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Enabling financial inclusion in developing economies

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Abstract

This paper addresses the adverse effects of closed-loop mobile payments on developing economies and investigates several market-led attempts to overcome the barriers of closed-loop mobile payments and enhance financial inclusion. The paper also describes the approaches taken by Tanzania, Pakistan and Jordan, and discusses their challenges and outcomes.

Keywords: financial inclusion, interoperability, mobile payments, Tanzania, Pakistan, Jordan

INTRODUCTION

We live in an era where we no longer need to worry about whether the person on the other side of a transaction is using the same provider. From phone calls and e-mails to withdrawing cash from automated teller machines (ATMs), the concept of interoperability — a simple concept with a significant impact — has long been integrated in our day-to-day lives.

Within the financial landscape, the same holds true. For regulators, the integration and interoperability of e-money, or more specifically mobile money, with the rest of the financial infrastructure, has long been a strategic priority. Mobile money has been transforming the financial landscape and lifting unbanked and underbanked populations out of financial exclusion — as seen in 31 emerging markets that have experienced an impressive increase in financial inclusion rates thanks to simultaneous growth in the use of mobile money.[1] However, the 'closed-loop' ecosystem limits the growth of mobile payments when users are unable to transact directly with other users, agents or merchants of other mobile money service providers.

CLOSED-LOOP MOBILE PAYMENTS

Vendors accepting cash must suffer the burden of store counts and preparations as well as the risk of transaction errors, while the acceptance of debit and credit cards carries high transaction costs that increase with the price of the purchase. By contrast, mobile payments are more beneficial in terms of reduced costs and enhanced customer satisfaction.[2] In addition, unlike card payment facilities, mobile payments do not require big infrastructures to work; compared with card payments, they also provide consumers with enhanced security and convenience.[3]

A closed-loop mobile payments ecosystem meets the market's initial requirements for mobile money services: providing cash alternatives to unbanked customers, minimising costs and simplifying operations with access to real-time transactions. However, for this growth to continue, the lack of interoperability must be addressed — for example, 'we rarely come across instances where we cannot use a particular

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debit or credit card because the merchant does not have a point-of-sale machine that supports that particular bank',[4] and the case for mobile payments is no different — just as today's consumers do not need multiple cards to complete payment transactions, in the future, they should also not need multiple mobile payment applications to complete transactions.

Interoperability between mobile payment service providers including banks, mobile network operators, trusted third-party agents and financial institutions increasingly bridges the gap between all users, whether banked or unbanked, and enables the seamless movement of mobile money between different institutions. Enabling services such as bulk disbursements and bill payments, and accelerating financial inclusion and enhancing financial innovation, now represent the market's new requirements for mobile money services, and open interfaces are now necessary to transform the closed-loop mobile money ecosystem into an interoperable one.

MERCHANTS AND CLOSED-LOOP MOBILE PAYMENTS

Micro and small merchants (MSMs) such as bus-stop newsstands, convenience stores, food vendors and businesses that operate in small shops and kiosks often deal with cash only, especially in developing economies. Such MSMs number in the hundreds of millions, and interact with billions of financially excluded or underserved customers. Thus, while each individual merchant generates low revenues, together, they influence the global economy significantly, with an estimated US$6.5tn financial transactions annually.[5]

As such, MSMs present a great opportunity to accelerate financial inclusion on a countrywide scale where 'digital payment systems must be improved to meet the specific needs of small merchants. These improvements include simpler and less expensive card terminals, effective support and customer services, increased merchant protections around chargebacks, faster processing times and reduced costs'.[6]

Mobile payments provide a favourable alternative to point-of-sale (POS) terminals in terms of financially including micropayment transactions and unbanked users in an ecosystem that makes electronic payments, salaries, remittances and peer-to-peer transfers faster and simpler. This is in addition to the fact that traditional POS terminals can be time-consuming, confusing, costly in terms of transaction and maintenance fees, and present other kinds of inconvenience not associated with the use of cash.[7]

Mobile payments also meet the main criteria that merchants cite as the benefits of using cash: convenience, cost, safety and reliability. Mobile payments provide MSMs with the benefits of instant deposit into their accounts and make digital transactions accessible to a much broader segment of society as POS terminals are not required. According to research conducted by Juniper, mobile merchant transactions by unbanked individuals in developing markets will grow from 1.8 billion per annum in 2018 to 3.8 billion by 2023.[8]

INTEROPERABILITY IN DEVELOPING ECONOMIES

While mobile payments inherently advance the financial ecosystem by providing banks and payment service providers with a cost-efficient way to outsource cash handling, deposit and withdrawal transactions, and without the need to invest in new physical infrastructures such as new branches and cell towers, interoperability between these providers is critical for the prevention of monopolies and the advancement of mobile innovations.

The case is highly similar to the European Union's Revised Payments Services

Directive, which weakens banks' monopoly on consumer data, making way for new mobile, messenger and peer-to-peer models that expand the payments footprint 'where merchants and consumers will interact with multiple companies in a more decentralised, technology-driven system'.[9] This ultimately breaks down barriers to entry in the mobile payments space, promoting competition and innovation among providers and banks, enabling them to offer a new set of services for banked and unbanked users that were not previously possible, nor profitable. For providers, interoperability increases the number of transactions and volume of money in the ecosystem; for users, it offers accessible and flexible financial services; and for regulators, it significantly accelerates financial inclusion and draws more cash into the formal financial system, along with more control over it. Finally, unbanked users will be able to choose mobile money providers based on value propositions, pricing and quality.

While interoperability is essential in both developed and developing economies, it is more significant for the latter where a vast majority of the population lives in a cash economy where they are paid solely in cash, therefore losing their natural connection to a financial ecosystem where income is in electronic form. Such users require new financial infrastructures to deposit their money into the bank — however, banks are hesitant to deploy such infrastructures due to the low revenues generated from such users and the high costs of implementing physical infrastructures.

ACHIEVING INTEROPERABILITY

There have been several market-led attempts to achieve interoperability in the mobile payments ecosystem in which mobile payment service providers, banking systems and public sectors have collaborated to create a standard framework for interoperability including bilateral arrangements, commercial switch and national switch.

Each market assesses the implementation model based on several factors, including risk management, the complexity of implementation, transaction cost, regulatory environment, agreement framework, user experience and time to market.[10] As this paper will discuss, such cases include Tanzania, Pakistan and Jordan.

Bilateral mobile payment arrangement

After assessing the above-mentioned factors, Tanzania has decided to facilitate financial inclusion through bilateral integration between mobile money service providers (MMSPs). As these MMSPs were already connected to banks, this was deemed as the simplest solution to achieve interoperability, while also attaining more control over mobile payment services and implementation costs.[11]

With this model, MMSPs integrated their platforms on a one-to-one basis, and the MMSPs and regulator decide when and how often to settle the payments, as portrayed in Figure 1.

According to the study conducted by GSMA,[12] the challenges included:

- extended time to launch and go live due to different MMSP organisational priorities; and
- difficulty in aligning business and legal requirements due to the complexity of writing operational rules from scratch.

Despite these challenges, however, the Bank of Tanzania claims that the country is now a world leader in the field bilateral mobile payments.[13]

Indeed, the volume of mobile payment transactions in 2015 was 100 per cent higher than in 2013, before the bilateral mobile payment arrangement came into force in 2014.[14] According to the Bank of Tanzania,

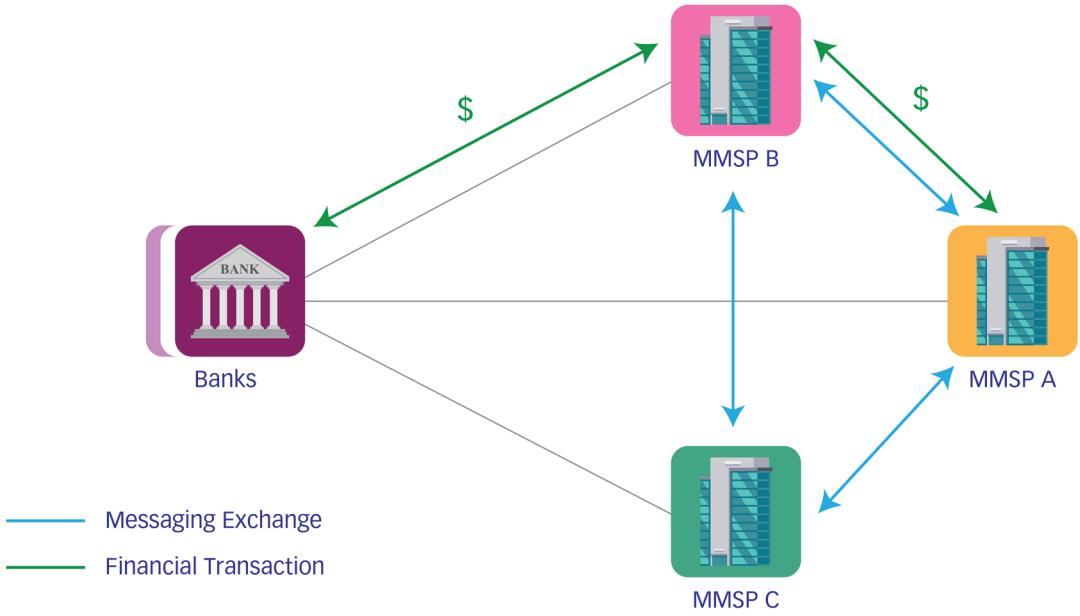

Figure 1: Bilateral agreement in Tanzania

the success of the bilateral agreement continues to grow: 'the interoperability among the four major mobile payment services providers has substantially contributed to the increase in transactions across network operators and therefore reducing the cost of mobile financial services'.[15] At the end of April 2018, the number of active mobile money accounts was 19.5 million versus 17.3 million in April 2017 — a significant increase of over 2 million users in one year.[16]

Finally, over half of Tanzanian adults now have access to financial services, with mobile money being a principal driver for financial inclusion in Tanzania.[17]

Commercial mobile payment switch

Pakistan decided to facilitate financial inclusion through connecting to a commercial switch. As MMSPs in Pakistan are bank-led, this was deemed to be the most efficient and cost-effective model for implementation, with all providers agreeing to accept rules set by a third party in order to facilitate implementation.[18]

In this model, MMSPs integrate with the commercial switch in order to connect with each other, and the switch determines the settlement rules, as portrayed in Figure 2.

According to the study conducted by GSMA,[19] the challenges included:

- unaligned features that did not meet the MMSPs requirements as the third-party commercial switch provider had not understood the requests clearly; and
- MMSPs were required to invest some effort in helping the third-party commercial switch provider understand the mobile money business case.

Following the implementation of the commercial mobile switch, Pakistan witnessed a dramatic 39 per cent increase in the number of registered mobile accounts in country from 2014 to 2015, with 7.5 million registered mobile accounts in the country in December 2015.[20]

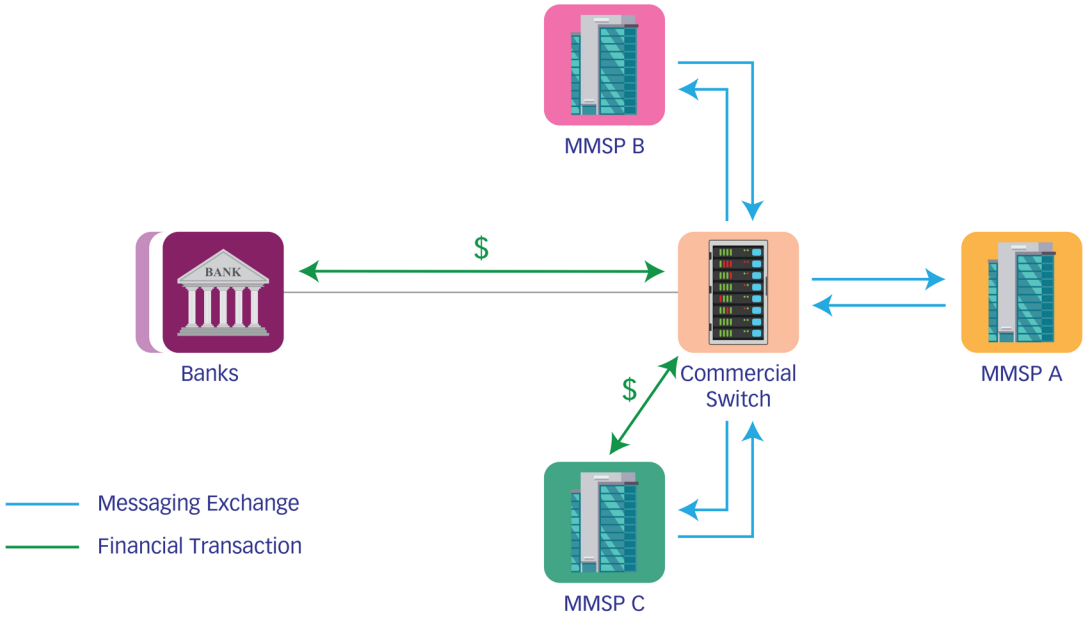

Figure 2: Commercial switch in Pakistan

However, in 2017, mobile money account ownership among Pakistanis remained very poor at 0.6 per cent (compared with 53 per cent in Tanzania, for example). While the number of agents offering mobile wallet registrations in Pakistan grew from 21 per cent in 2014 to 34 per cent in 2017, Pakistanis are still unwilling to sign up, register for or use wallet services, the top reasons being a lack of understanding of what the mobile money services are, how they can be used, and an overall lack of awareness regarding the different features of mobile wallets.[21]

While growth has been relatively slow, Pakistan achieved real gains in financial inclusion in 2017, driven mainly by banks and mobile money, which has increased financial inclusion rates from 9 per cent in 2016 to 14 per cent in 2017.[22]

National mobile payment switch

Jordan decided to facilitate financial inclusion through a national mobile payment switch to enable all citizens to carry out financial transactions using their mobile phones. A key feature of this model is that it enables all unbanked citizens to use the JoMoPay mobile wallet as users require only their national ID number, mobile number and mobile device.[23]

In this model, MMSPs, banks, ATM/POS switches, bill payment providers, real-time gross settlement, automated clearing house and electronic cheque clearing are all connected to the national mobile payment switch as portrayed in Figure 3.

The challenges included:

- the central bank and its solution provider were required to thoroughly revise every point of connection with different parties before production to ensure that both security and performance would be sufficiently robust for a successful mobile payment ecosystem; and
- the central bank and its solution provider were required to invest a lot of effort in the creation of a solid and robust rulebook for the central bank, with dynamic and

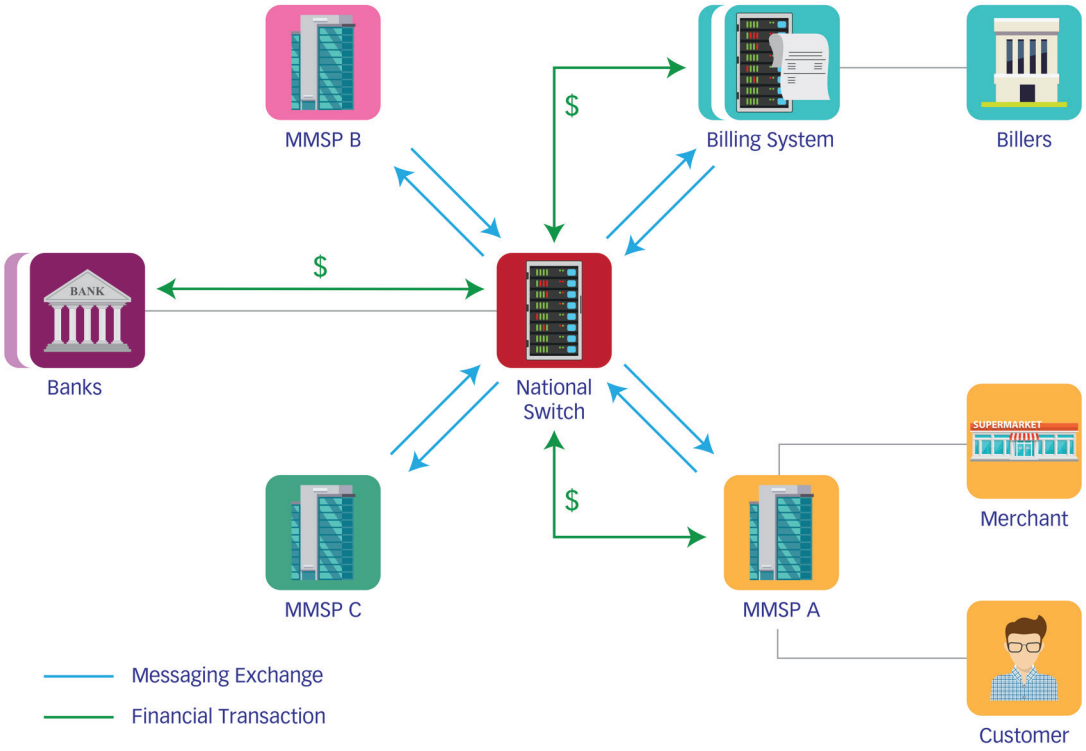

Figure 3: National switch in Jordan

configurable regulations within the switch to facilitate any rule changes without the need for technical engagements or new implementations.

JoMoPay furnishes secure mobile payments around the clock even to remote areas in Jordan, providing a new financial tool to the less fortunate, who make up 40 per cent of the population. It allows users to open e-wallet accounts to conduct money transfers more cheaply and with less complicated processes than with legacy bank accounts. In addition, it supports near-field communication and QR technologies, further facilitating the payments process for users and merchants alike at point-of-sale. [24]

With JoMoPay, the Central Bank of Jordan is playing a leading role in developing financial inclusion in untapped markets, resulting from 'growth of the mobile payment ecosystem permitted by an improved regulatory framework and oversight function of the central bank'.[25]

According to the World Bank's Triennial Index, Jordan's financial inclusion rates advanced to 42 per cent in 2017 compared with 24.6 per cent in 2014; the indicator of financial inclusion for low-income adults increased to 32.9 per cent; and mobile payments accounts increased to 1.1 per cent versus 0.5 per cent in 2014. As for the population in rural areas, financial inclusion went up to 46.1 per cent in 2017, which is significantly higher than the Middle East and North Africa's rate of 36.9 per cent.[26]

Presently, there are 608,344 active wallets connected to JoMoPay, with a total transactions value conducted through JoMoPay of JOD 16,231,312 in 2019 disbursed among

utilities, charities, financial, governmental and educational digital payments.[27]

Implementation model assessment

Table 1 compares the main features of implementation models utilised by Tanzania, Pakistan and Jordan.

Evidently, the national mobile payment switch in Jordan provides more advantages to the central bank than in Tanzania and Pakistan in terms of control over timelines, settlement responsibility, settlement frequency, and dispute, fraud and risk management. In addition, it includes a national record for all registered individuals, business entities and governmental agencies, which provides the central bank with more insights on the mobile payments ecosystem and unprecedented statistics regarding the mobile money market and micropayments.

In turn, end users also benefit from advantageous capabilities including:

- enhanced consumer trust as the central bank is a trusted and secured entity;
- enhanced security as the central bank provides an agreement to each MMSP, where each MMSP has a settlement bank with a collateral amount that is controlled by the central bank;
- simplicity of money transfers as only a mobile number is required; and

As such, unlike bilateral agreements and commercial switches, the national mobile payment switch not only facilitates financial services and encourages unbanked users to transact more, but also provides clear governance, enhanced scalability and efficiencies at scale. It creates an open environment that can grow quickly according to market needs without any restrictions on transactions and is completely under the control of the central bank.

Table 1: Features of implementation models utilised by Tanzania, Pakistan and Jordan

Feature	*Bilateral agreement: Tanzania*	*Commercial switch: Pakistan*	*National switch: Jordan*
Regulatory approval of technical model	Yes	Yes	Yes
Control over service design	MMSPs	Switch provider and MMSPs	Central bank
Use cases allowed	Focused on cross-net P2P	Cross-net P2P and integration with other financial institutions and players such as banks, ATMs, merchants, etc	Cross-net P2P, P2M, M2P, P2B, B2P, P2G, G2P, cash in/out and other services, in addition to integration with other financial institutions and players such as banks, ATMs, MNOs, EBPP, etc
Control over timelines, including launch	MMSPs	Switch provider and MMSPs	Central bank
Settlement responsibility	MMSPs	Switch provider	Central bank
Settlement institution	MMSPs and their trust account banks	Central bank	Central bank
Settlement frequency	Manually, when needed to rebalance	Automated, daily	Automated, can be controlled by central bank
Dispute, fraud and risk management	MMSPs	Switch provider	Central bank
Cost	Same as on-net	At least the switch fee plus on-net	Same as on-net

HOW A NATIONAL MOBILE PAYMENT SWITCH WORKS

The main target behind a national mobile payment switch is to provide a full-fledged system that enables unbanked customers to interact with the financial system via low-cost financial instruments and channels, while also facilitating the required mechanisms for both banked and unbanked customers to transact with each other without any additional costs on banks to maintain and operate accounts for the unbanked population.

On the other hand, a national mobile payment switch provides the central bank with unprecedented insights into transactions, with the ability to set up the necessary rules and policies in terms of transactions count, amount and many other factors that cannot be achieved via separate switches, aggregators or application programming interface connections. It would also maintain a national record that centralises all mobile users' registration information, facilitating the processing of financial requests through the use of a receiver's mobile number without the need for any additional data. This additionally provides massively enhanced capabilities for the central bank to enforce mobile money regulation and policy.

A national mobile payment switch would ensure fully automated mobile payments clearing and settlement processes through the provisioning of required interfaces that present interoperability capabilities; as such, it will be interfaced and communicated with registered participants in the mobile payments ecosystem, in addition to third-party settlement systems including the real-time gross settlement system.

In addition, the switch would support processing and switching financial and non-financial messages on a straight-through processing basis and routing messages between multiple mobile payment service providers, assuming three major roles: switching (dispatching payments to designated banks and payment service providers), clearing (defining and managing clearing sessions' schedules, generating financial clearing positions and posting them to the settlement systems) and regulating (enabling the central bank to enforce policies and regulations through the switch).

The roles of the national mobile payment switch can be secured with a security subsystem that utilises up-to-date security technologies and standards that consider various security measures to ensure the safe exchange and reflection of all mobile payment transactions being conducted.

Ultimately, the advantages of secure and convenient mobile payments distinguished by minimised costs and burdens on banking infrastructures make a national mobile payment switch a desirable option for daily micropayment services and the boosting of developing economies in terms of financial inclusion and financial services.

CONCLUSION

There are several approaches to facilitating financial inclusion using mobile payments, and while each approach comes with its own challenges and outcomes, all market players in the ecosystem are required to collaborate and encourage unbanked users to take part in such digitisation initiatives. Such collaboration includes financial literacy programmes and the modernisation of internal systems to support a greater shift from cash payments into mobile payments for all industries within the economy, which is suitable for the wider population including refugees, women, youth, etc. Payment service providers should also develop attractive value propositions for subscribers and agents, including MSMs.

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