

Evaluating the Role of Digital Financial Infrastructure in Expanding Equitable Credit Access for Urban Migrant Workers in India

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ABSTRACT

India has built one of the largest bodies of public digital financial infrastructure in the world: Aadhaar identity, paperless e-KYC, the Unified Payments Interface, Direct Benefit Transfers, and the Jan Dhan accounts that carry them. This paper asks how far this infrastructure has reached the country's urban migrant workers, and how far reaching them has turned into something they can use, in the form of wages received in full and credit they can actually obtain. It works from a corpus of eighteen studies covering migrant garment workers in Bangalore, women street vendors in Delhi, urban-poor households in Pune, construction workers, and national survey data. The analysis runs in three parts. The first tracks digital transaction use among urban migrant labour across the five years to FY24 and finds that it moved from marginal to ordinary: retail digital payment value grew roughly sevenfold to USD 3.6 trillion, and street vendors came to receive close to half of what they were paid digitally. The second sets reported migrant earnings against the statutory minimum wages in force where those earnings were made, and finds workers at the weakest defensible reading of the floor or below it, with construction workers hired through middlemen holding no wage records at all. The third asks why usage rose and where it stalled, and identifies fear of fraud, low literacy, KYC and documentation requirements, and gendered control of devices as the binding constraints. What the analysis reveals is a gap between payments and credit. The infrastructure has delivered access, is delivering usage unevenly, and has so far delivered very little credit that can be verified. The barriers that cap payment use are the same ones that decide who builds a transaction record, so lending based on that record risks repeating the exclusion it was meant to correct.

Keywords : Digital financial infrastructure; financial inclusion; urban migrant workers; Unified Payments Interface (UPI); credit access; minimum wages; informal labour; India.

1. Introduction

The 2030 Agenda for Sustainable Development enshrines the principle of “leaving no one behind,” positioning financial inclusion as a cross-cutting enabler of poverty reduction, decent work, and reduced inequality (United Nations, 2015). India has pursued this goal through a deliberately constructed layer of public digital infrastructure — a unique biometric identity (Aadhaar), paperless e-KYC onboarding, real-time interoperable payments through the Unified Payments Interface (UPI), and Direct Benefit Transfers — with the Pradhan Mantri Jan Dhan Yojana (PMJDY) seeding basic accounts at scale (Ramanujam et al., 2025). The result has been one of the fastest payment transitions anywhere: retail digital payments rose from USD 300 billion in FY18 to USD 3.6 trillion in FY24 and are projected to reach USD 7 trillion by FY30, even as cash slipped below 60% of transactions (Kearney, 2024). For a workforce the formal economy has historically overlooked, this infrastructure promises a route into the financial mainstream.

That promise is most consequential for India’s internal migrants. The 2011 Census counted nearly 454 million internal migrants — close to 38% of the population — and migrant-run micro-enterprises constitute roughly 99% of the country’s 63.4 million unincorporated non agricultural firms, anchoring urban commerce through an estimated 10 million street vendors and a fast-growing platform-gig workforce (Ramanujam et al., 2025). Yet inclusion is not defined by account ownership alone. Following the access–usage–quality framework of financial inclusion, genuine inclusion requires that services be not merely available but used consistently, securely, and meaningfully over time (Ramanujam et al., 2025). The gap is stark: although more than 95% of surveyed urban-poor and migrant households now hold a bank account, persistent deficits in literacy and confidence continue to separate ownership from effective use (Goel et al., 2024).

Two theoretical lenses frame how this gap might be closed. Empowerment theory holds that access to financial tools and technologies enhances individuals’ decision-making autonomy and economic agency — extending, for street vendors, to greater control over earnings, access to credit, and social recognition in traditionally male-dominated spaces (Mallick et al., 2026). The Technology Acceptance Model (TAM) complements this by explaining adoption itself: perceived ease of use and perceived usefulness drive the uptake of digital payments (Davis, 1989), which equally implies that fear, low digital literacy, and distrust will suppress it. Read together, the two lenses cast digital financial infrastructure not as an end in itself but as a potential catalyst of empowerment — one whose effect depends on whether marginalised users actually adopt, trust, and benefit from it.

Nowhere is this potential clearer, or less realised, than in credit — the frontier the payments revolution has yet to cross. Because migrant workers typically lack stable proof of residence,

formal employment records, or a documented credit history, they fall outside conventional lending frameworks: only 8 to 10% of micro-enterprises can secure institutional loans, leaving the remainder dependent on costly informal finance (Ramanujam et al., 2025). Even mainstream instruments reach them poorly — barely 102 million credit cards circulated nationwide as of March 2024, with penetration thinnest in the aspiring-income segments and small towns where migrants concentrate (Kearney, 2024). Here the digital footprint acquires a second function: each UPI transaction builds “a verifiable transaction history that can inform future creditworthiness” (Ramanujam et al., 2025), and lenders can combine this with alternative data — utility payments, rental records, and payment behaviour — to construct more inclusive credit-scoring models that widened the borrower pool among new credit users and small businesses (Kearney, 2024). Flagship collateral-free schemes such as the Pradhan Mantri Mudra Yojana and Stand-Up India could, in principle, reach migrants once their transactions render them legible to lenders (Ramanujam et al., 2025). The evidence to date, however, shows this empowerment to be real but unevenly distributed. Internal migrants have long remitted wages through high-risk informal channels, and digital adoption remains low: among migrant garment workers, only 5.7% used digital payment applications at baseline, and structured training raised use by just 5 to 10 percentage points without altering the amounts remitted — an “unfulfilled promise” (Adhvaryu et al., 2022). The shortfall is gendered: Findex data record only 14% of Indian women making a digital payment in a given year, against 26% of men (Adhvaryu et al., 2022), even though women constitute roughly two-thirds of India’s internal migrants (Bhardwaj et al., 2025). The women vendors of Delhi’s Mahila Haat embody the tension precisely. Largely illiterate migrants from Gujarat and Rajasthan, those who adopted Google Pay, PhonePe, and Paytm reported higher and steadier earnings — digital adopters have elsewhere seen daily sales rise by 15–20% (R. Gupta et al., 2021, as cited in Mallick et al., 2026) — yet many still avoid UPI for fear of cyber fraud and a lack of digital literacy (Mallick et al., 2026). The same infrastructure that can broaden credit may therefore, if left unaddressed, reproduce exclusion along lines of gender, literacy, and documentation.

Against this backdrop, this study aims to evaluate how far digital financial infrastructure has advanced equitable credit access for urban migrant workers in India. Specifically, it seeks: first, to map the public and private digital infrastructure through which migrant workers transact and the policy schemes intended to extend them credit; second, to examine the mechanism by which payment-generated data may translate into formal creditworthiness; and third, to assess the barriers — gender, literacy, documentation, trust, and fraud — that determine whether that translation reaches the most marginalised without exposing them to new harms such as over indebtedness. The detailed research gaps motivating these aims are developed in the following section.

2. Literature Review

The digital infrastructure consists of four bodies of work: the build-out of India's digital financial infrastructure, the dynamics of internal migration and informal urban work, the adoption of digital payments and remittances among marginalised users, and the emerging debate on data driven credit. The primary aim is to synthesize the above strands thematically, and set out the theoretical lenses that frame the analysis.

2.1. Digital Financial Infrastructure and the Inclusion Agenda

A broad consensus holds that public digital infrastructure has expanded financial access in India at remarkable speed. Account ownership rose from 35% in 2011 to 53% in 2014, 80% in 2017, and remained near 78% in 2021, a trajectory widely attributed to the Pradhan Mantri Jan Dhan Yojana (PMJDY) and Aadhaar-enabled onboarding (as reported by Ramanujam et al., 2025). This "digital rails" ecosystem — Aadhaar identity, paperless e-KYC, the Unified Payments Interface (UPI), Direct Benefit Transfers (DBT), and RuPay — has substantially reduced transaction costs and extended outreach (Ramanujam et al., 2025), while the wider Digital India programme has moved public services online in pursuit of economic expansion and reduced leakage (Jain & Pushpendra, 2023). At the level of everyday commerce, this shift is now measurable: retail digital payments grew from USD 300 billion in FY18 to USD 3.6 trillion in FY24, cash fell below 60% of transactions, and even street vendors reported receiving roughly 46% of payments digitally (Kearney, 2024). Demirgüç-Kunt et al. (2020, as cited in Mallick et al., 2026) argue that such payments reduce cash dependency, streamline transactions, and create a formal record of financial activity.

Yet a recurring theme is that account ownership is a weak proxy for inclusion. The Reserve Bank of India's Financial Inclusion Index deliberately balances three pillars — access, usage, and quality — precisely because availability does not guarantee meaningful use (Ramanujam et al., 2025). Empirical work bears this out: Goel et al. (2024) find that although more than 95% of surveyed urban-poor and migrant households owned a bank account, a persistent gap in literacy and confidence separated ownership from effective use, with women disproportionately affected. The literature thus converges on a distinction between access and usage that is central to the present study.

2.2. Internal Migration and the Urban Informal Workforce

A second strand situated the technology within India's migration and informal-labour landscape. The 2011 Census recorded nearly 454 million internal migrants — close to 38% of the population — and micro-enterprises constitute roughly 99% of the country's 63.4 million unincorporated non-agricultural firms, with migrants prominent among the estimated 10 million

street vendors and the platform-gig workforce (Ramanujam et al., 2025). Importantly, technology is not merely a downstream service for this population but a driver of migration itself: Dutta and Randolph (2024) show that mobile-phone service expansion significantly increased cross-state migration to Indian cities between 2001 and 2011, as improved transmission of labour- and marriage-market information, together with agglomeration effects, acted as forces of urban concentration. Others document the precarity that accompanies this mobility. Pandey (2026) frames rural-urban migration through the “paradox of unemployment,” in which migrants pursuing better prospects encounter limited urban opportunity, while NITI Aayog (2020) catalogues state-level efforts to empower migrant workers through skill development and livelihood generation. Chandrashekhar (2023), studying migrant construction workers during COVID-19, uses a stakeholder approach to show how migrants’ “engagement and dis-engagement” with digital tools shaped their ability to access welfare, exposing a system marked by a structural “lack of inclusivity.” At a broader level, Triandafyllidou (2025) argues that advanced digital technologies are reshaping the future of work, with effects “most visible” in the field of migration.

2.3. From Access to Usage: Digital Payments and Remittances Among Migrants

Within this population, the adoption of digital payments — especially for remittances — is the most directly studied behaviour. UPI is widely credited with enabling low-cost, real-time transfers that lower remittance costs and, in doing so, generate transaction histories capable of informing credit scoring (Ramanujam et al., 2025). The evidence on uptake, however, is sobering. In a randomised evaluation among migrant garment workers, Adhvaryu et al. (2022) found that only 5.7% used digital payment applications at baseline; classroom training raised use by about 5 percentage points and individualised training by about 10, yet neither changed the frequency or amount remitted — leading the authors to characterise the intervention as an “unfulfilled promise” and to conclude that technological and regulatory requirements, not knowledge gaps alone, constrain adoption. Complementary findings reoccur across the folder: DBT beneficiaries frequently withdraw their entitlements immediately, driven by low institutional trust (Ramanujam et al., 2025); and Mallick et al. (2026), studying women vendors at Delhi’s Mahila Haat, report that adopters gained higher and steadier incomes — consistent with the 15–20% rise in daily sales documented by R. Gupta et al. (2021, as cited in Mallick et al., 2026) — even as many migrants continued to avoid UPI out of fear, illiteracy, and the threat of cyber fraud. Suri and Jack (2016, as cited in Mallick et al., 2026) provide the theoretical bridge to this study’s concern, arguing that once informal workers can transact digitally they gain a pathway toward broader services such as savings, credit, and insurance.

2.4. The Digital Divide and Gendered Exclusion

A fourth strand explains why usage remains uneven, locating the answer in a stubborn digital divide. Sarkar, Pick, and Somai (2024) map the demographic, socioeconomic, and geographic dimensions of that divide at the state level, noting that India remains, in relative terms, a “global laggard” in ICT adoption despite rapid diffusion. Aneesh et al. (2026) sharpen the point by identifying the socioeconomic determinants of digital inequality, with pronounced gender and rural-urban gaps in both access and skills, while Sen (2020) documents a rural-urban divide in participation in the digital economy following demonetisation. The gendered dimension is especially salient for this study. Bhardwaj et al. (2025) observe that women constitute roughly two-thirds of India’s internal migrants yet remain among the least financially literate, their financial realities “in the dark” within policy and academic circles; and the Findex gap, the difference the World Bank’s Global Findex survey records between women’s and men’s use of digital payments — 14% of Indian women making a digital payment in a given year against 26% of men (as reported by Adhvaryu et al., 2022) — quantifies the disparity. Taken together, this literature establishes that the same infrastructure celebrated in Section 2.1 is unevenly distributed along lines of gender, literacy, geography, and documentation.

2.5. From Payments to Credit: Alternative Data and the Creditworthiness Frontier

The strand most directly tied to this study’s title concerns the leap from payments to credit — and here the literature is thinner and more speculative. The scale of exclusion is well established: only 8 to 10% of micro-enterprises can access institutional loans, leaving migrants dependent on costly informal finance (Ramanujam et al., 2025), and barely 102 million credit cards circulated nationwide as of March 2024, with penetration thinnest in the aspiring-income segments and small towns where migrants concentrate (Kearney, 2024). The proposed remedy is consistent across sources: because each UPI transaction builds “a verifiable transaction history that can inform future creditworthiness” (Ramanujam et al., 2025), lenders can combine this footprint with alternative data — utility payments, rental records, GST filings, and payment behaviour — to construct more inclusive credit-scoring models that widen the borrower pool among new credit users and small businesses (Kearney, 2024; Ramanujam et al., 2025). Flagship collateral free schemes such as the Pradhan Mantri Mudra Yojana and Stand-Up India are positioned as the policy vehicles for this expansion, though migrant-owned enterprises that leave no formal paper trail currently fall outside conventional lending frameworks (Ramanujam et al., 2025). The literature is careful, however, to flag the downside risks — predatory lending, opaque digital credit platforms, hidden fees, and over-indebtedness — that accompany data-driven underwriting for marginalised borrowers (Ramanujam et al., 2025).

2.6. Critical Perspectives: Datafication and Digital Vulnerability

A smaller but important critical literature cautions against reading the digital footprint purely as an asset. Chowdhury (2026), examining migrant workers under Malaysia's digital-governance regime, argues that the datafication of migrant labour produces a distinct form of "digital vulnerability" at the intersection of weak regulatory protection and platform surveillance, and calls for a shift "from data sovereignty to data justice." Related work on digital and platform labour (Graham & Anwar, 2018) underscores that technological mediation can entrench precarity as readily as it relieves it. For a study concerned with equitable credit access, this perspective is a necessary counterweight: the very transaction records that can render migrants creditworthy also render them legible to systems they neither control nor fully understand.

2.7. Theoretical Underpinning

Following Mallick et al. (2026), this study is framed by several complementary theories. The Theory of Informality (Hart, 1973) explains the environments in which migrant vendors operate — economies lacking structured access to formal banking and regulatory protection, for which digital tools represent a potential route to formal participation. Empowerment theory holds that access to financial tools enhances individuals' agency and autonomy, extending to control over earnings and access to credit (Mallick et al., 2026). The Technology Acceptance Model (TAM) attributes adoption to perceived ease of use and perceived usefulness (Davis, 1989), which by extension predicts that fear, low literacy, and distrust will suppress uptake — while the Unified Theory of Acceptance and Use of Technology (UTAUT) adds social influence and facilitating conditions as determinants (as applied in Mallick et al., 2026). Finally, the access–usage–quality framework of financial inclusion (Ramanujam et al., 2025) provides the evaluative scaffold for judging whether infrastructure translates into genuine empowerment. Together these lenses cast digital financial infrastructure as a conditional catalyst whose effect depends on adoption, trust, and design.

3. Research Gap and Methodology

3.1. Research Gap

This paper analyses the impact of the expanding digital financial infrastructure as a mode of payment to urban migrant workers in India. How far has the spread of this financial instrument helped migrant workers in getting their dues? Does this system prevent corruption and bribery on the part of the contractor, the supplier of labourers, and of the migrant workers themselves? Has this system led to greater equality between the minimum wages announced by various states and governments and the amounts these workers actually receive?

Three gaps emerge from the literature review. First, the literatures on payments and on credit rarely meet: studies of digital-payment and remittance adoption (Adhvaryu et al., 2022; Mallick et al., 2026) seldom trace the chain through to formal borrowing, while the credit-scoring discussion (Kearney, 2024; Ramanujam et al., 2025) remains largely prospective, asserting that transaction data can inform underwriting without evaluating whether it actually reaches urban migrant workers. Second, exclusion is documented along gender, literacy, and geography (Sarkar et al., 2024; Aneesh et al., 2026; Bhardwaj et al., 2025) but is seldom connected to credit outcomes — the question of who benefits when payment data becomes credit data is largely unexamined.

Third, the critical literature on datafication (Chowdhury, 2026) and the risk warnings on predatory digital credit (Ramanujam et al., 2025) have not been integrated with the optimistic inclusion narrative, leaving the conditions for equitable — as opposed to merely expanded — credit access undertheorised for migrant populations specifically. This study addresses these gaps by evaluating how far digital financial infrastructure has advanced equitable credit access for urban migrant workers in India, examining the mechanism linking payment-generated data to creditworthiness, and assessing the barriers and safeguards that determine whether that mechanism includes the most marginalised or reproduces their exclusion.

3.2. Methodology

This study is a review-based secondary analysis. It generates no new field data. Instead it treats the studies in its corpus as evidence in their own right, taking out what each of them measured and reading those measurements against one another. Ramanujam et al. (2025) approach a closely related question the same way, describing their work as “a review-based methodological approach grounded in the analysis of secondary data.” This paper follows that precedent with one difference. Where they synthesise mainly at the level of policy architecture, the emphasis here falls on comparing measured outcomes across populations, instruments and years.

The design suits the question for three reasons. First, the mechanism the paper is interested in, whether a payment record becomes a credit record, operates across regulators, banks, payment operators and borrowers at the same time, and no single field site can see all of it. A survey in one market can establish whether its vendors use UPI. It cannot establish whether their transaction histories are reaching anyone’s underwriting model. Second, good primary evidence on this population already exists, and it is bounded in ways that make synthesis the useful next step: a randomised trial of 702 migrant garment workers in Bangalore, a census of 50 women vendors at Delhi’s Mahila Haat, a 61-household survey in Pune’s slums and labour camps, a nationally representative analysis built on the NSSO’s 79th round, and an industry survey of more than 6,000 consumers and 1,000 merchants across 120 cities. Each is rigorous inside its

own frame and none supports a national claim on its own. Third, the question is evaluative rather than causal. It asks how far an infrastructure has carried an outcome, and under what conditions, not what its average treatment effect is.

Eighteen studies published between 2018 and 2026 make up the corpus. They were selected against three criteria: relevance to at least one of the questions above; enough methodological detail for their findings to be judged; and, taken together, coverage of the whole chain from infrastructure to usage to credit. The corpus is deliberately mixed in kind, because no one type of source spans that chain. Peer-reviewed articles and working papers supply measured outcomes at the level of individuals and households. Industry and institutional reporting supplies magnitudes at the level of the system. Government reports and the critical literature supply the policy architecture and the case against reading it optimistically. The close-up evidence sits in Delhi, Pune, Bangalore, West Bengal and among Bihari and eastern Uttar Pradesh migrants in urban centres, with national coverage coming from survey-based work.

Each document was read in full, and its reported figures were taken out together with the sampling frame and the year they came from, so that no number travels through this paper detached from the study that produced it. Figures a source had itself taken from somewhere else were recorded as second-hand and carried forward as such. The material was then coded against the access–usage–quality framework that underpins the Reserve Bank of India’s Financial Inclusion Index, with a fourth category added for credit, which that framework does not treat separately but this question requires. Coded material was compared across sources to find where independent studies agree. Quantities were aligned to a common FY19–FY24 window where the source allowed it and left in their original frame, clearly labelled, where it did not. Where two sources disagree, both figures are reported with their samples rather than averaged. The two figures were plotted by the author from data reported in Kearney (2024) and Ramanujam et al. (2025); no new data were generated, and each carries a source line naming the document it came from.

Two conventions run through Section 4. Rupee–dollar conversions follow the source document rather than being recalculated at a single rate, and monthly wage equivalents assume the standard 26-day working month. One category of source sits outside the corpus. The statutory minimum wages used in Section 4.2 come from official notifications of the Government of NCT of Delhi and the Ministry of Labour and Employment, supported by contemporaneous press reporting on the contested Karnataka notification, because no document in the corpus reports those floors. This is the only departure from corpus-only sourcing, and it is marked again at the point of us.

The question: does digital payment reduce corruption in contractor mediated wage payment? Is deliberately shown as non-existent. There is no measurement of leakage or bribery within the

system. No source available measures the uptake of formal credit by urban migrant workers directly. The evidence available on infrastructure and on payment usage is enormous and reduces sharply at the point where credit begins. This absence is the first of the three gaps set out which looks at the conditions for adopting payments to credit rather than any other result.

4. Analysis

4.1. The Increasing Role of Digital Financial Transactions Among Urban Migrant Labour: A Five-Year Comparison

The macro trajectory over the five financial years bracketing this study is unambiguous. The value of retail digital payments grew from roughly USD 0.5 trillion in FY19 to USD 3.6 trillion in FY24 — a compound annual growth rate of about 49% — over which period UPI's share of that value rose from 22% to 68%, its transaction volumes compounding at 138% a year (FY18–24), while cash fell from about 90% of all transactions in 2017 to under 60% (Kearney, 2024). The infrastructure beneath this shift scaled in parallel with internet users growing from about 210 million in 2013 to around 918 million in 2023 (Kearney, 2024), bank account ownership rose from 80% of adults in 2017 to 89% in 2024, and by mid-2025 UPI was processing 19.47 billion transactions a month worth 25.08 trillion, with PMJDY accounts crossing 52.6 crore ₹ (Ramanujam et al., 2025).

Table 1 : Comparison for the extent of UPI from 2019 to 2024 in USD Trillion

Financial Year	USD TRILLION
FY19	0.5
FY20	0.8
FY21	1
FY22	1.8
FY23	2.7
FY24	3.6

Source: NITI AAYOG; Kearney 2024



Figure 4.1. Value of retail digital payments in India, FY19–FY24 (USD trillion). Source: author's plot from RBI data as reported in Kearney (2024), Figure 1.

The more pertinent question is the extent of growth of upi users as compared to the urban migrant labour using this format for various payments. At the start of the window, migrant participation was negligible: in November 2019, only 5.7% of migrant garment workers surveyed in Bangalore used digital payment applications, and just 6% even knew about them. The Findex data recorded only 14% of Indian women (26% of men) making any digital payment in a year (Adhvaryu et al., 2022). By 2021, roughly 12% of Indian adults had made a digital merchant payment (Findex 2021, as cited in Adhvaryu et al., 2022), and one in three accounts still lay inactive — though inactivity had fallen sharply from 48% in 2017 to 33% (Ramanujam et al., 2025). By the end of the window the picture had inverted at the point of sale. Surveyed urban merchants received about 69% of transaction volumes digitally, and even street vendors like paan shops, fruit and flower sellers, and food stalls reported receiving roughly 46% of payments digitally. Consumers in the “aspiring” income segment (under INR 500,000 a year, the bracket containing most migrant workers) transacted digitally about 67% of the time (Kearney, 2024). The same movement is visible longitudinally at the micro level: among migrant women vendors at Delhi’s Mahila Haat, self-reported monthly incomes clustered at USD 100–150 before UPI adoption and USD 150–200 or more after it (Mallick et al., 2026).

Table 2: Digital payment access and usage among urban migrant labour, c. 2017–2020 compared with c. 2024–25

Indicator	2017-2020	2024-2025
Retail digital payments (value)	USD 0.5 TRILLION	USD 3.6 TRILLION
UPI share of retail digital payment value	22%	68%
Cash share of transactions	90%	<60%
Adult account ownership	80%	89%
Inactive accounts	48%	33%
Digital payment use, migrant garment workers	5.7%	-
Street vendors' payments received digitally	Negligible	46%

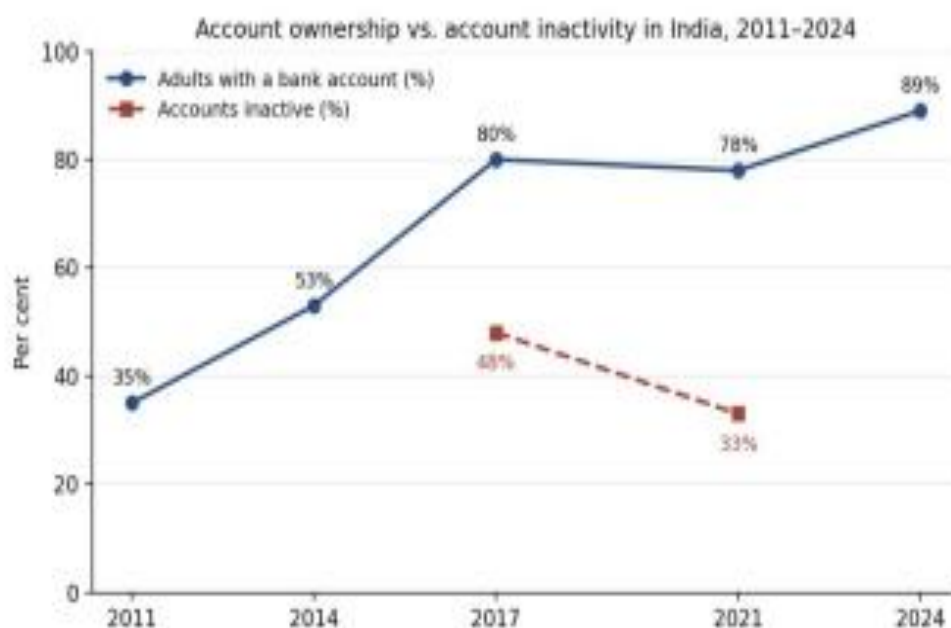


Figure 4.2. Adult bank account ownership (2011–2024) against the share of accounts lying inactive (2017–2021), illustrating the access–usage gap central to this study. Source: author’s plot from World Bank Global Findex data as reported in Ramanujam et al. (2025), Figures 1–2.

Two qualifications temper this comparison. First, the migrant-specific baseline (5.7%) and the endline vendor figure (46%) come from different populations and instruments, so the five-year change should be read as convergent evidence of direction and rough magnitude, not as a single tracked cohort. Second, growth in transactions has not become depth of usage: *migrants continue to use accounts largely as withdrawal points for Direct Benefit Transfers rather than for sustained saving or credit, and roughly one account in three remains dormant (Ramanujam et al., 2025). The role of digital transactions in migrant working life has thus moved, within five years, from marginal to normal — but it remains transactional rather than transformational, which is precisely the gap between payments and credit that this paper interrogates.*

4.2. Are Migrant Labourers Receiving Minimum Wages?

The sharpest evidence comes from Bangalore's garment sector, where the migrant workers studied by Adhvaryu et al. (2022) earned an average of 8,890 per month (about USD 120) at ₹ the November 2019 baseline. Karnataka's contested notification of October 2019 set the garment minimum wage at 341.94 per day — 8,890 for a 26-day month, a figure the average wage ₹ ₹ matches almost exactly — after revising it down from 445.69 per day ($\approx$ 11,588 monthly), a ₹ ₹ reduction the Karnataka High Court subsequently held inoperative (as reported by The Wire, 2023; Scroll.in, 2019). Against the lower notification, the average migrant garment worker sat exactly at the floor, with no margin. This was against the judicially restored rate and the migrant labour were underpaid by roughly 23%. In this sector the minimum wage functions as the maximum wage — and remittances consume 53% of pay for those workers who remitted (Adhvaryu et al., 2022).

The Delhi comparison points the same way for self-employed migrant labour. Women vendors at Mahila Haat reported monthly incomes of roughly USD 100–150 ($\approx$ 8,300–12,500) before UPI ₹ adoption and USD 150–200 ($\approx$ 12,500–16,700) after taking into account weekday earnings of ₹ ₹300–500 (Mallick et al., 2026). Delhi's statutory minimum for even unskilled employed labour stood at 18,066 per month from October 2024 and 18,456 ($\approx$ 710 per day) from April 2025 ₹ ₹ ₹ (Government of NCT of Delhi, Labour Department, 2025). As vendors are their own account workers, the minimum wage does not legally bind their earnings to levels stated by the government; but as stated by the government. It shows that even after digital adoption presumably raised their incomes, these migrant women earned below what the law deems the minimum. The national floor-level minimum wage (176 per day from 2017, since revised to ₹ ₹178, and advisory until the Code on Wages, 2019 floor is operationalised) is so low that clearing it — as both groups do — signals little (Ministry of Labour and Employment; Indian Economic Service, n.d.).

Table 3: A comparison of earnings of migrant labour against the statutory requirements set by different states

Group (study, period)	Reported earnings	Applicable statutory benchmark	Position
Migrant garment workers, Bangalore (Adhvaryu et al., baseline Nov 2019)	₹8,890/month average	Karnataka garment notification: ₹341.94/day (≈₹8,890/mo); prior rate ₹445.69/day (≈₹11,588/mo) restored by the High Court	At the reduced floor; ~23% below the restored rate
Migrant women street vendors, Delhi (Mallick et al., fieldwork pre-2026)	≈USD 100–200/month (≈₹8,300–16,700), incl. post-UPI gains	Delhi unskilled minimum: ₹18,066/mo (Oct 2024); ₹18,456/mo (Apr 2025)	Below the unskilled floor even after digital adoption

Source: Adhvaryu et al.; Mallick et al.

The qualitative record in the corpus corroborates rather than contradicts this pattern. Migrant construction workers recruited through middlemen, holding no wage slips or employment records face “lesser wages, non-payment of wages, and lack of legally mandated benefits,” with women earning 30–40% less than male counterparts, and protections under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 going largely unimplemented (Chandrashekhar, 2023). During the pandemic, employers reportedly denied wages outright to stranded migrant daily-wagers (NITI Aayog, 2020), and surveyed migrants in the NCR reported earnings “often insufficient” to cover urban living costs and remittances together (Pandey, 2026). The data thus converge on a clear answer: where measurement is possible, migrant labourers earn at the weakest permissible reading of the minimum wage or below it — and, critically for this paper, the absence of the very payment records that digital wage transfers would create is itself what makes underpayment easy to sustain and hard to contest (Chandrashekhar, 2023).

4.3. Reasons for increased usage and subsequent stagnation

The data point to an increase driven from both the supply and the demand side, and simultaneously capped by an identifiable set of frictions. On the supply side, the 2016 conjuncture namely UPI’s launch, 4G with cheap data, and demonetisation created rails and a shock that pushed users of all classes toward digital modes, sustained thereafter by smartphone diffusion (ownership among 18–34-year-olds rose from 27% to 37% between 2015 and 2018

alone), QR-code ubiquity at zero cost to small merchants, and products such as UPI Lite and UPI Lite X engineered for low-value payments and weak connectivity (Kearney, 2024; Adhvaryu et al., 2022). Government transfers reinforced the pull: DBT flows worth a cumulative 34.2 lakh ₹ crore made bank accounts unavoidable even for reluctant users (Ramanujam et al., 2025). On the demand side, migrants adopted this system where usefulness was tangible: vendors accepting digital payments served more customers and reported higher, steadier incomes. With digital adopters elsewhere recording 15–20% higher daily sales, and creating a network effect in which customer preference itself compelled merchant adoption (Mallick et al., 2026).

The same sources explain why usage has not risen further, and for some groups has stalled. Fear is the dominant reported brake: 51% of surveyed consumers worry about financial fraud, 49% about double debits, and 51% cite internet failures as a reason to prefer cash. Concerns were most pronounced among women and the inspiring migrant segment (Kearney, 2024). Mahila Haat vendors who refused UPI cite “fear, illiteracy, and cyber fraud” explicitly (Mallick et al., 2026). Capability gaps compounded fear. In Pune, 83.6% of surveyed urban-poor and migrant households had internet access but only 11.9% used it for any financial decision (Goel et al., 2024). Structural and regulatory frictions bind even willing users together. Adhvaryu et al. (2022) show that classroom training lifted digital payment use by only ~5 percentage points and intensive hand-holding by ~10–11, because adoption was gated by technological and regulatory prerequisites like phone, bank linkage, KYC documentation, rather than knowledge alone. For migrant women in particular, irregular earnings, distrust, and patriarchal control over devices suppressed the use of accounts opened in their own names (Bhardwaj et al., 2025). Trust deficits complete the picture: Where beneficiaries cash out of DBT transfers immediately, and one in three accounts remains dormant (Ramanujam et al., 2025).

In terms of the study’s theoretical frame, the pattern is exactly what the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology (UTAUT) would predict: usage rose where perceived usefulness became undeniable in terms of higher sales, customer demand, free rails and ease of use improved (UPI, QR, Lite variants). This plateaued where perceived risk (fraud), facilitating conditions (connectivity, KYC, device control), and social influence (gender norms) remained adverse. The increase in digital transactions among urban migrant labour is therefore real and large but conditional. The conditions that cap payment usage are the same ones that will determine whether transaction data can ever mature into equitable credit access.

5. Limitation of Our Study

The main limitations are that the study has not collected any primary data due to paucity of time and money. All sources are from secondary data. None of the sources measures how many urban

migrant workers actually receive formal credit. The evidence is rich on infrastructure and on payment usage, and then it more or less stops at the point where credit begins. What the paper says about the move from payments to credit is therefore about the conditions for that move rather than about its results.

The five-year comparison in Section 4.1 sets figures side by side that come from different groups of people, measured in different ways. The 5.7% recorded among garment workers in Bangalore in 2019 (Adhvaryu et al., 2022) and the 46% of payments street vendors reported receiving digitally in 2024 (Kearney, 2024) are not two readings of the same cohort. Together they show a direction and a rough scale of change, and nothing more exact than that. The sources also mix financial years, calendar years and survey rounds, and rupee-dollar conversions follow whichever rate each source used rather than a single common one.

The corpus leans towards particular cities and particular trades. Its close-up evidence comes from Delhi, Pune, Bangalore, West Bengal, and from Bihari and eastern Uttar Pradesh migrants living in urban centres; its national evidence is survey-based. Migrant workers in smaller towns, and in sectors other than garments, construction and street vending, appear only indirectly.

The wage comparison in Section 4.2 is a benchmark and not a compliance audit. No study in the corpus tests minimum-wage compliance directly, and the Mahila Haat vendors are their own account workers whom minimum-wage law does not bind. The statutory floor is used there to show what the law treats as a minimum income in the same city, not to establish that anyone has broken it.

The paper also leaves one part of its own research question unsettled. No source in the corpus measures corruption or bribery in contractor-mediated wage payment directly. The closest evidence is Chandrashekhar's (2023) account of recruitment through middlemen and the absence of wage slips, which describes the conditions that make underpayment possible rather than measuring what is skimmed from it.

The sources are of uneven weight and have been treated accordingly. Several are working papers that have not been peer-reviewed, a few carry small bibliographic irregularities, and the main industry source has a commercial sponsor and a sampling frame weighted towards urban e-commerce users. The study also makes no causal claim anywhere. TAM and UTAUT are used to organise the explanation of why adoption rose and where it stalled; they are not tested here. And because digital finance in India moves quickly, the figures are current to FY24 and the policy position to 2025.

6. Conclusion and the Way Ahead

This study set out to ask how far India's digital financial infrastructure has advanced equitable credit access for urban migrant workers. Three conclusions follow from the evidence, and they do not all point the same way.

The first is that the infrastructure has worked, and worked fast, at the level it was built for. In the five years bracketing this study, digital transactions went from being unusual in migrant working life to being ordinary. Retail digital payment value grew roughly sevenfold to USD 3.6 trillion, UPI's share of that value rose from 22% to 68%, cash fell below 60% of transactions, and street vendors, the occupational group in which migrants are most visible, came to receive close to half of what they were paid digitally (Kearney, 2024). Account ownership reached 89% of adults, and DBT flows made holding an account unavoidable even for people who had no wish to open one (Ramanujam et al., 2025). Judged on access alone, few countries have done anything comparable.

The second conclusion is that access has not turned into meaningful use, and that the shortfall follows a pattern rather than falling randomly. About one account in three is dormant, benefit recipients tend to withdraw transfers as soon as they arrive, and in Pune 83.6% of surveyed urban-poor and migrant households had internet access while only 11.9% used it to inform any financial decision (Goel et al., 2024; Ramanujam et al., 2025). The reasons are consistent across the sources: fear of fraud and of transactions that fail, low literacy and low confidence, and the practical prerequisites of phone-bank linkage and KYC documentation, which training on its own cannot supply (Adhvaryu et al., 2022). For the women who make up roughly two-thirds of India's internal migrants, irregular earnings, distrust of institutions and the fact that men often control the household phone add further weight (Bhardwaj et al., 2025). Usage, in other words, is conditional, and the conditions press hardest on the people the policy was meant to reach.

The third conclusion follows from the second, and it is the main finding of this paper. The payments revolution has not yet become a credit revolution for this group. Only 8 to 10% of micro-enterprises can obtain an institutional loan, barely 102 million credit cards circulate nationally, with the thinnest penetration in exactly the income brackets and small towns where migrants are concentrated, and the mechanism that is supposed to turn UPI histories into creditworthiness remains, in all the evidence available here, a proposal rather than a demonstrated practice (Kearney, 2024; Ramanujam et al., 2025). The equity problem is sharper than it first appears. The same barriers that currently cap payment usage decide who builds a usable transaction record in the first place. A lending system that reads transaction data will lend to the people who transact. Unless the usage gap closes first, credit scoring built on digital footprints is likely to repeat the existing pattern of exclusion in a more sophisticated form, while

adding new risks of its own: over-indebtedness, opaque lending platforms, and the accumulation of data about workers who neither control nor fully understand the systems now reading them (Chowdhury, 2026; Ramanujam et al., 2025).

The wage evidence in Section 4.2 points in a direction that was not anticipated at the outset. Where the comparison could be made, migrant workers were earning at the weakest defensible reading of the statutory minimum or below it, and construction workers hired through middlemen hold no wage slips or employment records at all (Chandrashekhar, 2023). Having no payment record is therefore not only a barrier to credit. It is part of what makes underpayment

easy to continue and hard to challenge. Digitising migrant wages has a value that has nothing to do with credit scoring, and that arrives before it.

Thus Digital financial infrastructure is necessary for equitable credit access for urban migrant workers, but it is not sufficient on its own. It has delivered access. It is delivering usage unevenly. So far it has delivered very little credit that can be verified.

6.1. The Way Ahead

Six directions follow from this analysis. The first five are matters for policy; the last is for research.

Close the usage gap before depending on the data it produces. Lending on transaction history can only reach people whose transactions are recorded. Measures that raise sustained use, rather than one-off adoption, are a precondition for equitable data-driven credit and not a separate agenda running alongside it.

Treat the prerequisites, not only the knowledge gap. The clearest experimental result in the corpus is that training raised digital payment use by only about 5 to 10 percentage points, because adoption was gated by phone-bank linkage and KYC documentation rather than by what workers knew (Adhvaryu et al., 2022). Documentation rules that accommodate mobility, such as portable or address-flexible KYC for workers with no stable proof of residence, would achieve more than financial-literacy programmes alone.

Make the transaction record count where credit is actually given out. The collateral-free schemes are already in place. Recognising verified UPI, utility and rental histories within the assessment process for the Pradhan Mantri Mudra Yojana and Stand-Up India is the practical step that would turn a payment record into borrowing capacity for enterprises that leave no conventional paper trail (Ramanujam et al., 2025).

Design for women, who are the majority of internal migrants. Gaps in payment use, financial literacy and control over devices run through the whole corpus, and they are not incidental to the credit question. An account opened in a woman's name but operated by someone else produces a transaction record that does not describe the person it is supposed to describe (Bhardwaj et al., 2025; Mallick et al., 2026).

Build trust at the same pace as the technology. Fear of fraud, the risk of a failed transaction and the absence of anywhere to complain are the brakes users report most often. Quick and time bound grievance redress, interfaces that work in more languages and by voice, and clear protection against predatory digital lending are what turn an impressive system into one that people at the margins are willing to rely on (Kearney, 2024; Ramanujam et al., 2025).

Measure what is currently unmeasured. The most striking result of the review behind this paper is an absence of available source reports credit uptake separately for urban migrant workers. A migrant-disaggregated credit statistic, a study from the lender's side of whether alternative data really enters underwriting models, and a cohort followed from first digital transaction to first formal loan would each turn a question this paper could only frame into one that can be answered.

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