



Interledger
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OPEN AND INSTANT PAYMENTS IN AFRICA

Current landscape and opportunities





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About Interledger Foundation

The Interledger Foundation (ILF) is a non-profit advocate for the web, promoting innovation, creativity, and inclusion by advancing open payment standards and technologies that seamlessly connect our global society. ILF's mission is to broaden the diversity of voices in the tech ecosystem by using the Interledger Protocol (ILP) as a driver for digital financial inclusion.

The Interledger Protocol is a currency-agnostic payments network that enables money to travel as quickly and efficiently as data on the internet. ILF is the home and steward of ILP standards, the technical specifications that are transparent and available to encourage consistent use and interoperability worldwide.

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About The DFS Lab

The DFS Lab is a research consultancy and an early-stage investor focused on the digital commerce opportunity in Africa. The DFS Lab consulting arm combines cutting-edge research and data collection, with a deep network of partners and on-the-ground experience, to explore and understand the frontier of digital commerce in Africa. We are a global team sitting in Lagos, Nairobi, Cape Town, Paris, and San Francisco.

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Foreword

Across Africa, digital financial services and technology have been vital to financial inclusion—55% of adults on the continent now have access to a mobile money or bank account.¹ At the Interledger Foundation, we are committed to strengthening financial inclusion across the globe in areas underserved by traditional banking services, including Africa. Our vision is to build a more inclusive payments system using the web to connect people and facilitate easy, interoperable financial transactions across borders and currencies. Just as the internet became the primary way to share information and data, we believe the Interledger Protocol (ILP) can be the same conduit for exchange, but for payments instead of data.

Our priorities include rebuilding financial infrastructure to move payments; advocating for a more connected, open, and collaborative payments network; transforming outdated banking norms that exclude those who are disadvantaged; promoting engagement through inclusive financial participation; and harnessing new talent, business models, and practices.

This research paper is a major milestone towards understanding how open payment technologies, such as ILP, can advance digital financial participation and economic development. In an ILP-enabled world, sending money could become as simple as sending data. As cashless transactions become a bigger part of our lives, particularly in the wake of COVID-19, there are still barriers and limitations to connecting different payments systems, banks, and currencies. What if digital payments operated more like email? For businesses, this would mean eliminating high transfer fees. For individuals, this would make transferring money easier and more affordable.

We see an opportunity to build new pathways to financial access that will connect humanity in a new way, and hope you find this research as helpful as we have.

Briana Marbury

Executive Director, Interledger Foundation

1. World Bank. (2021). The Global Findex Database 2021. Available at: <https://www.worldbank.org/en/publication/globalfindex>

Executive Summary

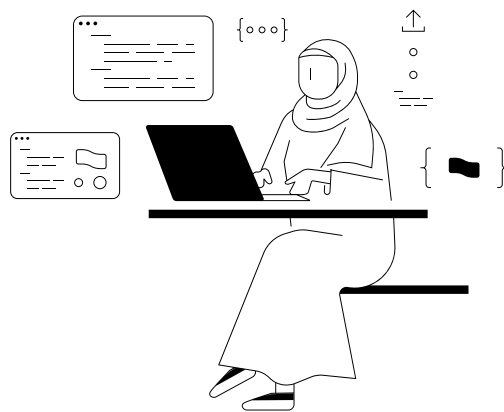
Over the past 10 years, Africa has made significant progress in the adoption of digital payments, and it has only accelerated since the onset of the COVID-19 pandemic. However, a lack of instant and open payment systems continues to slow progress on financial inclusion and the digitization of the broader economy.

This report highlights key themes in the evolution of the continent's payment landscape. As of the end of 2021, national instant payment systems were live in four countries—Ghana, Kenya, Nigeria, and South Africa—and in development in another 14 countries.

Scaling instant and open payment systems can run up against major hurdles, however. Long-standing challenges, such as insufficient infrastructure and technology investments, inconsistent and outdated regulatory frameworks, a lack of competition, and obstructive commercial incentives often result in a high degree of fragmentation and end users experiencing costly, slow, and unreliable payments.

In terms of cross-border payments, we found renewed optimism in emerging central bank-led payment systems such as PAPSS and SADC TCIB, as well as a raft of innovative payment integrators and hubs like MFS Africa and AZA Finance. Crypto-enabled platforms such as Yellow Card, Ripple, and many others are also investing in new models that are set to disrupt payment ecosystems. The success of payment initiatives was found to be related to progress in three main areas: compliance with regulation, sufficient investment in technology and operations, and well-aligned commercial incentives.

Africa's dynamic fintech sector is also energizing the region and creating payment solutions that reach a broad market. We foresee a major opportunity for networked, interoperable, instant payment technologies like Interledger Protocol (ILP) to build on this progress and develop the African payments landscape even further.



Introduction

Over the past decade, financial inclusion in Africa has made significant gains. The proportion of adults in sub-Saharan Africa with an account increased from 43% in 2017 to 55% in 2021,² in large part because of the rapid growth and adoption of digital financial services (DFS), which are being supported by efficient digital payment systems. Now, as the industry evolves, interoperability expands, and new players and products emerge, DFS could play an even greater role in the financial lives of Africans. One way this could happen is through open and instant payment systems, especially those that allow people to make cross-border transactions.

To better understand how open and instant payment systems could deepen financial inclusion in Africa, the Interledger Foundation (ILF) commissioned this research to examine the current landscape and opportunities. A review of existing research and literature was complemented by a series of expert stakeholder interviews (see Appendix B) that revealed perspectives on the latest trends.

This report frequently refers to open and instant payment systems, which we define as the digital infrastructure that facilitates the interoperable and instantaneous exchange of money across borders and currencies. We highlight many different payment systems, recognizing that some are more open than others and that clearing and settlement times vary.

This research takes a closer look at the status of payment systems in Africa, the barriers to developing them, and what is required for open and instant payment initiatives to succeed. The report is structured as follows:

- ➔ **Section 1** briefly explores how open and instant payment systems have the power to improve financial inclusion in Africa.
- ➔ **Section 2** covers the landscape of payment systems in Africa, looking at both national and regional payment systems.
- ➔ **Section 3** delves into the prerequisites of an open payment system and features examples of central-bank led and private-sector payment initiatives that are reshaping the African payments landscape to be more open, lower cost, faster, and more reliable.



2. World Bank. (2021). The Global Findex Database 2021. Available at: <https://www.worldbank.org/en/publication/globalfindex>

Section 1

Open and instant payments can drive financial inclusion in Africa

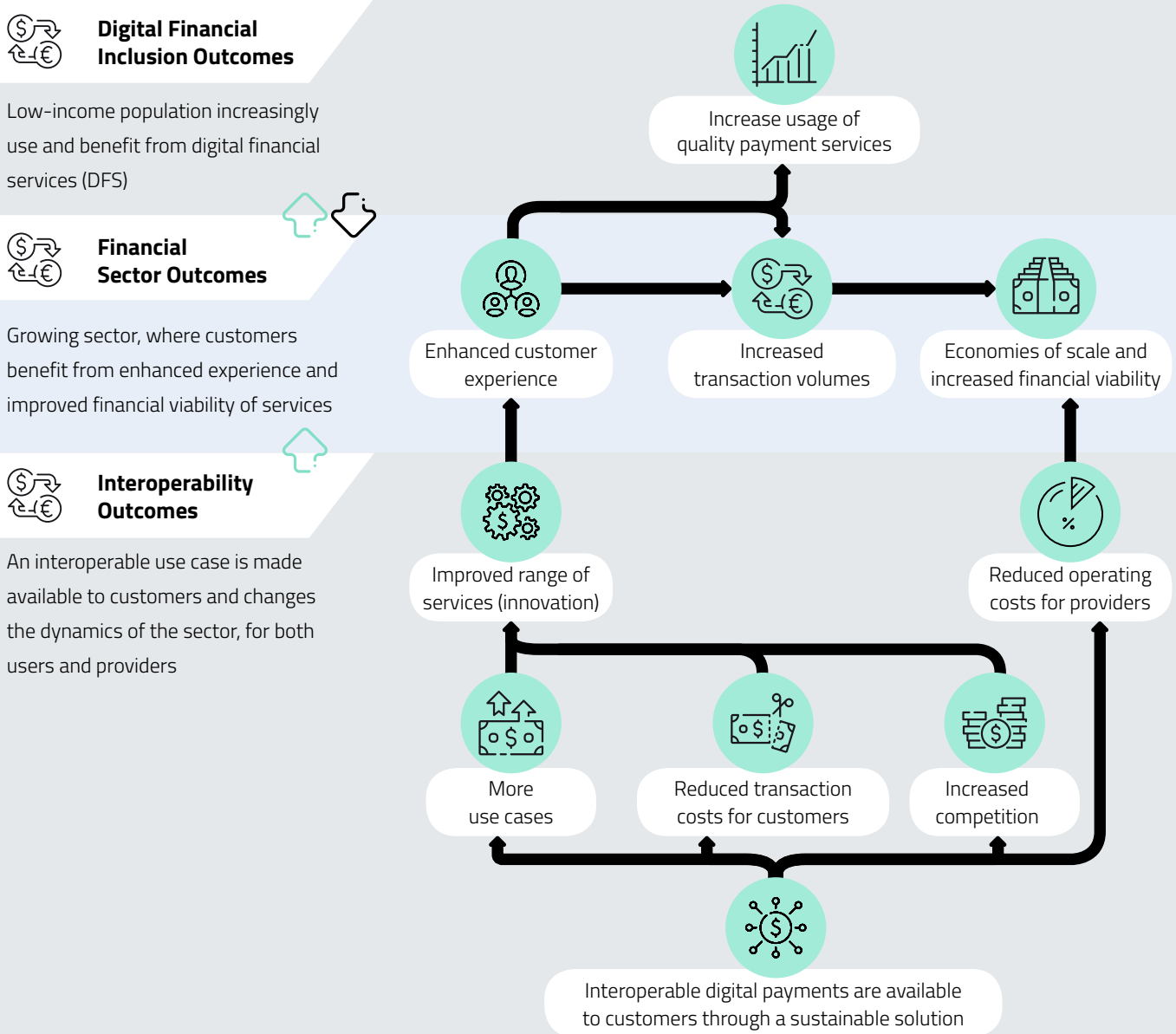
Payment systems that are designed to be open and interoperable, with fast or instant clearing, can drive financial inclusion.

When financial systems are open and interoperable, customers can transact freely, regardless of their DFS provider or financial institution. This might mean sending money to a friend who has an account with another provider, paying a merchant that has been acquired by another provider, or withdrawing funds from the agent or ATM of another provider. Interoperability sets off a virtuous circle (see Figure 1) of greater competition, a wider range of potential product features, lower costs and more sustainable business models. For example, in mobile money markets where interoperability has been introduced, transactions have grown.

Fast or instant payments also enable a much wider range of services that support use cases critical to a customer's daily financial needs, such as in-store payments, remittances, and other forms of commerce. Like interoperability, fast or instant payments not only increase transaction volumes, but also have the power to kickstart a virtuous cycle of growth and innovation.



Figure 1: The pathway from interoperability to financial inclusion³



Source: CGAP, 2021

3. CGAP. (2021). Technical Note: Interoperability in Digital Financial Services. Available at: https://www.cgap.org/sites/default/files/publications/2021_01_Technical_Note_Interoperability_Digital_Financial_Services.pdf

Not only does interoperability have the potential to improve supplier economics, but customers also value the convenience it brings to their day-to-day payments.⁴ Without interoperability, customers face difficult and costly workarounds like opening an account at the same DFS provider as their family members so they can transact with them directly.⁵ By making financial services more convenient, interoperability also encourages customers to transact more. In an interoperable market, customers are more likely to choose a service provider based on its value proposition, quality of customer service, and pricing rather than its customer base.⁶

Despite the value that open and instant payments can bring to the ecosystem, competition bottlenecks, implementation challenges, regulatory hurdles, and technical complexities can prevent them from being implemented.⁷ In the next section, we look at the progress that has been made with more open instant payment systems in Africa, as well as the challenges that are slowing this progress.



4. BFA. (2018). Tanzania Interoperability Post-Implementation Review. Available at: https://www.findevgateway.org/sites/default/files/publications/files/tanzania_interoperability_post-implementation_review_21_feb_2018_wdisclaimer.pdf.

5. CGAP. (2021). Technical Note: Interoperability in Digital Financial Services. Available at: https://www.cgap.org/sites/default/files/publications/2021_01_Technical_Note_Interoperability_Digital_Financial_Services.pdf.

6. Ibid.

7. The Level One Project. (2019). Level One Project Guide 2019. Available at: https://www.leveloneproject.org/wp-content/uploads/2020/07/L1P_Guide_2019_Final.pdf.

Section 2

Africa's payment system landscape

African payment systems are diverse, with innovation and growth coexisting alongside daunting challenges. Both the banking and mobile money sectors are introducing innovative solutions in response to regional challenges, such as low levels of financial inclusion, heavy use of cash, and limited branch and ATM networks.

In this section, we outline some reasons to be optimistic, as well as the challenges that need to be addressed to enable Africans to transfer money smoothly and cost-effectively.

Payment infrastructure: African payment systems are extremely fragmented

Across Africa, the development of national and regional payment systems has differed greatly in terms of their approaches and outcomes. This section takes a closer look at payment infrastructure⁸ across the continent, highlighting key themes and major limitations at both national and regional levels.

8. A payment ecosystem is comprised of real economic actors, channels, instruments, and processing functions, as well as clearing and settlement infrastructure (see Appendix A).





National payment systems



Most payment systems in Africa are built on real-time gross settlement

The clearing and settlement functions of a national payment scheme often run through the infrastructure of real-time gross settlement (RTGS)—an instantaneous funds transfer system. RTGS systems enable economies of scale, which can significantly reduce transaction costs. They also reduce the need for payment service providers to set up bilateral connections, which can be expensive and fragmented.

The South African Reserve Bank (SARB) was the first in Africa to adopt an RTGS system in 1998.⁹ This laid the groundwork for infrastructure development in the Southern Africa Development Community (SADC) (a case study we discuss later in this section). Another noteworthy example of a well-functioning RTGS system is in Nigeria, which is overseen by the Central Bank of Nigeria (CBN). This system began operations in 2006, and in early 2013 was upgraded to support 24/7 functionality and SWIFT messaging formats.¹⁰



Outdated and underdeveloped infrastructure can discourage use

While nearly all jurisdictions in Africa use an RTGS for large-value fund transfers, only a fifth report that their national RTGS systems are responsible for the majority (more than 50%) of these volumes.¹¹ For example, Kenya's RTGS system, the Kenya Electronic Payments and Settlement System (KEPSS), processed only 19,000 transactions a day on average before a major system upgrade in 2020. KEPSS is now able to support more than a million transactions per day, has the capability to support the payments industry on a 24/7 basis, and is compliant with the latest ISO 20022 SWIFT messaging standard.¹² These investments by the Central Bank of Kenya (CBK) have ensured the country is processing payments with the latest RTGS technology.

9. Bech, M. and Hobijn, B. (September 2007). "Technology Diffusion within Central Banking: The Case of Real-Time Gross Settlement" in *International Journal of Central Banking*, Vol. 3, No. 3, pp. 147–181. Available at: ijcb.org/journal/ijcb07q3a5.pdf.

10. Cenfri. (December 2018). *Payment systems in sub-Saharan Africa*. Available at: <https://cenfri.org/wp-content/uploads/2018/12/Payment-systems-in-SSA-Note-2.pdf>.

11. World Bank Group. (2020). *Payment Systems Worldwide: A Snapshot*. Summary Outcomes of the Fifth Global Payment Systems Survey. Available at: <http://documents.worldbank.org/curated/en/115211594375402373/A-Snapshot>.

12. Central Bank of Kenya. (2020). *Kenya National Payments System Vision and Strategy 2021–2025*. Available at: <https://www.centralbank.go.ke/wp-content/uploads/2020/12/CBK-NPS-Vision-and-Strategy.pdf>.



From a public investment standpoint, one size does not fit all

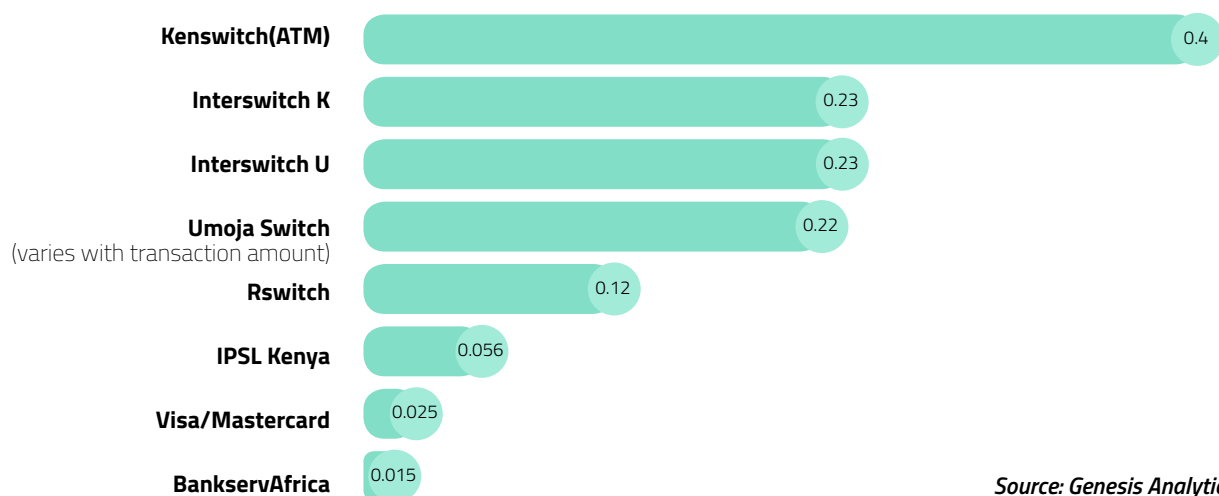
While larger economies such as Nigeria, South Africa, and Kenya have the resources to invest in state-of-the-art RTGS systems, other countries take a different approach. In markets where mobile network operators (MNOs) dominate the instant payments landscape, bilateral funding arrangements sometimes support instant settlement for e-money, rather than centralized systems. This is the case for e-money clearing and settlement in both Uganda and Tanzania.¹³ Continued use of regional or international payment processors like SWIFT, as in Madagascar,¹⁴ may be more appropriate for countries with a small population, low GDP per capita, and low banking penetration rates.



Market coordination failures have hampered shared private-sector infrastructure

A common national switch allows smaller players to leverage the infrastructure of larger players rather than building their own. In Tanzania in 2006, the absence of a national switch led a consortium of small banks to make cards interoperable through a private-sector switch called Umoja Switch. Initially, 27 banks connected to the switch, but the largest commercial banks opted out (due to discussions around the development of a competing national switch). As a result, Umoja Switch was unable to process sufficient transactions to achieve scale, and transaction fees remained relatively unaffordable for end users.¹⁵ Interswitch (Uganda), Kenswitch¹⁶ (Kenya), and RSwitch (Rwanda) have reportedly faced similar challenges, with processing costs several multiples of regional and global benchmarks (see Figure 2).

Figure 2: Processing cost per transaction (US\$)



Source: Genesis Analytics (2016)

13.Cook, W., Lennox, D. and Sbeih, S. (January 2021). Technical Guide: Building Faster Better: A Guide to Inclusive Instant Payment Systems. CGAP. Available at: https://www.cgap.org/sites/default/files/publications/2021_01_Technical_Guide_Building_Faster_Better.pdf.

14.Making Access Possible (MAP). (2017). Madagascar: Financial Inclusion Diagnostic Report. Available at: https://finmark.org.za/system/documents/files/000/000/229/original/Madagascar_Diagnostic_English_2017.pdf?1601992586.

15.G:ENESIS. (n.d.). Scalable, Affordable, Accessible? Building Interoperable Payment Systems that Promote Financial Inclusion in East Africa. Available at: https://www.findevgateway.org/sites/default/files/publications/files/eac_payments_infrastrucutre_study_wdisclaimer.pdf.

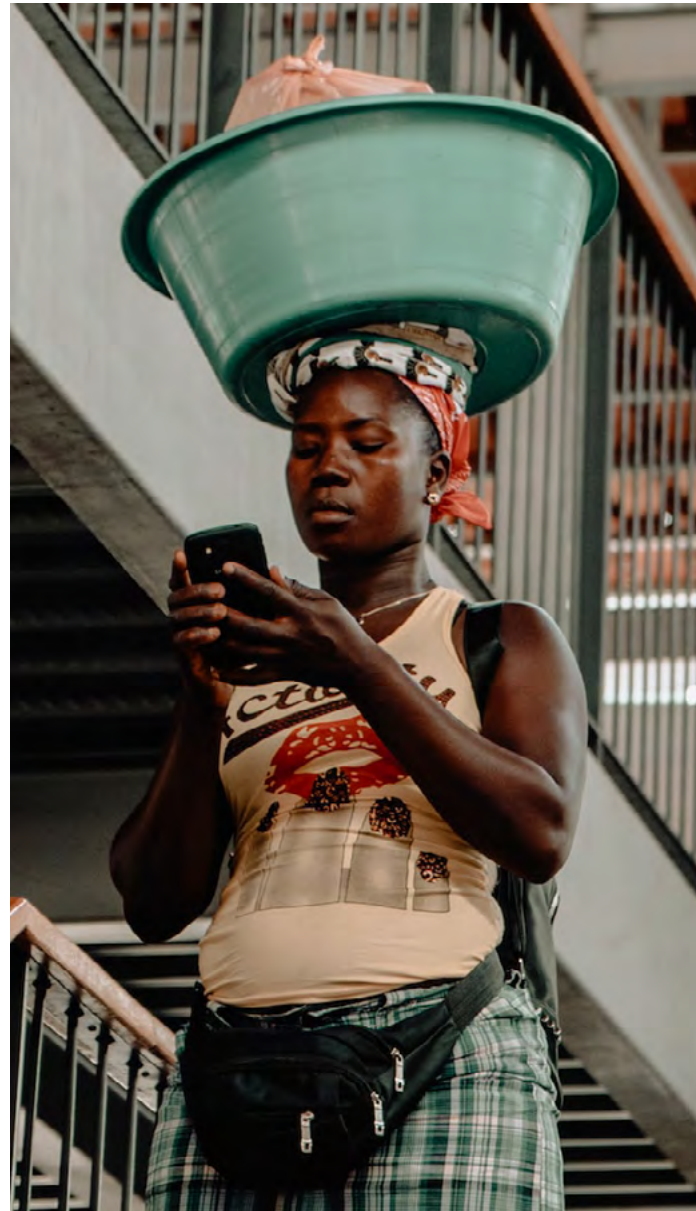
16.This predated the 2020 upgrade.



Mobile money interoperability is being propelled by industry cooperation

In many countries, the adoption of mobile money has outpaced traditional banking services and, in some cases, stimulated interoperability even faster than in the traditional banking sector. In 2015, the number of mobile money accounts surpassed the number of bank accounts in the region.¹⁷ This path to payment infrastructure development has been most evident in East Africa, especially in Kenya (where the success of M-Pesa has been well documented¹⁸) and Tanzania (a case study we highlight next).

In 2015, Tanzania accounted for a third of all mobile money accounts in East Africa.¹⁹ A bilateral agreement between the country's major MNOs Airtel and Tigo was signed in 2014, marking the start of interoperability across network providers. A couple of years later, MNOs Zantel and then Vodacom joined the arrangement.²⁰ Alongside these industry developments, a clear legal framework for non-bank providers to offer regulated payment services was issued as part of the National Payment Systems Act 2015. This combination of industry innovation and a supportive regulatory environment boosted the growth of interoperable domestic transactions substantially²¹ and led to a sustained rise in mobile money payment transactions (see Figure 3). As the mobile money market took off, many commercial banks also developed their own mobile services. By 2017, 60% of people in Tanzania were actively using DFS and the proportion of those who were financially excluded had nearly halved, dropping to 28% from 54% in 2006.²² Tanzania is on an upward trajectory with an instant payment system led by the central bank: the Tanzania Instant Payment System (TIPS). The launch of TIPS is discussed later in this section. Despite some progress, the lack of interoperability between mobile money services and banks remains a major challenge in most African markets.



17.GSMA. (2017). State of the Industry Report on Mobile Money: Decade Edition: 2006–2016. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/03/GSMA_State-of-the-Industry-Report-on-Mobile-Money_2016.pdf.

18.Kenya is a global poster child for mobile money proliferation. M-Pesa, a low-cost P2P money transfer platform launched by Safaricom in 2007, has enabled the majority of the underserved and underbanked population in Kenya to be included in the financial system. According to the CBK, between 2011 and 2018, account ownership in Kenya doubled to 81% of the population, with more adults having a mobile money account than traditional bank accounts. In the country's payments ecosystem, MNOs and e-money issuers negotiate bilaterally and set interparty fees for transactions, and service providers settle through prefunded accounts. The CBK is, however, moving toward regulation focused on creating interoperability and linking all mobile money and banking products. This would improve the user experience and help to limit the potential adverse consumer effects of Safaricom's market dominance by making it easier for smaller players to establish themselves.

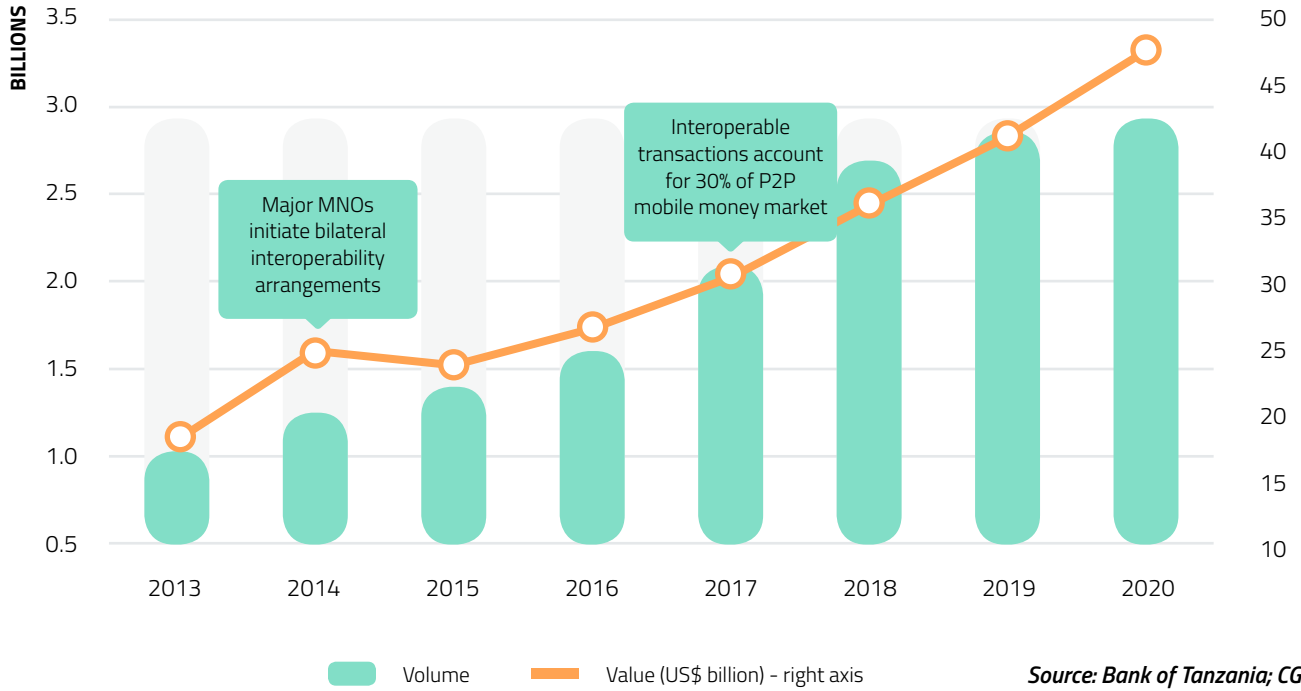
19.GSMA. (September 2016). The Impact of Mobile Money Interoperability in Tanzania. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/10/2016_GSMA_The-impact-of-mobile-money-interoperability-in-Tanzania.pdf.

20.Under the MNO-led interoperability model, no participant pays switching fees. Instead, the costs of maintaining bilateral connections are borne by each participant, and incentives are balanced through interparty rates that are set through separate commercial agreements between bilateral partners.

21.Interoperable transactions as a proportion of total P2P mobile money transactions in Tanzania grew from 5% to around 30% between February 2016 (when Vodacom signed the MoU with Airtel and Tigo) and September 2017.

22.2006 Finscope Survey; 2017 Finscope Survey.

Figure 3: Mobile money transaction trends in Tanzania

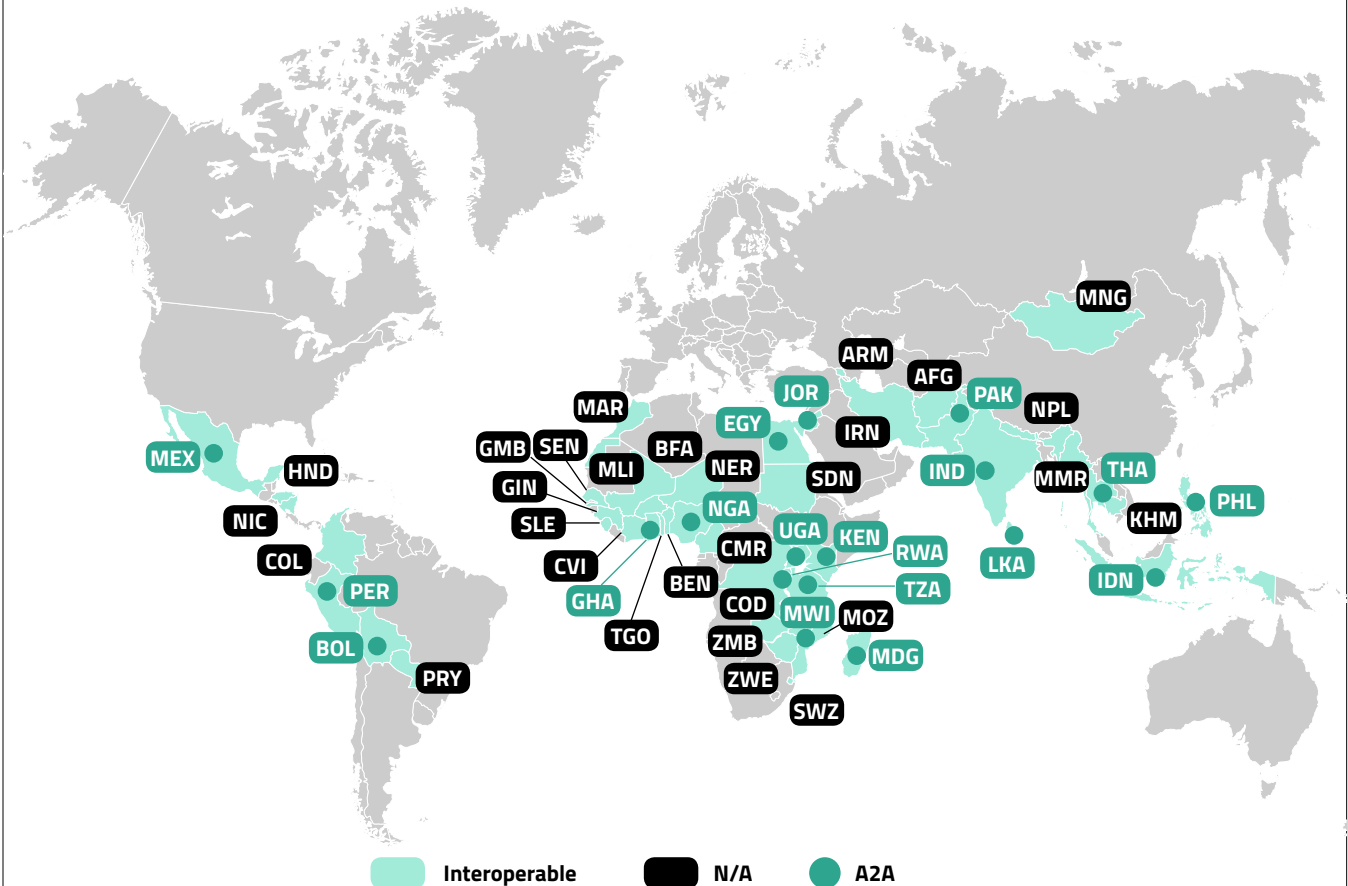


Box 1: Mobile money interoperability has taken off in Sub-Saharan Africa

Person-to-person (P2P) transfers remain the primary reason mobile money customers use their account, but before account-to-account (A2A) interoperability was an option customers were forced to adopt workaround solutions, such as conducting over-the-counter (OTC) transactions, using multiple SIM cards, and sending voucher-based transfers.

Mobile money providers responded to these consumer frictions and, in a bid to boost growth in P2P transfers, accelerated A2A interoperability across sub-Saharan Africa. By 2020, Ghana, Nigeria, Uganda, Kenya, Rwanda, Tanzania, Malawi, and Madagascar were all interoperable mobile money markets.²⁵

Figure 4: Mobile money interoperability around the world



Source: GSMA

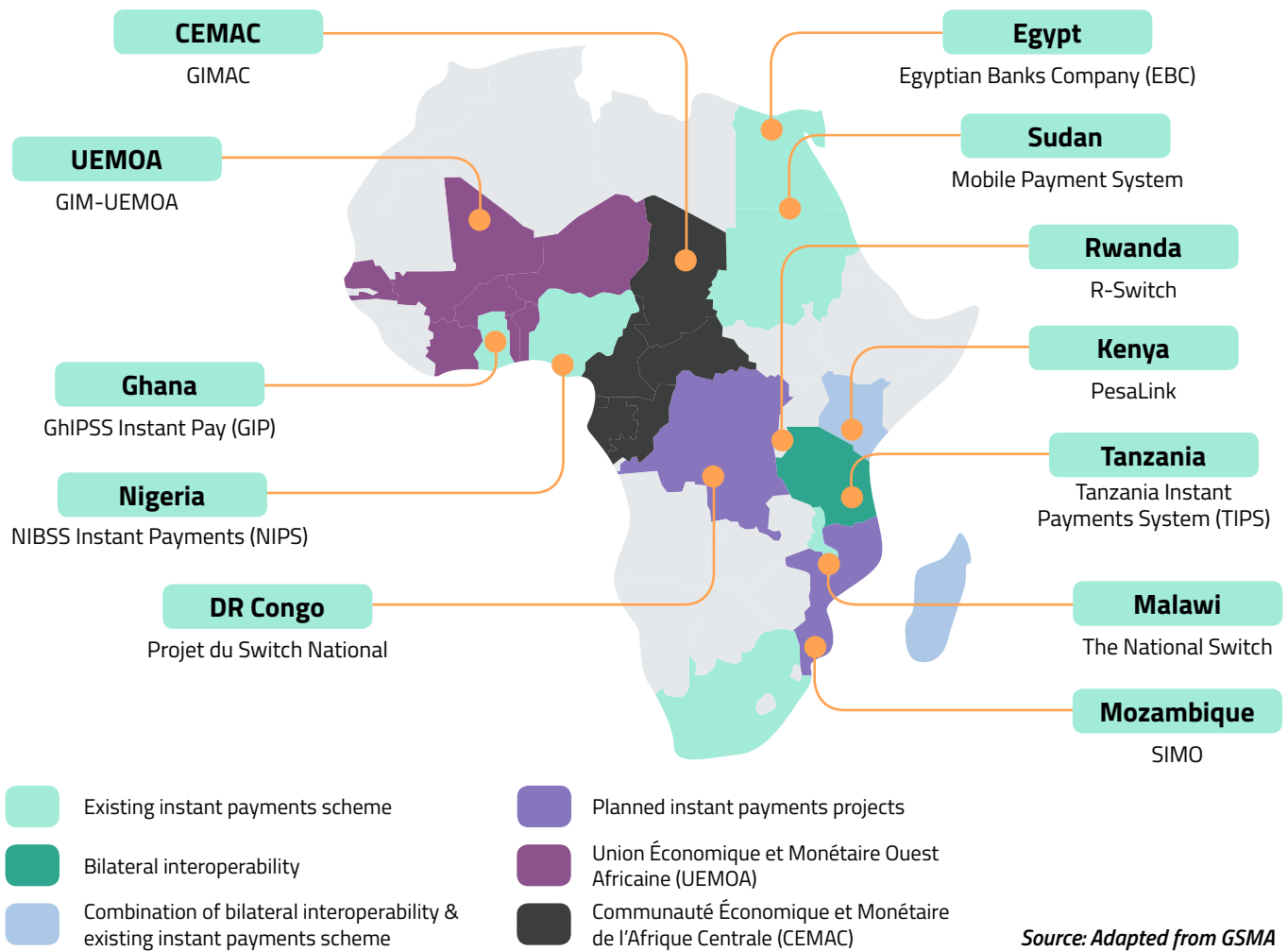
25. GSMA. (June 2020). Tracking the Journey Towards Mobile Money Interoperability. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/06/GSMA_Tracking-the-journey-towards-mobile-money-interoperability-1.pdf.



Instant payment schemes may be a solution to the lack of interoperability between mobile money and banks

Several African countries and sub-regions have recently seen the development of instant payment schemes (see Figure 5). As of the end of 2021, national instant payment systems were live in four countries—Ghana, Kenya, Nigeria, and South Africa²³—and in development in another 14 countries.²⁴ These open and instant payment systems will allow all member banks to create a mobile money-like experience (i.e., real-time payments) for large segments of the population, in some cases through basic phone USSD channels. With a more expansive set of product features, banks may give MNOs a new form of competition—if they can overcome inertia and execute these schemes well.

Figure 5: Development of instant payment schemes in Africa (selected countries)



23. World Bank Group. (September 2021). Considerations and Lessons for the Development and Implementation of Fast Payment Systems. Available at: https://fastpayments.worldbank.org/sites/default/files/2021-11/Fast%20Payment%20Flagship_Final_Nov%201.pdf.

24. AfricaNenda. (October 2021). The State of Instant Payments in Africa: Progress and Prospects. Available at: https://www.africanenda.org/uploads/files/211005_AfricaNenda-Instant-Payments-in-Africa-Report_vF-1.pdf.

Next, we dive into four notable examples of open and instant payment systems in Africa:



KENYA – PesaLink.

Established in 2016 to facilitate interbank money transfers, PesaLink allows customers to send money in real time through a variety of retail banking payment channels, including mobile devices, ATMs, internet banking, agents, bank branches and points of sale (POS). As of 2021, 30 banks were live on the system and accounted for US\$ 47 billion in transactions per year.²⁶ Switching infrastructure is emerging, with three payment switches and four gateways operational in Kenya. The CBK is exploring proposals for a single integrated national switch as part of the National Payments Strategy for 2022–2025. Indications are that the PesaLink system has potential capacity to handle regional transactions and a degree of API openness. Banks and microfinance institutions (MFIs) associated with the Kenya Bankers Association (KBA) are direct participants in PesaLink, while payment aggregators are indirect participants that require sponsorship from banks for settlement purposes. Non-banks can also connect to PesaLink using limited APIs.



GHANA – Ghana Interbank Payment and Settlement Systems (GhIPSS) Instant Pay.

In 2015, the Bank of Ghana (BOG) revised agent and e-money guidelines, allowing MNOs to operate mobile money services for the first time. Following this update to the regulatory framework, in 2018, the national switch Gh-Link (connecting the domestic ATM and POS systems) was adapted to enable interoperability between mobile money providers and banks. GhIPSS Instant Pay (GIP), a platform through which instant payments are settled across bank accounts and mobile wallets, was also built on Gh-Link in 2015.²⁷ All this has driven digital payments in Ghana, fueled primarily by the widespread uptake of mobile money accounts. Between 2012 and 2017, Ghana was the fastest-growing mobile money market in Africa,²⁸ and by 2020 transactions via mobile wallets and phones represented just over 80% of the country's GDP.²⁹ Innovations in interoperability have continued, and in 2020 Ghana was the first African country to launch a universal QR code, which enables merchants to receive instant payments from a customer's mobile phone.³⁰



TANZANIA – Tanzania Instant Payment System (TIPS)

The domestic payment system in Tanzania is undergoing a transformation from an aggregator-led system, in which payment service providers settled transfers bilaterally, to a centralized switch system. The development of TIPS was announced by the Bank of Tanzania (BoT) in mid-2021 and has been developed using open-source Mojaloop code. This was followed by three banks and two MNOs pilot testing P2P and person-to-business (P2B) transfers.³¹ TIPS was not fully live by the time of publication but is expected to be in late 2022 or 2023.

26. AfricaNenda. (October 2021). The State of Instant Payments in Africa: Progress and Prospects. Available at: https://www.africanenda.org/uploads/files/211005_AfricaNenda-Instant-Payments-in-Africa-Report_vF-1.pdf.

27. Bank of Ghana. (August 2019). Payment Systems Oversight : Annual Report, 2015. Available at: <https://www.bog.gov.gh/wp-content/uploads/2019/08/Ghanas-Payment-Systems-Report-2015.pdf>.

28. Ozyurt, S. (July 9, 2019). "Ghana is now the fastest-growing mobile money market in Africa". Quartz Africa. Available at: <https://qz.com/africa/1662059/ghana-is-african-fastest-growing-mobile-money-market/>.

29. Creemers, T. et al. (August 13, 2020). "Five Strategies for Mobile Payment Banking in Africa". BCG. Available at: https://www.bcg.com/publications/2020/five-strategies-for-mobile-payment-banking-in-africa?mc_cid=9db89d0f52&mc_eid=e740b6a321.

30. Hinchliffe, R. (May 15, 2020). "Ghana becomes first African country to introduce universal QR code." Fintech Futures. Available at: <https://www.fintechfutures.com/2020/05/ghana-becomes-first-african-country-to-introduce-universal-qr-code/>.

31. Cook, W., Lennox, D. and Sbeih, S. (January 2021). Technical Guide: Building Faster Better: A Guide to Inclusive Instant Payment Systems. CGAP. Available at: https://www.cgap.org/sites/default/files/publications/2021_01_Technical_Guide_Building_Faster_Better.pdf.



NIGERIA – NIBSS Instant Payment (NIP)

Since its launch in 2011, the NIBSS³² Instant Payment (NIP) system has enabled users to receive instant payments regardless of which bank the payment is sent from or which payment channel they use. The infrastructure enables P2P, P2B, and business-to-business (B2B) use cases through various channels, such as POS, ATM, mobile banking, USSD, agent and alternative third-party channels. Where EFT payments take up to 24 hours to reflect, NIP transactions are typically completed within minutes, guaranteeing payment finality and strengthening consumer trust.³³ By 2020, the system had processed \$380 billion in transaction value, equivalent to 90% of Nigeria's GDP³⁴ and approximately eight times the value of payments processed through South Africa's real-time clearing (RTC) system.³⁵ In 2021, the CBN published a regulatory framework for open banking³⁶ that will enable data sharing across financial service providers in the market.



32. NIBSS, the Nigeria Inter-Bank Settlement System Plc, is owned by the CBN and operates both the Nigerian Automated Clearing System (NACS) and the Nigerian Central Switch (NCS). It plays a core role in timely settlement and clearing between banks and facilitates interoperability across the various payment actors in the financial system, including licensed non-bank payment providers. Nigeria's sophisticated and shared infrastructure environment has allowed payment providers to concentrate on providing better services to consumers, which in turn enables more efficient market development. Tiered KYC requirements lessen the reporting requirements of providers serving the low-value retail segment, and the country's centralized biometric identification system, called the Bank Verification Number (BVN), gives customers a unique identity that can be verified across the entire payments industry. The latter innovation has addressed major issues around identity theft and fraud.

33. NIBSS.

34. World Bank. (2020). World Development Indicators. Available at: <https://databank.worldbank.org/source/world-development-indicators>.

35. AfricaNenda. (2021). The State of Instant Payments in Africa: Progress and Prospects. Available at: https://www.africanenda.org/uploads/files/211005_AfricaNenda-Instant-Payments-in-Africa-Report_vF-1.pdf.

36. Olaniwunajayi. (May 2022). Newsletter: CBN Releases the Draft Operational Guidelines for Open Banking in Nigeria. Available at: <https://www.olaniwunajayi.net/blog/wp-content/uploads/2022/05/Newsletter-CBN-Releases-the-Draft-Operational-Guidelines-for-Open-Banking-in-Nigeria.pdf>.

Regional and cross-border payment systems



The low-value cross-border retail segment remains largely underserved

Integrated regional and cross-border payments are vital to promoting open trade and investment, yet only five of the 17 African jurisdictions surveyed in 2020 indicated that their local RTGS system was interconnected for cross-border payments.³⁷ Several regional schemes have launched in the past decade, but are largely limited to wholesale, high-value transfers, leaving the low-value retail segment largely underserved (see Table 1). There are several challenges with cross-border payment systems, from a lack of regulatory harmonization and incompatible and underdeveloped infrastructure to challenges sourcing foreign exchange and a lack of investment in merchant aggregation.³⁸

Table 1: Regional payment schemes in Africa

Year	Region	System	Currencies	Retail	Off-shore*	Settlement bank
2012	COMESA	REPSS	EUR, USD			CCH/CBoM
2013	SADC	SADC RTGS	ZAR			SARB
2013	EAC	EAPS	BIF, KES, RWF, TZS, UGX			EAC central banks
2021	SADC	SADC TCIB	ZAR			SARB

* Settling a foreign currency

Source: Adapted from the Bank of International Settlements (BIS)

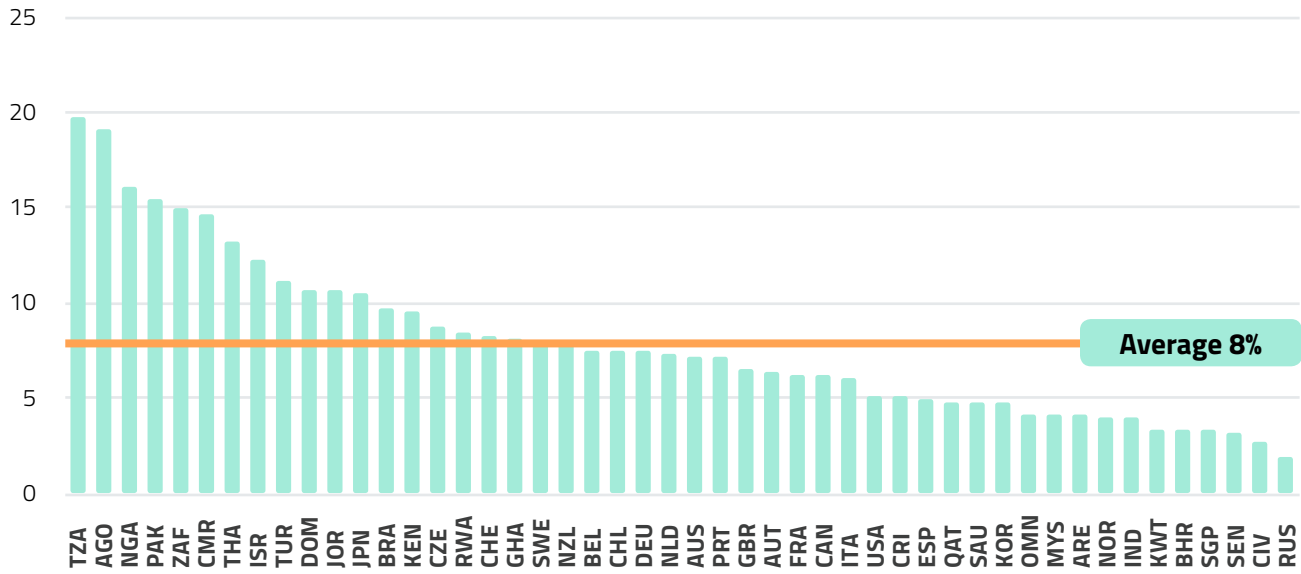
Consequently, the cost of sending remittances in Africa is still the highest in the world, and approximately two times that of South Asia.³⁹ Tanzania, Nigeria, South Africa, and Angola are the worst-performing countries, where transaction fees for a \$200 transfer top 15% of the total value (see Figure 6). The Tanzania–Kenya and Tanzania–Uganda corridors are rated among the top five most expensive corridors in the region.

37. World Bank Group. (June 2020). Payment Systems Worldwide: A Snapshot. Summary Outcomes of the Fifth Global Payment Systems Survey. Available at: <https://documents1.worldbank.org/curated/en/115211594375402373/pdf/A-Snapshot.pdf>.

38. Cenfri. (December 2018). Payment systems in sub-Saharan Africa. Available at: <https://cenfri.org/wp-content/uploads/2018/12/Payment-systems-in-SSA-Note-2.pdf>.

39. AllAfrica. (June 3, 2021). Africa: Sub-Saharan Africa Most Expensive Globally to Send and Receive Money. Available at: <https://www.mfw4a.org/news/africa-sub-saharan-africa-most-expensive-globally-send-and-receive-money#:~:text=News%2C%20Events%20%26%20Webinars-,Africa%3A%20Sub%2DSaharan%20Africa%20Most%20Expensive%20Globally,to%20Send%20and%20Receive%20Money&text=The%20cost%20of%20remittances%20in,Asia%2C%20the%20lowest%20average%20cost.>

Figure 6: Average transaction cost (%) of sending \$200 in 2020, by country



Source: World Bank



Regional blocs have taken different approaches to cross-border payments

While the SADC experience with wholesale cross-border payments has been mostly positive, the East African Payment System (EAPS) is facing some hurdles. We discuss these two examples in Box 2 and 3, respectively.



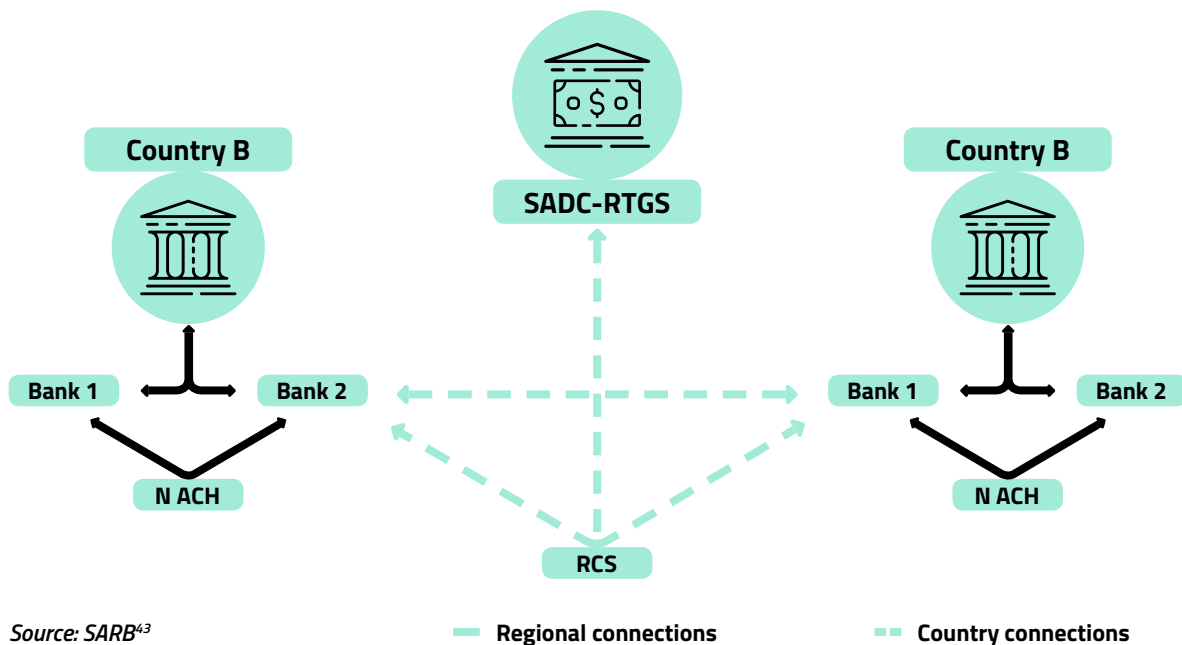
Box 2: SADC – solid governance and cooperation structures enable wholesale cross-border payments

Within the global payments landscape, a few regions have active real-time settlement schemes, including SADC.⁴⁰ High levels of cross-border trade in SADC have enabled a regional payment system to develop over the past decade. The solid governance and cooperation structures of member country central banks have been the foundation of this success.

Real-time settlement of high-value payments a success story

The SADC RTGS is an automated settlement system that allows banks and non-bank institutions authorized to participate in their domestic settlement systems to connect across borders. Deployed in 2013, the system is operated by the SARB but owned by all SADC central banks. As of the end of 2021, 15 (of 16) SADC member states and 84 banks were participating.⁴¹ Currently, the system settles in the South African rand (ZAR), but work is ongoing to support multiple currencies. The SADC-RTGS Renewal Project will enable all participants to be ISO 22002 messaging-compliant by 2025.

Figure 7: SADC-RTGS settlement model⁴²



40.Cook, W., Lennox, D. and Sbeih, S. (January 2021). Technical Guide: Building Faster Better: A Guide to Inclusive Instant Payment Systems. CGAP. Available at: https://www.cgap.org/sites/default/files/publications/2021_01_Technical_Guide_Building_Faster_Better.pdf.

41.SADC. (December 2021). Settlement Statistics and Indicators. Available at: <https://www.sadcbankers.org/subcommittees/PaySystem/SADC-RTGS%20StatisticsAndIndicators/Lists/Statistics/Attachments/101/SADC-RTGS%20Settlement%20Statistics%20and%20Indicators%20-%20Decemeber%202021.pdf?Mobile=1>

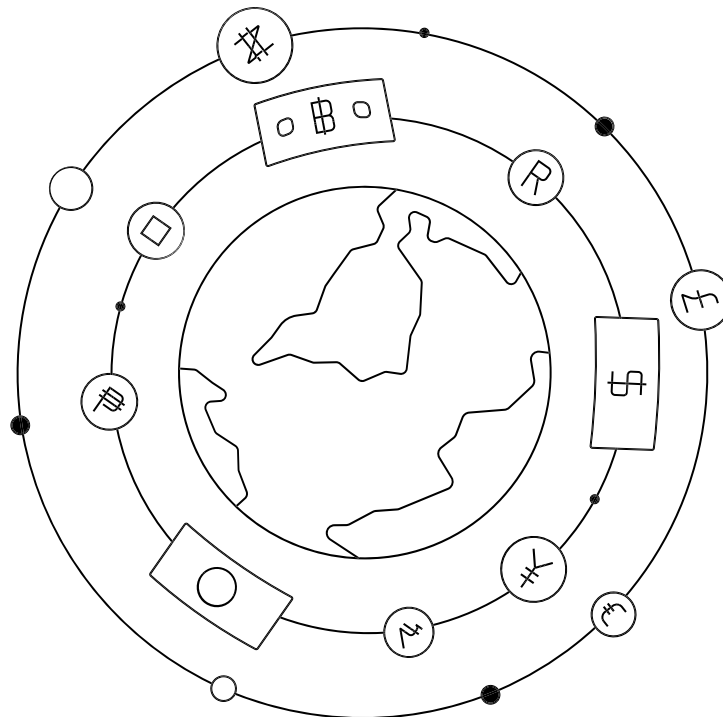
42.SADC. (March 2021). Self-Assessment of the Principles for Financial Market Infrastructures (PFMI). Available at: [https://www.resbank.co.za/content/dam/sarb/what-we-do/payments-and-settlements/sadc-rtgs-/SADC-RTGS%20\(SIRESS\)%20PFMI%20Self-assessment%202021.pdf](https://www.resbank.co.za/content/dam/sarb/what-we-do/payments-and-settlements/sadc-rtgs-/SADC-RTGS%20(SIRESS)%20PFMI%20Self-assessment%202021.pdf)

43.Ibid.

Advanced infrastructure provides springboard for inclusive cross-border transactions

Building on the SADC-RTGS infrastructure, a relatively new retail payment scheme called Transactions Cleared on an Immediate Basis (TCIB) is being developed and tested to enable low-value, real-time payments across the SADC region. According to the SADC Payment System Oversight Committee, the scheme was designed for both bank and non-bank institutions (including MNOs), with retail transaction initiation permitted via multiple channels, including mobile and agent networks.⁴⁴ Settlement occurs through the SADC-RTGS or, where a settlement currency is not yet available, through correspondent banking relationships.

The TCIB was launched in a controlled environment in July 2021, with Namibia and Zimbabwe participating in a successful proof-of-concept exercise for interoperability between bank and non-bank institutions. According to the SADC Banking Association, the regional retail scheme is projected to reduce the cost of sending money abroad by around 50% for the end user, largely due to the elimination of SWIFT charges. However, TCIB participation is voluntary and the participation of commercial banks has been much lower than expected. This is covered more fully in Section 3.



44. SADC Committee of Central Bank Governors. (September 2021). SADC Payment System Oversight Committee Report. Available at: <https://www.sadcbankers.org/subcommittees/PaySystem/sadcpoc/Documents/SADCPSC%20Report%20April%202019%20-September%202021.pdf>.

Box 3: East Africa⁴⁵ – EAPS performance limited by fragmented settlement infrastructure

The East African Payment System (EAPS) is characteristic of various challenges, from the uneven development of domestic payment systems to inconsistencies in regulatory frameworks, limited large-value and retail payment systems in member states, and relatively small financial systems dominated by a few commercial banks.

No single platform for clearing and settlement

The EAPS has struggled since its launch in 2014. Unlike the SADC-RTGS, the system does not operate on a single platform. Instead, it relies on bilateral account relationships between East African central banks, as well as existing national RTGS systems to settle (see Figure 7). When it was first deployed, only Kenya, Tanzania, and Uganda had live RTGS systems. Rwanda joined in 2015 after establishing a domestic RTGS, and Burundi and South Sudan had not yet joined by 2021. Without an automated mechanism to send and receive messaging feedback from regional counterparts, clearing and settlement are often delayed and the overall performance of the EAPS has been limited.

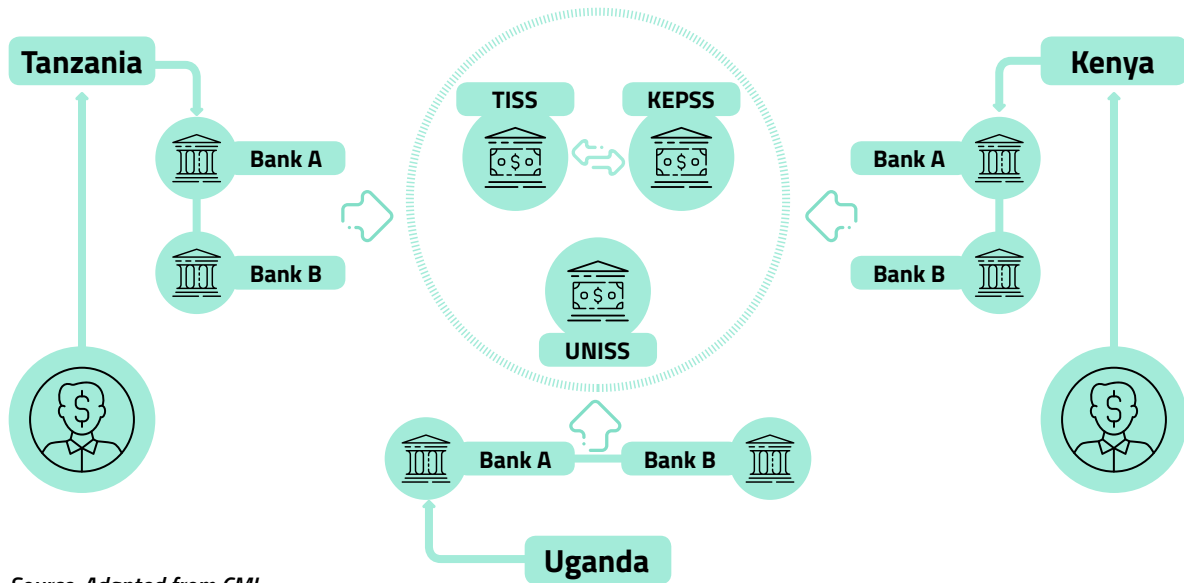
In addition, the EAPS is a multicurrency system that uses the local East African Community (EAC) currencies, with foreign exchange risks borne by commercial banks and end users. This burden on individual member banks to hold or self-source enough liquidity of different currencies has been a major issue, making adoption of the EAPS slow.⁴⁶

The EAC is preparing to deploy an integrated single and shared technology platform with a common switch and real-time clearing functions for low-value retail payments across borders.

45. East Africa's regional bloc includes Burundi, Kenya, Rwanda, Uganda, South Sudan, and Tanzania.

46. Bech, M., Faruqi, U. and Shirakami, T. (March 2020). "Payments without borders". BIS Quarterly Review. Available at: https://www.bis.org/publ/qtrpdf/r_qt2003h.pdf.

Figure 8: EAPS architecture



Source: Adapted from CMI

While there is excitement around recent cross-border payment platforms that will likely better serve the low-value retail segment, such as the SADC TCIB (which processed its first live transactions in August 2021⁴⁷) and the pan-African PAPSS (which launched earlier in 2022⁴⁸), it is still too early to assess their progress. We discuss both TCIB and PAPSS in more detail in Section 3.

47. BankservAfrica. (August 6, 2021). "TCIB successfully processes first live transactions". BankservAfrica Newsletter. Available at: <https://www.bankservafrika.com/blog/post/tcib-successfully-processes-first-live-transa>.

48. Usman, Z. and Csanadi, A. (February 7, 2022). Latest Milestone for the African Continental Free Trade Area: The Pan-African Payment and Settlement System. Available at: <https://carnegieendowment.org/2022/02/07/latest-milestone-for-african-continental-free-trade-area-pan-african-payment-and-settlement-system-pub-86376#:~:text=PAPSS%20is%20a%20financial%20platform,of%20promoting%20intra%2DAfrican%20trade>.

Policy and regulation: Country differences are adding complexity to regional payment systems

According to CGAP, there are basic regulatory enablers⁴⁹ in any market that can either be missing or drafted in a way that can inhibit the growth of DFS.⁵⁰ Beyond those that foster DFS at the national level, regional open payment systems must also consider policy and regulation across borders. For instance, differences in provider licensing requirements, foreign exchange controls, and AML/CFT regulations can all make it more complex to operate regionally.

Regulatory enablers for open payments are improving. While 91% of countries in sub-Saharan Africa report having a dedicated payment system law or regulation, only 67% have an e-money law in place.⁵¹ Only 19% of respondents from sub-Saharan Africa reported that “payment initiation by third parties using APIs” or PISP models were permitted, compared to 34% on average globally.⁵² However, in 2020, the GSMA reported that 14 countries worldwide had improved (+1% or more) their mobile money regulatory environments. In sub-Saharan Africa, this included Angola, Egypt, eSwatini, Ethiopia, and the eight member countries of the West African Economic and Monetary Union (WAEMU).⁵³ Similar improvements have been made in banking sector and payments regulation.

Even when regulations are well crafted and enforced evenly, there can still be friction. The fact that there are 54 separate national regulatory and policy regimes across Africa causes significant friction and a fragmented payment system. Any scheme that includes cross-border payments is inherently more complex as it must deal with multiple national regulations.

Inertia among central banks and policymakers is a significant barrier to change. This has reverberated throughout the banking sector, creating a cautious approach even where regulations might be interpreted as permitting new activities.



49.Staschen, S. (May 2018). “Basic Regulatory Enablers for Digital Financial Services”. CGAP. Available at: <https://www.cgap.org/research/publication/basic-regulatory-enablers-digital-financial-services>.

50.These include whether non-bank providers can issue e-money accounts, whether DFS providers are permitted to use third-party agents to provider customers access, whether a proportionate anti-money laundering framework is adopted, and whether consumer protection rules are tailored to the full range of DFS providers and products. Similarly, the GSMA scores countries against six regulatory enablers of mobile money and 26 indicators, with a higher score associated with more enabling regulation for DFS. In 2021, Ghana, Rwanda, and Malawi had the highest index scores (97, 96, and 93, respectively), while Zimbabwe and Mauritania had the lowest (57 and 41, respectively). See: <https://www.gsma.com/mobilefordevelopment/resources/the-mobile-money-regulatory-index-2/>.

51.World Bank Group. (June 2020). Payment Systems Worldwide: A Snapshot. Summary Outcomes of the Fifth Global Payment Systems Survey. Available at: <https://documents1.worldbank.org/curated/en/115211594375402373/pdf/A-Snapshot.pdf>.

52.PISP enablement is an expansive regulatory feature that allows fintechs and a wider range of non-bank institutions to initiate payments via API to create a much wider variety of payment scenarios and products. See: <https://documents1.worldbank.org/curated/en/115211594375402373/pdf/A-Snapshot.pdf>.

53.GSMA. (2022). State of the Industry Report on Mobile Money 2022. Available at: https://www.gsma.com/sotir/wp-content/uploads/2022/03/GSMA_State_of_the_Industry_2022_English.pdf.

Market dynamics and competition: A vigorous fintech sector has only partially overcome the inertia of banks and MNOs

The small market size of many African countries is compounded by complex regulations, limited infrastructure, and a high degree of fragmentation. This reality opens the door for innovation to address these complexities, but it also reinforces the power of monopolies and the inertia of providers and can stymie innovation.



A dynamic fintech sector has begun to energize the region and create payment solutions for a broad market

2021 was a year of big investment deals in Africa as tech startups across the continent raised close to \$5 billion—double the previous year's investment.⁵⁴ Fintech companies continue to capture most of the venture investment in Africa, with more than 60% of total funding. Not surprisingly, most of the biggest deals in the sector were payment or fintech-related, including Opay (\$400 million Series C), Flutterwave (\$170 million Series C), TymeBank (\$180 million Series B), Jumo and MNT Halan (\$120 million each), MFS Africa (\$100 million), as well as Zepz (formerly WorldRemit), Chipper Cash, Tala, and Wave. This rush of capital is driven in part by the opportunity to build a modern payments sector on the continent and solve some of the major payment challenges.

Some of the most exciting fintech developments are those that address opportunities specific to Africa. These include innovations that leverage mobile money data, offline transactions that use USSD or STK commands, and a burgeoning set of cash-in/cash-out (CICO) models that meet the needs of the average consumer. Other key trends have been scaling digital payments, buy-now-pay-later services, and models that address African small- and medium-sized enterprises (SMEs) with a variety of software-as-a-service (SaaS) solutions, payment processing, social commerce tools, and supply-side marketplaces that aim to digitize all aspects of the mom-and-pop shop.⁵⁵



However, limited competition, lack of scale, and resistance to change have limited innovation and degraded service quality

Many African banks and MNOs have limited technology and innovation budgets compared to their North American or European counterparts. Updating legacy technology systems is resource intensive and time consuming,⁵⁶ and they are unlikely to adopt technologies that are not market tested or compatible with their existing technology systems.

Banks and MNOs also have mixed incentives to change, seemingly afflicted by the “innovator’s dilemma”. Where incumbents have access to open retail payment systems, they sometimes fail to create use cases that leverage them effectively (e.g., TCIB in SADC has struggled to get banks to adopt features that use the real-time functionality).

54. Kene-Okafor, T. (December 30, 2021). “African tech took center stage in 2021”. TechCrunch. Available at: <https://techcrunch.com/2021/12/30/african-tech-took-center-stage-in-2021/>.

55. Deng, S. (October 19, 2021). “The B-Side of African Tech”. Medium. DFS Lab. Available at: <https://medium.com/dfs-lab/the-b-side-of-african-tech-be4dc1439bc8>.

56. Bech, M., Faruqi, U. and Shirakami, T. (March 2020). “Payments without borders”. BIS Quarterly Review. Available at: https://www.bis.org/publ/qtrpdf/r_qt2003h.pdf.



Most incumbents typically do not view open and instant payments as an opportunity

A common view is that interoperability for high-volume, low-value payments does not have strong business model.⁵⁷ On paper, low-value payment models are often appealing because they serve a much broader population and a wider range of high-volume use cases. However, in practice, they can be unworkable. The costs associated with customer onboarding, complying with local regulations, installing and upgrading new technology, managing complex operations, and opening payments to a wider range of players can quickly increase complexity and risks. Still, there are some positive incentives for open, instant payments as well as blockers, which are laid out in Box 4.

Box 4: Incentives and blockers to the adoption of open and instant payment systems

Organization type	Positive incentives	Blockers
Banks and bank associations	Banks could create better features, compete better with mobile money providers, and cut some processor revenues out of the value chain.	Inertia. Banks often experience the innovator's dilemma whereby fee and float revenue from current models discourage change.
MNOs and MNO associations	Better client features, cheaper international transfers, and cleaner integrations with banks and card processors.	MNOs believe they will lose more than they will gain by opening to third parties that can tap their agent infrastructure and clients.
Governments and central banks	Could see fast, low-cost transfers, more competition and variety, and ultimately improved consumer welfare.	Governments can find it challenging to adopt new approaches and fear pushing new initiatives that eventually fail.
Payment integrators	Open payments that allow PISP models could make integrators more central to the payment system and enable new revenue lines.	There is also a risk they could cannibalize existing revenue and the risk of lack of uptake may not justify the upfront cost.
Card networks, fintechs, and others	Could be a way to move further into the payment value chain or develop adjacent revenue streams.	The business model is not always clear and may cannibalize other card revenue.

57. SWIFT. (2015). The Global Adoption of Real-Time Retail Payments Systems (RT-RPS). Available at: <https://www.swift.com/swift-resource/4716/download?language=en>.

Product landscape: Some dynamism, but value chain issues have made many products cumbersome and expensive

Africa has always been the global leader in mobile money uptake, and the COVID-19 pandemic spurred millions more to open accounts. In 2020, the number of mobile money accounts in Africa passed the half-billion mark and accounted for more than 64% of the global value of mobile money transactions, totaling \$767 billion. There is no sign of this growth slowing down. Traditional banking and payment channels like ATMs and PoS systems are also showing an upward trend, and credit card and debit card usage are growing fast but remain far below other regions.⁵⁸

The availability of mobile money coupled with the range of digital bank transfers and card payments across Africa have resulted in quite a high number of digital payment methods but also a great deal of fragmentation and many sub-scale issues, such as high cost.



Costly and difficult customer and merchant adoption is a major challenge

Many DFS providers have learned the hard way that acquiring low-income customers and merchants, who could drive significant payment volume, is often more expensive than acquiring wealthier, more digitally savvy ones.⁵⁹ Educating and marketing new digital products to consumers and merchants are especially challenging with inexperienced users, requiring investment to build understanding and trust. Similarly, high data costs limit digital access for low-income customers and merchants,⁶⁰ making them much harder to target with digital advertising. When customer acquisition challenges are stacked against lower revenue per user, the commercial calculus usually shifts to niche products that target middle- and high-income customers and away from mass-market products that would drive the need for open and instant payments.



58. Banda, M. (June 30, 2021). "CR2 market insight: African banking and payments trends". Intelligencio. Available at: <https://www.intelligencio.com/africa/2021/06/30/cr2-market-insight-african-banking-and-payments-trends/>.

59. Kendall, J. (December 9, 2020). "Fortune at the middle of the pyramid". Medium. DFS Lab. Available at: <https://medium.com/dfs-lab/fortune-at-the-middle-of-the-pyramid-3a6886eb97f3>.

60. Schmidta, S. et al. (February 2017). Connecting the Next Four Billion: Strengthening the Global Response for Universal Internet Access. USAID, Digital Impact Alliance (DIAL), SSG Partners. Available at: https://www.usaid.gov/sites/default/files/documents/15396/Connecting_the_Next_Four_Billion.pdf.



Remittance costs are coming down, but providers still face regulatory and foreign exchange challenges⁶¹

At the end of 2021, the global average remittance cost was 6.0%, while at 7.8%, sub-Saharan Africa was still the most expensive region to send a money transfer.⁶² Banks remain the most expensive type of service provider, with an average cost of 10.44%, while mobile money channels were the cheapest to both send and receive. A lack of price transparency is one of the main contributors to the high cost of remittances, with customers often unable to compare costs between providers.⁶³ Underdeveloped financial infrastructure, limited competition, and regulatory obstacles also lead to high remittance costs.⁶⁴ Within sub-Saharan Africa, fees account for the bulk of these costs (65%) while foreign exchange margins make up the remainder.⁶⁵

Service providers in all 54 African countries cite challenges with differing money transfer and payment service provider regulations, as well as the cost of sourcing and managing foreign exchange liquidity for the continent's 42 currencies.



Despite recent growth, fragmented markets and low card adoption have slowed adoption of merchant payments⁶⁶

One of the most challenging aspects of the payments landscape is online and retail merchant payments. Most countries have a fragmented market with many different payment types—banks, mobile money wallets, cards—and the difficulty of handling online transactions in different local currencies complicates the processing of digital payments across borders.

61.The World Bank. (December 2021). Remittance Prices Worldwide Quarterly. Issue 40. Available at: https://remittanceprices.worldbank.org/sites/default/files/rpw_main_report_and_annex_q421.pdf.

62.GSMA. (2022). State of the Industry Report on Mobile Money 2022. Available at: https://www.gsma.com/sotir/wp-content/uploads/2022/03/GSMA_State_of_the_Industry_2022_English.pdf.

63.World Bank Remittance Prices Worldwide website: <https://remittanceprices.worldbank.org/about-remittance-prices-worldwide>.

64.Ibid.

65.World Bank. (December 2021). Remittance Prices Worldwide Quarterly. Issue 40. Available at: https://remittanceprices.worldbank.org/sites/default/files/rpw_main_report_and_annex_q421.pdf.

66.Mureithi, C. (April 4, 2022). "Why Africa's digital payment landscape is still highly fragmented". Quartz Africa. Available at: <https://qz.com/africa/2149097/why-africas-digital-payment-landscape-is-still-highly-fragmented/>.



For merchants, this fragmented landscape poses many challenges

The need to maintain connectivity with multiple payment service providers requires a degree of tech savviness that is challenging even for bigger merchants, let alone micro and small entrepreneurs. Other challenges include a lack of business intelligence information, different payment periods for different processors, major reconciliation challenges, and a lack of reporting tools and analytics software.



Processors and merchant acquirers also operate in a fragmented payment technology landscape

For example, Cellulant, a leading African payment processor, connects over 257 payment methods across Africa, almost 60 of which are mobile money providers. The rest consist of bank accounts and cards, which are sometimes connected via a switch but sometimes not. This fragmentation is incredibly challenging as they not only have to manage integrations with all these APIs (many of which are poorly constructed and/or low quality), but also deal with local regulations and foreign exchange liquidity issues.



Summary: The three biggest challenges are fragmentation, cost, and speed and reliability

This section has outlined many areas of innovation and the variety of challenges associated with open and instant payments. The three challenges that come up most consistently across the region are fragmentation, cost, and speed and reliability.

Fragmentation

We define fragmentation as the fundamental inability to create seamless payment experiences spanning different systems and geographies. A high level of fragmentation is characteristic of many African markets and the region overall. Many factors are at the root of this, including inconsistent regulatory regimes, challenges with payment infrastructure, problems with payment intermediaries, foreign exchange liquidity issues, and others. Fragmentation is not only evident with innovation (banks, mobile money, new card models, etc.) but also duplication and a lack of standardization. Fragmentation is one of the biggest challenges in Africa's payments landscape as it creates redundant investments, high costs, poor merchant and consumer experiences, the need for liquidity, and a tapestry of partial solutions that do not work well together.

Cost

The cost of making payments and moving money is typically high for providers, merchants, and end users in Africa. There are a variety of reasons for this, including lack of competition, liquidity management challenges, insufficient scale, burdensome regulations, and low investment by providers in service quality and technology. Cost recovery at switches is a common model, but low volumes often increase member costs that, in turn, are usually passed on to end users. Fragmentation and a lack of seamless interoperability also drive up costs because merchants and other payers/payees must either manage the complexity themselves or pay fees to middleware and aggregator service providers to manage it for them.

Speed and reliability

These are often major challenges with banks and payment systems infrastructure, resulting in high failure rates, low resolution rates, long processing times, and downtime rates that would not be accepted in other markets. The root cause of these issues can be difficult to pinpoint, and providers tend to place blame up and down the value chain. For example, banks and MNOs will often point to high-cost switches and low-capacity processors while switches and processors will often point to banks' and MNOs' lack of capacity to process and resolve errors quickly. Regulations are also often implicated by system participants.

Each of these challenges is driven by a complex web of factors, but all could be improved with the well-executed deployment of open and instant payments technologies. Any new open payments initiative will have to improve on one of these challenges to be credible, and if they make significant improvements, system participants will likely herald it as a major contribution.

However, no level of technology will change the situation unless it is executed properly. Major progress could be made if financial intermediaries executed better within the payments value chain using infrastructure already in place (e.g., by effectively implementing SWIFT GPI). In the next section, we examine the key elements needed to enable open and instant payments and feature positive examples of providers and schemes across Africa.

Section 3

Catalyzing the opportunity: three critical enablers of open payments

Taking a critical look at existing payment initiatives and carefully considering the opinions of system participants, this section explores three critical enablers that must be in place for open payment initiatives to succeed: 1) regulation and policy compliance, 2) technology and operations, and 3) commercial incentives and business models.

We also take a closer look at some exciting new open payment initiatives in Africa—ones that we hope could address long-standing issues in the African payments landscape. In each case, we look at how they have fared with respect to the three enablers. Since payment initiatives cannot be categorized as simply open or closed, we assess how open they actually are and their ability to create seamless payment experiences for users while reducing fragmentation, lowering costs, and improving speed and reliability.

Three enablers of success for open payments

When we analyzed open payment initiatives across Africa, we found that success was tied directly to progress with the three enablers. Limited success could be attributed to progress on one or more of the enablers while successful open payment initiatives had made sufficient progress on all three.





Regulation and policy compliance

Regulation is perhaps the most obvious requirement. Some private-sector open payment initiatives can exist outside regulations or in regulatory grey areas (e.g., in the early days of mobile money, many regulations were not clear until countries adopted e-money regulations). On the other hand, national or central bank-run switches usually allow only regulated entities as members. The regulated status of the scheme operators or participants is only one component. Other regulatory elements—KYC, AML/CFT, taxation, data privacy and localization, foreign exchange control regimes, and even trade regulations—must also be considered as money is moved between and across borders.



Technology and operations

Investing in and managing the right technical infrastructure, as well as operational procedures, can be daunting in an area as demanding as payments. Basic payment processing and switching technologies are significant investments on their own, but other operational considerations, such as managing compliance, sourcing liquidity and foreign exchange, IT security, assessing counterparty risk, managing fraud and errors, and many others, can place major demands on providers in the payments value chain.⁶⁷ Often, the switching technology can be adequate for real-time or near real-time clearing, but the inability of participants to meet operational requirements can slow payments dramatically.⁶⁸



Commercial incentives and business models

With open payment systems, the participation of intermediaries in the value chain is critical. Open and instant payments or payment initiatives aimed at serving the mass market can look great on paper, but when market players consider the complications, risks, and fully costed investment, they often do not see a sustainable business model.⁶⁹ Incentives for different players vary depending on whether they would be net payors or payees in the scheme, or if the scheme would cannibalize existing business lines (see Box 5). For example, mobile money providers often fear that opening their agent networks could cannibalize their mobile money and airtime revenue. These dynamics can often prompt the largest and most important players (in terms of volume) to opt out, halting or severely hindering the scheme.

67. According to SWIFT, around a fifth of payments originating with an African bank to a bank in Africa are routed through a finance counterparty in the US, and in 2017 the US dollar accounted for almost 50% of payments from Africa. Source: SWIFT. (2018). Africa Payments: Insights into African transaction flows. Available at: <https://www.swift.com/swift-resource/170536/download?language=en>.

68. An example of the importance of scheme participant capacity comes from the introduction of the 2017 Global Payments Innovation (GPI) by SWIFT in which adherents had to sign up to high operational standards meant to reduce value chain-related challenges and errors that are often blamed on SWIFT. Among the banks in Africa that have adopted it, transaction time for 70% of payments is within five minutes. Any extra delays are due to factors such as regulation (many African banks, for instance, run additional manual anti-money laundering and anti-fraud checks before crediting inbound remittances). The problem is that only 5% of African banks (less than 50 out of nearly 4,500 GPI-adopting banks worldwide) have signed up to the strict service-level commitments needed to activate GPI for their customers. Source: <https://brightsimons.com/2022/02/22/will-papss-save-afcfca/>.

69. SWIFT. (2015). The Global Adoption of Real-Time Retail Payments Systems (RT-RPS). Available at: <https://www.swift.com/swift-resource/4716/download?language=en>.

Box 5: The interoperability business case for providers and the role of interparty fees

+	New revenue generated	Scheme managers, switch operators, industry participants, and customers all have their own economic incentives to participate in an interoperability scheme. A sustainable payment system would ensure that these incentives are aligned to drive the necessary transaction volumes to achieve scale.
+/-	Product substitution	
+/-	Indirect benefits	
=	Gross Margin	For providers, the new off-net transaction volumes they would see from interoperability would not only boost their bottom line, but could also be a substitute for other types of on-net transactions (e.g., fewer cash withdrawal transactions may result in lower margins). There may also be indirect benefits and costs. For example, a net-receiving provider can benefit from larger account balances while a net-sending provider may experience the opposite. Interparty fees are typically set between participants to correct these imbalances. While they are not charged directly to the customer, scheme owner or switch operator, they play an important role in the “scalability” of the scheme.
-	New operational costs	
=	Net Profit	
/	New capital expense	
=	ROI from interoperability	

Sources: CGAP

Some exciting initiatives are addressing long-standing payment challenges in Africa

This section introduces some disruptors in DFS that are addressing the key challenges of open payment systems in Africa. In each case, we document how well they have managed the need for strong technology and operational rigor, regulatory compliance, and compelling commercial incentives for key stakeholders. We also qualitatively assess just how open, interoperable, and instant their approach is.

Legend:



No significant challenges



Major challenges experienced



Some challenges experienced



Unknown/too early to tell




Payment integrators and hubs


MFS Africa

A mobile money hub making progress on all fronts

Launch: 2009

What it is: A payment aggregator offering a single API to connect to banks and mobile money platforms in over 30 markets. There are four to five African aggregators of a similar size with similar offerings.

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  As a payment integrator, they make it easier to connect to existing financial institutions and switches, but do not add new payments pathways.

Other actors with similar models: Flutterwave, DPO, and Cellulant



Technology and operations

MFS Africa is a state-of-the-art API and hub platform that boasts a 99.9999% uptime rate and can process 5,000 transactions per minute. MFS Africa has also begun building out its CICO infrastructure via the acquisition of Capricorn Digital Limited, whose Baxi product is a network of over 90,000 CICO agents.⁷⁰



Commercial incentives

MFS Africa is for-profit and creates clear value for customers by dramatically reducing operational complexity and integration costs and avoiding the need to pay transaction fees associated with third-party switching platforms. In 2021, the company raised \$100 million in Series C funding after demonstrating a clear path to growth.⁷¹



Regulation

MFS Africa is a first mover in solving regulatory complexity for payment providers, having acquired unique licenses in over 30 African jurisdictions.⁷² As an AML/CFT risk mitigation mechanism, the company runs a process called “sanction screening” of its network of participants.⁷³

70.MFS Africa. (28 March 2022). “MFS Africa Completes Capricorn”. Available at: <https://mfsafrica.com/press-view/26>.

71.Kene-Okafor, T. (November 10, 2021). MFS Africa collects \$100M to expand its digital payments gateway across the region. TechCrunch. Available at: <https://techcrunch.com/2021/11/10/mfs-africa-gets-100m-after-series-of-investments-and-acquisitions-in-the-past-year/>.

72.Stakeholder interview.




73.MFS Africa. (1 April 2021). “Tech Talk: Changing Markets, Borderless Financial Transactions”. Available at: <https://mfsafrica.com/article/2>.


Mowali

Commercial structure limits the potential gains of advanced open-source tech

Launch: 2018

What it is: A joint venture between Orange and MTN that runs a switch enabling interoperable transfers between the two operators on a cost-recovery basis. Still in the pilot stage.

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  While Mowali aims to make local Orange and MTN deployments interoperate seamlessly, integration with other mobile money providers has been more challenging. .

Other actors with similar models: Mobile money interoperability schemes in Tanzania, Ghana, Madagascar, Uganda, and other countries, although most are not cross-border schemes.⁷⁴



Technology and operations

Mowali is built on the Mojaloop switching and payments platform software with custom upgrades, but is unproven at scale.



Commercial incentives

As a joint venture, Mowali has struggled to manage the politics and incentives of its two large MNO partners. Since it was planned to be run on a cost-recovery basis, this may also have limited its ability to attract top talent from the MNOs' management pools.^{75 76}



Regulation

While the participating MNOs are licensed in the markets where they operate, Mowali became mired in regulatory issues related to international money transfer and cross-border KYC/KYB compliance.

74. Naji, L. (2020). Tracking the journey towards mobile money interoperability – Emerging evidence from six markets: Tanzania, Pakistan, Madagascar, Ghana, Jordan and Uganda. GSMA. Available at: <https://www.gsma.com/mobilefordevelopment/resources/tracking-the-journey-towards-mobile-money-interoperability-emerging-evidence-from-six-markets-tanzania-pakistan-madagascar-ghana-jordan-and-uganda/>.

75. GSMA and Sofrecom. (2020). The many paths to mobile money interoperability: Selecting the right technical model for your market. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/06/GSMA_Many-paths-to-mobile-money-interoperability-2.pdf.




76. Stakeholder interview.


AZA Finance

Solving the cross-currency liquidity challenge for businesses in Africa⁷⁷

Launch: 2013

What it is: AZA Finance is one of the largest non-bank providers of cross-border payments and foreign exchange, with an API that provides both wholesale currency purchase and retail settlement.

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  While AZA is open to all and solves the major challenge of interoperable payments in Africa (where to source foreign exchange), the model does not create new pathways for interoperability.

Other actors with similar models: Foreign exchange bureaus and pan-African banks.



Technology and operations

AZA Finance services are built on its leading proprietary technology platform (available via web and API).



Commercial incentives

AZA Finance is for-profit and creates clear value for customers by dramatically reducing operational complexity, time, and cost in sourcing large amounts of liquidity for African currencies.



Regulation

AZA Finance has strived to be in regulatory compliance and has adopted the requisite licensing and compliance procedures in all markets where it operates. Its biggest challenge is avoiding AML/CFT exposure.

77. We are considering adding Yellow Card, Stellar, and/or Ripple as case studies in the next version. See: Fintechnews Africa. (December 1, 2021). "7 Africa-Based Crypto Exchanges You Should Know". Fintechnews Africa. Available at: <https://fintechnews.africa/40400/fintechafrica/7-africa-based-crypto-exchanges-you-should-know/>.




Central bank-led platforms


Nigeria

NIP is a decade in the making with more leapfrog innovation ahead

Launch: 2011

What it is: Nigeria's national switch, which enables a variety of payment types and is jointly owned by the Central Bank of Nigeria (CBN) and deposit money banks. NIBSS Instant Payment (NIP) is best-in-class, but there are other national switches with similar characteristics.

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  NIP is used by nearly all Nigerian banks, is interoperable, and performs instant clearing.

Other actors with similar models: TIPS (Tanzania), GhIPSS (Ghana), PesaLink (Kenya), and R-Switch (Rwanda)

Technology and operations



The NIP solution is a top-of-the-line technology platform that includes an open API gateway environment, real-time clearing (24/7/365), a universal identification system (BVN), sandbox testing and technical support for live deployment by providers. Between 2018 and 2021, NIP payment volumes recorded a CAGR of 75.5 per cent.^{78 79}

Commercial incentives



NIP is jointly owned by the CBN and all licensed deposit money banks. This ownership structure, as well as a consultative process for setting operating rules and defining new features, has created high levels of buy-in and participation. Key to this was an initial CBN mandate that all banks must invest in the system collectively,⁸⁰ but even after the mandate was lifted NIP continued to maintain member participation through collective decision-making and aggressive investments in new features and world-class service.^{81 82}

Regulation



With NIP, regulatory compliance is by design, as direct participants are mandated to have settlement accounts and requisite licensing, and enforce standard compliance.^{83 84 85}

78. Authors' calculations based on data retrieved from NIBSS.

79. Stakeholder interview.

80. Central Bank of Nigeria. (August 25, 2010). Circular: Interoperability and Interconnectivity of the Payments System Infrastructure in Nigeria. Available at: https://www.cbn.gov.ng/OUT/2010/CIRCULARS/BSPD/INTEROPERABILITY_CIRCULAR.PDF.

81. In terms of e-payments transaction efficiency, NIBSS reports a 99% transaction success rate in a 24-hour window. See: NIBSS. (2020). E-Payments Transaction Efficiency 2020. Available at: <https://nibss-plc.com.ng/dashboard/istat/platform-efficiency?task=platform-efficiency>.

82. Stakeholder interview.

83. Central Bank of Nigeria. (January 2021). Framework for Quick Response (QR) Code Payments in Nigeria. Available at: [https://www.cbn.gov.ng/out/2021/ccd/framework%20for%20quick%20response%20\(qr\)%20code%20payments%20in%20nigeria.pdf](https://www.cbn.gov.ng/out/2021/ccd/framework%20for%20quick%20response%20(qr)%20code%20payments%20in%20nigeria.pdf).

84. BFA Global. (June 23, 2021). Fintech Regulation in Nigeria. Available at: <https://bfa-global.com/wp-content/uploads/2021/06/0.-Fintech-Regulation-in-Nigeria-16-March-2021.pdf>.


85. Central Bank of Nigeria. (August 27, 2020). Circular: Guidelines for Licensing and Regulation of Payment Service Banks (PSBs) in Nigeria. Available at: <https://www.cbn.gov.ng/out/2020/ccd/approved%20reviewed%20guidelines%20for%20licensing%20and%20regulation%20of%20payment%20service%20banks%20in%20nigeria-27aug2020.pdf>.


SADC TCIB

Business case for bank participation in voluntary scheme not easy to solve

Launch: Live after 2021 pilot

What it is: Southern Africa Development Community (SADC) regional switch enables cross-border retail payments through the TCIB platform.

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  TCIB is open to all banks and MNOs that meet certain compliance criteria. It is interoperable and performs instant clearing.

Other actors with similar models: WAEMU (West Africa), EAPS (East Africa), CEMAC (Central Africa), and RPSS (Eastern and Southern Africa)



Technology and operations

Operated by the regional switch BankServ, TCIB is based on the ISO 20022 messaging standard, running atop the SADC RTGS infrastructure layer and enabling interoperability between bank and non-bank participants across regional borders.⁸⁶ It enables immediate clearing of single credit “push” transactions while settlement is managed on a deferred basis.



Commercial incentives

The platform operates on a cost-to-recovery model funded by SADC central banks. It is projected to cut costs for end users by over 50% while allowing banks to connect to new consumer markets through the agent networks of participating money transfer operators and mobile money providers.^{87,88} Still, since going live in 2021, growth in TCIB transaction volumes has underperformed as the major commercial banks have not yet joined.



Regulation

As with PAPSS and NIP SADC, TCIB is also regulatory-compliant by design. All participants are required to obtain an authorization letter from their respective central bank and adhere to AML/CFT, KYC, and balance of payments (BoP) reporting requirements as per the regulatory guidelines of the jurisdiction.⁸⁹

86.BankservAfrica. (n.d.). Introductory guide to TCIB. Available at: <https://www.bankservafrika.com/website/services/transactions-cleared-on-an-immediate-basis>.

87.Stakeholder interview.

88.BankservAfrica. (n.d.). Introductory guide to TCIB. Available at: <https://www.bankservafrika.com/website/services/transactions-cleared-on-an-immediate-basis>.




89.SADC Committee of Central Bank Governors. (September 2021). SADC Payment System Oversight Committee Report. Available at: <https://www.sadcbankers.org/subcommittees/PaySystem/sadcpsoc/Documents/SADCPsoc%20Report%20April%202019%20-September%202021.pdf>.


PAPSS

Expanded liquidity pooling could usher a new era of pan-African trade payments

Launch: 2022

What it is: A pan-African switch designed to support cross-border trade, sponsored by Afreximbank and jointly owned by the region's central banks and financial service providers (FSPs).

Status: Technology and operations  | Commercial incentives  | Regulation 

How open:  PAPSS is open to all regional banks, is interoperable, and aims to achieve instant clearing.

Other actors with similar models: N/A

Technology and operations



PAPSS claims to process near-instant payments in 120 seconds with the latest ISO 20022 messaging standard.⁹⁰ Country-level switches can submit transactions to PAPSS in real time, but settlement has been found to take longer due to reliance on foreign exchange conversions and central bank settlement processes.⁹¹ The performance of the system is yet to be tested at scale.

Commercial incentives



The PAPSS governing council reflects strong buy-in from governments and multilateral institutions, which have a 63.5% shareholding in Afreximbank, while African FSPs and private investors hold 23.7 per cent.⁹² The fact that settlement and liquidity provision are guaranteed by Afreximbank and central banks across the continent bode well for participation, but the true incentives have yet to be tested in a wider market deployment.⁹³

Regulation



PAPSS regulatory compliance is by design and resolved at the country level,⁹⁴ which means that direct participants are mandated to have settlement accounts and requisite licensing with their central bank, which also enforces compliance.

90.Roberts, L. (February 11, 2022). "The Newly Launched Payments System Set to Save Africa \$5 Billion Annually". Forbes. Available at: <https://www.forbesafrica.com/focus/2022/02/11/the-newly-launched-money-minded-system-which-is-set-to-save-africa-5-billion-annually/>.

91.Stakeholder interview.

92.Afreximbank. (2022). Abridged Unaudited Financial Statements for the Three Months Ended 31 March 2022. Available at: <https://media.afreximbank.com/afrexim/Afreximbank-abridged-unaudited-financial-statements-for-the-first-quarter-ended-31-March-2022.pdf>.

93.PAPSS (May 21, 2021). Press Release: Afreximbank and AfCFTA announce the Operational Roll-out of the Pan-African Payment and Settlement System (PAPSS). Available at: <https://papss.com/media/afreximbank-and-afcfta-announce-the-operational-roll-out-of-the-pan-african-payment-and-settlement-system-papss/>.

94.PAPSS. (n.d.). Get Connected -- For PAPSS Participants. Available at: <https://papss.com/get-connected/>



Lessons from these examples

This section has provided a snapshot of the innovations shaping open payment systems across Africa. The case studies highlight key lessons and examples for those looking to build on open payment systems. One of the main lessons from our analysis is that even the most advanced and sophisticated technologies can fail if the commercial incentives are not sufficiently strong or when the operating models run counter to regulation.

In central bank-led schemes where providers have a direct stake, high levels of participation are more likely and can unlock network effects. An alternative path, as seen in Nigeria, is for the regulator to make participation mandatory. Although this can be unpopular at first, making payments instant and interoperable can be a more successful strategy over the long term. We have seen this play out elsewhere in the world, with Brazil as a notable case. Here, banks were mandated to adopt the fast retail payment system, Pix, which was launched in November 2020. Within the first six months of operation, 45% of adults in Brazil had used the platform to make a payment or receive funds.⁹⁵ We have learned that voluntary approaches to market adoption, even subsidized platforms with significantly lower direct participation costs, do not automatically attract interest from major providers like commercial banks.

⁹⁵From the Outside. (April 22, 2022). Lessons from Brazil's "Pix" fast payment system". From the Outside Blog. Available at: <https://from-the-outside.com/2022/04/22/lessons-from-brazils-pix-fast-payment-system/>.

Looking ahead

While the excitement, opportunity, and investment in open payment solutions in sub-Saharan Africa are encouraging, the research in this report shows how many payment systems still have significant challenges that can make it difficult and inefficient to move money where it needs to go. This complexity only increases with cross-border/international payments when long wait times and high transaction fees inhibit trade and create a barrier for millions of people who need to send or receive funds. In an otherwise interconnected world, the inability of underrepresented populations to participate in the global digital economy is a social justice issue. There is a clear need for a solution that will act as a bridge across disconnected financial systems in Africa and beyond.

How can a decentralized, open payments network such as the Interledger Protocol help connect fragmented financial systems? How can we inspire an ecosystem of stakeholders that want to build with ILP to better handle different currencies, eliminate delays and high fees, while at the same time creating a more equitable ecosystem for all users? These are the areas of inquiry and experimentation that ILF is dedicated to exploring. Aided by our partnership with DFS Lab, our work has already seen new start-up projects launched in South Africa, Nigeria and Togo, ranging from supporting new mobile payment systems and sustainable farming, to independent creators.

We wholeheartedly believe in the transformational potential of our technology and how it can improve digital participation in one's economy. However, well-meaning organizations and corporations are often prescriptive without fully understanding the challenges and barriers faced by the very individuals they propose solutions for. Therefore, we have embarked on a listening and learning phase in our financial inclusion work, starting in various countries in Africa. Recognizing that every region and country has unique landscapes and that we do not have all the answers for their individual needs, we are committed to adapting our technology and ideas to the realities of the people it may benefit.

The research presented in this report provides a foundation for us to shape and grow our strategy in Africa and beyond. In the next two phases of our partnership with DFS Lab, we will reflect on the experiences of small business owners, craftspeople, and others whose entrepreneurialism is hampered by antiquated and restrictive policies and technologies. We will then apply what we have learned to fund projects dedicated to innovation in the open payments space through bootcamps, workshops, and awards. This new cohort will join our vibrant international community of changemakers as we continue to build a global movement to bring payments into the 21st century.

Briana Marbury

Executive Director, Interledger Foundation

Appendix A: Primer on the anatomy of a payment system

A payment ecosystem is comprised of real economic actors, channels, instruments, processing functions, as well as clearing and settlement infrastructure.

- ➔ **Channels** – the ways in which payments can be accessed, including the internet, ATMs, USSD, bank branches, POS, mobile banking, and agents.
- ➔ **Instruments** – payment instruments include cash, cards, cheque, EFT, e-wallets, and channels that rely on these instruments to send payments.
- ➔ **Processing** – a layer of communication for payment services providers to send and receive messages for payment orders.
- ➔ **Clearing** – the obligations of payment services providers to one another are established through a clearing process, typically handled by a switch operator that transmits, reconciles, confirms, and nets transactions between payment participants. The clearing function initiates settlement for either a real-time or deferred transfer, and the switch typically performs other functions, such as fraud monitoring and dispute management. A switch operator can be a private entity, a not-for-profit institution, or a central bank.
- ➔ **Settlement** – the discharge of obligations between payment services providers is facilitated by a settlement system that executes the actual transfer of funds to the receiving provider. Safe and efficient settlement is critical to the overall integrity of any payment system and a settlement agent can be any financial institution, including a central bank.
- ➔ **Scheme** – a scheme defines the terms for maintaining a payment system, and includes the procedures, rules, and technical standards that govern how transactions are executed and participants will work together. The overseer of a scheme is typically the central bank, which monitors and assesses the payment system by enforcing legislation and regulation—the binding agent of an effective payment system.

Source: Adapted from Cenfri; CGAP

Appendix B: Stakeholder interviews

This research was complemented by a series of expert stakeholder interviews and we thank the following participants for their time.

- ➔ AfricaNenda
- ➔ Arunjay Katakam, author of “The Power of Micro Money Transfers”
- ➔ Chipper Cash
- ➔ GSMA
- ➔ IPA Tanzania
- ➔ Mama Money
- ➔ MFS Africa
- ➔ Mojaloop Foundation
- ➔ NIBSS
- ➔ SADC Banking Association
- ➔ Tanda



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