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MICROFINANCE INDUSTRY NETWORK

HSBC

Knowledge Partner
MSC
MicroSave Consulting

Transforming microfinance, Empowering communities: The digital payments initiative

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List of abbreviations

AI	Artificial Intelligence
API	Application Programming Interface
BHIM	Bharat Interface for Money.
BRD	Business Requirements Document
BST	Branch Staff Training
CEO	Chief Executive Officer
CIO	Chief Information Officer
CSP	Capacity-Building Service Provider
GRM	Grievance Resolution Mechanisms
HR	Human Resources
IDRBT	Institute for Development and Research in Banking Technology
IT	Information Technology
IVR	Interactive Voice Response
L&D	Learning and Development
LMS	Loan Management Systems
MFI	Microfinance Institutions
MFIN	Microfinance Industry Network
NPCI	National Payments Corporation of India
PoS	Point of Sale
QR	Quick Response
RBI	Reserve Bank of India
RFP	Request for Proposal
RPA	Robotic Process Automation
UI	User Interface
UPI	Unified Payments Interface

Executive summary

In India, digital payment collection for microfinance loan repayments has increased gradually in recent years, driven by wider mobile access, new payment technologies, and policy support for financial inclusion. However, most borrowers still prefer to repay loans in cash, especially those with limited digital experience or low access to smartphones. The Microfinance Industry Network (MFIN) recognized these realities and launched a project to support the shift from cash-based to digital collection methods for its partner microfinance institutions (MFIs). The goal was to make payments easier and safer for borrowers, improve efficiency for MFIs, and lay the groundwork for broader financial inclusion.

MFIN began with a detailed scoping study to understand the landscape and identify adoption barriers. The research found that digital awareness differed significantly among borrowers. Approximately 17% of respondents were comfortable with digital payments, while many others faced barriers, such as limited access to smartphones, low digital literacy, and a lack of trust in digital channels. Most borrowers continued to pay in cash, mainly due to habit and concerns about digital security. The study also identified gaps in the digital readiness and skills of MFI staff, who play a critical role in helping borrowers adopt new payment methods.

Based on these findings, the project selected three digital payment collection options that matched the needs of different borrower groups and MFIs, rather than applying a single solution everywhere:

- **UPI 123PAY:** This solution is designed for borrowers with feature phones. It uses voice instructions and phone keypads to enable the collection of digital payments from those without smartphones or Internet access.
- **UPI AutoPay:** This option allows recurring and automatic repayment deductions, which makes it convenient for borrowers to pay on time and easy for MFIs to manage regular collections.
- **Custom-built mobile applications:** Dedicated apps enable borrowers with smartphones and higher digital confidence to make repayments, check balances, and track loan information directly from their phones.

Each solution was selected after a careful study of the specific needs, infrastructure, and preferences of MFIs and their clients. The approach intended to ensure ease of use, security, and seamless integration with IT systems, and build trust through transparency and tailored user support.

The project partnered with FinTech companies for technology development and with a capacity-building service provider (CSP) for training to implement these plans. The FinTech firms customized digital repayment solutions for each MFI, which focus on user experiences and reliable backend systems. The training provider developed various modules for MFI staff and borrowers, with content available in presentations, pamphlets, audio, and video. Master trainers at MFIs were trained first, then branch staff, who in turn educated borrowers during group meetings. Topics included how to make digital payments, prevent fraud, and address transaction problems. This tiered approach made it easier to build skills at every level and addressed each group's specific needs and concerns.

The rollout of digital solutions faced significant challenges. Many MFIs struggled with technical integration or lacked sufficient IT resources. Borrowers hesitated to switch to digital channels, worried about trust and mistakes. In response, the project used easy-to-understand demonstrations, real-world examples, and repeated engagement to encourage adoption.

MFIN also organized a special training for the IT staff of MFIs in partnership with the Institute for Development and Research in Banking Technology (IDRBT), which exposed participants to new technologies, such as artificial intelligence, blockchain, and cybersecurity. This program sought to prepare organizations for further digital transformation and help them manage technology upgrades more effectively.

The project concluded with a workshop, where partner MFIs and industry experts shared their experiences. Discussions highlighted that ongoing training, clear communication, and continued trust-building are critical for lasting behavior change among borrowers. The project has laid a strong foundation for digital collections in microfinance, but sustained impact will need ongoing support, practical solutions, and broader FinTech innovation.

In the next step forward, MFIN plans to expand on the success of this project by supporting further innovation in the digital transformation of the MFI sector. This will involve the adaptation of existing solutions and support for new product development, shaped by the real needs and constraints of low-income borrowers and the institutions that serve them. The project sets a strong example to digitize repayments in India's microfinance sector and contribute to financial inclusion and resilience for millions of underserved families.

1. Scoping study: The foundation to transform digital repayment

We began the process to digitize repayment collection for microfinance institutions (MFIs) in India with a thorough scoping study. This study established the foundation to understand the existing landscape of repayment mechanisms, assessed the digital readiness of MFIs and their clients (borrowers), identified challenges and opportunities, and ultimately recommended the most suitable digital payment solutions. The insights from this study directly informed the project's strategic direction and ensured that subsequent interventions aligned precisely with the needs of the target beneficiaries and the operational realities of the MFIs.

Objectives of the scoping study

The scoping study sought to identify insights that would support the scale-up of digital payment solutions that would enable microfinance borrowers to repay loans digitally in a cost-effective, seamless, and user-friendly manner. The study established several specific objectives:

1. **Evaluate existing digital solutions for loan repayments:** A primary objective was to comprehensively review the digital payment systems and solutions already developed or supported by the National Payments Corporation of India (NPCI). This involved a detailed analysis of their features, functionalities, and potential applicability within the microfinance ecosystem.
2. **Assess partner MFIs' readiness:** The study sought to assess the current technological infrastructure, operational processes, and institutional willingness of selected partner MFIs to adopt and deploy digital repayment solutions. This assessment extended beyond technical capabilities to examine their internal policies, staff capacity, and leadership commitment toward digital transformation.
3. **Assess the readiness of MFI clients (borrowers) and staff:** A crucial aspect was to evaluate the digital literacy, access to digital tools (such as smartphones), banking habits, and overall inclination of microfinance borrowers to use digital payment methods for loan repayments. Concurrently, the study assessed the readiness of MFI branch staff to facilitate and support digital transactions, including their understanding of digital platforms and their ability to guide borrowers.
4. **Identify the most suitable digital models:** Based on comprehensive assessments, a crucial objective was to identify and recommend the most suitable and viable digital models for repayment collection. These models needed to align with each MFI's specific requirements, cater to the diverse needs and digital proficiency levels of borrowers, and integrate seamlessly with existing operational workflows.
5. **Assess capacity-building needs:** The study sought to identify gaps in digital financial literacy among borrowers and staff. This assessment then guided the development of targeted capacity building and training programs.

These objectives ensure a comprehensive understanding of the ecosystem, which leads to evidence-based decision-making and a customized project implementation strategy.

Methodology and approach: A multistakeholder engagement

The scoping study employed a mixed-methods research methodology that combined quantitative and qualitative approaches to gather comprehensive insights from various stakeholders. This inclusive approach ensured the findings were well-supported and represented the complex realities on the ground.

The research design incorporated:

1. **Literature review and desk research:** The initial phase involved a thorough review of existing literature, industry reports, and public information on digital payment solutions in India, particularly those relevant to financial inclusion and microfinance. This review helped to understand the broader regulatory environment and technological advancements.
2. **Discussions with the National Payments Corporation of India (NPCI):** We held discussions with the NPCI representatives to gain a deeper understanding of digital payment methods. These discussions provided an in-depth understanding of the various payment methods developed and managed by the NPCI, such as UPI, which included payments through UPI QR codes, Bharat BillPay, USSD payments, BHIM *Aadhaar* Pay, and other digital channels. The objective was to assess the technical feasibility, scalability, and suitability of these methods for microfinance loan repayments, given the unique characteristics of MFI operations and their borrower base. This direct engagement ensured alignment with the national digital payment infrastructure and policies.
3. **MFI head office-level engagements:** We conducted discussions with the leadership and relevant departmental heads, such as operations, IT, and finance, of partner MFIs. These interactions focused on their current repayment collection processes, existing digital payment infrastructure (if any), challenges with traditional cash collections, strategic vision for digitalization, and readiness to integrate new technological solutions. This engagement helped assess institutional buy-in and identify potential project champions within each MFI.
4. **MFI branch staff-level engagements:** We carried out focused discussions with MFI branch personnel to recognize the critical role of frontline staff. The engagements sought to understand their day-to-day operational challenges in repayment collection, familiarity with digital tools, perceptions of borrowers' digital literacy, and willingness to adopt new digital processes.
5. **Borrower-level engagements:** We engaged directly with borrowers to understand their digital readiness and preferences. We administered a structured quantitative survey to borrowers across diverse geographies and demographics. This survey collected data on key parameters, such as:
    - **Smartphone ownership and internet access:** Ascertain the penetration of smartphones and access to mobile internet
    - **Bank account usage:** Understand the prevalence of bank accounts, types of accounts, and frequency of use

- **Current repayment methods:** Document how borrowers currently make loan repayments (cash, digital, among others) and their reasons to choose these methods
- **Digital payment usage:** Explore the usage of various digital payment methods for other transactions (for example, bill payments, transfers) and the specific mediums used, such as UPI or USSD, among others
- **Digital financial literacy:** Assess the borrowers' understanding of digital transactions, security aspects, and grievance resolution mechanisms.
- **Willingness to adopt digital repayment:** Assess their openness to shift to digital modes for loan repayment and perceived benefits or barriers.

Key findings from the scoping study

The scoping study provided several critical insights that served as foundational knowledge for the project's design and implementation. While specific MFI data is not detailed here, the aggregate findings painted a clear picture of the landscape:

1. **Varying degrees of digital readiness among borrowers:** The study identified distinct borrower segments based on their digital readiness. Approximately 17% of borrowers demonstrated moderate to high digital literacy and actively used digital payments for various transactions. The other borrowers indicated low digital literacy, limited access to smartphones, or a strong preference for traditional cash-based transactions due to familiarity, trust issues, or lack of awareness. Smartphone penetration, bank account, and availability of debit card were key determinants of digital readiness.

2. **Predominance of cash repayments:** Despite the push for digitalization, cash remained the dominant mode of loan repayment across most MFIs. During group meetings, around 80% of borrowers preferred cash payments. This highlighted that a shift from cash to digital payments would require a significant behavioral shift for most of these borrowers.
3. **Challenges with existing digital awareness levels:** Many borrowers expressed a lack of awareness of digital repayment options or perceived the process as complex. A notable gap persisted in terms of understanding security aspects and available grievance resolution mechanisms (GRM). Less than 50% of borrowers were aware of GRM, and 87% were unsure whom to approach in case of issues with digital transactions. This highlighted the critical need for extensive digital financial literacy and awareness campaigns.
4. **MFI operational readiness:** MFIs showed varied levels of technological infrastructure and willingness to integrate new digital solutions. Some MFIs had initiated steps toward digitalization, while others required significant support and infrastructure upgrades.

Common challenges included legacy loan management systems (LMS), complexity in API integration, and staff training needs.

5. **Staff as crucial enablers:** MFI branch staff were identified as key to drive digital adoption among borrowers. Their digital proficiency, willingness to educate borrowers, and ability to troubleshoot digital transaction issues directly impacted borrower adoption rates. The study highlighted the need for comprehensive training for staff on digital solutions and effective communication of their benefits to borrowers.
6. **Trust and security concerns:** A significant barrier to digital adoption among borrowers was a lack of trust in digital platforms and concerns about transaction security. Instances of fraud or perceived complexities often led to apprehension. Only 52% of borrowers showed trust in digital transactions. This emphasized the need for transparent, secure, and user-friendly solutions, coupled with effective grievance resolution mechanisms and continuous user support.
7. **Opportunity for feature phone-based solutions:** Given the variable smartphone penetration, the study identified a significant opportunity for feature phone-based digital payment solutions to reach a broader segment of borrowers. Around 34% of borrowers had feature phones, which highlighted the importance of diverse solution offerings.

These findings provided a practical baseline, which enables the project to develop targeted interventions rather than a one-size-fits-all approach.

Arriving at the right payment solution

We identified and selected the most suitable payment solutions for each MFI as a critical outcome of the scoping study. This was a highly customized matching process that ensured alignment with the unique operational context and borrower base of each partner MFI.

1. **Comparative analysis of NPCI solutions:** We conducted a detailed comparative analysis of NPCI-developed payment systems to build on the discussions with the NPCI. This involved an evaluation of UPI, USSD payments, BHIM *Aadhaar* Pay, card payments through Point of Sale (PoS), cheque, and automatic debit to bank accounts, among others. The analysis focused on parameters, such as:
    - **Ease of use for borrowers:** The level of simplicity and intuitiveness of the solution for borrowers, given their varying digital literacy levels
    - **Integration complexity for MFIs:** The technical effort and cost required for MFIs to integrate these solutions with their existing LMS and operational systems
    - **Transaction cost:** The per-transaction cost implications for borrowers and MFIs
    - **Scalability and reach:** The ability of the solution to reach a large number of borrowers, which includes those in remote areas or without smartphones
    - **Security features:** The inherent security protocols and fraud prevention mechanisms in the solution

- **Reconciliation capabilities:** The ease of reconciliation for MFIs to track and manage digital repayments

2. **Match solutions to MFI and borrower need:** The detailed findings from the MFI and borrower readiness assessments were then systematically mapped against the strengths and weaknesses of the evaluated NPCI payment solutions. This iterative process involved:
    - **Understanding MFI preferences:** Each MFI's operational models, technological infrastructure, and strategic priorities shaped their specific preferences or capabilities and determined the most viable solutions. For instance, an MFI with a strong internal IT team may prefer direct API integration for a mobile app, while another may benefit from a third-party aggregator model.
    - **Catering to borrower segments:** The identified borrower segments (for example, smartphone users compared to feature phone users, digitally literate compared to less digitally literate) directly influenced the recommended solutions. For segments with lower digital literacy or feature phone users, solutions, such as UPI 123PAY were prioritized. For smartphone users with higher digital comfort, MFI-specific mobile applications or UPI AutoPay options were considered.
3. **Customization potential:** A "one-size-fits-all" solution proved ineffective. The approach, therefore, emphasized the need for customization of the chosen solutions to align perfectly with each MFI's unique workflow alongside their borrowers' specific needs and ease of transactions. This early customization foresight proved crucial for successful implementation.

The comprehensive scoping study, with its multi-level stakeholder engagement and detailed analytical approach, created the base for the project. It provided a clear roadmap, identified the "what," "why," and "how" of digital repayment transformation, which enabled the project to move forward with a well-informed strategy for FinTech onboarding and capacity-building initiatives.

The table below shows the interventions planned for each of the MFIs.

Intervention planned	ACFL	Annapurna	Fusion	IIFL Samasta	Mitrata	Sarala	Spandana	Svamaan	Svatantra
UPI 123PAY		Yes	Yes						Yes
UPI AutoPay				Yes					Yes
Customer-facing application		Yes			Yes	Yes	Yes	Yes	
Capacity-building of the borrower	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

2. Onboarding of FinTechs and capacity-building service providers: Bridging gaps with strategic partnerships

The project transitioned into the next phase after the comprehensive scoping study, which identified the digital repayment needs of microfinance institutions (MFIs) and their borrowers. This phase focused on the onboarding of specialized FinTech partners and a capacity-building service provider (CSP). This phase crucially translated the study recommendations into tangible solutions and ensured the successful adoption of digital repayment mechanisms across target segments. Partners were selected after a thorough review to ensure they possessed the necessary technical capability, experience in financial inclusion, and commitment to customize their services to fit the specific needs of each MFI and its borrowers.

Identifying partners to bridge gaps

The primary objective during this next phase was to identify partners who could bridge the identified gaps in digital payment infrastructure and digital financial literacy. The scoping study provided a clear understanding of:

- The types of digital payment solutions most suitable for different MFI and borrower segments, such as UPI-based solutions, mobile applications, and feature phone-compatible options;
- The varying levels of digital readiness among borrowers and MFI staff, which highlighted the need for extensive and customized capacity-building interventions.

The project initiated a structured process for partner identification to address these diverse requirements:

1. **Request for proposal (RFP) issuance***:* We issued a request for proposal (RFP) to invite proposals from various FinTech firms and CSPs. The RFP clearly outlined the project's objectives, the specific digital payment solutions identified during the scoping study, the expected scope of work, and the criteria for partner selection, which emphasize innovation, scalability, cost-effectiveness, and experience in the Indian microfinance sector.
2. **Shortlisting and detailed presentations**: We conducted a structured shortlisting process based on the initial submissions. The shortlisted firms were then invited to provide detailed presentations that showcased their proposed solutions, technological capabilities, implementation methodologies, and a clear understanding of the microfinance landscape. These presentations enabled in-depth technical and operational assessments.
3. **Project-led partner selection and MFI alignment:** We selected three FinTech partners and one CSP. Out of them, one was finally chosen for solutions related to AutoPay and mobile applications for borrowers, while another was selected for UPI 123PAY.

FinTech partner onboarding: Customized solutions for digital repayment

Based on the consultative process, the project identified specific FinTech partners to develop and deploy the digital repayment solutions with:

1. **For UPI AutoPay and MFI borrower mobile applications**: We initially identified two FinTech partners. These partners presented their capabilities to interested MFIs, who then selected one based on their specific needs, capabilities, and the proposed cost of development. This approach enabled MFIs to choose the solution that best integrated with their existing loan management systems (LMS) and operational workflows, which ensured a seamless transition.
2. **For UPI 123PAY (feature phone-based solution)**: We identified one specific FinTech firm for the development and deployment of UPI 123PAY solutions, based on the critical need to cater to borrowers without smartphones or limited internet access.

The onboarding process for FinTech partners involved detailed discussions between the chosen firm and each MFI to finalize the scope of work and commercial terms. This process ensured that each solution was personalized to the unique requirements of the MFI. It encompassed aspects that include API integration, data flow, and user interface elements.

Capacity-building service provider onboarding: Empowers stakeholders

Parallel to onboarding FinTech firms, the project focused on securing a CSP to address identified digital financial literacy gaps. While the process mirrored FinTech identification, the project ultimately identified one primary partner.

The onboarding of FinTech and capacity building partners, underpinned by a consultative and customized approach, laid the groundwork for the successful implementation and adoption of digital repayment solutions. This directly addressed the strategic imperatives identified during the scoping study.

3. FinTech solutions: Development, deployment, and impact

The project entered its critical implementation phase after the scoping study provided strategic insights and the successful onboarding of specialized FinTech partners. This phase focused on the development and deployment of customized digital repayment solutions. This section details the process, outputs, and progress made across three core solution categories: UPI 123PAY, UPI AutoPay, and mobile applications of MFI borrowers. Each solution was designed to cater to distinct segments of microfinance borrowers, which ensured a broad and inclusive approach to digital financial inclusion.

1. UPI 123PAY: Empowers feature phone users

The project prioritized the development of UPI 123PAY to recognize a significant segment of microfinance borrowers who do not own smartphones or have limited access to data services. This innovative solution uses feature phone capabilities to enable digital loan repayments, which directly address a key digital divide identified in the scoping study. The project onboarded a dedicated FinTech partner for this initiative, which brings expertise in voice-based payment solutions.

Process of development

The development of the UPI 123PAY solution was a multi-stage process, characterized by close collaboration between the FinTech firm, the partner MFIs, and the project team:

1. **Interactive voice response (IVR) system development**: The core of UPI 123PAY is in its interactive voice response (IVR) system. Developed by the FinTech partner, this phone-based system guides borrowers through the loan repayment process through pre-recorded messages, voice inputs, and keypad inputs. This design ensures ease of use for individuals who are less digitally literate or accustomed to traditional phone-based interactions.
2. **IVR script finalization**: The finalization of the script for the IVR system was a critical step that required extensive iteration and testing to ensure clear, concise, and unambiguous instructions for borrowers across different linguistic and literacy backgrounds. The goal was to minimize confusion and maximize successful transactions without the need for direct human intervention.
3. **API integration with MFI LMS**: The most crucial technical step was to connect the IVR system with the respective MFIs' loan management systems (LMS). This API integration was crucial for seamless data exchange, which allowed real-time processing of UPI 123PAY transactions, accurate reconciliation, and updates to borrower repayment records. The process required significant coordination and technical effort from the FinTech firm and the MFI's IT teams.

Outcomes and impact:

The development efforts resulted in the successful deployment and operationalization of UPI 123PAY across three MFIs, which include Annapurna, Fusion, and Svatantra. This deployment has resulted in the following outcomes:

- **Enhanced accessibility**: UPI 123PAY provides an effective feature phone-based payment channel. It has significantly enhanced the accessibility of digital repayments for a large segment of microfinance borrowers who were previously excluded due to a lack of smartphone ownership or internet access.
- **Simplified repayment process**: The IVR-guided process simplifies what may otherwise be a complex digital transaction, which makes it intuitive and manageable for borrowers with varying levels of digital literacy.
- **Operational efficiency**: For MFIs, the solution contributes to reduced cash handling, improved reconciliation, and enhanced operational efficiency in repayment collection. These solutions align with the project's broader goals.

Key change for UPI 123PAY: Eases payments for borrowers

During the setup of the UPI 123PAY solution, we noticed a significant challenge, especially for microfinance borrowers. For numbers not linked to the MFI's database, the usual payment process required two steps. First, after the borrower initiated a payment, the call would disconnect when it was time to enter the UPI PIN. Then, the borrower would receive a new incoming call, which asked for the PIN to complete the transaction.

This two-step process led to several challenges. Many borrowers often change their mobile numbers or use numbers not recorded with the MFI. In many cases, the mobile number linked to the MFI was not the one with active UPI access, as UPI may be registered under a different family member. This extra step made the whole payment process confusing and difficult. A major concern was trust, as borrowers hesitated to share their PIN on an incoming call since they feared it might be a scam. As a result, many borrowers did not want to use UPI 123PAY again.

We discussed these concerns with the NPCI. We explained that this was a project focused only on EMI collections for specific MFIs, which means the money always returns to the MFI. We requested an exemption from the two-step process for this pilot.

The NPCI understood our concerns and agreed to change the flow for our MFIN project. This change is vital to make UPI 123PAY simple, secure, and effective for microfinance borrowers, which builds their trust and helps more people use digital payments for their loans.

2. UPI AutoPay: Automates and streamlines digital repayments

UPI AutoPay offers a recurring payment mandate feature that streamlines the collection of regular loan installments, which provides convenience for borrowers and predictability for MFIs. In this process, the MFI initiates payment mandates on behalf of borrowers, who then approve these mandates through their UPI-enabled apps. This eliminates the need for manual intervention each time an EMI is due, automates the repayment process, and enhances collection rates. Additionally,

no charges are levied for failed transactions, which makes the solution cost-effective. The project identified a FinTech partner to help develop and integrate this solution.

Process of development:

The implementation of UPI AutoPay involved several key development and integration steps:

1. **MFI dashboard development**: A dedicated MFI dashboard was developed to help MFIs effectively monitor and manage UPI AutoPay mandates and transactions. This dashboard provides a centralized view of mandates, transaction statuses, and reconciliation data, which offers critical oversight and control.
2. **Integration with banks' APIs**: The successful functioning of UPI AutoPay relies on integration with banks' APIs. This critical step enables the seamless flow of payment mandates and transaction data between the MFI's LMS, the FinTech partner's platform, and the banking infrastructure.
3. **User acceptance testing (UAT) and use case testing:** Before full-scale deployment, the UPI AutoPay solution underwent rigorous user acceptance testing (UAT) and comprehensive use case testing. This phase validated the system's functionality, security, and usability from the perspectives of both the MFIs and the borrowers, which ensured it met operational requirements and user expectations.

Outputs and impact:

The successful deployment of UPI AutoPay marks a significant milestone, as it transitions from its development phase to active implementation. With MFIs, such as Svatantra and IIFL Samasta now live, UPI AutoPay promises to significantly enhance the efficiency and ease of financial transactions across the microfinance sector.

- **Automated collections**: UPI AutoPay facilitates automated, recurring collections, which reduces the manual effort involved in repayment reminders and collections, and results in greater efficiency for MFIs.
- **Enhanced borrower convenience**: For borrowers, UPI AutoPay offers the convenience to approve a one-time mandate for automatic deductions and ensures timely repayments without manual intervention. This reduces the risk of defaults due to forgetfulness or logistical challenges.
- **Improved predictability**: MFIs gain better predictability in their cash flows through the automated nature of collections, which aids in financial planning and liquidity management.
- **Scalability**: The standardized nature of UPI AutoPay allows for scalable deployment across a large number of borrowers and MFIs, which contributes to broader digital adoption.

3. MFI borrower mobile applications: Digital repayment at fingertips

The project helped develop dedicated mobile applications for MFI borrowers with smartphones. These apps provide a comprehensive digital touchpoint for loan repayments, access to loan information, and potentially other financial services.

Process of development:

The development of these mobile applications involved a collaborative and often iterative process:

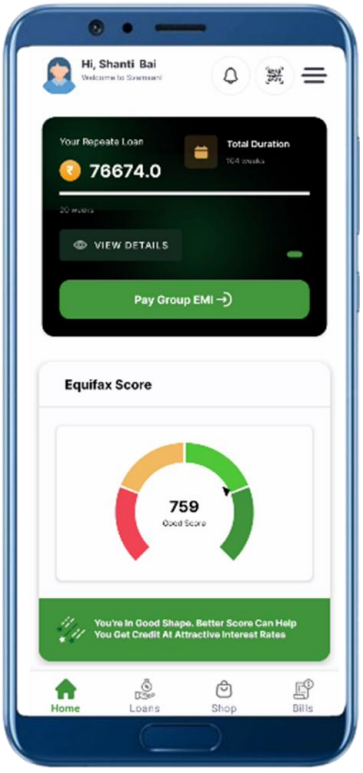
1. **Scope finalization and business requirements document (BRD) creation:** The process begins with the finalization of the project scope between the MFI and the FinTech partner. This critical step culminates in the creation of a comprehensive business requirements document (BRD). The BRD serves as the foundational blueprint that details all functional and non-functional requirements alongside the desired outcomes for the mobile application. All subsequent developments are based directly on the specifications outlined in this document, which include APIs and the user interface.
2. **API development by MFIs:** MFIs develop the required APIs based on the BRD. These APIs are crucial for seamless integration of the mobile application with their internal loan management systems (LMS). This enables real-time data exchange that permits borrowers to view their loan details and make payments directly through the app.
3. **Application user interface (UI) development and iteration:** The mobile application's user interface (UI) and overall design are developed alongside API development, and guided by the BRD's specifications. This phase focuses on an intuitive, user-friendly interface with clear navigation and strong security features. It often includes sharing initial design mock-ups and modifications based on feedback.
4. **FinTech partner integration and testing:** Once the MFI APIs and the application's core UI are ready, the FinTech partner undertakes the critical integration and initial testing phase. This step ensures that the mobile application can securely and efficiently communicate with the MFI's systems for transaction processing and data retrieval, as specified in the BRD.
5. **User acceptance testing (UAT):** The mobile applications undergo user acceptance testing (UAT) after successful integration and internal testing. This crucial step validates the application's functionality, user experience, and alignment with both MFI and borrower requirements, which ensures it meets the initial scope and BRD specifications.
6. **Official launch and go-live:** The final stage involves the official launch and deployment of the mobile applications to make them available to borrowers.

Outcomes and impact:

The development of MFI borrower mobile applications has significantly advanced and expanded the digital repayment ecosystem. The mobile application is now **live** for five of our partner MFIs, which include **Sarala, Mitrata, Spandana, Annapurna,** and **Svatantra**, and has led to the following outcomes:

- **Enhanced borrower experience**: These apps offer a convenient, self-service channel for borrowers to manage their loan repayments directly from their smartphones, which provides greater control and flexibility.
- **Improved transparency**: Borrowers can access their loan statements, repayment history, and upcoming due dates directly through the app, which promotes greater transparency and trust.

- **Platform for future services**: The mobile application serves as a foundational platform that can be expanded in the future to offer a wider range of digital financial services, beyond just loan repayments, which contributes to deeper financial inclusion.



Challenges and lessons

The development and deployment of these complex FinTech solutions, which involve multiple stakeholders and diverse technological requirements, presented several challenges that provided valuable lessons:

1. **Delayed API development by MFIs**: A recurring challenge was the delay in API development by some MFIs. This often stemmed from internal IT resource constraints, differing priorities, or the complexity of exposing legacy systems through APIs.

   Lessons: Proactive engagement with MFI IT teams from the outset, a clear definition of API specifications, and potentially providing technical assistance or external resources to accelerate API development are crucial. The early identification of potential bottlenecks within MFI IT departments is key.

2. **Integration complexities**: The integration of new FinTech solutions with diverse and often legacy loan management systems (LMS) of various MFIs proved to be a significant technical hurdle. Each MFI's system had unique configurations, which required customized integration efforts.

   Lessons: A flexible and modular approach to solution design, which emphasizes API-first development and thorough pre-integration assessments, is crucial. Standardized integration frameworks, where possible, could accelerate future deployments.

3. **Coordination and communication across stakeholders**: Effective coordination between the project team, FinTech partners, and multiple partner MFIs was a continuous challenge, as each had its own operational rhythms and IT capabilities. Consistent communication, timely data sharing, and synchronized efforts were essential to keep projects on track.

   Lessons: Establish clear communication protocols, dedicated project managers on both the MFI and FinTech sides, and regular tripartite review meetings are paramount for complex multi-stakeholder projects.

4. **Customization requirements**: While customization was a strategic choice to meet specific MFI needs, it also introduced complexity and extended development timelines. Each solution had to be adapted to fit the MFI's existing workflows, branding, and services.

   Lessons: The balance of customization and scalability is crucial. The identification of core functionalities that can be standardized and simultaneously permit configurable options for MFI-specific requirements can optimize development efforts.

5. **User acceptance and adoption hurdles**: Beyond technical deployment, the need to ensure actual user acceptance and widespread adoption remained a challenge. This involved technical functionality and addressed user trust, digital literacy levels, and behavioral shifts.

   Lessons: The interdependent relationship between FinTech solution deployment and capacity-building efforts is critical. User-centric design, continuous feedback loops from pilot users, and readily available support mechanisms are essential to drive adoption. The successful deployment of solutions is only half the battle. The other half is to ensure their effective use by the target beneficiaries.

6. **Reliability and security assurance:** The development and deployment of financial transaction systems demanded the highest levels of reliability, security, and compliance. Continuous efforts were needed to ensure that all solutions met industry standards for data protection and fraud prevention, which required rigorous testing and adherence to regulatory guidelines.

   Lessons: Security-by-design needs to be prioritized from the initial stages of development, alongside regular security audits, and the implementation of comprehensive fraud detection mechanisms.

7. **App store submission delays and complexity:** The evolving, increasingly stringent security and privacy norms of a major app store (for example, requirement for access to the app, updated privacy policies on MFI websites) led to significant to-and-fro communication and extended the time required for mobile application upload.

   Lessons: A dedicated checklist for app store compliance is vital early in the development cycle.

Despite these challenges, the project showed great resilience and adaptability. The lessons learned from the development and setup of each solution are helpful for future digital inclusion efforts. The successful launch of UPI 123PAY, UPI AutoPay, and MFI borrower mobile applications marks a significant step forward for digital repayment collections and creates opportunities for improved efficiency, clearer processes, and wider financial access for microfinance borrowers across India.

4. Capacity building: Better digital adoption through comprehensive training

The successful setup of digital repayment solutions, as detailed in the previous section, required a practical and comprehensive capacity-building framework to achieve its intended impact. The project carefully designed and executed a multi-tiered training program, which recognizes that technological solutions are effective when the users know how to use them.

This initiative sought to enhance the digital financial literacy and operational readiness of all key stakeholders, which include MFI head office personnel, branch staff, and, most critically, the microfinance borrowers themselves. The objective was not merely to teach how to use new tools, but to build confidence, trust, and bring about a long-term behavioral shift toward digital transactions.

The project engaged a dedicated capacity-building service provider (CSP). The CSP's expertise in adult education and customized content delivery is essential for the development of training and awareness content that connects with diverse audiences.

Building IT capabilities: Training on emerging technologies

The MFIN organized a specialized training program for the IT staff of partner MFIs and other financial institutions. It sought to raise awareness of recent developments in FinTech and inspire participants to introduce innovative solutions into their own organizations. The program specifically sought to cover the latest trends in FinTech, such as artificial intelligence (AI), blockchain, and cloud computing. It also showed how other institutions use these technologies to improve financial services.

For this initiative, MFIN selected the Institute for Development and Research in Banking Technology (IDRBT) to deliver the training. Established by the Reserve Bank of India (RBI), the IDRBT is India's primary institute for banking technology. The institute conducts research and development in banking technology and offers training, advisory, and consulting services to the banking and financial industry. This program was the first customized training IDRBT had ever organized specifically for the MFI sector.

Training content and delivery

The in-person, five-day training program was held from 7th August 2023 to 11th August 2023. The comprehensive curriculum included various emerging technologies and critical IT areas. It includes AI, blockchain, robotic process automation (RPA), cybersecurity, IT risk management, vendor management and audit, financial fraud analytics, digital payment, and dispute resolution.

The IDRBT's faculty primarily led the training sessions. These experts provided participants with a solid foundation in FinTech basics. Additionally, experts from various industries were invited to speak on specific topics, who shared their experiences and discussed how MFIs could adopt new technologies to better serve their customers. The sessions were designed to be interactive and engaging, which encouraged participants to share their own knowledge and experiences.

Training impact

This training proved to be a valuable opportunity for the participants, which enabled them to learn about the latest FinTech developments and understand how these could be applied within their respective MFIs. The training provided them with the necessary tools and skills to develop and implement new solutions that promoted creative thinking and encouraged new approaches. As a result, MFIs could develop innovative solutions that meet the needs of their customers better. Trained IT officials of MFIs are now better equipped to implement projects efficiently. These trained officials develop comprehensive IT plans, provide staff training and support for new IT systems, and ensure proper maintenance and updates. Beyond the technical training, the program offered a unique opportunity for participants to learn from peers who often work in similar roles and face similar challenges.

This training program helped strengthen the IT capabilities of MFIs, enabled them to enhance customer service, and contributed significantly to broader financial inclusion goals.

Content development: A contextualized and comprehensive approach

The development of training content was a highly collaborative and iterative process, which ensured its relevance and effectiveness across different stakeholder groups. This included a thorough review of the partner MFIs' current training content to gain insights into their existing programs and identify specific areas for enhancement. The CSP engaged in detailed discussions at every level of the MFI hierarchy, from head office departments, such as L&D, HR, IT, and operations, to branch staff, and directly with borrowers. Grassroots engagement was fundamental to the identification of specific lessons, existing knowledge gaps, and the operational realities each group faced.

The result was a comprehensive training module that covered the new digital payment initiatives introduced through the project and a reinforcement of existing digital payment solutions. The content was delivered through various formats to cater to diverse lessons, literacy levels, and accessibility needs:

- **Slide decks and presentations**: MFI staff received structured classroom-style training sessions that provided a systematic overview of concepts and processes.
- **Audio messages and videos**: Visual and auditory content helped engage and reach audiences with lower literacy levels and enabled complex processes to be explained simply.
- **Pamphlets, flip charts, and posters**: The training material included tangible, easy-to-read materials that could be distributed widely and served as quick reference guides for staff and borrowers on key information, safety tips, and grievance resolution mechanisms.

The thematic coverage of the content was structured for different audiences:

- **Content for master trainers**: This module was designed with adult learning principles at its core. It provided a comprehensive understanding of the new payment solutions introduced by the project, such as UPI 123PAY, UPI AutoPay, and MFI apps, within the broader landscape of digital payments in India. It also equipped future trainers with the pedagogical skills needed for effective knowledge transfer.

- **Content for branch staff**: This content is focused heavily on the practical aspects of various digital payment processes. It provided detailed guidance on how to address common challenges faced during digital transactions, troubleshoot basic issues, and, crucially, conduct training sessions for borrowers. It also highlighted the benefits of digital transactions for borrowers and branch staff, which include reduced cash handling and improved reconciliation. As a result, the MFI would gain better efficiency and transparency.
- **Borrower level content**: This content is focused on the direct utility and safety of digital payments, which is simplified and highly practical. It covered **various types of digital payments**, the **process to conduct digital transactions**, **safety tips**, **fraud awareness**, and a **grievance resolution mechanism, among others.**

Each training module was based on each MFI's needs and how they operated. This approach ensured that the content was useful and easy to understand for the learners.

Tiered training within partner MFI staff: Cascading knowledge

The capacity-building program adopted a strategic "train-the-trainer" model to ensure widespread reach and sustainability. This model created a cascading effect throughout the MFI organizational structure:

1. **Master trainer (MT) training**: The CSP conducted specialized training sessions for designated master trainers from the MFI head offices and key regional personnel. This intensive training equipped them with a deep understanding of the digital solutions and their benefits. Partner staff also received effective adult learning methodologies to enable them to train others.
2. **Branch staff training (BST):** The master trainers organized and conducted training sessions in collaboration with the CSP team for MFI branch staff. These sessions were pivotal as branch staff are the direct interface with borrowers. The training included **virtual and in-person sessions**, which highlight adaptability to geographical spread and logistical constraints. The CSP representatives also participated in some of these branch staff training sessions, which provided additional support. These sessions sought to empower branch staff to effectively facilitate digital repayments and serve as local champions for digital adoption.

Borrower's training to drive digital adoption at the last mile

The project's ultimate success depended on borrowers' adoption of digital repayment methods. MFI branch staff, trained by the master trainers, conducted the training sessions for borrowers. These sessions used existing MFI group meeting structures and adapted the content to local contexts and languages.

The key topics covered during borrower training included:

- **Types of digital payments***:* MFI branch staff explained the concept of UPI, mobile applications, and specifically the UPI 123PAY system to the borrowers.
- **Process of digital transactions**: This was a step-by-step, simplified demonstration of how to initiate and complete a digital loan repayment process. It included practical guidance on how to use QR codes, make calls for UPI 123PAY, approve the AutoPay mandates, or navigate simple mobile applications.
- **Safety tips**: These comprised crucial advice on how borrowers could secure their mobile phones, understand the importance of PINs, and protect themselves from phishing attempts or other forms of digital fraud.
- **Fraud awareness**: These practical examples and warnings about common fraudulent practices emphasized what not to share and whom to trust.
- **Grievance resolution mechanism (GRM)**: The GRM comprised clear and accessible information on whom to approach (MFI branch staff, customer care numbers) and the steps to take in case of any issues or failed transactions, to build essential trust in the system.

The direct, last-mile training was essential to build confidence among borrowers. This training dispelled myths and addressed their concerns about the use of digital channels for financial transactions.

Challenges and lessons

A large-scale capacity-building program was implemented across diverse geographies with different digital literacy levels. The program presented a unique set of challenges, which provided invaluable lessons:

1. **Diverse digital literacy and learning aptitudes**: Borrowers and some of the branch staff showed significant variations in their initial digital literacy levels and learning aptitudes. A "one-size-fits-all" training approach proved ineffective.

   Lesson: The importance of **customized content and flexible delivery methods** became essential. When the trainees were grouped by their existing digital proficiency, they adapted to the pace and depth of training, which improved the outcomes. The use of visual aids, practical demonstrations, and explanations in the local language was critical.

2. **Logistical complexities of in-person training**: The organization of in-person training sessions, especially for branch staff across multiple states and remote locations, presented logistical hurdles. These challenges include travel delays, schedule conflicts, and a lack of suitable training environments.

   Lesson: A blended approach combined virtual sessions, where feasible for staff, with targeted in-person sessions for hands-on training. This approach addressed specific queries that proved more efficient.

3. **Resistance to change and trust deficit**: Despite awareness, some borrowers and staff showed an initial resistance to shift from familiar cash transactions. The reasons included ingrained habits, fear of technology, or distrust of digital systems.

   Lesson: The project emphasized the **benefits**, which include convenience, safety from carrying cash, and real-time confirmation. Success stories from early adopters were showcased to help overcome resistance. Trust required consistent messaging, effective grievance resolution mechanisms, and approachable, well-trained branch staff as local anchors.

4. **Content development in a diverse and undocumented landscape:** The creation of training content was time-consuming due to the need for multiple regional languages and customization for each MFI. The project focused on content development for digital payment solutions already in use by MFIs. However, documented payment processes proved difficult to obtain as most MFIs lacked readily available materials. This required extensive sessions with their operations and IT teams to map out the entire process.

Lesson: Content development, especially in a fragmented and undocumented operational environment, emerged as a significant undertaking that required dedicated time and resources. Direct engagement with MFI operations and IT teams at an early stage was crucial to accurately capture processes and develop customized, multilingual training materials.

5. **Maintaining consistency in training delivery**: A tiered "train-the-trainer" model that ensures consistent quality and messaging across all levels of training was a continuous effort. Master trainers needed adequate support to cascade knowledge effectively.

   Lesson: Detailed trainer guides were developed, while branch staff established feedback mechanisms. These steps helped maintain quality and standardize the training experience.

The comprehensive capacity-building program successfully established a stronger foundation for digital literacy and confidence. The program empowered the MFI staff to be digital champions, who educated borrowers on the benefits and safety of digital repayments. This project created a supportive environment for the sustained adoption of digital financial services, which contributed significantly to the broader goal of financial inclusion.

5. Future directions and strategic focus to sustain impact and catalyze innovation

The successful operationalization of digital repayment solutions marks a significant milestone in the digital transformation of the microfinance sector. Sustainability, scalability, and strategic innovation are essential to build upon this momentum and address the persistent challenges and emerging needs.

Sustainability and scalability of digital repayments

The initial deployment of UPI 123PAY, UPI AutoPay, and MFI borrower mobile applications has shown the feasibility and benefits of digital repayment. The immediate priorities are to:

- **Sustain current solutions**: Ongoing efforts are crucial to ensure the continued smooth operation of the deployed payment solutions. These efforts include regular technical support for MFIs and the resolution of any unforeseen operational challenges that may arise as adoption grows.
- **Reinforce borrower behavioral shift:** While digital solutions are in place, many borrowers still prefer cash repayments. This preference requires sustained efforts in digital financial literacy. Continuous reinforcement through targeted handholding, repeated training sessions, and clear communication on the benefits and security of digital transactions will be vital.
- **Demonstrate and replicate success:** The success stories from MFIs that participated need to be effectively documented and showcased to other MFIs. This approach will be essential to encourage wider adoption across the sector, share best practices, and highlight the tangible benefits of transition to digital repayments.

Catalysis of broader digital innovation for the sector

The current project focused on the implementation of existing payment solutions with limited innovation. Yet, the experience has highlighted critical unmet needs within the MFI sector. Gaps remain in areas, such as borrower stress prediction, digital group formation, cash flow-based credit assessment, income estimation, and compliance with data privacy regulations.

Likewise, MFIN plans a strategic shift to address these gaps and drive holistic digital transformation toward:

- **A structured approach to innovation:** MFIN will establish a dedicated, sector-aligned initiative to systematically identify crucial challenges faced by MFIs and their clients, which seeks to develop targeted, MFI-specific, and modular digital solutions.
- **An innovation model that combines adaptation and creation**: MFIN will facilitate the refinement and customization of the digital tools to better suit the unique ways MFIs work with their customers. This approach supports the development of new solutions to address ongoing and emerging gaps.

- **Sustainable development through collaborative partnerships:** Entrepreneurs and specialized solution providers should engage early in the process to reduce the risks associated with innovation and ensure the commercial viability and sustainability of solutions.

The MFIN-HSBC project has yielded tailored technology solutions that address the needs of borrowers and have the potential to transform microfinance collections in India. The project's success and lessons learned underline the importance of continuous capacity building, ongoing technical support, and trust-building to sustain the adoption of digital payments among microfinance borrowers.

When we look ahead, sustainable digital transformation will require an approach that combines the adaptation of existing solutions in the ecosystem, strategic innovation to fill critical gaps, and collaborative partnerships. These steps will empower MFIs to enhance operational efficiency, reduce cash handling risks, and propel customers toward financial inclusion and resilience.

The intervention has shown that the benefits of digitization in microfinance go beyond institutional gains. They directly improve the customer experience through streamlined repayments, increased convenience, and reduced risk of errors and fraud. This experience provides a foundation for stakeholders to expand digitization in the sector and potentially deliver measurable value for customers at every level. These lessons lay the groundwork for the rest of the sector. As more MFIs adopt these solutions, putting the customer first will ensure more inclusive growth across the industry.

Project end workshop—digital repayments: Transforming microfinance, empowering communities

The Microfinance Industry Network (MFIN) hosted a workshop in New Delhi, titled "Digital repayments: Transforming microfinance, empowering communities." This event marked the conclusion of MFIN's project to expand digital loan repayments for MFI borrowers in India.

The project successfully introduced innovative digital repayment solutions tailored for the borrowers of MFIN's nine partner MFIs. These solutions included UPI 123PAY for users with feature phones, UPI AutoPay to manage recurring payments, and customized mobile applications designed to meet the unique needs of borrowers. These technological advancements were complemented by a series of comprehensive training modules that worked to enhance MFI technology infrastructure, improve staff skills, and increase borrowers' digital financial literacy.

The workshop itself provided an essential platform for all project partners to share valuable lessons learned throughout the initiative. These insights are anticipated to drive widespread digitization efforts among MFI borrowers moving forward.

Two expert panelists led the discussions at the workshop. The first panel, moderated by Swetan Sagar from MFIN, explored "Can technology enhance group dynamics in digital repayment models" and featured insights from CIOs and senior executives of prominent MFIs. The second panel, led by Anil K. Gupta from MSC (MicroSave Consulting), addressed the topic, "Beyond transactions: Leveraging digital repayments to enhance financial literacy and customer behavior." This

discussion included participation from key industry leaders, such as the CEO of NPCI Bharat Bill Pay Limited and the Director of the National Centre for Financial Education.

The workshop concluded with closing remarks from Anil K. Gupta, who summarized the key takeaways and provided a future outlook. It effectively demonstrated MFIN's firm commitment to digital innovation within the microfinance sector. It also built the foundations for greater operational efficiency, improved financial literacy, and broader financial inclusion across India.

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