

CASE STUDY

INDIA'S FRICTIONLESS PAYMENTS

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You're in line at a café. When you reach the counter, you tap your phone to pay—only to be told, “Sorry, we only take Apple Pay. You're trying to use Google Pay.” You sigh and leave without your coffee.

This minor frustration reveals a major challenge: Digital payments are not always as convenient as they sound. As is often the case with infrastructure—digital or physical—we notice only when it doesn't work well. What's missing here is interoperability: the ability of different payment apps, banks, and platforms to connect seamlessly.

Many digital payment systems are like walled gardens. If you and the person you are paying do not use the same payment provider, the transaction is not possible. Private platforms prefer to keep users within their domains, also known as closed-loop systems.

Interoperability turns walled gardens into public squares, where everyone can transact with anyone. You use your favorite app, and the other party uses theirs—and the payment goes through.

Our recent research shows that this freedom of choice drives two major benefits (Copestake and others 2025). The first is a better user experience. Consumers choose their favorite apps based on what they value, including ease of use, reliability, or language options. The second is more innovation. Providers must consistently deliver and improve, since switching is easy, and users are not locked in.

Digital acceleration

Our work draws on India's rapid transition to digital payments and finds that interoperability can

The world's largest real-time payment system shows the power of interoperable platforms

empower consumers, foster innovation, and accelerate the shift away from cash.

In 2016, the country launched the Unified Payments Interface (UPI), which allows payments to be sent and received easily across all participating apps and banks. The system has transformed India's payment landscape and become the largest real-time payment system in the world by volume, processing more than 19 billion transactions every month.

Tellingly, most UPI transactions take place across different apps, which would not be possible if they operated only as closed-loop systems. At the same time, cash use has declined. UPI's is a story of digital acceleration unlocked by interoperability.

Many users initially joined UPI through trusted apps, often offered by their banks. The UPI operator also launched BHIM, a simple public app to help introduce the system to new users.

As UPI gained traction, more than 200 apps and most banks entered the market. And interoperability allowed users to move freely to newer, better apps—without having to persuade other users to shift at the same time.

This flexibility meant new entrants could both enter more easily and scale up more quickly. Incumbents had to raise their game. More reliable apps—as measured by transaction failure rates—pulled in more users. Over time, reliability improved across the board.

Driving growth

But was interoperability critical to the digital payment takeoff, or would it have happened anyway? Evidence from two important episodes using new, granular data reveals that interoperability did indeed play a central role in driving the growth of digital payments in India.

First, India's banknote demonetization in 2016 (when the government withdrew various banknote denominations from circulation) pushed many people to try digital payments for the first time. Users faced a choice between closed-loop apps and the interoperable UPI. They largely chose UPI, which saw much more rapid growth—driven by cross-app transactions made possible by interoperability.

Second, in 2017, after a regulatory push, a leading closed-loop provider joined UPI, resulting in the merger of two large preexisting payment networks. The result? In districts with the most initial fragmentation—and therefore the largest gains from this increase in interoperability—digital payments grew faster.

Users valued the combined network more than the sum of its parts: Both networks were used more, and transactions between them also picked

up. Total digital payments rose relative to proxies for cash usage.

Connected networks

Interoperability was a key driver of India's success in expanding digital payments. But several other factors contributed as well. These include a broad digital ID system, financial inclusion programs, and affordable mobile internet.

Countries seeking to expand digital payments can draw several lessons from India's experience. It starts with building open infrastructure. Interoperability can foster user choice and innovation. Next, invest in digital enablers. Affordable mobile data, national ID systems, and broad access to banking are essential. Governments can also support early adoption with a public app that helps build momentum.

It's also crucial to monitor the market and tailor regulation. In India, providers have found ways to nudge users—through QR code branding, bundled services, and other means—to stay within their walled gardens. Today, over 95 percent of UPI transactions are initiated using only three apps, and in about half of them, both payer and payee use the same app. Tracking usage patterns, app dominance, and switching costs is critical for authorities to identify the best ways to preserve user choice.

Back to the café. This time, you can use your preferred provider, pay instantly, and walk away with your coffee and a digital receipt. That small moment of ease—made possible by interoperability

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—is the foundation of a broader digital transformation. It is what allows digital systems to reach everyone on their terms, without creating new silos.

Done right, interoperability turns fragmented systems into connected networks. It strengthens trust, accelerates adoption, and levels the playing field. For countries building the future of finance, interoperability is not just helpful, it's fundamental. **F&D**

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REFERENCE

Copestake, A., D. Kirti, and M. Martínez Pería. 2025. “Growing Retail Digital Payments: The Value of Interoperability.” IMF Fintech Note 25/004, International Monetary Fund, Washington, DC.

Woman uses mobile phone QR code to make payment at a café in Maharashtra, India.



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