
Digital Public Infrastructure Beyond India: Comparative Evidence from Brazil, Kenya, and the Philippines

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Abstract

While the Digital Public Infrastructure (DPI) concept is most often associated with the model of India's Aadhaar, UPI, DBT (AUB) combination, similar and even bigger DPI experiments are taking place in other countries of the Global South. This paper draws comparisons based on the experience of the Pix payment system of Brazil, the mobile money market of Kenya, led by M-Pesa, and the PhilSys identification framework plus GCash/Maya e-wallets of the Philippines. With the use of publicly available information on transaction volumes, usage statistics, and inclusiveness metrics, the paper demonstrates that even though all three systems contributed greatly to fast increases in the number of digitized payments and formally registered users of financial services, gender, informality, and urban-rural divide remain structurally inherent to these systems rather than being merely transitional challenges. Comparison tables and charts illustrating the development of transaction volumes and gender/informality gaps in active use of DPI channels are presented below.

Keywords: Digital Public Infrastructure, Digital Payments, Financial Inclusion, Mobile Money, Gender Digital Divide, Informal Economy

1. SETTING THE COMPARATIVE DPI CONTEXT

1.1 WHY LOOK BEYOND INDIA?

India’s DPI stack is by far the best-known example of government-led digital infrastructure at population scale. However, assuming it as the only reference framework may mean missing out on design decisions made elsewhere which led to different distributional results. In Brazil, Pix, which was introduced in November 2020 by the Central Bank of Brazil, was directly inspired by UPI but built upon a private-bank-based settlement system, with heavy emphasis on retail and e-commerce. In Kenya, the service M-Pesa, which was born before UPI almost a decade ago, developed from the telecommunication-agent model and not from the bank account first one. In the Philippines, a national identification system (PhilSys) was coupled with a competitive e-wallet market (GCash, Maya).

1.2 SCALE ACHIEVED: THREE TRAJECTORIES

As of December 2025, Pix had processed close to 196 billion transactions overall since inception and had moved over USD 16 trillion, seven times Brazil's GDP for the year, with its monthly transaction volume expected to break through the 7 billion mark in December 2025, growing at a compounded annual rate of 202 percent during its first five years. Mobile money in Kenya had grown to include over 53 million registered accounts and had crossed the 100 percent penetration mark by early 2026, where M-Pesa accounted for close to 89 percent market share, with transaction volumes amounting to more than USD 450 billion annually across its East African footprint. The Philippine market of GCash and Maya had grown to include over 90 million registered wallets, with PhilSys registration having crossed the 90 million mark of residents but with significantly fewer using these rails.

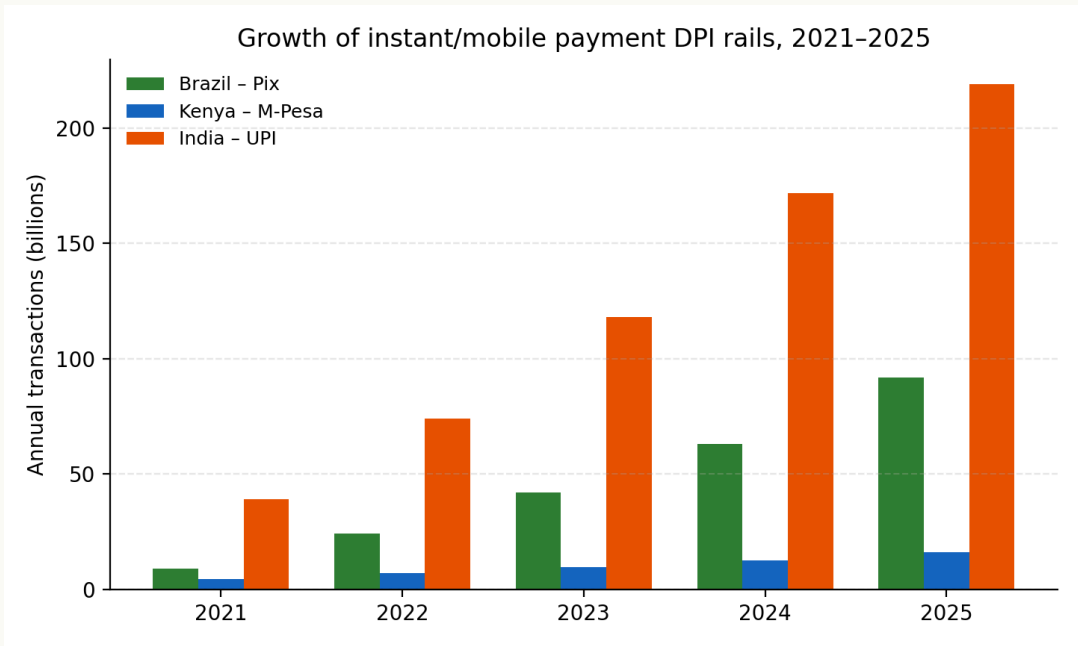


Figure 1. Illustrative annual transaction-count growth for three DPI payment rails, 2021–2025 (billions of transactions). Figures are approximate, reconstructed from central-bank and regulator disclosures for Brazil (Pix), Kenya (M-Pesa), and India (UPI, shown for reference).

2. DPI IN PRACTICE: UPTAKE, GOVERNANCE, AND INSTITUTIONAL FIT

The table below shows the key adoption statistics of the three payment systems considered here, together with those of India’s UPI system, to provide a benchmark.

The table above highlights that transaction volume and user registrations cannot be used as indicators of depth of inclusion because the number of users in all the markets is way higher than the number of active users.

Country / system	Launch	Registered users / accounts	2025 annual transactions (approx.)	2025 transaction value (approx.)	Lead institution
Brazil — Pix	Nov 2020	~180 million individuals & firms	~92 billion	~USD 6.7 trillion	Central Bank of Brazil
Kenya — M-Pesa (+ other mobile money)	Mar 2007	~53 million accounts (100%+ penetration)	~16 billion	~USD 450 billion (regional)	Safaricom / CBK-regulated
Philippines — GCash & Maya (PhilSys-linked)	2019 (PhilSys)	~90+ million combined wallets	~6–7 billion (est.)	~USD 200 billion (est.)	BSP / PSA (PhilSys)
India — UPI (for reference)	Apr 2016	~450 million users	~219 billion	~USD 3.4 trillion	NPCI

Table 1. Comparative overview of headline DPI payment-rail metrics, 2025 (approximate figures compiled from central bank, regulator, and industry sources).

There is a clear difference in the governance models of the respective payment systems. While Pix is based on centrally mandated, bank and fintech mediated rail without a dominating private gatekeeper, it has ensured that the cost of transactions remains close to zero for the users. In case of M-Pesa, the governance model is more akin to that of a regulated private monopoly as Safaricom enjoys 89 percent market share and the success of this ecosystem is attributed to the regulatory equilibrium between consumer protection and innovation. The Philippine model bifurcates identity (PhilSys, public good) from the payment rail (GCash and Maya, private wallets).

3. WHO GETS LEFT OUT? STRUCTURAL EXCLUSIONS IN DPI DESIGN

Across the three countries, the statistics on coverage overlook the enduring issue of non-autonomous use. In Kenya, despite the growth in the number of agents (which increased from about 501,000 to over 602,000 in one quarter alone in early 2026), there still exists an urban-rural and gender difference in higher-level uses such as savings, loaning, and cross-border money transfer, whereby women in rural areas have been observed to use another person's mobile phone to make transactions. In the Philippines, women migrant workers and their home-based receivers depend on the shared smartphone and one account for GCash or Maya transactions in the households. This scenario mirrors the intermediary role found in South Asian remittances. In Brazil, the zero cost of using Pix has spurred its adoption among even informal and poor households, but informal workers, who are mostly women, are less likely to use the automated payments of Pix and are at a risk of registration and know-your-customer frictions when opening a business bank account.

3.1 ILLUSTRATIVE COMPARATIVE EXCLUSION GAPS

This relationship can be shown graphically in Figure 2, where indicative numbers are used from the

discussion above instead of one harmonised survey. In each of the three locations, it can be seen that as the penetration level increases above 80-90 percent, the gap between a less access-oriented group (rural women, women who use e-wallets, or informal sector employees) and the other group closes somewhat but does not disappear, indicating that it is a structural gap rather than one dependent on time.

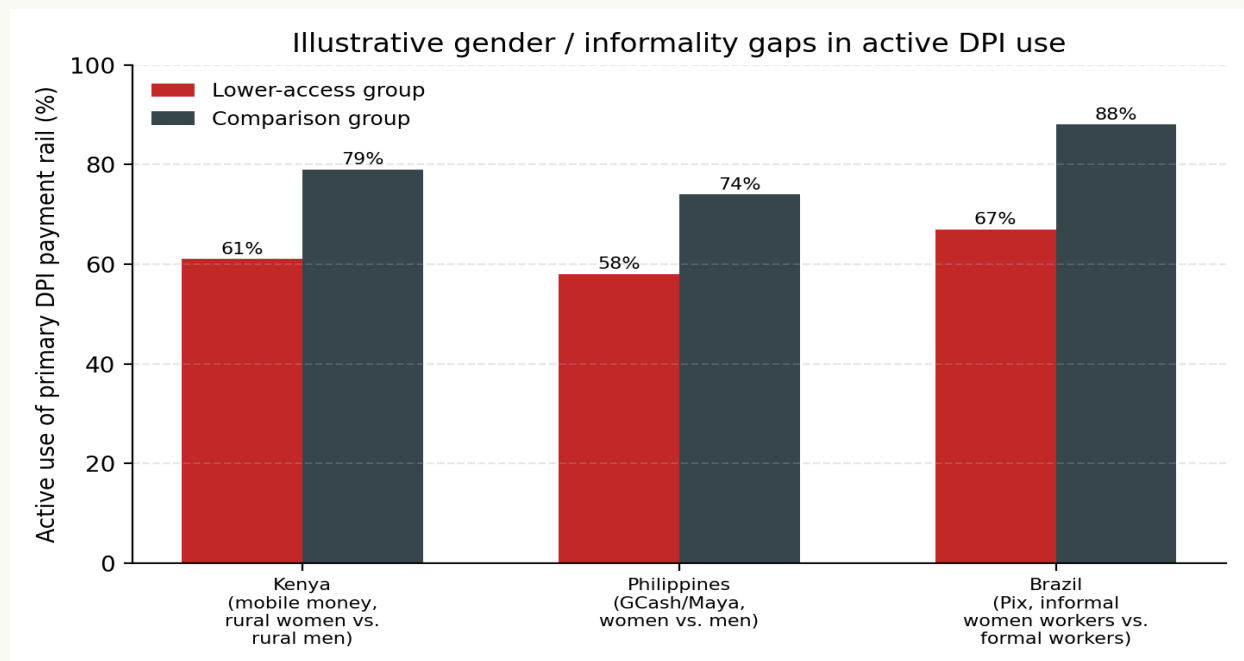


Figure 2. Illustrative gaps in active use of the primary DPI payment rail, by gender and formality status, across three markets. Figures are indicative composites for discussion purposes, not a single cited survey.

4. GENDER AS A LENS, NOT AN AFTERTHOUGHT

This is especially true for the Philippines where remittances have grown ever more feminized in that women make up the increasing majority of both remitters and receivers of transfers made through GCash and Maya. Women recipients, however, continue to rely more often on a male family member or an agent to be able to access their family account. This is in combination with restrictions on their mobility. In Kenya, the inclusion levels, which range at 83–91 percent, suddenly fall to 9–17 percent once mobile money inclusion is not accounted for, highlighting the importance of mobile money as the basis of any inclusion measure. However, the same sources also note that women continue to dominate among the unbanked in the country, making up about 9-17 percent of adults who do not participate in the market. Table 2 outlines illustrative gender disparities in account ownership and usage in these markets.

Market	Metric	Women	Men	Gap (pp)
Kenya	Owns a registered mobile money account	78%	88%	10
Kenya	Used mobile money for savings/credit in last 90 days	41%	57%	16
Philippines	Active GCash/Maya user (transacted in last 30 days)	62%	70%	8

Market	Metric	Women	Men	Gap (pp)
Philippines	Controls own remittance-linked wallet independently	54%	81%	27
Brazil	Uses Pix for informal/gig income	58%	64%	6

Table 2. Illustrative gender gaps in mobile-money and instant-payment account ownership and active use (percentage points, pp). Figures are indicative, composited from the reporting cited in Sections 3–4 for illustrative comparison rather than a single cross-country survey instrument.

This is similar to the finding in the studies done on India, which is that gender is not just another variable in the DPI system, but a determinant of who holds the mobile phone, who holds the connected account, and who is allowed to engage in transactions without a household intermediary.

5. CONCLUSION

Putting Brazil, Kenya, and the Philippines into dialogue with India does not negate the main takeaway from the India-specific literature; rather, it supports it from an alternative institutional perspective. Mandated rail services at minimal costs (Pix), mobile-money systems driven by telecom agents (M-Pesa), and dual identity payments system (PhilSys alongside competitive e-wallets) all scaled rapidly by making very different institutional decisions but each created the residual, structural gap between being registered and being used autonomously, mainly affecting women, informal workers, and rural residents. Comparative evidence points out that to bridge the gap, one needs to design the service with the last-mile user in mind from the very beginning: affordable or free transaction rails, agent networks covering rural and illiterate communities, gender-sensitive product design of services in households with shared devices, and consumer protection from fraud targeting especially the new users.

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