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The Economics of Digital Payments: Analyzing the Relationship Between Digital Financial Infrastructure, Consumer Spending Behaviour and Financial Inclusion

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Abstract

Digital payments have stopped being a convenience and become infrastructure. This paper asks how the design of that infrastructure shapes two outcomes usually studied apart: how consumers spend, and who gets included in the formal financial system. Drawing on a structured review of peer-reviewed evidence published between 2016 and 2026, it develops a three-link framework. Infrastructure lowers transaction and monitoring costs; payment behaviour then changes spending and saving; and the resulting data trail can open access to credit. The evidence is fairly consistent on the first and third links. Mobile money, debit cards and public payment rails reduce leakage, build savings and widen credit access (Suri & Jack, 2016; Bachas et al., 2021; Ghosh et al., 2025). The second link cuts both ways. Cashless payments raise spending modestly, more so for conspicuous goods and among lower-income buyers (Schomburgk et al., 2024; Agarwal et al., 2024). Having a payment account, in other words, does not guarantee financial health. The paper closes with implications for interoperability, spending visibility, data sharing and digital literacy.

Keywords: *digital payments; financial inclusion; consumer spending; cashless effect; digital public infrastructure; UPI; mobile money*

1. Introduction

Not long ago, a payment was simply how you settled a bill. Today it is also a record, a credit signal and, for many households, the first door into the formal economy. That change is why economists increasingly treat payment systems as infrastructure rather than as a product, in the same family as roads or power grids.

The change has been fastest in places that were once considered hard to reach. Global account ownership rose from 51 percent of adults in 2011 to 76 percent in 2021, and mobile money accounts contributed an 8-percentage point increase in account own+ership across developing economies between 2014 and 2021 (Demirgüç-Kunt et al., 2022). India is the best-known case. The Unified Payments Interface (UPI) arrived in 2016 (Chopra et al., 2026), the same year a sudden demonetisation withdrew 86 percent of the currency in circulation (Agarwal et al., 2024).

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Two bodies of research have grown up around this shift, and they rarely speak to each other. The development literature asks whether digital payments include people: do they save more, borrow more safely, climb out of poverty? The behavioural literature asks whether digital payments change how people spend: do they feel less attached to money, and so part with more of it? A policymaker reading only the first would be optimistic. One reading only the second would be wary. Both are partly right, and the interesting question is how the same infrastructure produces both effects.

This paper therefore asks three questions.

1. How does digital financial infrastructure affect financial inclusion?
2. How does it change consumer spending behaviour?
3. What does the link between the two imply for policy design?

The contribution is integrative. Rather than add one more single-country regression, the paper brings together recent peer-reviewed evidence from Kenya, Niger, Mexico, India and China into a single framework, and it is explicit about where that evidence is strong and where it is thin.

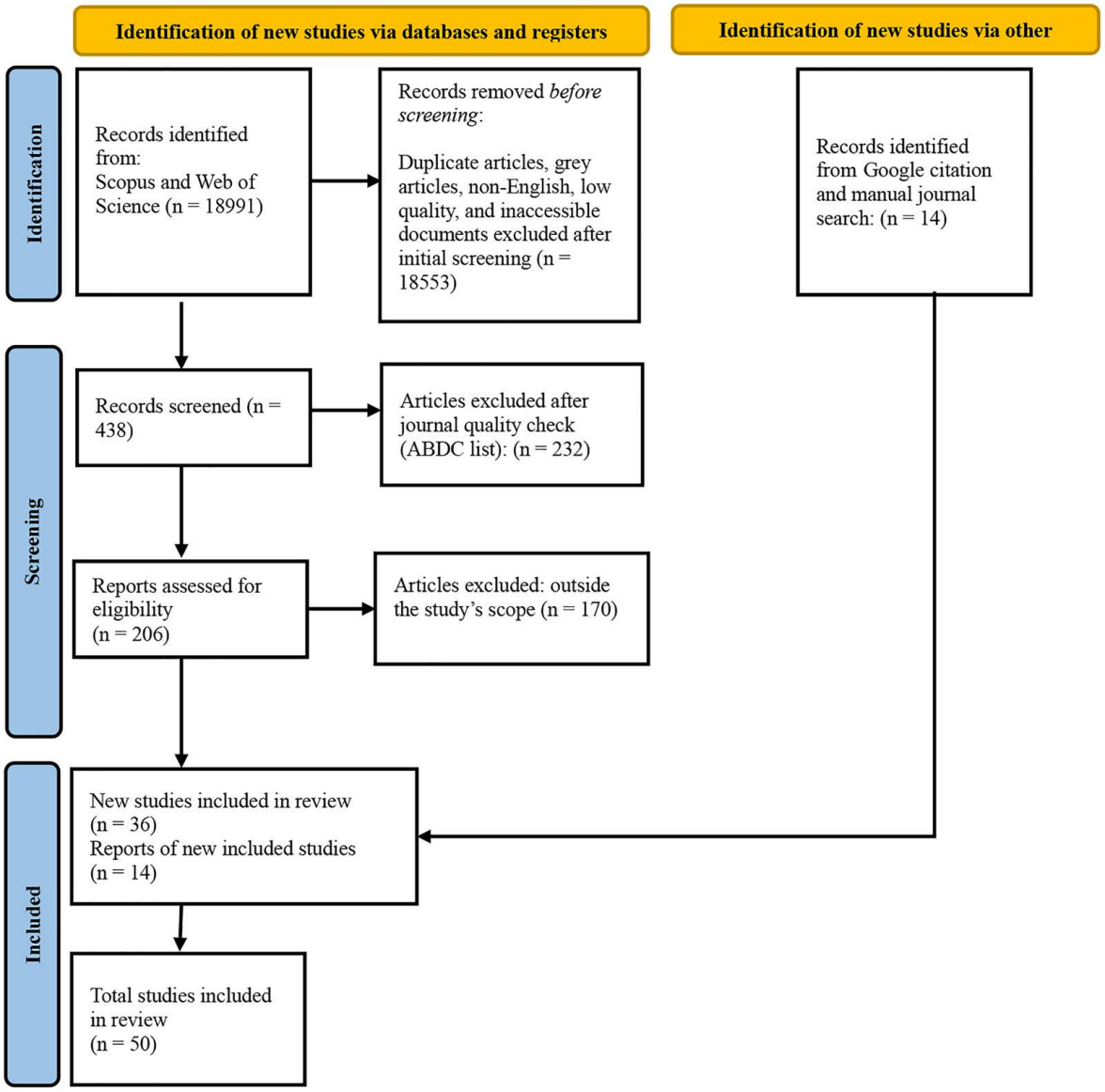


Figure 1: PRISMA Flow Diagram for inclusion and exclusion process

2. Literature Review

2.1 Payment infrastructure and development

The case for treating payments as infrastructure starts with what they do for firms and governments. Beck et al. (2018) model mobile money in Kenya as a payment instrument that avoids the risk of theft but carries electronic transaction costs. In their framework, more productive entrepreneurs and those with access to trade credit are more likely to adopt it, and calibrating the model to Kenyan firm data produces sizeable macroeconomic effects. On the public side, Muralidharan et al. (2016) randomised the rollout of biometric smartcards across 157 subdistricts and 19 million people in Andhra Pradesh. Payments became faster, more predictable and less corrupt, and leakage between government and beneficiaries fell. Aker et al. (2016) found a similar logic in Niger, where cash transfers delivered by mobile money raised household diet diversity by 9 to 16 percent among recipients of mobile transfers.

2.2 Digital finance and inclusion

Suri and Jack (2016) remain the most cited household-level result. They estimate that access to Kenya's M-PESA agents raised consumption and lifted about 194,000 households, or 2 percent of the total, out of poverty, with larger effects for female-headed households driven by better financial resilience and saving. The finding has been challenged by some development economists, a reminder that even the strongest evidence in this field is contested. Bachas et al. (2021) add a Mexican case in which debit cards helped cash-transfer recipients accumulate savings. Ozili (2018) takes the wider view, arguing that digital finance brings real benefits to users, providers and governments while raising unresolved issues of risk and stability.

Macro and cross-country work points the same way, with qualifications. Chopra et al. (2026) track an inclusion index for India from 2004 to 2021 and find that both Aadhaar, the identity layer, and UPI, the payment layer, raise inclusion in the long run, while UPI shows a negative short-run effect that the authors attribute to the digital divide. Petrikova and Kocisova (2024) use Global Findex data to study the individual attributes behind digital payment use in the Euro Area, treating it as a proxy for inclusion. Shair et al. (2024) examine digital resources and digital payments in South Asia. Sharma et al. (2022) run the arrow the other way, studying how the wider financial-inclusion ecosystem shapes UPI transactions.

2.3 Payments and spending

The behavioral side has an equally long pedigree. A consistent finding is the cashless effect: people tend to spend more when they pay by card or phone than with notes and coins, usually explained by the pain of paying that physical cash makes vivid. Schomburgk et al. (2024) pooled 392 effect sizes from 71 papers and found a small but significant effect. It is stronger for conspicuous purchases and weaker in pro-social settings such as tips and donations, and it has weakened over time. In India, Agarwal et al. (2024) provide causal evidence from demonetisation that a forced move to digital payments raised spending persistently. Work on Chinese household's links digital finance to higher consumption (Jiang et al., 2024) and to greater participation in risky financial markets (Ye et al., 2022).

3. Conceptual Framework

The framework treats digital financial infrastructure as three layers that work together: an identity layer that lets people open and verify accounts, a payment layer that moves money between them, and a data layer that lets payment records be shared with consent. India's experience is usually described in these terms (Chopra et al., 2026), but the logic travels. Kenya's M-PESA, Mexico's debit card programme and Niger's mobile transfers each supply some of the layers, though not all of them.

Three links run from these layers to the outcomes this paper cares about.

Link 1: costs fall and access widens. A digital rail makes it cheaper to move, store and reach money. The gains show up as less leakage in public transfers, safer storage, and more frequent contact with formal accounts. This is the link behind most of the inclusion evidence.

Link 2: behaviour changes. The same rail changes how a payment feels. Paying by phone is quicker and less visible than handing over notes, and Agarwal et al. (2024) attribute their spending result mainly to people feeling less attached to money when they pay digitally, rather than to lower transaction costs alone. A rail that makes balances easy to check can instead strengthen saving, as Bachas et al. (2021) found. Which way behaviour moves depends on whether the design makes spending or saving the easier path.

Link 3: records become assets. Every digital payment leaves a trace. When that trace can be shared with consent, it lets lenders judge borrowers they could not see before (Ghosh et al., 2025).

Table 1 sets out the mechanisms and the evidence attached to each.

Table 1. Mechanisms linking digital financial infrastructure to inclusion and spending

Link	Mechanism	Expected effect	Representative evidence
Cost reduction	Cheaper to move, store and reach money	Less leakage, more use of formal accounts	Muralidharan et al. (2016); Aker et al. (2016)
Monitoring and trust	Easy balance checks by card or phone	More saving, more trust in the bank	Bachas et al. (2021)
Low payment salience	A digital payment feels less like a loss	Higher spending, mainly on conspicuous or temptation goods	Agarwal et al. (2024); Schomburgk et al. (2024)
Verifiable records	Payment history becomes screening data	Better credit access, lower default	Ghosh et al. (2025)
Identity and interoperability	Shared ID and open payment rails	Larger long-run inclusion, short-run frictions	Chopra et al. (2026)

Three moderators sit across all the links: digital and financial literacy, trust in providers, and the digital divide in devices and connectivity. Chopra et al. (2026) point to the last of these when explaining why UPI's effect on inclusion was negative in the short run and positive in the long run. The framework also allows for feedback. As inclusion widens, more people use payments; as more people use payments, records thicken and credit improves; and spending patterns that help or hurt household balance sheets feed back into whether inclusion is useful at all.

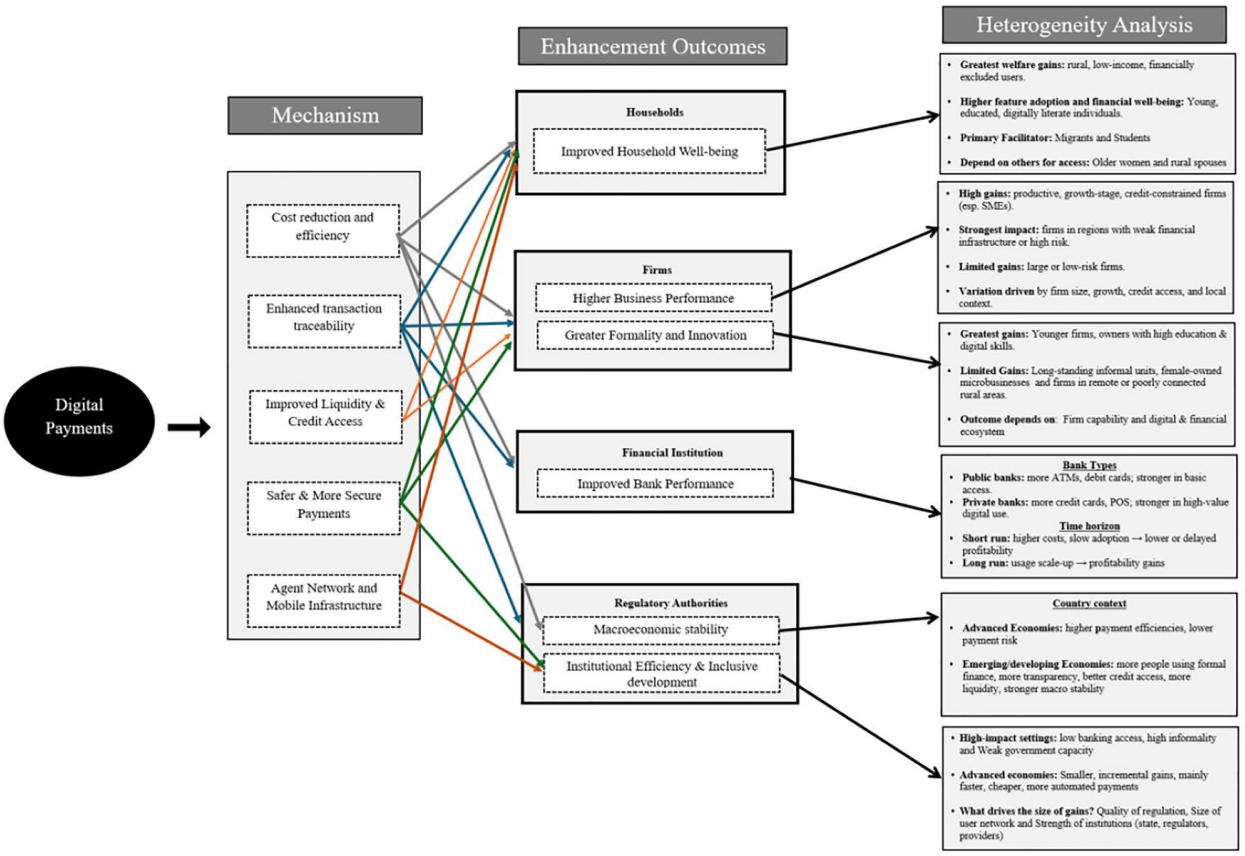


Figure 2: Conceptual framework of enhancement outcomes, mechanisms and heterogeneity analysis of digital payments across stakeholders.

4. Methodology

This is a structured integrative review, not a formal systematic review. The aim is to bring evidence from different disciplines into one argument and to be open about how that evidence was chosen.

Sources were identified through searches of web-indexed scholarly sources and publisher records in November 2026, using combinations of terms such as digital payments, financial inclusion, mobile money, cashless effect, UPI and household consumption. Three criteria guided selection. First, publication between 2016 and 2026. Second, a peer-reviewed journal article or an established institutional publication, with a DOI. Third, an empirical design that lets a reader judge the strength of the claim. One source is a working paper, because its journal version appeared only in 2026; the working-paper DOI is given.

Evidence was read with a rough ranking of design quality in mind. Randomised and natural experiments carry the most weight for causal claims, followed by meta-analyses, then panel and time-series studies, then descriptive and cross-sectional work. Regional-journal studies are used for context and do not carry the same weight as the leading journals. For each study the review recorded the setting, the design, the outcome and the direction of the effect, and these records form the tables in Sections 5 and 6.

Two limits follow directly. Selection was by judgement, so important studies may be missing. And because the studies use different outcomes and populations, the paper does not attempt a pooled estimate. It compares directions and mechanisms, not magnitudes.

5. Digital Financial Infrastructure and Financial Inclusion

The global picture comes first. The 2021 Global Findex surveyed about 128,000 adults in more than 120 economies, and its headline is the rise in account ownership from 51 to 76 percent over a decade (Demirgüç-Kunt et al., 2022). Mobile money is a large part of that story in developing economies. But an account is only an entry point, and the studies below are more useful because they show what people did once they were inside.

Where payments solve a concrete friction, the gains are clearest. Muralidharan et al. (2016) is the cleanest example. Government payments in Andhra Pradesh were slow and leaky; secure, biometrically authenticated digital delivery made them faster, more predictable and less corrupt, and the time saved by beneficiaries alone roughly matched the cost of the programme. In Niger, mobile delivery of drought-year cash transfers raised household diet diversity (Aker et al., 2016). The recipients, all women, also reported that the electronic transfer was less visible to others in the household, which hints at a gender channel. Suri and Jack (2016) found that channel at larger scale in Kenya, where poverty reduction was concentrated among female-headed households and women moved out of agriculture and into business.

Access to money is not the same as holding it. Bachas et al. (2021) studied cash-transfer recipients in Mexico who already had bank accounts. Those who were given a debit card built a savings stock equal to 2 percent of annual income within two years, and the extra saving was real, financed by lower current consumption rather than shifted from elsewhere. The card worked by cutting the cost of reaching the money and by making balances easy to monitor, which built trust in the bank.

At national scale, the picture is positive but uneven. In India, Chopra et al. (2026) find that Aadhaar and UPI both raised an inclusion index over 2004 to 2021 in the long run, while UPI's short-run effect was negative, with the digital divide and early gaps in knowledge and trust offered as explanations. Petrikova and Kocisova (2024) show that even in the Euro Area, digital payment use varies with individual attributes, and Shair et al. (2024) study how access to digital resources and digital payments together shape inclusion in South Asia.

Table 2. Selected evidence on digital financial infrastructure and inclusion

Study	Setting	Design	Main finding
Suri & Jack (2016)	Kenya, M-PESA agent access	Household panel, 2008 to 2014	Higher consumption; about 194,000 households (2%) out of poverty, more among female-headed households
Aker et al. (2016)	Niger, drought-year cash transfers	Randomised experiment	Household diet diversity 9 to 16% higher with mobile transfers
Muralidharan et al. (2016)	Andhra Pradesh, India	Randomised rollout, 157 subdistricts, 19 million people	Faster, less corrupt payments; lower leakage
Bachas et al. (2021)	Mexico, cash-transfer recipients	Natural experiment, administrative data	Savings equal to 2% of annual income after two years
Chopra et al. (2026)	India, 2004 to 2021	ARDL time series, inclusion index	Aadhaar and UPI raise inclusion in the long run; UPI negative in the short run

Study	Setting	Design	Main finding
Petrikova & Kocisova (2024)	Euro Area, 2021	Probit on Global Findex data	Digital payment use varies with individual attributes

Read together, these studies suggest that infrastructure delivers inclusion fastest when it removes a specific cost, such as a long queue, a lost payment or a trip to the bank, and slowest when it assumes people will find their own way to use it. They also show why account ownership is a weak measure on its own. What matters is whether the account becomes a place where money is received, kept and used.

6. Digital Payments and Consumer Spending Behaviour

If infrastructure draws people in, the next question is what they do once paying becomes easy. The evidence here is less comforting.

The cashless effect is real but small. Schomburgk et al. (2024) synthesise 392 effect sizes from 71 papers and find that cashless payment goes with higher spending than cash. Three details matter for policy. The effect is stronger for conspicuous consumption and weaker in pro-social situations such as tips and donations. It is stronger in periods of economic growth. And it has weakened over time, which fits the idea that people learn to compensate as cashless payment becomes familiar. The authors find no evidence that features of the payment method itself change the effect; the consumption situation and the economic context do the work.

Causal evidence from India points the same way, with an equity twist. Agarwal et al. (2024) use demonetisation as a natural experiment. Shoppers who relied more on cash beforehand were pushed harder towards digital payment, and their spending at a large supermarket chain rose and stayed higher even after cash supply recovered. A 1 percentage point rise in digital payment share goes with about 0.81 percent more monthly spending. The authors rule out purchase substitution from informal markets, income shocks, credit supply and price changes. By comparing in-store purchases with online orders paid in cash on delivery, they attribute the rise mainly to people feeling less attached to money when paying digitally. The increase is larger for temptation goods and among lower-income consumers.

Saving can rise too, if the design points that way. Bachas et al. (2021) are the counterweight. Debit cards raised savings and lowered current consumption among Mexican cash-transfer recipients because the card made balances easier to monitor. Digital payment does not mechanically make people spend more. The interface and the product around it shape which way behaviour moves.

Wider household and credit effects. Studies of Chinese households report higher consumption (Jiang et al., 2024) and greater participation in risky financial markets (Ye et al., 2022), the latter in a period when the Peking University Digital Financial Inclusion Index rose from 155 in 2013 to 228 in 2017. On the credit side, Ghosh et al. (2025) find that small businesses using more cashless payments are likelier to obtain credit from a FinTech lender and less likely to default, because verifiable payment records carry information about income and expenses.

Table 3. Selected evidence on digital payments, spending, saving and credit

Study	Setting	Outcome	Direction of effect
Agarwal et al. (2024)	Indian supermarket chain, demonetisation	Monthly spending	Up: +1 pp digital share goes with about +0.81% spending; larger for temptation goods and lower-income shoppers
Schomburgk et al. (2024)	Meta-analysis, 71 papers, 392 effect sizes	Spending, cashless vs cash	Small, significant increase; stronger for conspicuous goods, weaker for tips and donations; weakening over time

Study	Setting	Outcome	Direction of effect
Bachas et al. (2021)	Mexico, debit cards for transfer recipients	Savings and consumption	Savings up; current consumption down
Jiang et al. (2024)	Chinese provinces	Household consumption	Digital financial inclusion promotes consumption
Ye et al. (2022)	Chinese households	Risky financial market participation	Higher participation with digital finance
Ghosh et al. (2025)	Indian small-business FinTech lending	Credit access and default	Better access; lower default probability

The common thread is that digital payment changes the experience of spending. Whether that raises household welfare depends on what the household does next.

7. Policy Implications

Five levers follow from the evidence, and Table 4 pairs each with its support and its main risk.

The first is to build payment rails as open, interoperable public infrastructure, while planning for an adjustment period. The long-run gains in India came alongside short-run exclusion of people with low digital confidence (Chopra et al., 2026). The second is to route government payments into accounts people can actually use, with a card or app attached. The Mexican, Nigerien and Indian results all show that how a transfer arrives matters as much as how much arrives. The third is to make spending visible without taking choices away. Because the spending response is strongest among lower-income buyers and for temptation goods (Agarwal et al., 2024), simple prompts such as balance alerts and optional limits are cheap and aimed at the right place. The fourth is consent-based data sharing, so that payment records can widen credit access (Ghosh et al., 2025), paired with a route in for people who still use cash. The fifth is digital and financial literacy together with local connectivity, which the India evidence identifies as the main brake on usage.

Table 4. Policy levers, evidence and risks

Lever	Objective	Supporting evidence	Main watch-out
Open, interoperable public rails	Lower cost, wider access	Muralidharan et al. (2016); Chopra et al. (2026)	Early exclusion of low-literacy and rural users
Transfers into usable accounts with cards or apps	Cut leakage, build saving	Bachas et al. (2021); Aker et al. (2016); Muralidharan et al. (2016)	Dormant accounts if funds are withdrawn at once
Spending visibility tools	Offset low payment salience	Agarwal et al. (2024); Schomburgk et al. (2024)	Must stay optional to avoid paternalism
Consent-based data sharing	Turn payment records into credit access	Ghosh et al. (2025)	Privacy risk; cash-reliant users left behind

Lever	Objective	Supporting evidence	Main watch-out
Literacy and connectivity programmes	Close the usage gap	Chopra et al. (2026)	Cost and targeting

8. Conclusion

Digital payments are best understood as infrastructure whose design decides what it delivers. When a rail removes a specific cost, such as leakage in public transfers, the cost of reaching an account or the opacity of a small borrower, the evidence points to real gains in saving, welfare and credit access. When a rail simply makes paying effortless, the evidence points to modestly higher spending, concentrated among lower-income buyers and on temptation goods.

Those two findings are not in conflict. They are the same mechanism seen from two sides, and the practical task for policymakers and providers is to choose which side of it to build for. That means open public rails, accounts that people can use, visible balances, data sharing with consent, and sustained work on literacy and connectivity. Inclusion should be judged by whether households end up better off, not by how many accounts exist.

The evidence is strong enough to guide design and not strong enough to settle every question. The next step for research is to follow the same households through both the inclusion gains and the spending response.

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