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Digital technologies exacerbating mission drift in microfinance institutions: Evidence from India

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ABSTRACT

Digital technologies (DTs) are increasingly recognized as crucial in addressing social issues related to inequality and enhancing the well-being and agency of socially marginalized groups. We however, provide evidence that, instead of alleviating social inequalities, use of DTs (re) produced and exacerbated these inequalities in disparate forms, for an already marginalized population. Based on a qualitative study of employees from five microfinance institutions (MFIs) in India that offer uncollateralized group loans to poor rural women, our findings demonstrate how the pursuit of financial gains through DTs in providing microfinance exacerbated mission drift in MFIs, leading to reduced quality and depth of outreach. The use of DTs undermined social and human capital development — both crucial for alleviating poverty — and widened exclusion rather than bridging the gap. We explicate the quality of outreach (i.e., quality of services provided) as an additional dimension of social outreach, alongside the depth of outreach (i.e., reaching poorer borrowers) for understanding mission drift. Our findings call for consideration of existing intersectional social inequalities when leveraging DTs for social causes.

1. Introduction

A growing literature on Microfinance institutions (MFIs) highlights tensions and trade-offs between social outreach and financial gains, making these organizations susceptible to the risk of mission drift – referred to as increased focus on financial performance at the detriment of their core mission of poverty alleviation (Wry & Zhao, 2018; Xu, Copestake, & Peng, 2016). Mission drift, thus, is seen as an ethical problem as institutions created to serve the poor and vulnerable tend to focus on financial gains at the expense of social outreach (Beisland, D'Espallier, & Mersland, 2019). Amidst growing criticism, the challenge for many MFIs is to balance the social-financial goals, such that the institutions created to serve the poor and vulnerable, do not abandon social goals for commercial gains (Battilana & Dorado, 2010; Beisland et al., 2019; Hermes, Lensink, & Meesters, 2011). In this context, it is presumed that the use of digital technologies (DTs), can help MFIs scale up operations, facilitate a wider range of products and services, and bring in efficiency and cost savings (Dorfleitner, Forcella, & Nguyen, 2022; Moro-Visconti, 2021; Vong & Song, 2015), that can potentially help MFIs to better serve its core mission (Ray, Paul, & Miglani, 2018).

However, using DTs to empower marginalized communities is a complex sociocultural process. Without socially embedded solutions, these efforts risk partial or complete failure, and in some cases, they may even magnify existing marginalization (Parthiban,

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Qureshi, Bandyopadhyay, Bhatt, & Jaikumar, 2020; Walsham & Sahay, 2006; Zheng & Walsham, 2021). Marginalized groups, such as poor rural women borrowers of MFIs, are often constrained by rigid social structures, informal institutions and local customs that unfairly preclude them from economic participation (Qureshi, 2022; Qureshi, Pan, & Zheng, 2021; Zheng & Walsham, 2021). Hence, despite claims that DTs ‘can help to avoid a trade-off between the social and financial performance of the MFIs’ (Dorfleitner et al., 2022: 474), their use can also exacerbate mission drift. Given this, we study how the use of DTs in providing microfinance impacts mission drift in MFIs. Understanding this is crucial not only for MFI practices but also for other institutions leveraging technology for social causes. We explore this question through a qualitative study primarily involving interview data from employees at multiple levels within five MFIs in India. Our research offers three key contributions. First, we provide evidence that the use of DTs in providing microfinance is exacerbating mission drift. Second, we elucidate the quality of outreach — explained by the time invested with borrowers during training or group meetings to build social and human capital — as a significant additional measure for understanding mission drift, in addition to the depth of outreach (i.e., reaching the poorer borrowers) (Wry & Zhao, 2018; Xu et al., 2016). Our findings show that while depth of outreach is critical for MFIs, ensuring quality outreach is equally indispensable for fostering inclusivity and addressing the multifaceted challenge of poverty alleviation among poor rural women at the bottom of the pyramid (BoP). Third, we highlight how intersectional inequalities, such as those based on gender and socio-economic status, mediate various spaces of inclusion and exclusion in interactions with DTs (Zheng & Walsham, 2021).

We begin with the literature review on mission drift in MFIs. We then outline the literature on DTs and MFIs. Subsequently, we describe the research setting, explain the method, the findings, and present the discussion and conclusion.

2. MFIs and mission drift

MFIs are for-profit social enterprises that provide small, uncollateralized group loans with joint liability to poor, primarily rural women, enabling them to start income-generating businesses (Hudon, Labie, & Reichert, 2020; Tavanti, 2013). These organizations vouch for core identity-based commitments to social causes through commercial means, aiming to serve the poor and unbanked, often neglected by traditional banking systems. (Wry & Zhao, 2018). The mission of MFIs extends beyond merely disbursing loans; it aims to enhance social and human capital, empowering women to rise out of poverty (Banerjee & Jackson, 2017; Postelnicu & Hermes, 2018; Tavanti, 2013). Enhancing social capital refers to leveraging networks, relationships, and social norms that facilitate cooperation and mutual benefit among community members and human capital development focuses on improving borrowers’ skills, knowledge, and overall competencies, enabling them to better utilize the loans they receive (Hermes et al., 2011; Wry & Zhao, 2018).

Traditionally, MFIs have relied on social solidarity as collateral, using personal interactions between borrowers and field officers to make credit decisions and educate borrowers on relational expectations of microloans. In rural areas, borrowers who take joint liability loans usually live in close-knit communities connected through social networks - that provide necessary information and flexibility to field officers for screening and monitoring group members, reducing information asymmetry and facilitating loan approval or disapproval decisions (Postelnicu & Hermes, 2018). In this context, social capital built on principles of reciprocity, trust, and shared norms, plays a crucial role in MFIs to promote solidarity within groups. This solidarity makes group members collectively responsible for repaying individual loans which play a significant role in ensuring loan repayments discipline, facilitating advice-seeking, and sharing information to enhance human capital (Banerjee & Jackson, 2017). Additionally, social capital allows for cost-free monitoring of effort and capital diversion, helping mitigate endogenous default risk in group loans (Benami & Carter, 2021). Past research highlights the importance of group meetings—regular gatherings of borrowers and MFI field officers—as critical for harnessing social capital to benefit both borrowers and MFIs (Postelnicu & Hermes, 2018).

Recent literature underscores a shift in the focus of MFIs towards serving less poor borrowers in pursuit of financial gains, contributing to mission drift (Hermes et al., 2011; Xu et al., 2016). While the goal of serving poorer borrowers and simultaneously generating sufficient revenue to scale up operations is appealing, it remains a significant challenge (Wry & Zhao, 2018). Targeting poorer borrowers requires more extensive support, which increases financial strain on MFIs (Santos, Pache, & Birkholz, 2015). For instance, poorer borrowers often lack a credit history, requiring MFIs have to rely on coarse proxies (e.g., talking to neighbors) and expend significant time and effort in assessing creditworthiness before disbursing loans (Wry & Zhao, 2018). Additionally, poorer ones lack valuable physical collateral (Postelnicu & Hermes, 2018), and have limited numeric and literacy skills, making it difficult for them to manage and repay loans (Yaron, 1994). As a result, they often require additional assistance from MFIs to acquire basic skills necessary for loan management and repayments (Wry & Zhao, 2018). Furthermore, poorer ones tend to have irregular income and are more vulnerable to external shocks such as natural disasters or economic shocks, making them riskier borrowers.

Much scholarly work on MFIs has relied on the depth of outreach as a proxy to measure the social outreach, that is reflected in the poverty level of its borrowers served (i.e., the poorer the borrowers are, the greater is the depth of outreach) (Cull, Demirguç-Kunt, & Morduch, 2007; Wry & Zhao, 2018; Xu et al., 2016). From this standpoint, social outreach is less when the depth dimension of outreach is weakened (Mersland & Strøm, 2010). One of the most widely used indicators for measuring the depth of outreach is the average loan size. An increase in average loan size typically suggests less social outreach, based on the rationale that poorer borrowers often take smaller loans (Cull et al., 2007; Mersland & Strøm, 2010). This change indicates that an MFI is either targeting wealthier borrowers or that existing borrowers are able to afford larger loans after achieving success.

Research on mission drift in MFIs has primarily attributed the phenomenon to a reduced focus on the social goals among decisionmakers, including owners, funding organizations, managers (Armendáriz & Szafarz, 2011), and field officers (Beisland et al., 2019). As MFIs explore alternative business models to reduce costs and enhance social outreach (Labie & Mersland, 2011), the use of DTs has been suggested as a potential way to mitigate the trade-offs between social and financial performance (Dorfleitner et al., 2022). Notable, whether DTs prevent these social-financial trade-offs in MFIs remains to be investigated.

3. MFIs and DTs

In recent years, DTs have made rapid inroads into the microfinance sector globally, transforming how microfinance is provided to poor women borrowers. The widespread diffusion of DTs has led MFIs transition from labour intensive social networks to work patterns supported by DTs (Berger & Nakata, 2013). Reports suggest that faster digital transformation can help MFIs to remain competitive, be nimble, and better serve their borrowers (PwC, 2019; UNCDF, 2019). Assertions are made that adopting DTs is no more an option for MFIs if they want to stay relevant (UNCDF, 2019). Since MFIs deal with a large number of small-size loans, and periodical transactions (Plogmann, Adeel, Nett, & Wulf, 2010), DTs potentially aids financial inclusion and poverty alleviation through positive impact on organizational operational management (Dorfleitner et al., 2022).

The shift towards DTs is largely driven by the widespread use of mobile technology, which reduces the need to visit brick-and-mortar institutions (Benami & Carter, 2021; Bisht, Trusson, Siwale, & Ravishankar, 2023). The use of digital devices such as smartphones or tablets with customized software in providing microfinance, streamlines the loan application process by verifying borrower information, automating creditworthiness checks, and managing loan disbursements and repayments. This offers many benefits to MFIs, including reducing paperwork, enabling faster decision-making, shortening loan disbursement times, tracking real-time data, improving financial projections, reducing reliance on cash transactions and creating a digital footprint (Bisht et al., 2023; PwC, 2019). Additionally, along with using credit scoring algorithms based on recent transactions such as repaid loans or high repayment delinquencies, (Bumacov, Ashta, & Singh, 2014), MFIs have begun using alternate credit scoring methods that utilize information beyond previous formal credit history. This includes data such as utility records or mobile phone records, enabling more accurate evaluation of potential borrowers' repayment capacity, and default risk, thereby informing decisions on loan approvals or rejections (Benami & Carter, 2021).

This reliance on hard data starkly contrasts with the traditional human-centred approach of MFIs, which relied on social solidarity as a form of collateral and emphasized personal interactions between borrowers and field officers. Hence, the adoption of digital procedures presents multiple challenges for MFIs in their pursuit of the social mission of alleviating poverty. The Centre for the Study of Financial Innovation identifies DTs as a potential risk for MFIs, because it can be exploited by providers primarily focused on short-term profits (Milana & Ashta, 2020) potentially resulting in 'unintended consequences for financial inclusion' (Siwale & Godfroid, 2022:178). The risk is particularly concerning when it comes to using digital banking systems to integrate these poor women into the formal financial sector, as it exposes them to the inherent risks of dealing with banks, other financial institutions, and technology companies (Ozili, 2020). These women may get disproportionately affected in comparison to their wealthier and more educated counterparts as they face marginalization at the intersection of their gender, socio-economic standing, and rural background.

Recent literature acknowledges an individual's intersectional position within various 'systems of power,' that mediates how DTs shape various realms of inclusion and exclusion (Zheng & Walsham, 2021). The focus on intersectionality transcends the simplistic division of distinct groups into haves and have-nots, which suggests absolute disparities between those included and excluded and also avoids the pitfalls of technological determinism (Van Dijk, 2006; Van Dijk, 2020). It suggests that it's not just one, but a combination of various dimensions of offline individual inequalities such as gender, or socioeconomic status influence their perception and interaction with DTs in everyday life (Helsper, 2019), thus capturing the compoundedness (cumulative disadvantage) and sequentiality (one type of exclusion depends on another) of inequalities (Robinson et al., 2015; Van Dijk, 2006).

For example, worldwide, more men than women use the internet, and this gap is even more pronounced in emerging economies or less developed countries (Robinson et al., 2020). Moreover, women are more likely to underestimate their online skills and abilities compared to men, and this has real consequences for their behavior (Robinson et al., 2015). Socioeconomic status typically understood by income and education, is another crucial indicator, as income and education play a significant role in explaining the use and non-use of DTs. Empirical research demonstrates that individuals who have historically been disadvantaged in terms of socioeconomic factors are less likely to engage with technology in a wide range of ways (Robinson et al., 2015) and there exists considerable differences in continued technology use between socio-economically advantaged and disadvantaged groups (Hsieh, Rai, & Keil, 2008). Likewise, spatial be it urban or rural plays an important role in influencing the role of technology in society. While rural-urban inequalities are evident in both emerging and developed nations, the gap tends to be wider in emerging countries compared to developed ones. For instance, in 2017, the Internet penetration rate in rural India was around 20 %, nearly 45 % lower than that of urban India (Robinson et al., 2020). Moreover, meaningful connectivity necessitates 4G, but in numerous rural areas of developing countries, only 3G is accessible (International Telecommunication Union, 2022). Further, the ability of rural residents to capitalize on the opportunities presented by technology is hindered by their limited literacy and internet proficiency.

While there is a growing body of literature on digital transformation in MFIs, focusing on technology types and potential advantages, what remains unclear is how the use of DTs in providing microfinance affects the social objectives of MFIs. A recent study argues that research on the use of DTs and their consequences holds substantial practical value in enhancing the quality of life and empowerment of rural women in India, with potential implications for other developing countries (Venkatesh, Sykes, & Zhang, 2020). Accordingly, this study investigates how the use of DTs impacts mission drift in MFIs dedicated to poverty alleviation among rural women, who face marginalization at the intersection of socio-economic status, gender, and geographical location.

4. Research setting

MFIs in India have been a strong enabler in accelerating the provision of financial services to low-income households. However, over time, these institutions, have been criticised for mission drift as they increasingly cater to borrowers who are better off, thereby straying from their core mission to serve poor borrowers (Augsburg & Fouillet, 2013; Ghosh & Guha, 2017). These institutions using

DTs to provide microfinance in the Indian rural context provide an interesting setting for the study. Remarkably, nearly 100 % of disbursements in India are now conducted digitally, with funds being deposited directly into borrowers' bank accounts (Atul, 2023). MFIs in India are also striving to make loan repayments cashless through digital payment methods, but have encountered limited success (Bisht et al., 2023).

4.1. Rural India

As a developing country, even though India is one of the fastest-growing economies in the world, with a growing technology infrastructure, the development is unevenly spread between rural and urban areas. Rural India lags behind urban India in nearly all indicators of development, such as Gross Domestic Product, poverty, employment and health. This slow growth in rural areas is due to a lack of developed infrastructure, limited access to global supply chains (Schuetz & Venkatesh, 2020), low literacy levels and an overly slow rate of information diffusion due to a traditional mindset (Venkatesh, Sykes, & Venkatraman, 2014). People in rural areas generally stay within their villages and are often unaware of broader opportunities and issues even within their state or area. Shared perspectives, such as believing in karma (cause and effect principle) and lacking trust towards outsiders, serve as external boundaries for communities (Das, 2013). Despite a large rural population of over 68 % of the nation's population and 72 % of the total workforce (Chand, Srivastava, & Singh, 2017, 2017 statistics), only 5 % have access to a commercial bank branch (Varghese & Viswanathan, 2018). Financial products and services in rural areas are often expensive or not suited to the 'helplessly' financially illiterate population (Schuetz & Venkatesh, 2020).

4.2. Rural women

Societal challenges are more pronounced for rural women in India, who face additional socio-cultural constraints and marginalization when compared to men, limiting their ability to make personal choices and affording them lower social status. In rural areas, men are seen as protectors who are expected to provide for the family, while women are relegated to household and care work (Qureshi, Sutter, & Bhatt, 2018). Gender segregation is deeply ingrained in the culture and socio-cultural norms discourage the education of rural women and even impose restrictions on their presence in public places (Chatterjee, Gupta, & Upadhyay, 2020). Men usually display reluctance towards involving women in significant aspects of village life, such as decision-making, paid economic activities, or even inter-gender interaction and see them as life-long dependents (Qureshi et al., 2018). Violation of these norms can result in violent reprisals (e.g., Das, 2013). Surrounded by these rigidities, rural women typically have limited access to loans or other sources of capital.

While technology-based tools and applications have the potential to benefit rural women by providing market information and fostering entrepreneurial skills (Chatterjee et al., 2020), the socio-cultural environment in rural India imposes significant restrictions on their use of technology. For instance, villages councils in states such as Rajasthan, Gujarat, Bihar and Haryana banned women and girls from using or possessing mobile phones (Sinha, 2018). Not surprisingly, studies reveal significantly low levels of technology usage among women in rural Indian villages compared to men (Venkatesh et al., 2014) and a widespread practice of proxy use, where men predominantly operate technological devices on behalf of women (Parikh & Ghosh, 2006). Recent studies, however, underscore the significance of social capital within the networks of rural women for disseminating information, enhancing overall well-being, and promoting technology adoption (Venkatesh et al., 2020). This approach is particularly effective given the low literacy rates, the communal culture among rural women, and a longstanding tradition of oral information sharing in India (Parikh & Ghosh, 2006; Venkatesh et al., 2020).

5. Methodology

The article is based on semi-structured interview data from employees at five Non-Banking Financial Companies - Microfinance Institutions (NBFC-MFIs)¹ that served financially underserved women in rural India. These institutions were committed to poverty alleviation, as stated in their mission, vision, or policy statements, and provided loans through joint liability groups (JLGs). They used mobile applications for borrower screening, following steps such as Borrower Registration, Know Your Customer (KYC) checks using the Aadhaar² identification system, and document collection, uploading, and verification, as well as group formation. Similarly, they used mobile applications for credit bureau checks and relied on alternate credit scoring algorithms to assess borrowers' creditworthiness.

Once a loan was sanctioned, a digital update was sent to the borrowers, and the loan was directly disbursed to their bank accounts through mobile applications. Borrowers received digital receipts, and updates were recorded on the mobile application(s) used. For loan repayments, these companies offered options through mobile payment platforms like Unified Payments Interface (UPI), mobile wallets, and mobile banking apps to make repayments cashless. However, they had encountered limited success, as borrowers preferred to repay in cash. Fig. 1 provides an overview of the DTs employed by these MFIs to deliver microfinance to women borrowers.

¹ NBFC-MFIs, form a regulated sector regulated by the Reserve Bank of India that provides microcredit to 99 % of women from low-income households, primarily in rural India (MFIN, 2020).

² Aadhaar is a digital identification system in India.

A total of fifty-six semi-structured interviews (telephonic and in-person) were conducted by the first author with employees in senior and middle management (e.g., CEO, Vice President, Regional Manager) and operational roles (Branch managers and Field Officers). Prior research has highlighted the importance of employee input(s) in microfinance impact studies (Beisland et al., 2019; Labie, Méon, Mersland, & Szafarz, 2015). Field officers, in particular, are seen as a reservoir of information and insights as they closely interact with borrowers and manage relationships with them, impacting the quality of services provided by MFIs (Khavul, 2010).

We began by leveraging personal networks to reach out to CEOs/or Human Resource (HR) managers, requesting contacts for senior and middle management involved in decisions related to the use of DTs in MFIs. We also asked HR leads for contacts of branch managers and field officers in operational roles to gain insight into the application of DTs for delivering microfinance. All the interviewees were contacted personally, and their participation was requested. In some cases, we utilized snowballing to identify additional interviewees. A protocol for conducting interviews was piloted with two experts and three respondents. Based on their feedback, necessary changes were made. The interviews were conducted in English with senior and middle management, a combination of English and Hindi with branch managers, and only in Hindi with field officers. The interviews were stopped after we reached saturation, i.e., where additional data did not result in significant new insights or understanding (Lee, 1999). In all interviews, participants were asked to explain their experiences as vividly as possible, including specific events and examples. We included multiple informants to increase the accuracy and convergence of the information provided. Ethical research protocols were followed, including informed consent with an assurance of confidentiality. Each interview lasted 60 to 90 min and was recorded with the participants' permission. The recorded data were transcribed verbatim and the Hindi data were translated into English.

While semi-structured interviews served as our primary means of inquiry, we also used informal conversations, observations, and archival materials. The first author, who possesses prior experience in researching MFIs, engaged in informal conversations with participants in branch or head offices and made unobtrusive observations during field visits (e.g., sourcing, initial training, group meetings etc.). The presence was maintained passively to avoid disrupting any conversations between organizational employees and borrowers. A journal was maintained to keep field notes and reflections. Although we did not code these observations, they offered valuable insight into the subtleties, either corroborating or challenging the findings derived from interview data. The focus of these observations was to gain an understanding of the employees' focus on the use of DTs or related decisions. Similarly, our observations during field visits aimed to assess how the use of DTs by field officers influenced the delivery of microfinance to female borrowers.

Archival data, including emails about implementing DTs, financial gain documents (e.g., reduced human hours and cost savings), loan processing time, mobile apps, website technology related statement(s), and annual reports were also examined. These data sources played a crucial role in capturing the concerns and preferences of employees at different organizational levels as they went about using DTs. Furthermore, this also allowed triangulation to enhance the reliability of interview data gathered, by comparing stated intentions to observable outcomes (Denzin & Lincoln, 2011). The data collection took place over 18 months and is described in Table 1.

The data analysis was subjected to thematic analysis, which organizes raw data into themes (King, 2004). The primary analysis was conducted by the first two authors. This involved a thorough examination of the interview transcripts to identify patterns and variations in the descriptions, emphasize critical statements, and record initial interpretations in the margins. All data lacking specific coding associations were meticulously reviewed, with an active effort to seek out diverse and minority perspectives to ensure a comprehensive representation of the participants' viewpoints. In-depth discussions and mutual reviews of the content within each code were carried out, facilitating a deeper understanding of individual codes and their relationships. Following this, the third author conducted a review of the coding to arrive at a shared interpretation of the data. Any disagreements related to coding and interpretation were addressed through discussions among the authors. These extensive deliberations pertaining to the data, themes, and codes contributed to the attainment of a high level of inter-rater reliability. While the first author, with direct experience in the study's context, may have had confirmation bias, this was mitigated by the involvement of the other two authors in the analysis process. They were able to challenge the first author's interpretations and offer alternative explanations. Two overarching themes emerged from the analysis: 'Prioritization of financial gains' and 'Reduced social outreach'. These themes were then used to code the data progressively with the second or third-order codes. Examples of second-order codes include 'Benefits afforded by DTs', 'Focus on reducing risk', and 'Intensification of financial targets.' Table 2 provides an overview of the main themes and codes. To maintain the anonymity of participants and the companies, we use pseudonyms when referring to them.

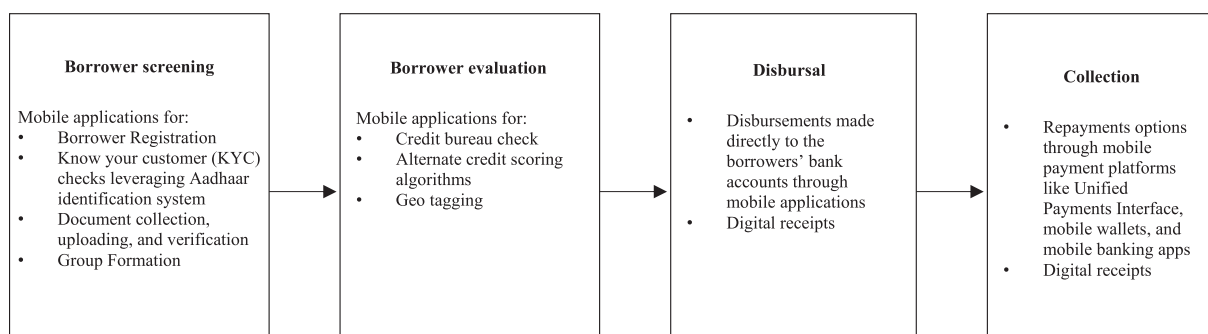


Fig. 1. Overview of digital technologies utilized by MFIs in providing microfinance.

Table 1
Data sources.

Companies ^a	Company A	Company B	Company C	Company D	Company E
Interviews conducted		CEO (1)			
	Vice President (1)	Vice President (3)	Vice President (1)	Vice President(2)	Vice President (2)
	Regional manager (2)	Regional Manager(2)	Regional Manager(2)	Regional Manager(2)	Regional Manager(4)
	Branch manager (3)	Branch Manager(2)	Branch Manager(2)	Branch Manager(3)	Branch Manager(2)
	Field officer (4)	Field Officer(5)	Field Officer(6)	Field Officer(3)	Field Officer(4)
Total number	10	13	11	10	12
Observation & informal conversations	6 h (spread over 2 days)	8 h (spread over 3 days)	7 h (spread over 2 days)	13 h (spread over 2 days)	8 h (spread over 1 day)
Archival material	Mobile applications	Mobile applications Emails about adoption of new technological solutions	Mobile applications Emails about adoption of new technological solutions	Mobile applications Emails about adoption of new technological solutions	Mobile applications Emails about adoption of new technological solutions
	Website	Website	Website	Website	Website
	Annual reports	Annual reports	Annual reports	Annual reports	Annual reports

^a Pseudonyms are used to protect anonymity of case firms and their members.

6. Findings

The companies' annual reports, websites, and policy documents offered insights into their strategies and ideologies for utilizing DTs to provide microfinance to women borrowers. For instance, Company A emphasized the implementation of cutting-edge technology solutions to support their high-touch business model, enabling a wider reach as outlined in their Annual Report. Similarly, Company B highlighted its prudent investments in Information Technology systems, which have led to the introduction of automated and DT platforms and tools, all aimed at enhancing their approach to borrower 'centricity' and maintaining consistent levels of service for borrowers, as noted in their Annual Report. Company C expressed its commitment to bringing modern digital capabilities to 'the very last mile' (those excluded on the basis of economic status and/or distance), and Company D underscored its dedication to infusing social elements into the lending process, using innovative technology to provide a seamless borrower experience, as highlighted in their annual reports. Likewise, Company E showcased its focus to leveraging DTs for positive change in lives of the 'underserved segment of India' in their Annual Report, and emphasized their continuous technological innovation 'in order to bank the unbanked' as articulated in their Vision statement. In sum, all five companies mentioned of using DTs to improve their social outreach. Contrary to these claims, however, the interview and other data revealed that, MFIs prioritized financial gains in using DTs, rather than social outreach. The data analysis coalesced into two key themes: (a) Prioritization of financial gains and (b) Reduced social outreach. In what follows, we explain these key themes and use illustrative quotes to support our findings.

Table 2
Main themes and codes.

Main themes	Description	Codes
Prioritization of financial gains	How financial gains were prioritized in using DTs for providing microfinance	<ul style="list-style-type: none"> • <i>Benefits afforded by DTs</i> <ul style="list-style-type: none"> — Improve operational efficiency — Improve competitiveness — Get banking license • <i>Focus on reducing risk</i> <ul style="list-style-type: none"> — Lesser risk of employee fraud — Lesser risk of borrower fraud — Lesser risk of theft or looting — Protection against economic shocks like demonetization
Reduced social outreach	How the use of DTs led to actions that reduced social outreach in microfinance institutions	<ul style="list-style-type: none"> • <i>Intensification of financial targets</i> • <i>Undermining of social capital and human capital development</i> <ul style="list-style-type: none"> — Use of credit scores to enforce repayments discipline — Less or no focus on organizing group meetings — Less or no focus on capability building • <i>Enabling exclusion</i> <ul style="list-style-type: none"> — Use of alternate credit scoring algorithms to assess the creditworthiness of borrowers — Not serving locations without internet connectivity — Not providing loans to people without a bank account — Victims of fraud

DTs: Digital technologies.

6.1. Benefits afforded by DTs

Data revealed that all MFIs partnered with fintech companies and adopted DTs. While this was a costly decision, it was driven by 'strategic necessity' that provided them financial benefits. They noted that DTs were essential for improving operational efficiency. Digital tools provided 'real-time' data about borrowers through cloud-based applications for authentication and verification, enabling quick creditworthiness assessments and reducing turnaround time and transaction costs:

We needed digital processes to improve operational efficiency. Now, if fifteen women form a group to get a loan, a field officer no longer needs to spend hours manually entering data. S/he [field officer] enters KYC [Know your customer] data of all the women with their Aadhaar ID in the mobile app, and the app retrieves the person's details if the biometrics match the Aadhaar server data. The field officer then checks the person's credit score online and obtain all relevant information, such as previous loans and outstanding debts to determine if a woman is eligible for a loan or not (Vice President#1, Company E)

The participants also highlighted the importance of DTs in enhancing competitiveness. They observed that new market entrants were easily adopting digital tools, and stressed that existing players needed to do the same to stay competitive. The use of DTs, for reducing cost and quick disbursement of loans, were identified as a crucial factor in sustaining market competitiveness.

Transacting online decreases cost and reduces processing time. Four to five years backs, we had fewer MFIs, but now the number has increased. Small players [new companies] are working with ease of using DTs, and they are competition for us. If we are slow in our processes, someone else will provide loans (Regional manager#2, Company A)

In addition, obtaining a banking license was a significant motivator for MFIs to adopt and improve DTs. This strategic move could enable access to funding from investors at more favorable interest rates, offering substantial financial benefits.

Last year the RBI [central bank of India] gave banking licenses to 10 MFIs. We also want to improve our technology in providing loans, to get a small bank license which may allow funding at a lesser rate of interest (Vice President#2, Company D)

Everyone knows that digital process improvements can get us a banking license, which makes business sense
(Vice President#2, Company B)

6.1.1. Focus on reducing risk

After the loan disbursement process began using DTs, MFIs shifted to directly transferring loans to bank accounts instead of disbursing cash. Borrowers received digital receipts; the updates were recorded on the mobile application(s) used. These changes, as stated by the participants, reduced the possibility of fraud. Previously, field officers could misuse their position to sign on behalf of borrowers and misappropriate cash. By directly transferring loans to the bank accounts, DTs reduced opportunities for such fraudulent activities, ensuring greater transparency in the disbursement process:

Digital processes have significantly reduced the risk of employee fraud. Now, we disburse directly to the bank account and provide digital receipts. We don't keep cash for disbursement in the branch. Earlier, sometimes, field officers used to sign on the borrowers's behalf and take cash themselves. (Vice President#1, Company C)

The use of DTs, however, did not eliminate the risk of employee fraud. Occasionally, field officers handling cash collections would accept loan instalments without digitally recording the transactions. This could occur if borrowers did not request receipts or if field officer claimed issues with internet connectivity, or server problems to cover up the unrecorded transactions.

Still, sometimes, collection staff take the money and don't show that as a transaction, either because the borrower didn't ask for a receipt or because he [collection staff] could get away saying, 'my internet is not working or 'the server is down' but overall chances of fraud have really reduced... (Regional Manager#1, Company A)

However, participants noted that the use of DTs significantly reduced borrower fraud in the lending process. While forged identity documents and other forms of deception were once common, the introduction of biometric verification through the Aadhaar portal, and multi-layered checks, including geo-tagging through applications, enhanced the accuracy of borrower authentication, making it harder for individuals to manipulate the system to obtain loans fraudulently.

Forged IDs were a big problem, but now with biometric verification from the Aadhaar portal, client [borrower] fraud has largely reduced. In case details are wrong, authentication fails. Sometimes a woman may call someone else's house hers to get a loan, but now we have many layers of checks in place, which can be traced via apps [applications] that are geo-tagged (Vice President # 2, Company E)

Another reason for implementing DTs was to reduce the risk of theft or looting associated with cash physically held by field officers. Respondents indicated a clear intention to eliminate cash collections entirely to further address security concerns and enhance safety.

Although we now disburse loans cashless, we still collect repayments in cash, which is very risky. Recently we experienced incidents when goons looted money from our collection staff – one time for 1.35 lakh [US\$ 1885] and another for 1.05 lakh [US

\$1570]. Of course, digital disbursement has reduced the risk, but we aim to move to cashless collections to further minimize security threats (Regional Manager#2, Company C)

The participants described demonetization³ as a crisis for MFIs, impacting their credit portfolios and leading to significant losses for many. They reflected on how demonetization exposed the vulnerability of relying on cash for collections. In response, they recognized the necessity of implementing robust digital solutions to safeguard against such economic disruptions.

We thought we were a technology-based company, but demonetization exposed a critical gap in our operations — we lacked digital options for collection, which is a vital aspect of our business. This experience made us realize the importance of having digital solutions, especially for contingencies. To stay afloat, it's absolutely needed.

(CEO, Company B)

If demonetization or any such thing happens again, it will not affect us in the same way. We now only disburse to bank accounts. Even for collection, we are working towards getting money directly from the borrowers' bank accounts and adding other digital payment options (Vice President#1, Company D)

6.1.2. Intensification of financial targets

Senior and middle management shared that the use of digital applications and platforms significantly reduced paperwork, simplified processes, and saved time that field officers traditionally spent on tasks such as borrower screening and evaluation. This enabled them to set higher financial targets based on the number of borrowers served and the amount of disbursement made. These targets were set at the organizational level and cascaded down to guide regional-level, branch-level, and individual-level targets.

Digital tools have made processes simpler, and a lot of time is saved on paperwork. So, we have increased the targets at all levels. If we do not grow our business, how will we survive? (Vice President#2, Company B).

Now, there is nothing pending. They [field staff] must do things then and there to move the process. Now they [field staff] end up saving a lot of time spent earlier in doing paperwork in the field. So, it's justified to increase the targets (Vice President #1, Company D)

Higher targets increased the focus on securing repeat borrowers, and digital applications significantly facilitated this process. Digital systems assigned unique identifiers to each borrower, allowing field officers to quickly access comprehensive borrower profiles that include financial history, family details, and assets. This streamlined access to data enabled faster credit checks, making it easier to offer loans to repeat borrowers and achieve financial targets more efficiently.

Targets are easier to achieve if we have more repeat borrowers - who have already taken loans from us. Since we provide a unique number to each borrower, we fetch information like what she [borrower] does, family members, and assets etc. through that number...So, with a click, we get data ready for credit checks (Field Officer#3, Company B)

The archival materials, including emails discussing the implementation of digital solutions and, as well as presentation slides, corroborated these findings. These documents outlined various financial benefits associated with the use of DTs in providing microfinance and included calculations illustrating the potential cost savings. For instance, they highlighted reductions in average person-hours and cost savings in areas such as sourcing of participants, and loan processing time.

It is noteworthy that neither the interviewees' accounts nor the archival documents acknowledged the potential challenges and risks posed by DTs for the social outreach of MFIs in a context where digital infrastructure is underdeveloped, and that the target population face deep- rooted social inequalities. Our data reveals that, rather than reducing inequalities, the application of DTs only widened them. The use of DTs did not improve social outreach, as evidenced by the interrelated themes of undermining social and human capital, and the exclusion of poorer women borrowers, which we will explain in the next section.

6.2. Reduced social outreach

6.2.1. Undermining social and human capital

The role of social capital is vital in MFIs that practice group lending, where the borrowers take joint responsibility for repaying loans given to group members. The presence of social capital as a substitute for physical collateral relies on social solidarity to ensure the success of the loan relationship between the MFIs and their borrowers. With the use of DTs, however, credit scores from credit bureaus were *the most important thing* for field officers and branch managers to enforce repayments and warn borrowers of adverse credit reports. Field officers noted that borrowers were repeatedly told that defaulting would make it harder for them to obtain future loans due to the poor credit history recorded in their digital footprints.

³ Demonetization was a nationwide announcement by the government of India in November 2016 when the government unexpectedly and immediately voided the legal tender status of Rupees 500 (US\$ 7) and Rupees 1000 (US\$ 14) Indian Rupee currency notes, that badly affected the cash-based microfinance industry.

With the use of credit scores, the concept of JLG [Joint liability group] has nearly disappeared. We make it clear to people that if someone misses an installment, their credit score will suffer, and they won't be able to secure a loan in the future. (Field Officer#2, Company C)

Now, the transactions are digitally recorded, and credit scores are available - so if they don't pay, their credit history will get negative, and that's what we tell them (Field Officer#4, Company C)

With this punitive focus, loan officers appeared disinterested in leveraging social capital, which relies on reciprocity, trust and shared norms for repayment. Field visits observations revealed that interactions between field officers and borrowers were more impersonal, with little attention to relationship-building that fosters social capital, thus reducing the human touch in the typically high-touch microfinance lending model. This approach contrasts with the traditional method, where field officers collected repayment in group meetings—a key feature of microfinance that involved training, socialization and the use of personal relations and social pressure to promote timely repayment of loans and other desired behaviours.

With the availability of credit scores, field officers showed a lack of enthusiasm for organizing or encouraging attendance in group meetings. They though, acknowledged the significance of holding group meetings, that could lead to better loan utilization and affect the repayment rate:

Earlier, we used to spend a lot of time ensuring that people necessarily gather for centre [group]meetings, but with the availability of credit scores, our focus is just on individual collection. (Field Officer# 6 Company D)

It's essential to meet them [borrowers] so that we do not lose human touch while getting carried away with technology. We should talk to them and understand their problems. Sadly, I am not doing any of these. It's only targets and targets (Field Officer#2, Company B)

The women we serve comes from the segment where many times, some don't have money to pay their instalments. In such cases, other women pool in money to pay for those defaulting on an installment. Now, since we are not organizing centre[group] meetings, the concept of group loan with joint liability fails (Field Officer#4, Company C)

The over-reliance on credit scores to enforce loan repayments also led to reduced focus on building human capital among rural women borrowers whose low literacy levels and socio-economic status make social interactions and bonding crucial, not only to seek advice for decisions related to daily lives or work but also to understand various technology-related issues, problems and remedies. The reduction in training days during loan disbursement and group meetings lessened the quality of interaction with the borrowers, reducing the focus on human capital development. This included neglecting loan utilization checks and money management training in critical components of capacity building and poverty alleviation- in a group setting. Instead, they prioritized meeting financial targets:

With the availability of credit scores...it doesn't matter if we discuss about their business problems or how to use an ATM card ...we just must keep stressing the consequences of not repaying on time (Field Officer# 3, Company B)

If we start focusing on how they can grow their business or show them what to do - How will we achieve our targets? We, of course, tell them how their credit score will be downgraded if they don't pay their instalments on time (Branch Manager# 3 Company C)

MFIs' reliance on credit scores weakened the network of social relationships, diminishing the role of social capital in transferring capabilities and information between women group members, thereby hindering efforts to alleviate poverty given the difficulties these women face in accessing external resources and networks.

6.2.2. Enabling exclusion

The informants noted the use of software that used the alternate credit scoring algorithms that collected and analysed various socio-economic information of borrowers (e.g., ownership of a gas burner, TV, fridge, number of rooms, income, expenses) to evaluate creditworthiness and determine loan eligibility. The software generated the loan score that determined whether a loan is granted and the amount provided:

We use _[software] which has many questions like; Does the woman have a gas burner? a TV? a Fridge? How many rooms are there in the house she lives in? What is the income? What are the expenses? After ...data is entered, and we get a loan score, to decide whether a loan can be provided or not or what amount of loan can be provided. (Branch Manager#1, Company E)

With such stringent checks in place [algorithms], we can control things and give loans to people, checking their creditworthiness - which helps us better understand who may pay us back (Branch Manager#2, Company B)

This use of algorithms enhanced MFIs' ability to minimize risk by lending only to those deemed more likely to repay, but it also facilitated stricter screening and limited field officers' agency and autonomy in providing loans, thereby reinforcing societal inequalities, and fostering a pernicious form of exclusion. This approach prioritized lending to the better-off among the poor while depriving the poorer women, who were considered risky investments, ultimately producing oppressive social consequences and rationalizing their marginalization.

Having transformed to *digital by default* (Helsper, 2011), MFIs provided services only in locations that have workable internet

connectivity. Employees at various levels mentioned digital infrastructural constraints such as ‘no internet network’, ‘intermittent network’, and ‘lack of electricity’, that hindered the last mile access and turned them away from poorer borrowers who deserved microfinance services. This exclusion mediated through DTs, led to a focus on only targeting and reaching borrowers who lived in areas with good digital connectivity, excluding already disadvantaged people on the wrong side of the access divide:

Earlier, when we did manual work, we could work anywhere - which was not dependent on internet availability (Branch Manager#3, Company D)

We feel we are over-dependent on technology without adequate digital infrastructure. We can only work where we have digital connectivity (Field Officer#1, Company A)

To decide zones to serve, we first see whether there is decent internet connectivity or not? (Regional Manager#1, Company E)

The shift to disbursing loans only to bank accounts resulted in the exclusion of borrowers who either did not have a bank account or were hesitant to open one due to low literacy or previous negative experiences (their own or someone else’s). Informants reported that their borrowers and potential borrowers were often ‘illiterate’ or ‘less educated’ with limited ‘digital awareness’ and ‘digital literacy’ showing ‘resistance’, ‘lack of trust’ or ‘fear’ towards banking transactions and feeling uneasy about using an ATM card. Despite these women requesting loans in cash, MFIs chose to exclude such customers.

People fear banking transactions. They often ask questions like, ‘How will I put thumb impression?’, ‘What if the company cuts extra money from my account?’, ‘What if the company takes the entire money from the account?’ Even though such borrowers asked for loan in cash, we stick to the policy of not giving cash. (Field Officer# 2, Company A)

Some women are still not comfortable using bank accounts They say, ‘give us cash’. ‘How will we know whether you have transferred money to our account?’ ‘We don’t even use mobile phones’... We end up missing such borrowers, but it’s our policy – we cannot give cash. (Field Officer#5, Company B)

Convincing women is exceedingly difficult, especially those who have had an unpleasant experience or heard about others bad experiences. Like a woman was saying that money disappeared from her ATM... (Branch Manager# 2, Company E)

Most employees in operational roles acknowledged the issue of women feeling uncomfortable with banking transactions, which are typically managed by men in their families. However, when asked about their inability to reach remote areas without digital connectivity or high need borrowers who lacked bank accounts, employees showed a lack of concern. There was an institutional disregard for these women, treating these cases as negligible or irrelevant, rather than addressing the barriers that prevent access to credit for these women:

We don’t bother about such women who may not get credit because of connectivity issues. This is a minuscule fraction. Likewise, if women don’t have a bank account, we can’t do cash disbursements -it’s our company’s policy (Branch Manager#1, Company C)

We don’t even talk about such cases; they are beyond our scope of work (Branch Manager#3, Company A)

Informants reported incidents where some women borrowers fell victim to fraud and lost part or all of their loan amount. Due to limited financial literacy, many women kept their Personal Identification Number (PIN) with their debit card, making it easy for thieves to withdraw money if the card was snatched or stolen. Likewise, some borrowers were so reliant on others to access their funds that they risked being deceived by those they trusted with their debit cards. Even if they did not receive their money, they are still held accountable for their loan instalments that added to the financial burden on borrowers, regardless of their circumstances.

Our borrowers often keep their PIN with the card [debit card], which has led to instances where the card is snatched, and money is withdrawn. We can sometime help by blocking the card, but in many cases, borrowers lose all their money. Most such women often struggle to repay their loan instalments damaging their credit scores, due to which it becomes difficult for them to get future loans (Branch Manager#1, Company D)

We came across cases when they [borrowers] gave their debit card to someone - who withdrew the money and told them that the ATM had no money. Even if they didn’t get any money, we’ve to ask them for instalments. It’s business after all. (Branch Manager#2, Company A)

In most cases, women who faced fraud were unable to repay their instalments, which led to a deterioration of their credit scores. This made it difficult or impossible for them to obtain future loans, further limiting their ability to improve their economic situation. This situation illustrates how inclusion in one space can coexist with exclusion in another (Zheng & Walsham, 2008). While these women had access to loans, this access did not lead to income-generating activities but instead further increased their indebtedness.

In short, amidst the growing use of DTs in providing microfinance, the social commitment that grants moral legitimacy to MFIs appeared neglected in the informants’ narratives. They prioritized the financial benefits of DTs, leading to a reduction in both the quality and depth of outreach, which in turn contributed to mission drift. While social goals may include the minimum requirement of “not knowingly do[ing] anything that could harm stakeholders” and addressing any harm caused to stakeholders when “harm is discovered and brought to their attention” (Campbell, 2007: 951), MFIs employees in using DTs, consciously strayed from their core

mission. They failed to take remedial measures, ultimately eroding their capacity to effectively serve their most important stakeholders.

7. Discussion

Our study aimed to examine how the use of DTs in providing microfinance to poor rural women impacts mission drift in MFIs. This is a crucial yet under-investigated issue with significant theoretical and practical implications. Our findings reveal that, amid the growing use of DTs, MFIs increasingly prioritized financial gains over poverty alleviation leading to heightened social-financial tensions and exacerbating mission drift. Based on the findings, we make three substantive contributions.

First, our findings illustrate how the use of DTs exacerbated mission drift in MFIs (see Fig. 2). Primarily motivated to adopt DTs to improve operational efficiency, competitiveness, and reduce risks, MFIs prioritized financial gains over social outreach in their implementation. The processes and practices failed to consider the positionality of women at the intersection of gender, rural background, and socio-economic inequalities leading to mission drift, evident in the reduced quality and depth of outreach. The emphasis on financial gains from DTs undermined the relevance of social capital and human capital – key factors in the success of microfinance—resulting in decline in the quality of outreach.

For microfinance to effectively serve its goal of poverty alleviation, it is crucial to integrate strategies for the development of human capital, and social capital, alongside providing access to financial capital (Tavanti, 2013). However, after implementing DTs, employees of MFIs, began to heavily rely on credit scores as a tool to enforce repayment discipline, often threatening borrowers with a negative credit report in case of default with minimal attention given to human capital development or fostering social capital. This shift was particularly detrimental to poor rural women, whose low literacy levels and socio-economic status make social interactions and bonding essential not only to seek advice on daily life and work decisions but also for understanding and resolving technology-related issues, and effectively utilizing credit. Interactions with borrowers became less personal, with reduced time spent in training, fewer organized group meetings, and little or no discussion on loan utilization. The neglect of a humane approach and non-reliance on interactional resources hindered the holistic, community-oriented support these women needed. Consequently, this piecemeal approach of alleviating poverty, focusing solely on providing credit, limited the effectiveness of microfinance and in many cases, magnified the challenges faced by borrowers.

Likewise, the use of DTs led to the exclusion of borrowers in various ways, widening the exclusion rather than bridging it and thereby reducing the depth of outreach. For example, MFI decision makers began excluding people without bank accounts. By transitioning to a digital- by-default approach (Helsper, 2011) without maintaining a parallel, manual paper-based system, they also excluded remote areas without internet connectivity - separating the haves from the have-nots based on digital access – and thus limiting last-mile services. This shows how delivery of microfinance mediated through DTs placed poor women in remote locations at an even greater disadvantage. Similarly, the use of alternate credit scoring algorithms to assess the creditworthiness of borrowers with questions about their financial wellbeing, illustrates how these algorithms, designed to enhance credit efficiency and reduce default

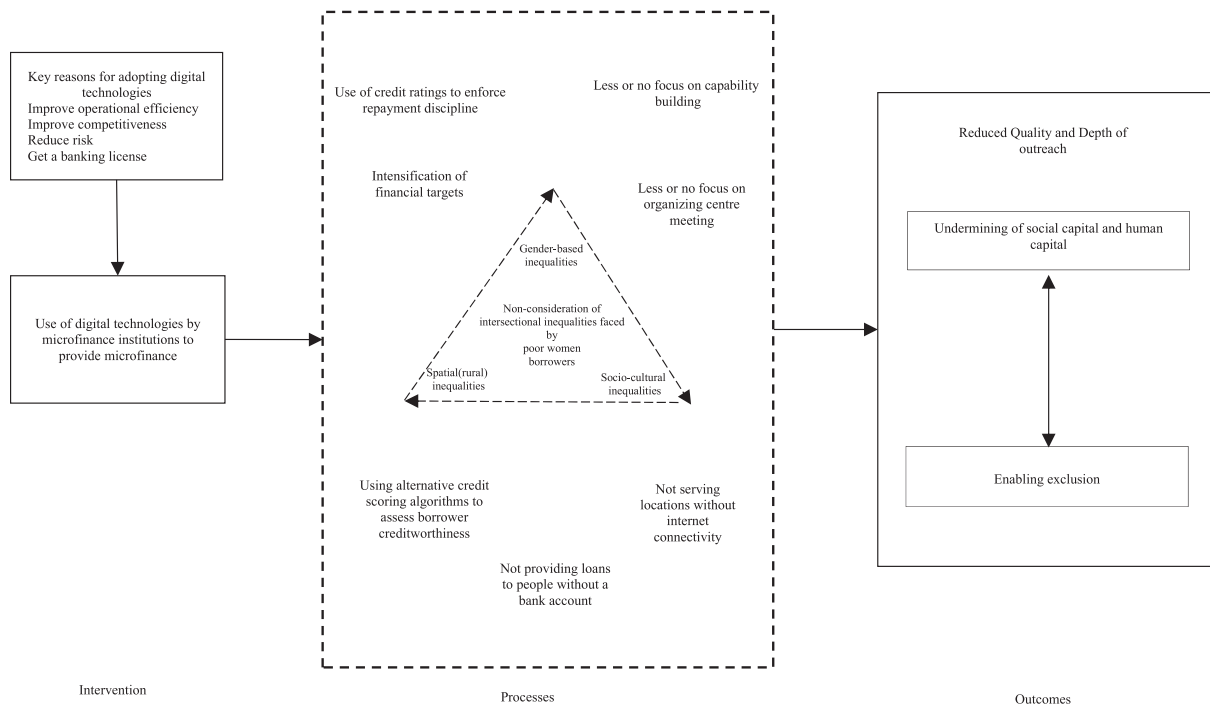


Fig. 2. Overview of how digital technologies exacerbated mission drift.

risk, can disadvantage poorer women. While algorithms have been touted as a means to improve credit access for the poor and expand the outreach of MFIs (Benami & Carter, 2021), our study reveals how the inscribed logic in these algorithms intentionally discriminated against poorer women, lacking material things. These women might have received credit, based on *soft* information, if human judgment and discretion was allowed to be used by field officers in borrowers' appraisal. The systems designed to replace human skills led to digital repression, favouring the better-off at the expense of poorer women, who were often perceived as higher-risk borrowers, thereby proliferating social inequalities.

Many women struggled with using bank accounts and ATM and lacked awareness about the risks associated with financial technology. For example, some women fell victim to fraud due to their ignorance or misplaced trust in others to access their funds, often resulting in a negative credit history. This not only worsened their existing vulnerabilities but also created new ones, placing a heavier burden on impoverished populations and constraining their ability to engage in future economic activities with MFIs or banks. Needless to mention 'it is better to be just poor than ... poor and indebted' (Moro-Visconti, 2021, p.022). We argue that in implementing DTs, MFIs deviated from their core mission, magnifying existing socio-technical discrepancies (Zheng & Walsham, 2021). These findings call previous research into question that assumes a deterministic view of DTs providing pro-poor advantages to MFIs (Mushtaq & Bruneau, 2019).

Second, our findings highlight the importance of the quality of outreach as a critical dimension of social outreach, alongside the depth of outreach (Wry & Zhao, 2018; Xu et al., 2016) for understanding mission drift in MFIs. We emphasize that a comprehensive understanding of mission drift requires attention to both the quality and depth of outreach. We demonstrate how a reduced quality of outreach explained by less time and effort spent on borrowers' interactions during training sessions or group meetings, to build social and human capital, can harm recipients and exacerbate their vulnerabilities, even when credit is provided. The reduction in outreach quality can increase the risk of individuals falling into deeper poverty (Banerjee & Jackson, 2017). Therefore, while considering the depth of outreach is essential for MFIs, inextricable is the quality of outreach, for enhancing financial inclusivity and effectively addressing the complexities of poverty alleviation among poor rural women.

Arguably, our findings on the quality of outreach support the less researched view in the extant literature, which suggests that market-based poverty reduction initiatives like microfinance does not necessarily empower or enable poor to move out of poverty and in specific contexts exacerbate vulnerabilities and powerlessness at the BoP (Banerjee & Jackson, 2017). Accordingly, this complements prior literature on BoP that often considers poverty as an opportunity for companies to extract value from the poor - whom they seek to transform into consumers, with little or no consideration about their welfare (Bapuji, Husted, Lu, & Mir, 2018). Overall, the findings on the quality of outreach broaden the existing understanding of social outreach, going beyond the predominant focus on the depth of outreach (Wry & Zhao, 2018; Xu et al., 2016) - that does not fully capture the complexity of the mission drift phenomenon.

Finally, our findings illuminate how intersecting inequalities, such as those based on power systems such as gender and socio-economic status, influence various realms of inclusion and exclusion in the use of DTs (Zheng & Walsham, 2021). For example, lack of internet access emerged a form of social exclusion, limiting some women's access to microfinance. However, having internet access did not guarantee advantages, as persistent inequalities in digital literacy and bank account management continued to affect their ability to effectively utilize the loan received, ultimately impacting their outcomes. Our findings underscore the critical challenges of using DTs for poverty alleviation and financial inclusion, particularly in contexts where poor borrowers face intersecting social inequalities. We problematize the use of isolated categories and advocate for a nuanced understanding of individual's relative positions within interconnected social structures that shape how DTs influence social outcomes.

We argue that the use of DTs for development is a socially embedded process. This perspective aligns with socio-technical systems theory, which underscores that the transformative or disruptive potential of new technologies is shaped by the interplay between institutional actors, and the local socio-economic environment (Sony & Naik, 2020). The theory emphasizes that technological determinism can obscure the complexities of sociotechnical change and limit opportunities for intervention in the development and implementation of new technologies (Münch, Marx, Benz, Hartmann, & Matzner, 2022; Sony & Naik, 2020). The technological affordances—i.e., the potential actions that DTs enable—interact dynamically with local socio-economic conditions, and this interaction determines whether DTs serve to enhance or undermine, social goals. Accordingly, we contend that decision-makers' priorities, such as increasing loan disbursement speed and reducing transaction costs, influenced the development and use of these technologies in ways that overlooked the social outreach, exacerbating mission drift in MFIs.

Our study addresses call from information systems researchers to explore the unintended or negative consequences of DTs used to tackle social challenges (Majchrzak, Markus, & Wareham, 2016; Qureshi et al., 2021) and highlight the limitations of single-axis analysis in understanding the implications of DTs for development (Zheng & Walsham, 2021). Overall, our study emphasizes the use of intersectionality as a theoretical lens to unpack the complexity and multiplicity of societal inequalities that single identity frames cannot fully address.

7.1. Practical implications, limitations and future research

Our study advocates for a more cautious approach to using DTs for providing microfinance to people living in extreme poverty. To stay true to their mission, MFIs must ensure they reach the poorer with deep penetration into rural areas, without being constrained by internet connectivity. Providing loans to bank accounts through digital delivery channels is only the first step; meaningful progress in poverty alleviation requires building human capital and leveraging social capital. This is especially crucial for women who fear banking transactions and are not comfortable handling or using ATM cards. Given the positionality of women borrowers in rural India, MFIs must consider systemic intersectionality in societal inequalities based on gender, location, and socio-economic status, which may significantly hinder the successful deployment of DTs in delivering microfinance. Policies and interventions should address the

intersecting barriers faced by women through bottom-up theorizing to effectively tackle social issues like poverty alleviation.

Poor rural women served by MFIs have high levels of illiteracy and are further constrained by other socio-economic inequalities they face daily. Hence, they require additional financial training and social support to understand financial products, delivery channels and effectively utilize the credit provided in the bank accounts. In a communal culture like rural India, social capital can be leveraged for information diffusion and fostering the understanding of financial transactions. Additionally, social capital can contribute to building human capital, which is vital for facilitating the efficient utilization of credit. This in turn, can help poor rural women reduce delinquencies, improve their socio-economic standing, and uplift their lives.

From this perspective, while DTs provide affordances that can improve operational efficiency and reducing risks for MFIs, it is crucial to understand the intersectionality of socially constructed inequalities as these technologies may reinforce or exacerbate existing disparities related to factors such as gender, socio-economic status, and geographic location. Simply, advancing in technology alone may not yield positive social outcomes at the BoP; rather, technology should be seen as one component of a broader socio-technical system, where institutional practices and social structures shape its impact on organizational outcomes. Therefore, the use of technology should align with users' needs, capabilities, and preferences, ensuring an appropriate level of human touch in the microfinance model to alleviate barriers that can hinder access to and quality of financial services for the poor. Failing to do so risks undermining the potential of DTs to reduce poverty and inequalities (Majchrzak et al., 2016; Qureshi et al., 2021; Walsham & Sahay, 2006), leading to dystopian outcomes not only in the present but also for the future, thereby amplifying long-standing social inequalities.

Regarding limitations, this study primarily relies on interview data collected from employees of MFIs. Although we gathered multilevel data from employees in senior and middle management (e.g., CEO, Vice President, Regional Manager) as well as operational roles such as Branch managers and Field Officers – who are particularly seen as a reservoir of information and insights due to their close interactions with borrowers (Khavul, 2010) – we acknowledge the limitation of not including the voices of female borrowers. Their perspective could have added further credibility to our findings. Future research could benefit from incorporating the insights of female borrowers to better understand how women perceive the organizational use of DTs in providing microfinance. Additionally, our findings are highly specific and contextualized, reflecting the nature of our qualitative research method. While these findings are analytically transferable to similar contexts, their generalizability may be limited. Nevertheless, we hope our study will guide future research in exploring how the use of DTs in providing microfinance affects social outcomes in MFIs across other countries. Our findings indicate that the way DTs were used led to a reduction in the quality of outreach. While quantifying quality of outreach is challenging due to the relational dynamics involved, future research could explore measures, such as borrower satisfaction, the level of training provided, the number of meetings conducted, time spent with borrowers, improvement in the borrowers' social and human capital, and their economic and social upliftment. These indicators could offer valuable insights into outreach quality.

Given that field officers can play a vital role in addressing challenges related to delivering technology-based services — while also considering customer receptivity and potential adverse effects, like lack of trust — it would be valuable to explore how organizations can leverage technology to help field employees focus on improving social outreach. Future studies could also investigate boundary conditions that enable MFIs to build social and human capital through technology, to serve the excluded and the vulnerable at the BoP. Finally, we encourage more studies that draw on the theory of intersectionality to better account for how socio-technical discrepancies can be magnified, leading to diverse forms of exclusion, marginalization, and vulnerability (Zheng & Walsham, 2021).

8. Conclusion

Our study demonstrates that MFIs, in their use of DTs for providing microfinance, prioritized financial gains over social outreach, resulting in exacerbated mission drift. This focus on financial gains undermined social and human capital and excluded poorer women, thereby reinforcing and magnifying existing social inequalities in several ways. We emphasize the importance of focusing on the quality of outreach to leverage social capital and promote human capital development for poverty alleviation, which relies on ensuring that poor rural women can make full use of the loan provided. Additionally, our study highlights the need for further research employing intersectionality as a theoretical framework to explore the complex and multifaceted nature of societal inequalities and their impact on the outcomes of technological interventions.

Compliance with ethical standards

Informed consent was obtained from all participants included in the study.

CRediT authorship contribution statement

Nidhi S. Bisht: Writing – review & editing, Writing – original draft, Methodology, Data curation, Conceptualization. **Ernesto Noronha:** Writing – review & editing, Supervision, Data curation. **Arun Kumar Tripathy:** Writing – review & editing, Formal analysis, Conceptualization.

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Data availability

The data that has been used is confidential.

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