs need not make heavy investment on swanky facilities and material, as clients do not possess expectation on it. Rather they should focus more on intangibles in service delivery. Shikhar and Spandana have high mean rank on responsiveness and reliability dimensions. Shikhar has the highest positive mean gap with high mean rank on responsiveness and reliability dimensions. Margdarshak and BMC need to focus on the reliability dimension. The MFIs must make effort on their commitment to deliver services on said time. The need to address issues, prioritize service delivery properly and preserve error-free records must be inculcated

Table 10: Pairwise Comparisons on SERVQUAL Dimensions

Dimension	Sample 1-Sample 2	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Tangibility	Shikhar–BMC	190.640	19.896	9.582	0.000	0.000
	Shikhar–MARG	245.480	19.896	12.338	0.000	0.000
	Shikhar–Spandana	321.200	19.896	16.144	0.000	0.000
	BMC–MARG	54.840	19.896	2.756	0.006	0.035
	BMC–Spandana	-130.560	19.896	-6.562	0.000	0.000
	MARG–Spandana	-75.720	19.896	-3.806	0.000	0.001
Reliability	BMC–MARG	37.630	19.445	1.935	0.053	0.318
	BMC–Spandana	-158.960	19.445	-8.175	0.000	0.000
	BMC–Shikhar	-286.997	19.445	-14.759	0.000	0.000
	MARG–Spandana	-121.330	19.445	-6.240	0.000	0.000
	MARG–Shikhar	-249.367	19.445	-12.824	0.000	0.000
	Spandana–Shikhar	-128.037	19.445	-6.585	0.000	0.000
Responsiveness	BMC–MARG	31.450	19.104	1.646	0.100	0.598
	BMC–Spandana	-181.293	19.104	-9.490	0.000	0.000
	BMC–Shikhar	-240.817	19.104	-12.605	0.000	0.000
	MARG–Spandana	-149.843	19.104	-7.843	0.000	0.000
	MARG–Shikhar	-209.367	19.104	-10.959	0.000	0.000
	Spandana–Shikhar	-59.523	19.104	-3.116	0.002	0.011
Empathy	BMC–MARG	25.327	18.659	1.357	0.175	1.000
	BMC–Shikhar	-237.963	18.659	-12.753	0.000	0.000
	BMC–Spandana	-244.803	18.659	-13.120	0.000	0.000
	MARG–Shikhar	-212.637	18.659	-11.396	0.000	0.000
	MARG–Spandana	-219.477	18.659	-11.763	0.000	0.000
	Shikhar–Spandana	6.840	18.659	.367	0.714	1.000
Assurance	BMC–MARG	45.897	20.006	2.294	0.022	0.131
	BMC–Shikhar	-141.743	20.006	-7.085	0.000	0.000
	BMC–Spandana	-320.640	20.006	-16.028	0.000	0.000
	MARG–Shikhar	-95.847	20.006	-4.791	0.000	0.000
	MARG–Spandana	-274.743	20.006	-13.733	0.000	0.000
	Shikhar–Spandana	178.897	20.006	8.942	0.000	0.000

Note: Each row evaluates the null hypothesis that the Sample1 and Sample2 distributions are identical. The asymptotic significance (two-sided tests) is presented. The significance level is 0.05.
Source: Author's estimates.

as regular practices. The MFIs are expected to ensure promptness in responding to clients' request and provide information regarding the exact time of delivering services. Shikhar and Spandana have high mean rank on assurance and empathy dimensions. Spandana has the highest positive mean gap with high mean rank on assurance and empathy dimensions. Employees in the MFI need to be consistently courteous with clients so as to in still confidence in clients. On empathy dimension, a negative gap is seen on understanding the specific needs of client and MFIs should strive to bridge the gap.

NOTES

1   Accessed at the findevgateway.org, FAQs
2   Accessed at the http://microfinance.cgap.org/2023/06/02/what-is-microfinance

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Factors Impacting the Adoption of Mobile Commerce in Rural India

– Nishi Malhotra*

Rural mass have higher intention to use m-commerce if it is perceived easy to use, simple and user friendly. The perceived usage or utility directly does not lead to purchase, rather it is the attitude or perceived ease to use m-commerce that leads to purchase intention.

Abstract

The marginalized rural population in India faces financial and social exclusion, primarily due to limited opportunities and restricted access to essential services. Surprisingly, few studies have delved into the factors influencing the adoption of technology and its impact on the usage of mobile commerce (m-commerce) among rural individuals in India. This pioneering paper aims to employ a comprehensive approach, integrating multiple perspectives, to examine the influence of subjective norms, as per the lenses of the Technology Acceptance Model (TAM), on the adoption of m-commerce in rural India. Utilizing the Partial Least Squares Structural Equation Modelling (PLS SEM) method, this study explores the theoretical framework of the TAM and the external variable of subjective norms. This study uses the data gathered from 111 villagers by means of a simple 5-point Likert questionnaire. Findings affirm that perceived usage significantly enhances the intention to make a purchase. Moreover, attitude of individuals acts as a mediating factor in the relationship between perceived ease of usage, perceived usage, and the intention to make a purchase. The subjective norms also exert a positive influence on purchase intention.

1. Introduction

The United Nations Sustainable Development Goal (UN SDG) emphasizes the crucial role of technology in banking, commerce and governance to reduce poverty through social inclusion and promote equitable growth. Economically underprivileged individuals often face discrimination due to the lack of physical access to opportunities, hindering their social and

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financial inclusion. Technology implementation or adoption is a bottom-up approach to promote social inclusion, diversity and equity. However, the adoption of technology is a complex process that is impacted by the subjective norms, attitude, intersectionality of subjective norms and attitude, and mental dispositions of the members. This paper aims to examine the various factors that impact the adoption of the technology such as mobile commerce (m-commerce) by the users. M-commerce, which involves commerce and transactions through wireless mobile devices, shows the potential of leveraging technology to address these objectives by providing access to citizen-centric services to the people in rural India (Niranjanamurthy *et al.*, 2013; Senn, 2000; Coursaris and Hassanein, 2002). Despite government efforts to advance digital governance and commerce, rural India confronts notable obstacles including inadequate physical infrastructure, connectivity issues, low digital literacy, and reliance on agrarian economy. Additionally, rural women and communities encounter multiple challenges in participating in m-commerce. However, m-commerce has the capacity to empower individuals to partake in entrepreneurial endeavours such as selling handicrafts or agricultural produce, thereby, contributing to their economic liberation. Moreover, it holds promises in enhancing the delivery of government services by increasing the efficiency of disbursing subsidies, pensions and direct benefit transfers to beneficiaries in remote areas. This study aims to address the limited literature on the utilization of m-commerce and the factors influencing its adoption in rural India. It seeks to bridge this gap by employing the theory of planned behaviour and the Technology Acceptance Model (TAM) to explore user acceptance of m-commerce in this context. The research endeavours to assess the impact of user psychological factors, such as perceived ease of use, perceived usage, subjective norms and attitudes, on the adoption of m-commerce in rural India. The study utilizes the Partial Least Squares Structural Equation Modelling (PLS-SEM) method to analyse the obstacles to the adoption of m-commerce in this specific rural setting (Wold, 1980). The valuable insights derived from this research on the acceptance of m-commerce in rural India will be highly beneficial to policymakers, government entities and businesses, as they strategize the integration of digital and mobile services within this demographic. Key policy initiatives may include the development of technological solutions, skill development programs, market information dissemination, and government schemes aimed at fostering rural entrepreneurship. By strategically leveraging technology, policymakers can empower individuals to engage in entrepreneurial activities through e-commerce platforms.

2. Literature Review

In 2022, 6.9% of all retail transactions were carried out through mobile devices, and this figure is projected to rise to 10.4% by the end of 2025, indicating the increasing preference for mobile-based transactions among Indian consumers (Statista, 2022). A substantial 70% of Indian consumers prefer making purchases using their mobile phones,

underscoring the widespread acceptance and convenience of m-commerce in India. Moreover, m-commerce constitutes approximately 60% of the total e-commerce market in India, reflecting the dominant influence of mobile devices in online transactions (Statista, 2022). The global number of smartphone subscriptions has surpassed six billion, representing around 80% of the world's population, highlighting the pervasive nature of smartphones in modern society. Although m-commerce is prevalent in developed nations, it is still in its early stages in India, lacking substantial momentum. M-commerce specifically involves conducting transactions using mobile devices like smartphones and tablets (Kim *et al.,* 2010). Various distinctive definitions of m-commerce are provided in the literature (Khalifa and Shen, 2008). In this study, m-commerce refers to business-to-consumer commerce, emphasizing the use of mobile-optimized websites, apps and payment systems to facilitate secure and convenient transactions on mobile platforms (Choi, 2018). M-commerce offers benefits such as convenience and an enhanced shopping experience, prompting the increased use of mobile devices for shopping (Gupta *et al.,* 2018). Additionally, mobile wallets and payment applications linked to m-commerce sites are considered part of the extended dimension of m-commerce. The study primarily aims to explore the main determinants of technology acceptance, specifically m-commerce, by people in rural India. Various factors deter individuals from accepting and integrating m-commerce into daily life (Villa *et al.,* 2018). The TAM is widely used to ascertain m-commerce acceptance, emphasizing factors such as perceived usefulness and perceived ease of use. This model illustrates that an individual's behaviour is influenced by their attitude towards potential outcomes and subjective norms within their social environment. The TAM, employing the theory of reasoned action, is utilized to explain the adoption of m-commerce in rural India. It emphasizes the critical role of perceived usefulness and perceived ease of use in shaping acceptance behaviours. The study also investigates consumers' acceptance behaviour toward m-commerce through the theory of planned behaviour (TPB) model. It indicates that an individual's intention to implement m-commerce is significantly influenced by their attitude and perceived behavioural control (Mishra, 2014). Liao and Cheung (2002) examined the factors influencing the perceived usefulness of a product and service, as well as the willingness to use and security. These insights contribute to a comprehensive understanding of user behaviour and the factors influencing the acceptance and usage of information systems, particularly in the context of m-commerce in rural India.

3. Hypotheses of the Study

Perceived ease of use and intention to use m-commerce

H1: Perceived ease of use (PEOU) has a positive influence on purchase intention through attitude towards m-commerce

The concept of perceived ease of use, as articulated by Davis (1989), is the extent to which users believe that a technology, m-commerce application, or website is user-friendly and

easy to operate. It underscores the likelihood of users to engage with technology perceived as straightforward and user-friendly, particularly within the context of commerce and shopping. Conversely, complex or challenging technologies are less likely to be adopted due to the perceived difficulty they entail. According to Thorbjørnsen *et al.,* (2002), perceived ease of use is the individual's assurance that using a specific m-commerce platform requires minimal cognitive effort, emphasizing the subjective evaluation of simplicity and practicality associated with m-commerce usage. Perceived ease of use also encompasses the notion of freedom from difficulty and excessive effort when utilizing m-commerce and technology (Davis, 1989). This understanding is closely related to the efficient management of cognitive resources, as excessive cognitive effort can deter the adoption of m-commerce. The literature suggests that the perception of ease of use is influenced by perceived utility (Phillips *et al.,* 1994) and significantly influences individuals' inclination to use technology, thereby, bolstering confidence in mobile commerce platforms. Studies consistently demonstrate that users are more likely to embrace technology when it is perceived as easy to operate (Adams *et al.,* 1992), highlighting the motivational aspect of intuitive interfaces and experiences. Intrinsic motivation, as defined by Vallerand (1997), refers to the natural satisfaction derived from utilizing technology. The users are more intrinsically motivated to use technology which is user friendly, intuitive and simple to use (Chiu *et al.,* 2009; Venkatesh and Davis, 2000; Venkatesh and Speier, 1999). Furthermore, the intention to adopt digital platforms is driven by extrinsic motivation, taking the form of perceived benefits associated with technology use, including interface design, navigation simplicity and clarity (Rogers, 1962). The hypothesis underlying this research posits that users who perceive a system as user-friendly, whether through prior experience or actual utilization, are more likely to value and interact with the system. Consequently, the initial hypothesis suggests that a greater inclination to utilize m-commerce is due to a perception of simplicity of use or ease of use.

3.1 Perceived usage and intention to use m-commerce

In this study, the TAM as conceptualized by Davis (1989) has been employed to elucidate the acceptance of technology, considering users' perceptions (Venkatesh and Davis, 2000). Adoption of technology is often construed as a psychological state influenced by the perceived usefulness of the said technology. Perceived usefulness, as defined by Davis (1989), signifies an individual's belief that a particular technological system would enhance their performance (Agarwal and Karahanna, 2000). The perceived usefulness is associated with the benefits experienced by users when using digital banking, encompassing the sustainable advantage of utilizing digital banking services (Barkhi *et al.,* 2007; Hamid *et al.,* 2016, Kim and Song, 2010). The TAM emphasizes that perceived usefulness significantly impacts technology adoption by encompassing benefits such as enhanced productivity, system effectiveness, and cost and time savings (Davis, 1986). The perceived usefulness essentially represents the extrinsic motivation for using technology,

in the form of enhanced performance. According to the TAM, an individual's acceptance of technology is influenced by perceived ease of use and perceived usefulness (Brandon-Jones and Kauppi, 2018). Studies demonstrate that perceived usefulness influences the intention to utilize technology, with users engaging in the online banking system only if they perceive utility from its use (Aryani *et al.,* 2018). Moreover, it is evident that perceived usefulness positively influences the behavioural intention to use technology (Venkatesh and Bala, 2008; Davis, 1989; Ramayah and Ignatius, 2005). The perceived usefulness of digital banking is associated with various benefits, including the ability to access financial services, reduction of transaction costs and time savings (Hamid *et al.,* 2016). Digital banking offers immediacy in shopping, comparison of banking alternatives and adaptability to evolving consumer attitudes (Boon-itt, 2019; Raza *et al.,* 2017). Based on these premises, the hypothesis posits that perceived usefulness directly impacts the intention to use digital technology for banking.

H2: Perceived usage (PU) has a positive influence on purchase intention through m-commerce
H3: Perceived ease of usage (PEOU) has a positive influence on perceived usage (PU)
H4: Perceived usage mediates relationship between perceived ease of usage and purchase intention

3.2 Attitude towards m-commerce

A psychological construct known as attitude encompasses an individual's emotions, convictions and inclinations in behaviour about a specific object, individual, or circumstance (Yang, 2012). It comprises a synthesis of affective states, cognitive processes, and behavioural reactions that influence an individual's perception and reaction to the external environment. A positive attitude towards technology, including m-commerce, indeed, enhances adaptability and agility. However, Davis *et al.,* (1989) in their technology acceptance model have ignored the role of affective attitude, which is a socio-psychological construct. Embracing technology with a positive mindset enables individuals and businesses to navigate the transitions to new processes more smoothly, effectively combating the diverse challenges and seizing the opportunities presented by the digital landscape. In literature, there is a gap in research studies that link the theory of planned behaviour, which is a cognitive theory to attitudes and emotions. As per various studies perceived ease of use and perceived usefulness are cognitive determinants that shape the dispositions and emotions of the users towards the adoption of m-commerce (Zhou *et al.*, 2007). Thus, our study propagates that PU (perceived usage) and PEOU (perceived ease of use) further contribute to the formation of attitudes towards the adoption of technology or m-commerce, corroborating the findings of Kulviwat *et al.*, (2007) and Mehrabian and Russell (1974).

H5: Consumer attitudes positively influence intention to adopt m-commerce
H6: Attitude mediates the relationship between perceived ease of usage and purchase intention
H7: Attitude mediates the relationship between perceived usage and purchase intention

3.3 Perceived behavioural control

Perceived behavioural control (PBC) holds a pivotal position within the theory of planned behaviour (TPB), encapsulating an individual's perception of their ability to perform a specific behaviour. This perception is rooted in the belief that one possesses the requisite resources, skills and opportunities to successfully engage and execute the behaviour in question (Fishbein and Ajzen, 1975). The significance of PBC in shaping the behavioural intentions and outcomes of individuals is indisputable. The concept of PBC, as described by Fishbein and Ajzen (1975), has a direct influence on an individual's self-efficacy regarding the execution of a particular behaviour, which subsequently affects the behaviour's actual outcome. In a similar vein, the study conducted by Pavlou and Fygenson (2006) highlights the complex and diverse aspects of PBC, regarding it as a critical factor influencing purchasing intention in digital transactions about external control beliefs. Elie-dit-cosaque *et al.* (2011) provide additional insight into the factors that determine PBC, stating that it is impacted by social factors, internal forces and external forces. This all-encompassing viewpoint illuminates the complex interaction of personal, ecological and societal factors that contribute to PBC. In conclusion, the wide array of studies examining PBC highlights its complex characteristics and the numerous factors that contribute to its formation, including internal individual characteristics as well as external environmental and social influences. Gaining insight into the factors that influence PBC is of paramount importance, not only for evaluating the intention of users to adopt and trust mobile and digital systems but also for conducting a comprehensive analysis of the behavioural reactions of individuals in diverse settings.

H8: PBC (Perceived Behavioural Control) positively influences the intention to purchase through m-commerce
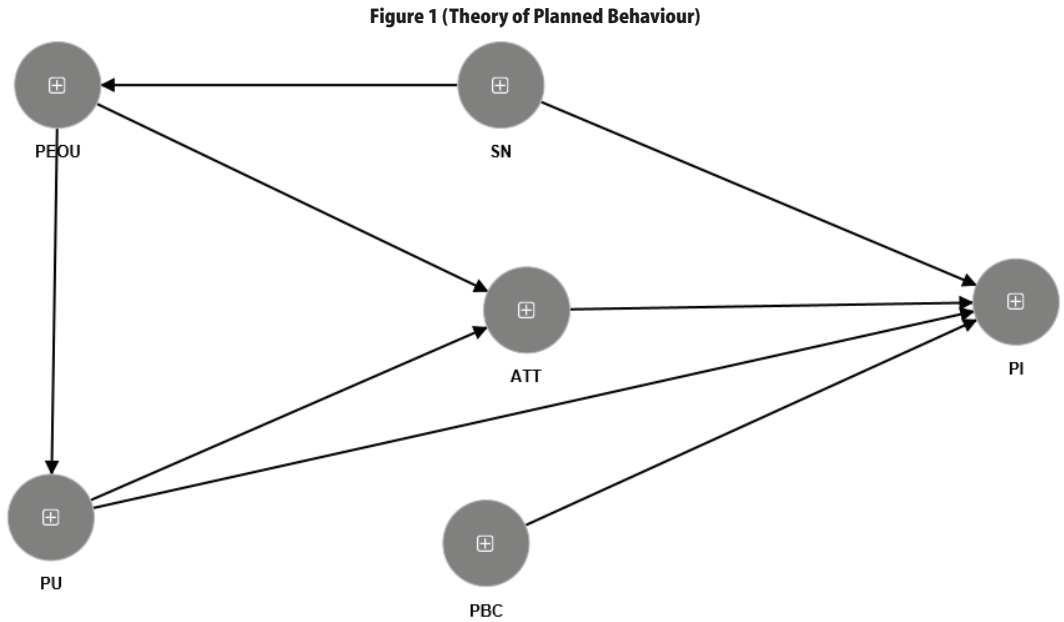
3.4 Subjective norms

Individual behaviour is notably influenced by subjective norms, encompassing the impact of family, friends and peers on actions, decision-making and purchase intentions (Liñán and Chen, 2009). Perceptions being inherently subjective contribute to the formation of these norms, underscoring personal interpretations shaping social behaviours across contexts. Users' behaviours are shaped by their attitudes and subjective norms, reflecting community pressure and approval leading to specific actions (Fishbein and Ajzen, 1975). The concept of subjective norms centres on a person's normative beliefs regarding influential individuals and their ability to motivate behavioural compliance (Ajzen, 1988; Ajzen and Fishbein, 1980; Armitage and Conner, 2001). In the present scenario, the perceived opinions of others like family and friends play a crucial role in influencing consumer behaviour when engaging in m-commerce (Ray *et al.*, 2019).

H9: SN (Subjective Norms) positively influences the consumer's intention to shop through m-commerce

H10: SN (Subjective Norms) positively influences the consumer's perceived ease of usage

Conceptual Model

Figure 1 (Theory of Planned Behaviour)

The conceptual model adopted for this study is grounded in the theory of planned behaviour and is presented in Figure 1. This model elucidates that subjective norms (SN) is an antecedent that influence perceived ease of use (PESU) and perceived usefulness (PU), subsequently impacting the intention to purchase (PI). Furthermore, the model underscores that perceived ease of use, and perceived usefulness contribute to shaping attitude (ATI), which in turn influences purchase behaviour. The holistic framework presented in this conceptual model encapsulates the complex interplay of subjective norms, perceived ease of use, perceived usefulness, intention to purchase, perceived behavioural control (PBC) and attitude, providing a comprehensive understanding of the factors influencing purchase behaviour within the context of the study.

4. Methodology

The research involved a questionnaire with a Likert scale ranging from 1 to 5. The questionnaire included five constructs, namely, perceived ease of use, perceived usefulness, attitude, subjective norms and intention to use. The constructs of perceived ease of use and perceived usage were adapted from Davis (1989), subjective norm from Yang (2012), and attitude indicators from Kim *et al.* (2014). Table 1 provides a detailed breakdown of the questionnaire's indicators. The research has used the Partial Least Squares Structural Equation Modelling (PLS-SEM) method, as established by Wold (1985), to test the hypotheses within the TAM. This technique aims to maximize the explained variance of the endogenous constructs/indicators while minimizing the overall term,

aligning with the PLS-SEM's goal as articulated by Claudia *et al*. (2014). The PLS-SEM has gained significant recognition in academia (Babin and Boles, 1998). Its suitability for non-normal data, especially when mediation is present in the model, is emphasized by Hair *et al*., (2019). Furthermore, it is noted that PLS-SEM is preferred over covariance-based structural modelling and ordinary least squares (OLS) regressions, particularly in cases of non-normality and small sample sizes (Hair *et al*., 2011; Claudia *et al*., 2014; Putri, 1998). The model is extremely important for understanding the relationships in the structural model (Hair *et al*., 2019; Benitez *et al*., 2010). SmartPLS V4 Software is used for the calculation of the measurement and structural model.

5. Data Collection and Analysis

The questionnaire comprising indicator questions for 7 constructs was collected using responses on a Likert scale (1 = strongly disagree and 7 = strongly agree). The respondents for the survey were selected using the random sampling technique, from the youth aged 15-65 years, from the rural regions in state of Delhi (Lajpat Nagar), National Capital Region (NCR) (Bahadurgarh), Uttar Pradesh and Rajasthan region. Due to the massive Digital India campaign conducted in rural India, there is a need to study the impact of various psychological attributes on usage behaviour of respondents. There is lack of studies that explore the factors impacting usage of m-commerce in rural regions of north India, and this was the reason for selecting this sample. Random sampling allowed us to do unbiased data collection to draw unbiased results and conclusions.

In total, 116 people were interviewed from January to March, 2024, and 5 samples were dropped due to incomplete data or missing values. Only 4 respondents were under 18 years of age, 31 respondents belonged to the age group of 18-25 years, 49 respondents to 26-35 years, 24 respondents to 36-45 years and 8 respondents were above 45 years of age (Figure 2). There were 88 males and 28 females. Regarding educational qualification, 20 had completed secondary and higher secondary, 48 bachelor's degree, 46 master degree and 2 doctorate studies (Figure 3). While cleaning of data, 5 samples were dropped due to missing values.

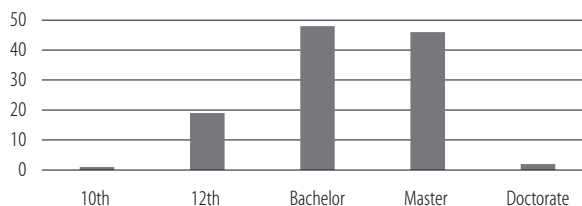**Figure 2: Distribution of Sample by Age Group**
Number of respondents age profile
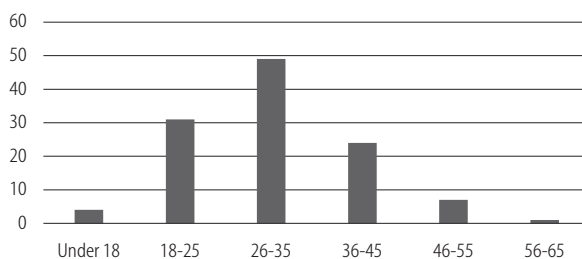
Source: Primary Survey.

Figure 3: Distribution of Sample by Education Level
Number of respondents education profile

Source: Primary Survey.

Figure 2 and 3 give the demographic profile of the respondents. Details of the constructs and indicator questions asked from the sample are given in Table 1.

Table 1: List of Construct and their Corresponding Indicator Questions

Construct	Indicator questions
Perceived ease of use	Learning to use m Commerce is extremely easy for me
	Using m Commerce do not require any effort
	Making purchase of what I want through m Commerce is easy for me
	It is easy to use m Shopping in the way that I want to do
	My interaction with m Shopping is clear and understandable
Perceived usefulness	Using m shopping help me accomplish my purchase more quickly
	Using m shopping do not require mental effort
	Using m shopping make my life easier
	Using m shopping increases efficiency of making purchase
Attitude	Using m shopping is a good idea
	Using m shopping is wise
	Using m shopping is beneficial
	I feel positive about shopping using mobile devices
Personal innovativeness	I am curious about m shopping
	I would like to try my purchase of product and services using m shopping
	I am free to explore m shopping among my peers
	Generally I would like to accept the idea of shopping using m shopping
Subjective norm	People who are important to me would recommend to use m shopping
	People who are important to me would find m shopping beneficial
	People who are important to me would find using m shopping very useful
	People who are important to me think that I should use m shopping
Perceived behavioural control	I have mobile device with internet access for shopping
	I would make purchase using mobile device given the available resources and opportunity
	It would be easy for me to use mobile device for shopping
Intention	I intend to use m shopping in next few months
	I predict that I would use m shopping in next few months
	I plan to use m shopping in next few months

Source: Author's construction.

5.1 Normality test

The demographic profile of the sample, consisting of 111 members, predominantly represents the age bracket of 18 to 55 years (Figure 2). To ensure accurate model prediction, Zhang and Yuan (2018) proposed a web-based calculator test for evaluating multivariate normality in the data. While the univariate data normality is upheld, as indicated by skewness and kurtosis values within the range of -2 to +2, the assessment reveals indications of non-normality in the multivariate distribution. This is illustrated by Mardia's Multivariate skewness (β = 3.22; p >0.00) and multivariate kurtosis (β =56.35; p <0.00) (George and Mallery, 2003; Field, 2009). The presence of non-normality in the data and the absence of distributional assumptions advocate for the adoption of PLS-SEM

analysis. This approach is favoured for its enhanced robustness in situations of abnormality (Hair *et al.*, 2011; Nitzl, 2016; Efron, 1987).

5.2 Common method bias

A potential issue of common method bias arises when data is collected from a single source (Avolio *et al.*, 1991), potentially raising concerns about the validity of the data (Podsakoff *et al.*, 2012). The study employed statistical tests and procedural designs to mitigate the potential influence of common method bias on the data (Reio, 2010). The questionnaire was meticulously crafted to be precise and tailored to a specific demographic. Furthermore, the study utilized the variance inflation factor (VIF) method to assess collinearity and ensure statistical control (Kock, 2015; Podsakoff *et al.*, 2012; Burton-Jones2009; Viswanathan and Kayande, 2012). To verify the accuracy of the responses, a pilot study involving 30 participants was conducted (Hulland, 1999). The results of the VIF analysis indicated that for all latent constructs, the VIF ranged from 1.73 to 3.73. This range, being just above 3.3 and below the conservative threshold of 5, suggests that common method bias does not appear to be a significant issue for the study.

5.3 Assessment of reflective constructs

As specified in the research protocol, an analysis was conducted on the peripheral loadings of indicators. All the external loadings for the five construct indicators exceed 0.7, as reported by (Hair *et al.*, 2010). External model evaluation is the initial phase in evaluating the PLS-SEM model. The process entails assessing the correlation between the indicators and the constructs. The study endeavours to evaluate and assess the model by conducting an assessment of its internal consistency reliability, discriminant validity, convergent validity, and indicator validity. An initial criterion for assessing the reliability of an indicator is the computation of the Cronbach alpha. The value bound for this indicator is between 0 and 1. For early-stage research, values exceeding 0.60 are deemed adequate, while values surpassing 0.70 and greater than 0.80 are deemed significant. Values exceeding 0.90 are considered undesirable, as they indicate that either the indicators being measured are identical or they are strongly correlated. This metric is exclusively concerned with the correlation between the variables. Additional metrics utilized to assess the reliability of the indicators are composite reliability and Rho values. The composite reliability serves as the upper bound on the actual internal consistency and reliability, while Cronbach alpha represents the lower bound. Composite reliability is the more liberal indicator of internal consistency compared to Cronbach's alpha, which is the more conservative. The correlation between the Cronbach alpha and the composite reliability is denoted by the Rho value. The indicator reliability of our model is deemed adequate, as all outer loadings of the reflective indicators exceed 0.708. The constructs demonstrate adequate internal consistency and reliability, as all Cronbach alpha values fall within the range of 0.708 to 0.90. Additionally, the composite

reliability (CR) and Rho value inference statistics are both greater than 0.708 and less than 0.90, respectively. The study employed the average variance explained (AVE) criterion to evaluate convergent validity. To assess convergent validity, the AVE values proposed by Hair *et al.,* (2017) were calculated for each variable. All of the calculated values were above 0.708. Table 2 provides the results of the measurement model.

Table 2: Results of the Measurement Model

Construct	Item	Scale	Loading	AVE	Composite reliability (Rho_a)	Cronbach alpha	Composite reliability (Rho_c)
Attitude	ATT1	REF	0.853***	0.689	0.899	0.849	0.849
	ATT2		0.806***				
	ATT3		0.827***				
	ATT4		0.822***				
Subjective norm	SN1	REF	0.862***	0.605	0.841	0.790	0.841
	SN2		0.734***				
	SN3		0.707***				
	SN4		0.799***				
	PEOU2						
PEOU	PEOU1	REF	0.820***	0.711	0.925	0.898	0.917
	PEOU2		0.860***				
	PEOU3		0.821***				
	PEOU4		0.792***				
PBC	PBC1	REF	0.889***	0.750	0.900	0.833	0.836
	PBC2		0.853***				
	PBC3		0.856***				
PU	PU1	REF	0.906***	0.701	0.892	0.858	0.903
	PU2		0.787***				
	PU3		0.857***				
	PU4		0.791***				
PINT	PINT1	REF	0.924***	0.763	0.850	0.844	0.906
	PINT2		0.843***				
	PINT3		0.851***				

Note: ATT refers to Attitude; SN refers to subjective norms; PEOU refers to perceived ease of usage; PBC refers to perceived behavioural control; PU refers to perceived usage & PINT refers to perceived intention.

5.4 *Discriminant validity*

Discriminant validity, indicates that the latent variables contribute a greater proportion of the variance explained by the indicator variables than is shared with other constructs. This method emphasizes that the AVE is evaluated in terms of squared correlation with other model constructs. Discriminant validity

Table 3: Results ofFornell and Larcker Criterion

	ATT	PBC	PEOU	PINT	PU	SN
ATT						
PBC	0.325					
PEOU	0.541	0.615				
PINT	0.418	0.459	0.555			
PU	0.402	0.456	0.600	0.295		
SN	0.314	0.305	0.515	0.269	0.486	

Note: ATT refers to Attitude; SN refers to subjective norms; PEOU refers to perceived ease of usage; PBC refers to perceived behavioural control; PU refers to perceived usage & PINT refers to perceived intention.

was assessed utilizing the Heterotrait-Monotrait Ratio (HTMT) and the Fornell and Larcker criterion (Fornell and Larcker, 1981). By the criterion proposed by Fornell and Larcker (1981), the square root of AVE is greater than the correlation of the construct in question with the remaining constructs. Therefore, discriminant validity is not an issue with the

Table 4: Heterotrait Monotrait Ratio Results

	ATT	PBC	PEOU	PINT	PU	SN
ATT	0.830					
PBC	0.274	0.866				
PEOU	0.480	0.540	0.843			
PINT	0.354	0.389	0.485	0.873		
PU	0.356	0.402	0.551	0.260	0.837	
SN	0.288	0.270	0.467	0.248	0.415	0.778

Note: ATT refers to Attitude; SN refers to subjective norms; PEOU refers to perceived ease of usage; PBC refers to perceived behavioural control; PU refers to perceived usage & PINT refers to perceived intention.

data. All HTMT values exceed the threshold of 0.85, indicating that the data do not contain any discriminant validity issues. Table 3 and 4 provide the results of data analysis.

5.5 Assessment of structural model

After testing the reliability and validity of the measurement model, the next step is to analyse the structural model to validate the hypotheses (Hair *et al.*, 2017). Further, the VIF (Variance Inflation Factor) was calculated to test the multicollinearity of the model. The results show that all the tolerance values are below the threshold value of 5.

The conceptual model

The conceptual model generated through the analysis using the PLS SEM model establishes along with the results of the measurement model and the structural model are given in Figure 4.

Figure 4: Results of the Measurement Model and the Structural Model Using the Pls Sem Method
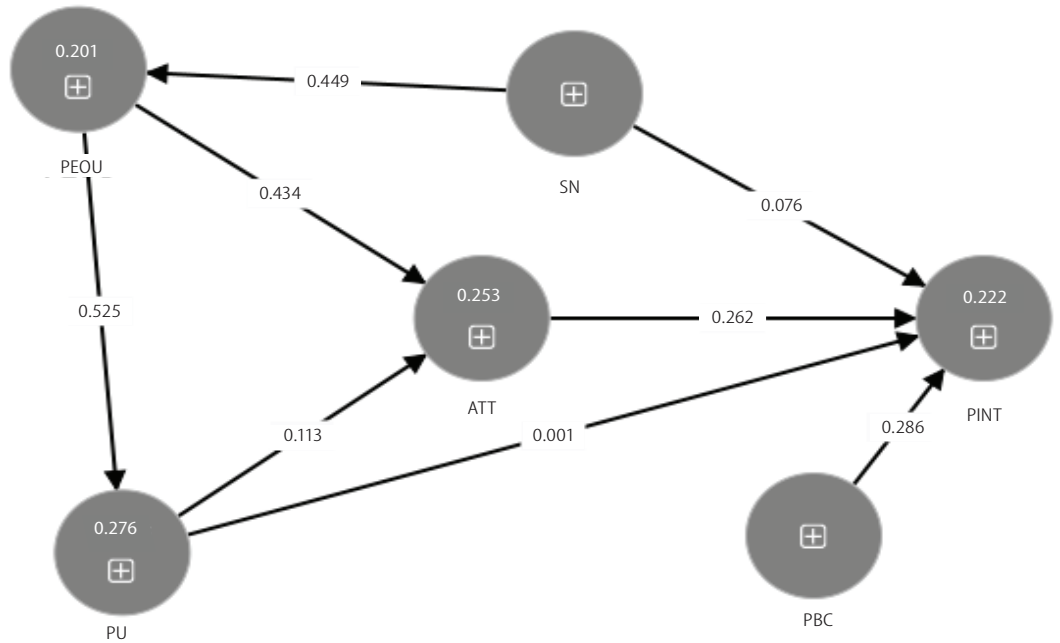
Results for the hypothesis testing for the direct effect

Results for the hypothesis testing are given in Table 5.

H1: Perceived ease of use (PEOU) has a positive influence on purchase intention through attitude towards m-commerce: Results show that the perceived ease of usage has a positive impact on the purchase intention among the rural villagers through the m-commerce (β_1 = 0.126; t = 1.892; p<0.000).

H2: Perceived usage (PU) has a positive influence on purchase intention through m-commerce: Results indicate that the perceived usage has no impact on the purchase intention among the rural villagers through m-commerce (β_2= 0.051; t=0.543; p<0.000).

H3: Perceived ease of usage (PEOU) has a positive influence on perceived usage (PU): Analysis indicate that the perceived ease of usage has a positive impact on the perceived usage of the m-commerce in India (β_3= 0.551; t = 9.376; p<0.000).

Table 5: Hypothesis testing

	Coefficient	T Statistics
PEOU – PINT	0.126***	1.892
PU – PINT	0.051	0.543
PEOU-PU	0.551***	9.376
ATT-PINT	0.240***	2.330
PBC – PINT	0.290***	3.357
SN-PINT	0.224***	4.904
SN-PEOU	0.467***	7.463
PEOU-PU-PINT	0.011	0.201
PEOU-ATT-PINT	0.098***	1.958
PU-ATT-PINT	0.031	1.145
SN-PEOU-ATT	0.258***	5.376
SN-PEOU-ATT-PINT	0.046***	1.799

Note: ATT refers to Attitude; SN refers to subjective norms; PEOU refers to perceived ease of usage; PBC refers to perceived behavioural control; PU refers to perceived usage and PINT refers to perceived intention.

H4: Consumer attitudes positively influence intention to adopt m-commerce: Results show that the consumer attitude have a positive impact on purchase intention (β_4= 0.240; t = 2.33; p>0.000).

H5: Perceived behavioural control has a positive influence on purchase intention: It is established that the perceived behavioural control has positive influence on purchase intention (β_5= 0.290; t = 3.357; p<0.000).

H6: Subjective norms have positive impact on purchase intention: Results establish that the subjective norms have positive impact on the purchase intention through m-commerce (β_6 = 0.467; t = 7.463; p<0.000).

H7: Perceived usage mediates the relationship between the perceived ease of usage and purchase intention: The analysis of the data establishes that the perceived usage mediates the relationship between the perceived ease of usage and purchase intention (β_7= 0.011; t = 0.201; p<0.000).

H8: Attitude mediates the relationship between the perceived ease of usage and purchase intention: Results indicate that attitude mediates the relationship between the perceived ease of usage and purchase intention (β_8=0.031; t=1.145; p<0.000).

H9: Perceived ease of usage mediates the relationship between subjective norm and attitude: Perceived ease of usage mediates the relationship between the subjective norms and attitude (β_9=0.258; t = 5.376; p<0.000).

H10: Perceived ease of usage and attitude serially mediate the relationship between the subjective norms and purchase intention: Results show that the perceived ease of usage and attitude serially mediate the relationship between the subjective norms and purchase intention.

6. Conclusion

Beliefs of a society and societal norms play an important role in motivating people to purchase. The social values give social identity to a group, and as the conflict theory substantiates, the difference in social values lead to conflict and separation within a homogenous set of people. As revealed by the findings reported in this paper, beliefs of a society positively influence purchase intention. And people, who have positive disposition towards the subjective norms that have positive influence on purchase intention, are more likely to perceive the m-commerce as easy to use. This implies that if the society believes that using m-commerce is a favourable trait, the user finds it easy to use m-commerce. If m-commerce is perceived easy to use, simple and user friendly, the users have higher intention to use m-commerce. Contrary to the theoretical premise, the perceived usage or utility directly does not lead to purchase, rather it is the attitude or perceived ease to use that leads to purchase. Results also show that the attitude (that is, mental disposition of the person) and perceived behavioural control (that is, disposition to control the ecosystem) lead to purchase intention. Perceived ease of usage, perceived behavioural control and attitude have a direct impact on usage of m-commerce.

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The Role of NBFC-MFIs in Enhancing Financial Inclusion

– S N Tripathy*

The microfinance sector in India has evolved into a vital force for inclusive economic growth, empowering millions in rural and underserved areas. The consistent growth, coupled with responsible lending practices, showcases the sector's resilience and its pivotal role in driving financial inclusion and empowerment.

Abstract

Over the past three decades, India's microfinance landscape has transformed significantly. Initiated by National Bank for Agriculture and Rural Development (NABARD) in 1992, microfinance aimed to empower self-help groups (SHGs) with non-governmental organisation (NGO) support. The sector expanded, notably post-2005, with the emergence of microfinance institutions (MFIs) and their transition into non-banking financial companies (NBFC)-MFIs around 2015. By 2023, the industry achieved remarkable growth, covering 718 districts and serving over seven crore low-income households. With an impressive 21% credit growth in 2022-23, NBFC-MFIs play a crucial role in financial inclusion and micro-enterprise development, contributing to economic growth and societal equity.

The data reveals significant progress in financial inclusion within aspirational districts, marked by increased borrower penetration, disbursements, loan portfolio diversification and reduced delinquency rates. Digital technology adoption in microfinance, including the use of mobile payment technology, reduces operational costs, allowing for automated processes and cost savings. It also enables lower interest rates, expands outreach, enhances financial inclusion by offering tailored products and improves credit assessments.

1. Introduction

The exorbitant cost of credit from traditional money lenders, coupled with insufficient support from institutional credit sources and the neglect of mainstream banking institutions towards individuals with low incomes, has paved the way for the emergence of microfinance. As a critical tool for financial inclusion, microfinance seeks to bridge the gap by providing

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essential financial services to those deemed unfit by conventional banking networks (Tripathy, 2023). This becomes particularly crucial in delivering affordable banking and credit services to individual borrowers and the financially marginalised poor. What sets microfinance apart is its innovative mechanism of group lending, primarily facilitated by self-help groups (SHGs), a unique approach that is both effective and intriguing (Tripathy, 2015).

Microfinance has proven to be a powerful force in fostering entrepreneurship and alleviating poverty, especially in rural and remote areas (Tripathy, 2016). Through offering financial tools tailored to the unique needs of underserved communities, MFIs empower individuals to engage in income generating activities, breaking the cycle of poverty. The emphasis on group lending provides financial assistance and promotes a sense of community and mutual support, contributing to the overall economic development of these marginalised regions (Tripathy, 2017). In the face of traditional banking constraints, microfinance has emerged as a beacon of hope for those excluded from formal financial system. Its impact extends beyond economic empowerment, as it plays a pivotal role in fostering social cohesion and uplifting the standard of living for individuals and communities that conventional financial institutions have long overlooked.

Over the past three decades, the microfinance landscape in India has witnessed significant transformations. In its inception in 1992, the National Bank for Agriculture and Rural Development (NABARD) played a pivotal role in launching microfinance, channelling funds directly to SHGs of people with low incomes, with non-governmental organisations (NGOs) facilitating the formation of these groups. Microfinance boosts micro-enterprise growth, lifting sales, profits and asset values, enhances employment opportunities and bridges societal divides.

2. Objectives of the Study

1) To examine the performance of different segments within the microfinance industry and the growth of aspirational districts[1] from June 2022 to June 2023.
2) To investigate how the adoption of technology, especially information and communication technology (ICT), and the interplay between technology adoption and enterprise development in microfinance has influenced the sustainability and efficiency of MFIs.

3. Microfinance Institutions

Around 2005, a new phase unfolded with the emergence of MFIs, providing direct financing to SHGs and entering direct competition with traditional banks. The period from 2005 to 2015 saw the ascendancy of MFIs as the dominant mode for microfinance. However, by 2015, a noteworthy shift occurred, as many MFIs transformed into non-banking financial companies (NBFC-MFIs), driven by profit motives. These entities

are formally registered under the Companies Act with the Ministry of Corporate Affairs and regulated by the Reserve Bank of India (RBI), marking a departure from the more informal structures of NGOs/MFIs (Sangwan, 2023).

As of February 2023, the *Bharat Microfinance Report* (BMFR) reported approximately 213 active MFIs and 99 NBFCs registered with the RBI. These institutions have extended their reach to 718 districts, while the credit growth of NBFC-MFIs during the fiscal year 2022-23 stood at an impressive 21%, surpassing the 15.9% growth recorded by traditional banks. This highlights the evolving dynamics and the increasing role of formalised financial institutions in microfinance.

According to the *India Microfinance Review 2023,* the microfinance sector has grown substantially, adding 80 lakh new women clients in 2022-23. This has elevated the total number of low-income women clients to 6.64 crore across 718 districts, supported by 12.96 crore active loans as of March 2023. Remarkably, the microfinance industry serves 6.64 crore low-income households, positively impacting around 30 crore lives across.

In 2022-23, the industry registered robust growth in portfolio outstanding and improvements in portfolio quality compared to the previous fiscal year. The total portfolio of the microfinance industry reached ₹3,48,339 crore as of March 31, 2023, involving various regulated entities such as NBFC-MFIs, banks, small finance banks (SFBs), and NBFCs under the MFI model. This consistent growth trend over the last five years, except for the period affected by the COVID-19 pandemic, indicates responsible and sustainable expansion. The sector has grown over 20 times, reaching ₹3.48 lakh crore in March 2023 from ₹17,264 crore in March 2012 (The Hindu Business Line, 2023, September 7).

Microfinance Industry Network (MFIN), the overarching organisation representing MFIs across the country, disclosed in its report that 211 organisations were actively engaged in the microfinance sector as of March 31, 2023. According to the findings, NBFC-MFIs emerged as the predominant contributors, constituting the largest share of 39.7% in the industry's overall portfolio among regulated entities (ibid.).

4. Non-Banking Financial Company-Microfinance Institutions

The NBFCs are emerging as key players in India's financial sector, offering diverse financial services to individuals and businesses. While they cannot accept deposits like traditional banks, NBFCs provide crucial credit and financial services that help fuel economic growth and promote financial inclusion.

The NBFCs play a crucial role in providing credit to segments of the population that may not have access to traditional banking services. They often have less stringent eligibility criteria than banks, making credit more accessible to a broader range of individuals and businesses. They are crucial in extending financial services to underserved and unbanked segments of society. They provide credit to individuals and businesses that

may need access to traditional banking services, helping them to meet their financial needs, improve their standard of living, stimulate economic growth, and promote entrepreneurship. They also offer various services, including lending, microfinance, investment, asset management, etc.

These loans may be for various purposes, such as personal, business, vehicle, home, etc. Moreover, NBFCs often offer innovative financial products and services that cater to specific customer needs, further enhancing their role in the financial sector. Some NBFCs offer insurance products such as life insurance, health insurance, and general insurance. They act as intermediaries between insurance companies and customers, helping customers choose the right insurance products.

Several NBFCs have embraced technology to streamline their operations and enhance customer experience. Digital lending platforms, online payment systems and artificial intelligence (AI)-driven credit assessment tools are examples of how technology is transforming the NBFC sector in India. The regulatory environment in India has been favourable for NBFCs, encouraging their growth and expansion. The RBI has implemented measures to promote financial inclusion and stability in the sector, providing NBFCs with a conducive environment. The NBFCs often offer complementary services to traditional banks, filling gaps in the financial ecosystem. They specialise in providing loans for specific purposes, such as vehicle financing, housing loans, or microfinance, complementing the services offered by commercial banks. They offer payment services such as electronic fund transfers, mobile payments and online payment gateways, and help to facilitate cashless transactions and improve the efficiency of financial transactions. They finance the purchase of physical assets such as machinery, equipment, vehicles, etc. They provide leasing or hire purchase services to individuals and businesses looking to acquire assets, and also offer investment services such as portfolio management, investment advisory and wealth management. They provide long-term financing for infrastructure projects such as roads, bridges, power plants, etc., and play a crucial role in supporting the country's infrastructure development. Over the years, NBFCs have built a strong track record of financial performance and governance, which has increased investor confidence in the sector. This has enabled NBFCs to raise funds through various channels, including equity, debt and securitisation.

The NBFCs often cater to the financing needs of small and medium-sized enterprises (SMEs). These businesses play a vital role in the economy by generating employment, fostering economic growth, and supporting expansion. With a customer-centric approach, they play a significant role in the housing finance sector by providing loans for purchasing homes and construction activities. This helps individuals fulfil their dream of homeownership and contributes to the growth of the real estate sector.

The NBFCs bring innovation and competition to the financial sector, driving banks to improve their services and offer more competitive products. They can tailor their

products and services to meet the specific needs of their customers, including those in underserved or niche markets. This flexibility allows them to quickly adapt to changing market conditions and customer preferences, providing them with a broader range of choices and better services.

5. Transformative Shifts in the NBFC Landscape

In 2023, the RBI's strategic regulatory actions induced pivotal shifts in the NBFC landscape, necessitating enhanced supervision and revised risk weights. Information technology (IT) governance directives introduced essential cybersecurity measures to ensure operational resilience in the increasingly digital financial ecosystem.

The NBFC sector, particularly FinTech firms, now dominates the small personal loan market, disbursing 82% of these loans. However, they account for only 30% of the total value of personal loans, focusing primarily on smaller amounts. Retail credit has surged to become India's largest credit segment, primarily driven by the expansion of personal loans. Despite this growth, a significant portion comes from subprime borrowers, with 40% holding five or more loans. Moreover, 25% of loans under ₹50,000 are non-performing assets (NPAs), exacerbating the sector's NPA rate due to the high-risk customer base (Economic Times, September 30, 2023).

Between September 2022 and 2023, NBFC credit growth soared by 20.8%, propelled by a 32.5% increase in personal loans and a 43.7% rise in agricultural lending. Over the past four years, personal loans have grown at an impressive compound annual growth rate (CAGR) of 33%, outstripping overall credit growth. This expansion led to a 2.3% increase in personal loan market share and a rise in agricultural loan market share to 1.9% in September 2023. However, recent adjustments in risk weights for retail loans may impact future growth trajectories (News18, August 10, 2023).

6. NBFCs' Funding and Performance Dynamics

As of September 2023, borrowings remained the primary funding source for NBFCs. Compared to September 2022, NBFCs' reliance on borrowing increased by 1.1%, reaching 62.1%. Concurrently, the share of share capital and reserve and surplus slightly declined to 27.9% from 28.5%. Banks and debentures were the primary sources of funds within borrowings, with NBFCs raising 25.0% through bank borrowing and 19.6% through debentures by September 2023 (ibid.).

The RBI conducted stress tests on 146 large NBFCs to assess their credit risk resilience across three scenarios: baseline, medium, and high risk. As of September 2023, these NBFCs maintained a 24.4% capital adequacy ratio and a 3.1% gross NPA (GNPA) ratio. In the baseline scenario, the GNPA ratio was 3.8%, rising to 5% in the medium-risk scenario and 6.3% in the high-risk scenario. The number of NBFCs failing to meet the

15% regulatory capital adequacy standard increased to 9 under the baseline scenario, 15 under medium risk, and 21 under high risk (ibid.).

In the first half of 2023-24, NBFCs experienced a drop in their GNPA ratio across all sectors, decreasing to 4.6% in September 2023 from 5.9% in September 2022. Personal loans had the lowest GNPA ratio at 3.6%. However, private NBFCs faced a higher GNPA ratio of 12.5% in industrial advances, constituting 21.6% of the total NBFC sector GNPA. Despite this, all sectors improved their GNPA ratios by September 2023, with the services sector witnessing the most significant reduction to 8.1% (Economic Times BFSI, August 7, 2023).

In Q2 of 2023-24, top NBFCs managed assets worth ₹7,65,753 crores, up 18.2% from ₹6,47,855 crores in Q2 2022-23. Capri Loans led a 59.1% growth in assets under management (AUM) to ₹12,358.5 crores, followed by Satin Credit Care and Bajaj Finance with 38.6% and 32.9% growth, respectively. The top NBFCs also saw a notable increase in their average return on assets (ROA), rising by approximately 0.5% to around 3.5% in Q2 2023-24 (Economic Times BFSI, October 23, 2023).

The average capital adequacy ratio for top NBFCs improved by 1.7%, reaching 29.7% from 28.0% in Q2 2022-23. PNB Housing Finance saw the most significant increase, rising by 6.3% to 30.4%, followed closely by Capri Loans with a 6.2% improvement. Furthermore, most of the NBFCs saw an improvement in their GNPA ratio during Q2 2023-24. PNB Housing Finance led with a 4.3% improvement compared to Q2 2022-23, followed by REPCO with a 1.6% improvement. Moreover, Indian banks' GNPA ratio fell to 3.2% by September 2023 (ibid.).

7. Bank Credit Exposure to NBFCs and Microfinance Growth

Banks' credit exposure to NBFCs stood at ₹15.2 lakh crore in December 2023, indicating a 15.1% year-on-year (y-o-y) growth. This growth rate is notably slower than in November 2023, and the average growth is approximately 27% for the prior 12 months. Moreover, according to a Care Edge report, the growth rate of advances to NBFCs has fallen below the overall bank credit growth, marking a trend last seen in March 2022 (CARE Ratings, December 2023).

In terms of portfolio outstanding, the microfinance industry grew by 24% in June 2023 over June 2022 and witnessed a quarter-on-quarter growth of 11% in June 2023 over March 2023. The NBFCs experienced the highest y-o-y growth of 51% in June 2023 over June 2022.

The NBFC-MFIs witnessed the highest growth of 48% in disbursement amount and 36% in loan disbursal from April 2023 to June 2023. All delinquency buckets have declined in June 2023 compared to June 2022. As of June 30, 2023, the portfolio outstanding for aspirational districts is ₹45,145 crores, growing by 22% in June 2023 over June 2022. Loans worth ₹48,396 crores were disbursed in aspirational districts from July 2022 to June 2023 (Equifax, October 2023).

As of June 2023, the top 10 states contributed 83% towards the outstanding portfolio. Regarding disbursement amount, Uttar Pradesh has witnessed the highest y-o-y growth of 37% during July 2022 to June 2023.

Table 1: Composition of NBFCs' Funding Sources: 2020-2023 (in %)

NBFCS' Source of Funds	March 2020	March 2021	March 2022	March 2023
Share capital, reserves and surplus	24.2	26.5	29.1	28.5
Total borrowings of which	66.4	63.3	60.9	62.3
i) Borrowing from banks	20.3	19.9	20.4	22
ii) CPs subscribed by banks	0.5	0.4	0.4	0.3
iii) Debentures subscribed by banks	2.5	3	2.8	2.8
Total from banks	23.2	23.3	23.6	25.2
Others	9.3	10.2	10	9.2

Source: RBI, Financial Stability Report, 2023.

According to estimates in the *Bharat Microfinance Report* (BMR), the average operating cost of NBFC-MFIs is about 7%, driven by extensive field monitoring. The corresponding financial cost averages around 12% and varies across different categories of MFIs from 10% to 14%. However, these NBFCs need help to accept demand deposits and encounter higher borrowing rates, especially for smaller and unrated MFIs (Sangwan, 2023).

Interestingly, it is noteworthy that despite the RBI's removal of the interest rate ceiling on non-collateral loans by NBFCs, including SFBs, non-profit companies and banks from 1 April 2022, the interest charged by these entities ranges between 24% and 29% per annum. This move, coupled with an increase in the annual family income ceiling to ₹3 lakh for collateral free loans, has resulted in a substantial rise in the clientele of NBFC-MFIs. From March 2020 to March 2023, NBFCs saw an increase in share capital and reserves and surplus from 24.2% to 28.5%, while total borrowings decreased slightly from 66.4% to 62.3%. Bank borrowings rose from 23.2% to 25.2%. This is reflected in the sector's growth of 21%, surpassing the 15.9% growth in the portfolio of traditional banks (RBI, 2022).

Due to the elevated financial and operating costs NBFCs face, the present interest rates they levy remain high. As per the Base Microfinance Regulations (BMFR) 2023, the effective yield of selected 82 MFIs during 2022-23 was 20.65%, showing an improvement from the previous year's 16.50%. The estimated income of 172 MFIs, according to the BMFR 2023, rose to ₹27,811 crore, reflecting a significant 43% increase over the previous year's revenue of ₹19,447 crore. Surprisingly, despite commercial banks (CBs) having an average financial cost of 6% on deposits from the public, they charge around 25% interest on unsecured joint liability group (JLG) loans. This higher interest income from microfinance loans might have played a role in the improved performance of CBs, indicating that microfinance has evolved into a profitable business under the guise of financial inclusion (RBI, 2023).

The removal of the lending rate cap by the RBI has empowered MFIs to engage in risk-based pricing, contributing to the increase in net interest margins (NIMs). The NIMs of NBFC-MFIs rose to 10.1% in 2022-23, up from 9% in 2020-21 and 2021-22. Despite credit costs declining from the peak in 2020-21, they remain higher than pre-COVID levels. The industry expects improved NIMs, resulting in a rise in return on total assets (RoTA)

to about 3.8% for 2023-24, supported by controlled credit costs of around 2.5% for the same period. While asset quality is improving, it still lags pre-COVID levels due to additional slippages from the restructured portfolio. Regarding capital structure, NBFC-MFIs have successfully raised about ₹3,000 crore of equity in 2022-23, indicating renewed interest from investors.

However, potential risks loom over the industry, including increasing customer indebtedness, rising average ticket size, and a shift from the JLG model to individual loans, which poses the risk of overleveraging. Furthermore, the sector is highly susceptible to event-based risks such as political and geographical uncertainties and natural calamities.

At the regional level Bihar, Tamil Nadu, Uttar Pradesh, Karnataka, and West Bengal are the top five states in terms of assets under management, with Bihar leading the sector with around 15% market share as of 31 December 2022 (Kinara Capital, 2024).

While MF through NBFC-MFIs has commendably extended credit to low-income individuals, particularly women (98%) in remote areas, regional disparities are evident. The Southern (32%) and Eastern (28%) regions receive more attention than the Northern (9%), Western (9%), and Northeast (3%) regions, posing a concern. Another issue is the lack of comprehensive data on indebtedness, as the SHG lending of around ₹2 lakh crore is not adequately captured. Moreover, smaller MFIs face high borrowing costs, justifying higher interest rates. The unprecedented growth in unsecured loans has prompted the RBI to increase the risk provisioning on unsecured retail lending from 100% to 125% for NBFCs and banks, effective November 16, 2023. However, it is essential to note that this adjustment excludes housing, education and vehicle loans, reflecting the central bank's concern and regulatory response to the evolving dynamics within the microfinance sector.

From Table 2, we can infer several trends in the microfinance industry from June 2022 to June 2023. The total loan outstanding in the microfinance industry grew by 24% year-over-year, indicating robust growth and demand for microfinance services. Banks showed modest growth with a 4% increase in loans outstanding, while SFBs saw a significant 26% y-o-y growth, highlighting their increasing role in the sector. The NBFC-MFIs experienced the highest growth rate at 46%, indicating substantial expansion in their lending activities, and NBFCs also exhibited strong growth at 24%, reflecting

Table 2: Agency -WiseLoan Outstanding in Microfinance Industry (₹ in crore)

Particulars	June 2022	September 2022	December 2022	March 2023	June 2023	Y-o-Y Growth (%)
Banks	98,445	98,001	95,923	104,984	102,004	4%
SFBs	44,810	45,046	46,878	52,386	56,296	26%
NBFC-MFIs	95,671	102,129	114,776	129,414	140,026	46%
NBFCs	25,232	23,175	26,506	28,850	31,278	24%
Not for Profit MFIs	2,383	2,999	3,154	3,446	657	-72%
Total Industry	266,541	271,350	287,237	319,080	330,261	24%
Q-o-Q growth rate (%)	—	2%	6%	11%	4%	—

Source: Microfinance pulse report, Vol XVIII – October 2023, p.7.

their expanding presence. In contrast, the not-for-profit MFIs showed a dramatic decline of 72%, suggesting significant challenges or a shift away from these institutions. Quarterly growth rates varied, with a peak of 11% from December 2022 to March 2023 and a more modest 4% from March 2023 to June 2023, illustrating the dynamic nature of the microfinance industry and the differing growth rates among its various segments.

Table 3 provides data on the growth of aspirational districts[1] from June 30, 2022, to June 30, 2023. The number of active borrowers in aspirational districts has grown significantly, 24%, from 9,867,000 in June 2022 to 12,229,000 in June 2023. This indicates an increasing outreach and accessibility of financial services in these districts.

Table 3: Some Aspects of Credit Flow in Aspirational Districts (June 2022- 23)

Aspirational Districts Growth Particulars	30 June 2022	30 June 2023	Growth %
Active Borrower Penetration ('000)	9,867	12,229	24%
Disbursement Amount (₹ in crore)	41,025 *	48,396**	18%
Active Loans ('000)	15,031	17,102	14%
Portfolio Outstanding (₹ in crore)	37,123	45,145	22%
***30+ Delinquency	3.98%	1.69%	—
***90+ Delinquency	1.48%	0.82%	—

Disclaimer: *Disbursement July 2021 to June 2022. **Disbursement July 2022 to June 2023. ***Delinquencies are calculated basis Portfolio Outstanding (POS). In the table, "30+ Delinquency" and "90+ Delinquency" refer to the percentages of loans that are delinquent by 30 days or more and 90 days or more, respectively. Source: Microfinance Pulse Report, Vol XVIII – October 2023.

The disbursement amount has increased by 18% from ₹41,025 crore in June 2022 to ₹48,396 crore in June 2023. This suggests an enhanced flow of credit to individuals and businesses within the aspirational districts, potentially driving economic activities and growth. Active loans have grown by 14%, from 15,031,000 in June 2022 to 17,102,000 in June 2023. This indicates a higher demand for loans within these districts for various purposes such as entrepreneurship, education, or housing. The portfolio outstanding has increased by 22%, from ₹37,123 crore in June 2022 to ₹45,145 crore in June 2023 (Equifax, October 2023).

The 30+ and 90+ delinquency rates have decreased significantly, with the 30+ delinquency dropping from 3.98% to 1.69% and the 90+ delinquency reducing from 1.48% to 0.82%. This indicates improved loan repayment behaviour and better credit quality within the aspirational districts. The data indicates significant progress in financial inclusion and credit access within the aspirational districts, marked by rising borrower penetration, increased disbursements, diversified loan portfolios and enhanced delinquency rates.

Active loans have grown by 14%, from 15,031,000 in June 2022 to 17,102,000 in June 2023. This indicates a higher demand for loans within these districts for various purposes such as entrepreneurship, education and housing. The portfolio outstanding has increased by 22%, from ₹37,123 crore in June 2022 to ₹45,145 crore in June 2023. This demonstrates a substantial growth in the total amount of money loaned, indicating that financial institutions are more confident in the economic potential and creditworthiness of borrowers in these districts.

Furthermore, digital lenders, particularly members of the Digital Lenders Association of India (DLAI), made significant strides, contributing 19.8% to the volume of loan

originations in 2022-23. While loans under ₹1 lakh remained significant in volume, a noticeable shift towards higher ticket-size loans indicated a growing dominance of NBFCs in originations. This shift emphasises the evolving landscape of consumer lending, marked by resilience and adaptation post-pandemic.

8. Empowering Microfinance through Digital Innovation

Traditional MFIs often grapple with high operational costs associated with physical branches, paper-based record-keeping and manual loan processing. However, adopting digital technology presents an opportunity for these institutions to streamline operations and significantly reduce costs. Digital platforms enable automated processes, and thereby, reduce the need for physical infrastructure and administrative staff, resulting in cost savings that can be passed on to borrowers through lower interest rates or used to expand outreach.

Despite the potential benefits, challenges on the supply side persist, including products not tailored to the informal sector, inflexible and document-intensive processes, and limitations in technology acceptance and availability. To bridge the gap, the prevailing financial inclusion delivery models often converge on handheld devices equipped with wireless connectivity, biometric authentication and micro-printers, facilitating last-mile delivery of financial services.

Transaction costs represent a critical aspect of mobile payments technology adoption, given their inherent affordability compared to traditional banking and money transfer mechanisms. The theory of technology acceptance model (TAM), a widely recognised framework in technology adoption, sheds light on how individuals embrace and employ new technologies, including mobile payment procedures, to accelerate financial inclusion and enhance operational efficiency (Tripathy, 2019).

Digital identity and credit scoring systems enabled by AI empower MFIs to make more accurate lending decisions, unlocking financial opportunities for individuals excluded from the traditional financial system. The AI integration addresses challenges such as scarce customer data and creditworthiness assessment by efficiently collecting and analysing vast amounts of data, enabling informed decision-making and forecasting future trends, especially in agriculture. Machine learning (ML) revolutionises the assessment process for rural and poor individuals seeking microcredits, serving as a decision-support tool to mitigate credit risks. The ML models meticulously evaluate vital financial variables, optimising decision-making and empowering advisors to serve vulnerable populations. The Aadhaar biometric ID programme facilitates financial inclusion by providing individuals with a unique and secure identity linked access to micro-accounts. Moreover, Fintech firms in India offer a wide range of services, including payments and transfers and personal finance services, leveraging technology to deliver innovative financial solutions online, mainly through ubiquitous smartphones.

The SFBs and NBFC-MFIs have recorded substantial growth. The SFBs experienced a remarkable y-o-y growth of 26%, while NBFC-MFIs saw an even higher growth rate of 46% during the same period. Not-for-profit MFIs experienced significant fluctuations, ending with a negative y-o-y growth of -72%. This erratic performance indicates the need for further investigations into the factors contributing to such fluctuations (Microfinance Pulse Report, 2024, March)

The microfinance industry witnessed a steady growth of 24% from June 2022 to June 2023. This growth indicates a positive industry trend despite variations in individual segments. While there have been fluctuations in quarter-on-quarter growth rates, there is an overall positive trend. The industry experienced a significant 11% quarter-on-quarter growth rate from March 2023 to June 2023, indicating a solid performance. The micro-finance industry demonstrates resilience and growth across segments, with SFBs and NBFC-MFIs leading, yet not-for-profit MFIs struggle, requiring attention due to significant negative growth.

Table 4 analyses the portfolio growth across districts; Uttar Pradesh and Bihar exhibit the highest compound annual growth rate (CAGR) from April 2020 to March 2021, with 16.6% and 13.2%, respectively. Uttar Pradesh maintains robust growth, peaking at 41.3% from April 2022 to March 2023. Conversely, West Bengal struggles, showing significant declines with a -13.1% and -5.0% y-o-y growth for the same periods. Southern states like Tamil Nadu and Kerala start with lower growth but experience substantial increases by March 2023. Maharashtra and Rajasthan demonstrate consistent performance, reflecting steady growth across all periods.

Table 4: Micro-CreditGrowth in Top 10 States (in %) 2020-23

State	Region	CAGR April 2020 to March 2022	year-on-year (y-o-y) growth		
			April 2020 to March 2021	April 2021to March 2022	April 2022 to March 2023
Bihar	East and NE	13.2	11.0	22.1	37.3
Tamil Nadu	South	7.5	–1.3	14.7	26.9
Uttar Pradesh	North	16.6	18.0	29.4	41.3
West Bengal	East and NE	0.3	23.0	–13.1	–5.0
Karnataka	South	10.5	9.2	16.0	29.9
Maharashtra	West	10.5	10.9	18.2	25.7
Madhya Pradesh	Central	9.3	15.6	10.5	22.3
Odisha	East and NE	8.7	11.7	13.3	20.1
Rajasthan	West	11.2	20.0	13.7	24.5
Kerala	South	7.3	3.2	13.5	21.4

Source: India Brand Equity Foundation (IBEF) reports.

9. Conclusions and Policy Implications

The NBFC-MFIs demonstrated their substantial role as the primary providers of micro-credit, emphasising their commitment to fostering financial inclusion and empowerment. The outstanding loan amount extended by these NBFC-MFIs reached an impressive

₹1,38,310 crore, as reported by *Economic Times* on November 16, 2023.[2] This substantial figure highlights their significant presence and dedication to improving access to financial resources for marginalised communities and promoting economic empowerment on a large scale.

The NBFCs are pivotal in India's financial sector. They provide essential credit and financial services to underserved individuals and businesses, thus, promoting economic growth and financial inclusion. By embracing technology and offering diverse services, NBFCs enhance customer experiences, support infrastructure projects, and complement traditional banking by catering to specific market needs.

Collaborative efforts involving cooperative banks are suggested to moderate interest rates and enhance financial inclusivity. The solid financial results of banks and NBFCs provide room for interest rate reduction, with banks taking the lead in this regard.

Government and financial institutions should prioritise aspirational districts for targeted support and investment initiatives to sustain and enhance the growth trends observed. This includes tailored financial products, capacity-building programmes, and infrastructure development to boost economic activities and entrepreneurship further.

Policymakers should analyse the regional disparities to develop region-specific strategies for fostering microfinance growth. States showing declining trends, such as West Bengal, require targeted interventions to address underlying challenges and stimulate microfinance activities. Conversely, states like Uttar Pradesh and Bihar, exhibiting robust growth, can be models for effective policy implementation in other regions.

Integrating digital innovation in microfinance holds immense potential to empower individuals, especially from marginalised communities, by enhancing operational efficiency, reducing costs, and expanding financial inclusion through AI, ML, and Fintech solutions.

NOTES

1   Aspirational district, currently numbering 117, are identified by NITI Aayog, Government of India, in January 2018, for improvement to enhance human development index, based on composite indicators like health and nutrition, education, agriculture and water resources, financial inclusion, skill development and basic infrastructure.

2   Available at https://bfsi.economictimes.indiatimes.com/news/nbfc/nbfc-mfis-largest-provider-of-microfinance-report/105253519.

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Digital Rupee: Potential to Transforming the Financial Inclusion Landscape in India

– Amrita Bose*

Access to a wide range of products and services, including formal savings, insurance, and kisan credit card (KCC) loans through digital rupee, in the form of central bank digital currency (CBDC) backed by the union government, could help to meet the needs of the disadvantaged groups and improve the standards of living of the financially excluded.

Abstract

Central bank digital currency (CBDC) is broadly defined as a legal tender in the form of digital currency issued and regulated by a country's central bank that aims to combine the benefits of digital payments with the stability and security of a nation's official currency. Unlike many traditional digital payment systems that typically require individuals to have a bank account to access digital transactions, CBDC transactions would not necessarily require one. Instead, access can be facilitated through digital wallets directly provided by the central bank or through service providers. People may exercise choice to hold digital sovereign money as an alternative to cash which can enable payments and transfers directly in risk-free central bank money, and on a real-time basis. The shift from public fiat money to electronic and private money has opened a plethora of opportunities for boosting digital financial inclusion in the country. Although digital payments are an important aspect of financial inclusion, they are just the first step toward the larger goals. In this commentary, an attempt has been made to understand the intricacies of CBDC, exploring how it works, its various types and the advantages it offers towards more inclusive growth in the Indian context with special focus on the retail market.

1. Introduction

India's financial landscape has undergone major transformation in the recent years. The implementation of the country's digital public infrastructure, which includes Aadhaar (digital ID system), unified payments interface (UPI) (a fast payments system) and digilocker (digital document wallet)

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has revolutionised the financial inclusion landscape. Digital financial inclusion involves the deployment of the cost-saving digital means to reach currently financially excluded and underserved populations with a range of formal financial services suited to their needs that are responsibly delivered at a cost affordable to customers and at the same time sustainable for the providers. Digitisation of banking services is an outcome of the adoption of modern technology. It resulted in the concept of doorstep banking and 24 × 7 banking, which transformed the reach and the spread of the banking service. The digital banking concept so far has been restricted to the digitisation of the systems and procedures, because the currency continues to be in physical form, and is different for each country.

With so many players, mainly fintech companies around and all the banks having their own UPI, the entire small businesses are able to participate in the economy. The goal of a cashless economy, whose feasibility was very uncertain as compared to a 'less cash' or 'cash lite' economy, is not very far. Although a variant of the digital currency in the form of cryptocurrency was introduced as early as 2009 based on the Blockchain technology, it lacked legitimacy in the regulatory framework. The popularity and the global acceptance of the cryptocurrency paved the way for the potential adoption of a central bank digital currency (CBDC). Hence, comprehending the working of the CBDC is essential for understanding the evolving landscape of financial inclusion through digital finance and central banking.

2. CBDC in the Indian Context

The CBDC is broadly defined as the legal tender issued by a central bank in a digital form. A concept note on CBDC was issued by Reserve Bank of India (RBI) on 7 October 2022. The RBI then launched pilot projects of CBDC in both wholesale and retail segments. The pilot in the wholesale segment, known as the digital rupee-wholesale (e₹-W), was launched on 1 November 2022, with its use limited to the settlement of secondary market transactions in government securities. Use of e₹-W is expected to make the interbank market more efficient. The RBI has also rolled out a pilot in the retail version of the CBDC (e₹-R) on 1 December 2022, which is initially limited to 13 banks . The e₹-R is being issued in the same denominations as the paper currency and coins, that are distributed through financial intermediaries, such as banks.

India has adopted a token based intermediary model for issuance of CBDC. Under this model, banking intermediaries distribute CBDCs to the population based on the supply provided by the central bank. Commercial banks and other authorised intermediaries are present as nodes in the distribution tier.

Previously, only banks were offering CBDC service on a pilot basis. However, the proposed inclusion of the non-bank payment system operators (PSOs) by RBI for CBDC distribution, will accelerate its use in the coming days. As reported by RBI, The CBDC (e₹-R) transaction volume crossed 10 lakh in late-December 2023 and the overall

number of transactions touched 2.2 crore since tits launch. The number of participants in the pilot stood at 50 lakh as on April 2024 with 46 lakh people and 4 lakh merchants transacting in CBDC.

3. Digital Currency: A Booster for Financial Inclusion

In a diverse country like India, financial inclusion is a critical part of the development process. Since independence, the combined efforts of successive governments, regulatory institutions and the civil society have helped in increasing the financial inclusion in the country. However, lack of infrastructure, poor connectivity and socio-economic barriers constrain the growth of financial inclusion to the optimum levels (As per RBI reports, India's FI-Index as of March 2023 was 60.1%). So a digital currency that does not require a fully functional bank account, and can work offline, would provide a major boost to financial inclusion in the country.

During the last few years, the government has relentlessly worked for developing a sound digital infrastructure, which has proved to be a game changer for the country. Substantial progress has been made towards financial inclusion based on the pillars of a digital identity in the form of Aadhaar, linking bank accounts with PM-Jan Dhan Yojana, and the penetration of mobile phones (JAM Trinity). The international experience so far shows that countries at the same level of development have taken almost half a century to achieve such a feat. This has provided a strong foundation for digital adoption and digital financial services solutions by banks, non-banking financial companies (NBFCs), insurers as well as fintechs.

The CBDCs can help support microfinance activities such as small loans and savings by providing a secure and accessible digital platform. The CBDC can be designed to support further access to other financial services such as savings, credit and insurance. Access to a wide range of products and services, including formal savings, insurance and credit, could help meet the needs and improve the economic aspirations of the financially excluded.

Enabling payments in the offline mode is imperative for reaching the most disadvantaged groups. Given that CBDCs represent tokens, they are suited to offline transactions. Some financially excluded populations rely on cash because they do not have reliable internet or mobile connectivity, especially in remote areas. The CBDC has the potential to support transactions in a fully offline environment with limited data service availability and mobile connectivity, typically through radio frequency identification, near field communication or bluetooth networking. Safe, secure and low-cost offline payment functionality for CBDC is currently under development and is being designed to manage potential risks of fraud, money laundering and terrorism financing.

The CBDC could be designed to operate on feature phones (non-smartphones) and even stored-value cards. Although smartphone and internet penetration are on the rise,

a significant share of the financially excluded population may still lack access. Less digitally literate populations and those without wide electricity access for charging smartphones may also be more comfortable with feature phones and store-value cards.

The CBDC can take leverage of the newly introduced digital platform available in disbursing kisan credit card (KCC) loans. A pilot on KCC digitalisation was launched by the RBI in September 2022 in select districts of Madhya Pradesh and Tamil Nadu with the objective of providing a platform for frictionless credit delivery to the farmers. The pilot enabled successful disbursal of agricultural loans within a few minutes to farmers by integrating with the digitised state land records database, credit information companies (CICs), satellite data, Aadhaar, e-KYC, etc. One of the unique features of CBDC, which is not present in other digital payments like UPI, is programmability, which would enable the banks to send digital money to the customers and limit its usage to specific merchants. While its usage is limited to the original beneficiary, it becomes interoperable with currency once it is paid to the merchant. For example, cash credit to farmers through KCC for crop related expenses like seeds, fertilizers, pesticides, electricity and diesel charges, etc., can be sent in digital rupee form to the farmers. Once the farmer sends eRupee to the merchant, they would be on a par with cash. The programmability character of CBDCs can streamline direct disbursal of crop loans through KCC on a real time basis, thereby, widening financial inclusion.

4. The Way Forward

Introduction of a new digital currency in the form of CBDC backed by the central government can take leverage of the prevailing current digital payment infrastructure offering a plethora of benefits, which, *inter alia*, include reduction in operational costs involved in physical cash management, fostering financial inclusion, bringing resilience, efficiency and innovation in the payments system, boosting innovation in cross-border payments space, and providing the public with uses that any private virtual currencies could provide without the associated risks.

The Indian regulators, government and fintech authorities have demonstrated the ability to make large scale financial infrastructure roll outs on several occasions. India's CBDC roll out could be a landmark event that could galvanise digital currencies and boost digital financial inclusion in the coming decades.

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Primary Agriculture Credit Societies as Deposit Mobilisation Agents: The Saga of Badgaon Agricultural Service Cooperative Society, Himachal Pradesh

– Dola Singh* and Shivani Sharma**

The linkage between banks and primary agriculture credit societies (PACS) is a vital construct aimed at enhancing financial inclusion and strengthening the rural credit delivery system . The collaborative effort wherein PACS act as deposit mobilising agents for banks leverages the strengths of both entities to provide comprehensive financial services to rural communities.

Abstract

Primary agriculture credit societies (PACS) are an integral component of the rural credit system, designed to provide financial services to farmers and rural communities. These grassroot level cooperatives offer a wide range of banking services tailored to the needs of their members, contributing significantly to financial inclusion and rural development. By linking with banks, PACS can extend a broader range of financial services to their members, including credit, savings, insurance and remittance services, thereby, promote financial inclusion in rural areas. The article focuses on understanding the importance of PACS in providing financial services in rural areas of Himachal Pradesh.

1. Introduction

Financial inclusion remains a significant challenge in India, especially in rural and remote areas. Despite substantial progress in recent years, many regions still lack access to essential financial services. To bridge this gap, financial inclusion has been a priority for policy makers for last few years. However, vast disparities exist between urban and rural areas. Urban regions benefit from a dense network of bank branches, automated teller machines (ATMs) and digital financial services (DFS). Rural areas with about 65% of the population often lack these basic financial infrastructures. In order to provide

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universal access to banking facilities with at least one basic banking account for every household, the Government of India launched the Pradhan Mantri Jan Dhan Yojna (PMJDY). The scheme has significantly increased the number of bank accounts, particularly in rural areas. By March 2024, over 520 million accounts had been opened under PMJDY, with more than a half in rural and semi-urban areas.

In the past few years, India has seen a digital revolution with initiatives like the Unified Payments Interface (UPI), Aadhaar-enabled Payment System (AePS) and mobile banking apps. These technologies have reduced dependency on physical bank branches and ATMs, thereby, making financial services more accessible. The COVID-19 pandemic further accelerated the adoption of digital banking, as physical distancing measures necessitated alternative transaction methods. Enhancing DFS in rural areas is critical for promoting financial inclusion and ensuring that all segments of the population benefit from modern financial systems.

In India, deposit mobilising agents (DMAs) play a vital role in extending financial services to the unbanked and underbanked population, particularly in rural and semi-urban areas. These DMAs use mobile devices and micro-ATMs to offer basic financial services, bridging the gap between formal banking institutions and rural population. They operate in areas where establishing the traditional bank branches is not feasible due to cost or logistical reasons.

2. Banking Scenario in Himachal Pradesh

The lead bank responsibility for Himachal Pradesh has been divided between three banks, namely, Punjab National Bank (PNB) in six districts (Hamirpur, Kangra, Kinnaur, Kullu, Mandi and Una), United Commercial Bank (UCO) in four districts (Bilaspur, Shimla, Solan and Sirmour) and State Bank of India (SBI) in two districts (Chamba and Lahaul-Spiti). The UCO bank is the State Level Bankers Committee (SLBC) convener bank. As per the economic survey of Himachal Pradesh 2023-24, more than 77% of the state's network of 2,292 bank branches are located in rural regions. According to the 2011 census, the average population per branch in the state was 3,073, compared to national average of 11,000. India Post Payments Bank, Financial Inclusion Network and Operations (Fino) Payments Bank, Airtel Payment Banks and Paytm Payment Banks are the four payment banks operating in the State.

Banks have deployed business correspondent agents (BCAs, also known as 'bank mitras') in sub-service areas to provide banking services to the far-flung areas, where brick and mortar branches are not financially viable. At present 12,243 bank mitras are deployed in the state by various banks for providing basic banking services in villages. In addition to this, PACS established at the grassroot level also provide financial services to agricultural and rural communities. They play a crucial role in facilitating access to credit and other financial services for farmers and rural residents.

Primary Agriculture Cooperative Societies **as** Deposit Mobilising Agents:

The primary agriculture cooperative societies (PACS) as DMAs can contribute a lot to the financial inclusion, rural developments, and agricultural growth by tapping into their established networks, trust and local knowledge to mobilise deposits and extend banking services to underserved population in rural areas. The utilisation of PACS as DMAs offers several potential benefits. Some of them are listed below:

➤ **Grassroot Presence:** PACS have a deep-rooted presence in rural areas, particularly agricultural regions, making them accessible and trusted by local farmers and communities. Leveraging this presence could facilitate the mobilisation of deposits from these underserved populations.

➤ **Financial Inclusion:** By utilising PACS as DMAs, financial institutions can extend their services to previously unbanked or underbanked populations in rural areas. This could promote financial inclusion by providing access to formal banking services and products to a wider segment of the population.

➤ **Cost-Effective Distribution Channel:** PACS serve as a cost-effective distribution channel for financial institutions, especially in remote rural areas where establishing brick-and-mortar branches may not be economically viable. This can help to reduce operational costs associated with expanding banking services in rural regions.

➤ **Trust and Relationship Building:** PACS often enjoy strong trust relationships with their members due to their community-centric approach and longstanding presence. This trust can facilitate the mobilisation of deposits, as members are more likely to entrust their savings to familiar and trusted institutions.

➤ **Promotion of Agricultural Development:** PACS focus on agricultural communities, utilising them as DMAs could contribute to the development of the agricultural sector by providing farmers with access to financial services, credit, and investment opportunities tailored to their needs.

➤ **Limit of Cash Deposits and Cash Loans:** The limit for cash deposits and cash loans by PACS has been increased from ₹20,000 to ₹2 lakh per member. This provision would facilitate their activities, increase their business and benefit the members of societies.

➤ **Increase in the limit of Tax Deducted at Source (TDS) in Cash Withdrawal:** The Union Government through the Budget 2023-24 has increased the cash withdrawal limit of cooperative societies without deduction of tax at source from ₹1 crore to ₹3 crore per year. This provision will save tax deducted at source (TDS) for cooperative societies, which they would be able to use to work for the benefit of their members.

3. Initiative of the Himachal Pradesh State Cooperative Bank

The PACS have defined area of operation, and can work only in that particular area of operation. There is another statutory requirement imposed by state government, that is, PACS could only deal with the members of the society. As per the circular of the Cooperative Department of the state, the PACS were instructed not to accept any kind of deposit from non-members and further directed to refund the deposit of non-members on maturity or within 2 years.

The Himachal Pradesh State Cooperative Bank Ltd. (HPSCB) framed a policy wherein PACS could act as DMA for banks on commission basis so as to avoid the shift of deposit of non-members to other financial institutions. As per the policy, even non-members can open accounts and avail all banking facilities of banking through PACS agents.

The PACS as DMAs scheme was designed by banks in such a way that even the un-banked rural person can avail all the facilities of banking easily without approaching the bank at their door steps, thereby, carrying out financial inclusion. Apart from this, the said scheme is useful in expanding the business of the bank through PACS, and to provide alternate business avenues to the PACS so as to increase their financial viability.

The DMAs would render services on behalf of the banks, as per agreement, by use of the latest banking technology to be provided by the banks. The transaction can be done through information and communication technology (ICT) devices (such as mobile phones, laptops, ATM/Point of Sale (PoS) machines) that are integrated to core banking solution (CBS) of the banks. The transactions are accounted on real time basis and customers receive messages for immediate verification of their transactions. At the same time, the authenticity of saving bank accounts opened through DMAs will be physically verified by a branch manager within a week so as to avoid any kind of fraud and to repose trust and confidence among the customers.

The scheme was applicable in all areas under the effective jurisdiction of the bank. Presently, 56 PACS have been enrolled with bank as DMA. The main accounts of all depositors shall be maintained at the branch level and for convenience for operation similar accounts are maintained at PACS level also. PACS working as DMA will have security of ₹50,000 in the shape of term deposit with the base branch. All the transactions done by DMAs are reported to the branch concerned on daily basis. Limit for cash deposit is ₹49,000 per day and cash withdrawal is ₹25,000 per day.

The scope of activities of DMA include:

➢ Identification of customers/depositors/borrowers within the frame of deposits/loan scheme of the bank.
➢ Creating awareness about savings and other products and education and advice on managing money and debt counselling.
➢ Processing and submission of account opening applications to banks and opening their accounts.

➤ Receiving equated monthly instalments (EMIs), principal and interest, and depositing the same in loan accounts of customers.

➤ Collection of small value deposits including that of PMJDY, Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY) and any other social security schemes launched from time to time.

➤ Recovery against non-performing assets (NPA) accounts

The DMAs had done transactions worth ₹102.66 crore as on 31.03.2023 and the bank had paid a commission of ₹4.55 lakh as on 31.03.2023 to DMAs. Micro-ATMs have been provided by the Bank to 30 PACS of the 56 PACS.

4. Badgaon Agricultural Service Cooperative Society Limited

The Badgaon society was started in the year 1964, with public distribution system (PDS) as their business. Before 1964, the area of The Badgaon Agricultural Service Co-operative Society Limited, Badgaon Tehsil Jhanduta District Bilaspur Himachal Pradesh, was included in The Barthi Village Service Cooperative Society Limited Barthi and a distance of eight to ten kilometers was covered within their area of operation so as to facilitate the villagers with the PDS.

The society did not have much work till the year 1992-93, which was limited to the purchase and sale of goods and loan distribution. After the year 1992-93, it was decided by the society's committee members to bring changes by diversifying its work and the society also started the work of taking deposits from the people and buying and selling of goods other than PDS goods. With the help of the committee and the staff, every family of the workplace was linked with the cooperative society, which created confidence in the cooperative society among the people of the entire workplace. The society has taken up the agency of electronic items, and is serving the people by providing electronic goods at cheaper price than in the market. Recently the PACS are providing all facilities through common services centre which is a great convenience to people.

Due to the hard work and guidance of its committee members, the cooperative society, which was run with a capital of only ₹2,760, is today functioning with a capital of ₹45 crore.

As shown in Table 1, there is a gradual increase in membership which shows that people have trust in the society, and are willing to get associated with it. The society has own deposits of ₹33.05 crore, from its members which reflects the collective financial engagement and trust of microfinance clients. These funds are used by the society to provide

Table: 1 Progress of the Badgaon Agricultural Service Co-operative Society Ltd					
Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Membership	1823	1864	1886	1914	1952
Deposit (₹ in Crore)	33.02	34.13	33.19	31.7	33.05
Fund (₹ in Crore)	2.15	2.57	3.23	3.39	3.60
Loan Advancement (₹ in Crore)	6.44	5.61	7.41	6.64	6.63

Source: Primary Data.

low-interest loans to farmers for purchasing seeds, fertilizers and equipment. This access to affordable credit improves agricultural productivity and increases the household income, demonstrating the direct impact of cooperative societies on rural economic development. The society has made an advancement of ₹6.63 crore, which depicts that PACS has significantly made impact on the community's economic growth and social well-being.

In order to provide the facility to its members to transact loans and deposits, the cooperative society has opened its branches at two places, apart from the society's office, and is running a campaign to connect every member with the society so that the financial condition of the society's members gets stronger. The society is providing loans to the members of its area through Kisan Credit Cards (KCCs), in which about 300 farmers have been added and a loan of ₹3 crore has been made available to the farmers through the bank. Because of this, the farmers (members) are purchasing fertilizers, seeds, pesticides and agricultural equipment at reasonable rates. The co-operative society is offering a variety of loans to its members such as house loan, personal loan, education loan and vehicle loan which is helping the people a lot.

Table 2: Business of the Badgaon Agricultural Service Co-perative Society as Deposit Mobilization Agent of HPSCB (₹ in lakh)

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Deposit as agent	34.15	194.59	230.15	327.36	271.65	1057.91
Withdrawal	12.60	123.33	140.41	187.78	183.02	647.17
Transfer	142.80	289.12	275.93	475.00	397.28	1580.16
Micro–ATMs (in ₹)				700	238659	239359
Total transactions	189.57	607.05	646.5	990.16	854.34	3287.64
Commission Received (in ₹)	20475	79730	82556	127779	117734	428274

Source: Primary Data.

Accounts opened by PACS for Bank

The cooperative society has been authorised to act as DMA of the HPSCB in the year 2019-20 in which the society has opened around 480 savings deposit accounts on the behalf of the bank in its area of operation (Table 2). The accounts which were closed in the bank were also updated as every effort was made to link every household with the bank.

Deposit collected as DMA

In 2019-20 society has collected deposits of around ₹34 lakh as an agent of HPSCB which has increased to ₹271.65 lakh in 2023-24. These figures shows that the PACS is winning the faith and trust of depositors. They have made every effort to collect deposits from non-members of PACS also.

Transfer of money through bank software

Figures in table shows that there is transfer of ₹15.80 crore by the cooperative society through DMAs as the software is being provided by the bank for this. It reflects a substantial financial operation aimed at empowering its members and fostering community development.

Transactions done as DMA

Society has made transactions of ₹32.87 crore with the customers from 2019-20 till 31 March 2024.

Commission earned as DMA

There is considerable growth in the commission earned by the PACS during these 5 years. The society has earned commission of ₹20,475 to work as DMA from the bank in the year 2019-20 which has grown to ₹1,17 lakh in the year 2023-24. Working as DMA not only benefitted the PACS by earning additional income but also increased the business of the bank, and has been a great help in financial inclusion, as the account holders who were not able to reach the bank can now avail the services of the bank at their doorsteps.

Transactions through Micro-ATMs

The cooperative society is also providing banking services through a micro-ATM machine provided by the HPSCB. Micro-ATMs are connected to the core banking solution (CBS) of the bank through GPRS technology, and it enables transactions such as cash withdrawals, deposits, balance inquiries, and fund transfers. Micro-ATMs were provided to the PACS in 2022 and transactions during that year was ₹700 but in the next year that is during the year 2023-24 the society had made transaction of ₹2.39 lakh with micro-ATM.

5. Conclusions

The PACS have long been the backbone of the rural credit systems in India, providing essential financial services to farmers and rural communities. As DMAs, the PACS are significantly enhancing financial inclusion and rural development by channelising the savings into productive investment in Himachal Pradesh.

Though PACS are playing a crucial role in mobilising deposits and expanding banking services in rural Himachal Pradesh, there are many challenges. Addressing these challenges requires collaboration between financial institutions, government agencies and PACS themselves to ensure effective implementation and maximise the impact of utilising PACS as DMAs in Himachal Pradesh.

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Centre for Research on Financial Inclusion and Microfinance (CRFIM), formerly known as Centre for Microfinance Research (CMR) was set up within BIRD to take up research activities in the fields of financial inclusion and microfinance for facilitating policy initiatives and improvements in design and delivery system of financial inclusion and microfinance services. The vision and mission are to emerge as a centre of reference for information, knowledge and valued opinion related to the financial inclusion and microfinance sectors, strengthen the sectors through research inputs that facilitate policy initiatives as also improvement in design and delivery systems that provide poor with sustainable access to quality financial services. Besides publishing half yearly journals, the centre has published 31 studies on issues related to financial inclusion and microfinance. The centre is publishing an Annual Trend Report on Financial Inclusion in India since 2019. The journals, study reports and trend reports are available at https://birdlucknow. nabard.org/center-of-excellence/cmr/