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# FIT IN Initiative

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Policy paper

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## Digital payment systems in emerging economies: Lessons from Kenya, India, Brazil, and Peru

by Jose Aurazo & Farid Gasmi

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Economics for the Common Good

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# Digital payment systems in emerging economies: Lessons from Kenya, India, Brazil, and Peru

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In a recent FIT IN Initiative working paper, Aurazo and Gasmi (2024) address a question on digital payments using a descriptive approach to highlight lessons that can be learned from an in-depth examination of successful experiences in emerging economies.\*

Digital payments can boost financial inclusion understood as access to and use of bank accounts, payment services, and other financial products. However, despite considerable efforts by policymakers in developing countries to promote financial inclusion, these countries still have a way to go regarding access to transaction accounts and the use of digital payment services.



**Jose Aurazo**

*Bank for International Settlements and Central Reserve Bank of Peru*

*Jose Aurazo joined the BIS in June 2023 as a visiting economist. At the Central Reserve Bank of Peru since 2015, he carried out policy-oriented research on digital payments and financial inclusion, analysed the competition conditions in the market for payment cards, and participated in the research stage of the central bank's CBDC project. Jose holds an MSc in Economics of Markets and Organizations from the TSE and an MSc in Economics from the Universidad del Pacífico (Peru).*



**Farid Gasmi**

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*Farid Gasmi is a professor and a researcher at the Toulouse School of Economics (TSE). Prior to joining the TSE, he was a Member of Technical Staff (MTS) at Bell Communications Research (Bellcore), USA. He holds MS and PhD degrees from the California Institute of Technology (CalTech), USA. His research interests are in the areas of Applied Industrial Organization, Regulation, and Development. He has extensive experience in consulting with private and public institutions in both developed and developing countries.*

## **What is the current situation regarding financial inclusion and digital payments in developing countries?**

While 76% of the world's adult population had an account with a formal financial institution in 2021, in developing countries this figure was around 71%. Moreover, only 57% of adults made or received a digital payment in developing countries, compared to 64% worldwide. Recently, policymakers and regulators, including central banks, have taken a leading role in establishing fast payment systems and issuing regulations to ensure the well-functioning of these systems which are expected to contribute to the expansion of financial inclusion. However, what makes a digital payment system successful and fosters its diffusion among a country's population, including individuals and businesses, still remains an open question for academics and policymakers..

## **Which digital payment systems have been the focus of your research?**

In our working paper, we analyze more specifically, four digital payment schemes, namely, M-Pesa in Kenya, UPI in India, Pix in Brazil, and Yape in Peru, that share the prominence they gained in the developing world but differ sufficiently enough in some key characteristics we have identified to allow to draw useful lessons from their successful implementation.

Launched in March 2007, a M-Pesa is mobile money wallet that allows mobile phone owners to deposit, transfer, and withdraw funds even if they do not have a bank account or a connection to the Internet.

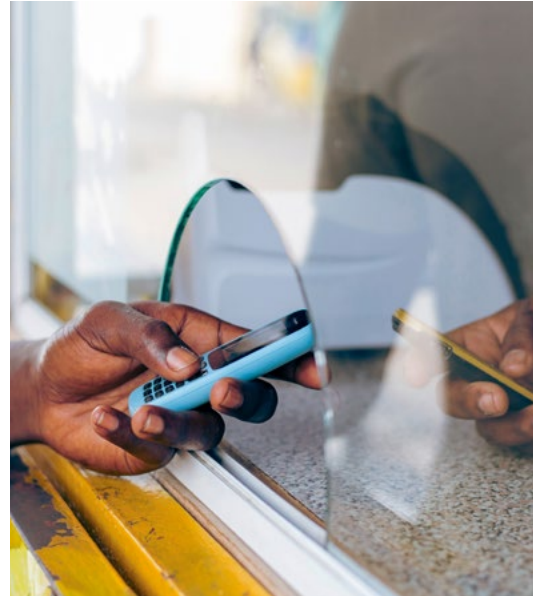


**When under control by regulators, interoperability is a powerful coordinating policy instrument, just as network interconnexion**

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India's UPI is an open system that allows participants to provide end-users with real-time payments, introduced in April 2016 by the National Payments Corporation of India, a division of the Reserve Bank of India, in association with the Indian Banks Association. Offered in November 2020, Pix is a fast payment system owned and operated by the Central Bank of Brazil that has transformed the way Brazilians make financial transactions by allowing them to send and receive immediate transfers using quick response (QR) codes and aliases such as mobile phone numbers or email addresses for authentication.

Yape, a digital wallet introduced by Peru's largest commercial bank in February 2016, experienced a significant surge in usage during the Covid-19 pandemic. This growth can be attributed to its user-friendly features, allowing individuals to make various types of payments effortlessly, including payments to small merchants. Yape has gained popularity for its convenience, enabling users to make payments using cell phone numbers or by scanning quick response (QR) codes, eliminating the need to provide traditional bank account information. Additionally, the platform has expanded its reach by involving eight other financial institutions.



### *What differentiates one payment system from another?*

These experiences drew our interest because of not only the dynamics of their respective development paths and their significant contribution to financial inclusion but also the regulatory and market structure contexts in which they emerged. A dividing line between these payment systems is the type of money they are based on, namely mobile money for M-Pesa and commercial bank money for UPI, Pix, and Yape. Moreover, at their initial stage the leading actors have been a private mobile network operator in Kenya and the central bank in India and Brazil. Meanwhile, a group of commercial banks offering digital payment wallets have been the actors that played a significant role in Peru. In our paper we argue that these digital payment solutions may also be meaningfully differentiated along three structural and fundamental dimensions. The first dimension is the role played by private digital platform developers and providers, as they are the main players involved in the last mile before reaching the end user. As such, they are responsible for providing a sufficiently user-friendly, reliable, and secure service, features that are highly valued by end-users and that could play a significant role in the success of a payment solution. The second is the role of regulators and central banks whose effective involvement whether light or heavy, passive or active, is essential for the establishment of a regulatory framework paving the way for a robust and efficient payment system. The third dimension concerns the role and extent of system interoperability, a crucial feature at all stages of system development. Interoperability serves as the "conductor's baton" for regulators, guiding competition, reducing costs for end-users, and enhancing adoption of cashless payments that will foster financial inclusion.

### *What lessons can we learn from this research, and what challenges lie ahead?*

Besides providing a tractable three-dimensional analytical framework for analyzing and representing, in a synthetic fashion, digital payment solutions, we shed light on two key lessons. First, there is, to some extent, no "one-size-fits-all" solution for the introduction and promotion of digital payments in an economy. Second, any solution should involve active public-private sector cooperation, on the one hand, and put the end-user at its focus on the other. From a forward-looking perspective, the authors highlight three potential challenges that digital payment systems are expected to face, which should therefore occupy a prominent place in the agendas of academics, policymakers, and public and private institutions.

**“** These issues relate to universal access, sustainability of pricing over time, data externalities, and sharing, and users' privacy protection

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The conceptual framework we have developed could provide policymakers with a useful preliminary benchmark to characterize a digital payment system and hypothesize about the expected impacts on the adoption and usage of services, on the one hand, and potential consequences on financial inclusion, on the other hand. Another attractive feature of the conceptual framework is that it lends itself to becoming even more operational by allowing the econometric investigation of causal relationships between the three key characteristics of payment systems identified by the authors and certain (system performance) outcome variables, such as adoption, price, and quality.

## KEY TAKEAWAYS

- **Digital payment systems can be analyzed from three dimensions:**
  - The role played by private digital platforms developers and providers,
  - The role played by regulators and central banks, and
  - The degree of the payment system interoperability.
- **Although, to some extent, these varied experiences suggest that there is no one-size-fits-all solution, they highlight the necessity of active public-private sector cooperation and placing the end user at the center of such initiatives.**
- **Future policy discussions should focus on three key challenges for any digital payment system:**
  - Universal access in remote areas,
  - Price sustainability over time, and
  - The value of data and its sharing and privacy policies.

### FURTHER READING

\* Publications by Jose Aurazo and Farid Gasmi, "[Digital payment systems in emerging economies: Lessons from Kenya, India, Brazil, and Peru](#)" FIT IN Initiative Working Paper, n. 11, January 2024, Toulouse School of Economics. The views expressed in this paper are only those of the authors and do not necessarily reflect those of the Bank for International Settlements, the Central Reserve Bank of Peru, or any other institution with which the authors are affiliated.

All the publications of the FIT IN Initiative are available to read on the [FIT IN Initiative website](#).



## About the FIT IN Initiative

In November 2020, the Toulouse School of Economics launched the Financial Inclusion Through Interoperability Initiative to catalyze new research to constructively influence the design and regulation of interoperable digital financial services systems in low- and middle-income countries.

The main objective of this four-year research initiative is to better understand the implications of alternative competition and regulatory policies and ultimately inform policies to expand the scope, improve the quality and reduce the cost of digital payment systems for impoverished users.

The FIT IN Initiative receives support from the Bill & Melinda Gates Foundation's Financial Services for the Poor program.

For more information: [www.tse-fr.eu/groups/FIT-IN-Initiative](http://www.tse-fr.eu/groups/FIT-IN-Initiative) / [ftininitiative@tse-fr.eu](mailto:ftininitiative@tse-fr.eu)

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