

3.5 Interoperability issues

3.5.1 Account-to-account interoperability

Mobile financial services operate through accounts, whether mobile wallets or bank deposit or bank loan accounts. Account-to-account interoperability is the ability to transfer funds from one account to another.⁸⁸ It enables “transfers between customer accounts at different mobile money schemes and between accounts at mobile money schemes and accounts at banks.”⁸⁹ Its utility is in enabling users “to make electronic payment transactions with any other user in a convenient, affordable, fast, seamless and secure way via a single transaction account.”⁹⁰

Institutions typically allow interoperability between accounts of an individual, and between accounts of different individuals with the same institution. Today, in most countries, there is extensive interoperability among bank accounts. As banks have entered the mobile money market, and particularly as partnerships among banks and MNOs have developed, interoperability between bank accounts and mobile wallets has become common. However, interoperability between mobile wallets of different providers is not the norm. Most mobile money providers still only allow transactions between accounts belonging to their own mobile subscribers, i.e., on-net transfers.

Interoperability between mobile wallets is important in markets where MNO mobile money services are leading the development of the market because of network effects and the market power of the MNOs. The ITU-T Focus Group on Digital Financial Services is thus focusing on interoperability, including developing a toolkit.⁹¹

3.5.2 Network effects and interoperability

Network effects were introduced in section 3.1. In telecommunications, regulators aim to ensure that networks interoperate seamlessly. This enables the networks to combine their network effects so that all users can communicate with all others regardless of the network to which they are subscribed. Without such interoperability, a larger network will have such a competitive advantage that it may be impossible for smaller networks to grow market share. This made interconnection fundamental to the introduction of competition in telecommunication markets.

Even where networks are interconnected, those with a smaller customer base may be prevented from competing by certain pricing strategies of those with a larger customer base. Large networks sometimes exploit network effects to preserve and deepen their market power by using low on-net prices and higher off-net prices. This makes it significantly more expensive for their retail customers to call customers on other networks than to call on the same network.⁹² This makes the larger network more attractive for customers, and where the larger network is dominant, a large price differential between off-net and on-net calls can harm competition. Such practices have sometimes been deemed to be anti-competitive.

⁸⁸ This is to be distinguished from sharing of agents, whereby an agent may perform cash-in and cash-out transactions for multiple mobile money providers and network neutrality whereby customers can access the same mobile financial services through different MNOs. Kumar, K and Tarazi, M. (January 2012), *Interoperability in Branchless Banking and Mobile Money*, CGAP: www.cgap.org/blog/interoperability-branchless-banking-and-mobile-money-0

⁸⁹ Clark, D and Gunnar C. (February 2014), *A2A Interoperability, Making Mobile Money Schemes Interoperate*, GSMA at 4: www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/03/A2A-interoperability_Online.pdf

⁹⁰ University of Washington: *Review of Interoperability and Regulations of Mobile Money*. EPAR request No. 313. https://evans.uw.edu/sites/default/files/EPAR_UW_Request_313_Mobile%20Money%20Regulations%20and%20Interoperability_10.7.15_0.pdf (citing ITU-T Focus Group on Digital Financial Services (2015))

⁹¹ www.itu.int/net/pressoffice/press_releases/2015/60.aspx#.VxiySv197q6

⁹² See, for example, Laffont, J., Rey, P., and Tirole, J. (1998). *Network competition II: Price discrimination*. Rand Journal of Economics. Vol. 29, no. 1.

As a network service, mobile money encounters similar issues. If customers of the largest mobile money provider cannot send and receive money to and from mobile money providers that have a smaller subscriber base, the latter are less useful and attractive to customers.

A lack of account-to-account interoperability in mobile money imposes inconvenience, cost and inflexibility on users:

- **Inconvenience:** The recipient cannot receive the money in his or her mobile wallet, and can only obtain the funds by physical withdrawal from the sending mobile money provider's agent. The recipient must locate and visit the agent, and depends on the agent being available and having sufficient cash.
- **Cost:** On top of this inconvenience, additional charges may apply to the sending user for such transfers and to the recipient for the cash withdrawal – amounts that would not apply in a simple account-to-account transfer.
- **Inflexibility:** This service is typically not available for transfer values below a certain value, making it less convenient than transferring between mobile wallets.

All of these factors make it far more desirable for senders and recipients to hold accounts with the same provider, typically the leading one. This may be one reason why many subscribers in countries with significant mobile money businesses will hold more than one subscription.

Where interoperability is not in place between mobile money providers (or where charges for cross-network transactions are high), it can be very difficult for alternative providers to build market share after the first provider has attracted a critical mass of customers. Mobile money markets therefore face a 'winner takes all' outcome resulting from 'competition for the market'.⁹³

While this is resolved in telecommunications through interconnection regulation, the problem remains in mobile money. One might say that in telecommunications, network externalities are 'socialised' (i.e., shared across networks through interconnection, and passed through to users), while in mobile money and other platform services the externalities are 'privatised' (i.e., enjoyed by the successful platform operator).

Furthermore, where the mobile money provider is a MNO, it may be able to exploit network effects in both telecommunications and mobile money. The combination of mobile money network effects and telecommunication network effects poses difficult problems.⁹⁴ The customer's mobile money account is in the vast majority of cases associated with her or her telephone number. Thus the firm with larger market share in telecommunications and/or mobile money may be able to leverage its market power from one market into the other. This can create a mutually reinforcing dynamic, whereby the telecommunication and mobile money services of the MNO become 'must have' services. The customer that does not have them is excluded from the ability to make cheaper calls and send money directly to most other users.

Account-to-account interoperability can reduce the network effects that contribute to market power in the markets for mobile financial services. It allows a new or smaller mobile money provider to offer an attractive service to customers because their customers can send money from any mobile wallet to any other mobile wallet – including those on the incumbent provider's network – without incurring charges at a level that discourages such a transfer. Interoperability can thus share the network effects

⁹³ Bourreau, M. and Valletti, T (2015) *Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What Doesn't?* CGD Policy Paper 065, Washington DC: Center for Global Development at 14: www.cgdev.org/sites/default/files/CGD-Policy-Paper-65-Bourreau-Valletti-Mobile-Banking.pdf

⁹⁴ Evans, D. and A. Pirchio, 2015 (see footnote 1); Sitbon, E. (2015) *Addressing competition bottlenecks in digital financial ecosystems*, Journal of Payments Strategy & Systems, 9(3); Jack, W. and T. Suri (2011) *The Economics of M-Pesa* MIT working paper; Jack, W. and T. Suri. (2014) *Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution*. American Economic Review, 104(1): 183-223; Robb, G. and T. Vilakazi (2015) *Barriers to entry in mobile money: a comparative study of Kenya, Zimbabwe and South Africa*, project report for CCRED/National Treasury project on Barriers to Entry; Hanouch & Chen (2015), cited above.

across networks, and reduce the incumbent's market power. Most importantly for the consumer, interoperability enables mobile money providers to compete on the merits of the service, attracting customers and usage on the basis of the quality, price, agent availability and innovation of its services.

Interoperability may thus reduce the harmful effects of anticompetitive USSD pricing (see section 3.4) and agent exclusivity (see section 3.3), because money can more easily circulate in the system.

3.5.3 Forms of interoperability

There are numerous possible ways in which interoperability can work⁹⁵, with variations depending on the degree to which they:

- have **breadth of scope**, e.g., focusing on interoperability among mobile wallets only, or instead between mobile wallets and bank accounts as well;
- are based on **bilateral or multilateral** arrangements, i.e., a series of one-to-one arrangements or instead a common processor that switches payments for each account provider shared by all participants; and
- involve **third parties** such as regulators or independent switching providers to facilitate them or instead remain proprietary to their participants.

Interoperability can be set up by central banks, by banks that own their own switches, by card payment companies and between mobile money providers. For example, Tanzania set up interoperability on a bilateral basis but relying on common standards to which all providers could sign-up, while Pakistan followed a switch model.⁹⁶

The most desirable option in a given circumstance will depend very much on the starting point, for example, whether there are already partnerships between MNOs and banks, and existing and planned clearing and settlement systems. Different costs, negotiation complexities and risks are involved. Whether the process is negotiated or imposed by regulators will influence the appetite for risk and complexity.

Negotiating the details of interoperability is sufficiently demanding that it requires a major commitment of time of the participating mobile money providers and experts, and possibly third party institutions to support, encourage and even fund the effort. Building systems for the first time, such as Tanzania's operational standards, also takes considerable time and support to reach consensus. Thus even where left to voluntary negotiation, the 'transaction costs' of arranging interoperability for the first time may require significant support from independent organisations and central banks.

Some features of any interoperability mechanism are particularly important to facilitate competition among service providers and make a meaningful difference for low income users. For instance, they need to be made in real time, unlike many banking transfer systems. It is also important to ensure that the charges for cross-network transfers be kept as low as possible, and if possible at the same level as for charges for transfers made to users of the same network.

This is more complicated than it sounds. In 'sender pays' telecommunication interconnection, the network operator is paid by the sender of the call. In contrast, mobile money transfers involve both sender and receiver paying, as mobile money providers typically generate revenue both on transfers and on cash-outs. (They rarely charge for cash-in, as the commercial objective is to attract money into the system; indeed, they typically pay an agent commission for facilitating cash-in.) So, if money leaves one mobile money provider system for another, the latter inherits the commercial opportunity of the cash-out business.

⁹⁵ Clark, D and Gunnar C. (February 2014), *A2A Interoperability, Making Mobile Money Schemes Interoperate*, GSMA: www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/03/A2A-interoperability_Online.pdf

⁹⁶ GSMA, December 2015, *Mobile Money: Choosing a technical model for A2A interoperability: Lessons from Tanzania and Pakistan*: www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/01/2015_GSMA_Choosing-a-technical-model-for-A2A-interoperability_Lessons-from-Tanzania-and-Pakistan.pdf

This could be resolved through charging the customer a fee for the transfer akin to a cash-out fee, but this would effectively undermine the purpose of interoperability, which is to enable seamless transfers. As a result, commercial models include agreeing a compensation mechanism payable by the receiving to the transferring mobile money provider, treating the transferring provider like an agent receiving a commission.

Thus embarking on introducing interoperability, whether through voluntary negotiation or mandated by regulation, is a commitment to a process that may take time.

3.5.4 Voluntarily negotiated interoperability

Voluntarily negotiated account-to-account interoperability between mobile money providers with large market shares and third-party mobile wallets is unlikely to be achieved soon in many countries. Nevertheless, in some countries, mobile money providers have concluded that it is in their commercial self-interest to negotiate account-to-account interoperability. In Indonesia, Pakistan and Tanzania, the MNOs have voluntarily established account-to-account interoperability, allowing users to make transfers to subscribers of another MNO.⁹⁷ But these are the exception.

Box 7. Account-to-account interoperability in Tanzania¹

In Tanzania, four MNOs have negotiated and agreed voluntary interoperability of mobile money accounts.² Airtel Money and Tigo Pesa implemented interoperability in August 2014, and EzyPesa and Vodacom M-Pesa joined in early 2016.

Instead of building a common switch as a central exchange system for all participants, the mobile money providers concentrated on common operating standards for bilateral exchange, including topics such as membership and participation criteria, clearing and settlement principles, dispute resolution, principles for interchange compensation (for cross-network transfers) and interparty risk.

The IFC-led process envisages also enabling cash-in and cash-out from any MNO agent for any service. It also envisages enabling employers *making* bulk payments of salaries into multiple mobile wallet accounts, and utilities, schools and merchants *receiving* payments from multiple mobile wallet accounts, to do so using a single account regardless of the subscriber's mobile money provider.

¹ Musa, O., Niehaus, C., Warioba, M., CGAP, 4 March 2015, **How Tanzania Established Mobile Money Interoperability**: www.cgap.org/blog/how-tanzania-established-mobile-money-interoperability; Hanford, R., Mobile World Live, February 2016, **Tanzania in mobile money 'first' for Africa**: www.mobileworldlive.com/money/news-money/tanzania-in-mobile-money-first-for-africa/?utm_campaign=MWL-M-20160218&utm_medium=email&utm_source=Eloqua

² The negotiations benefited from considerable expert support facilitated by IFC and funded by the Bill & Melinda Gates Foundation and Financial Sector Deepening Tanzania (FSDT).

3.5.5 Mandating interoperability

Interoperability can also be imposed by regulation, but the reality is that to make it happen, extensive effort to facilitate and encourage negotiations among participants is necessary to address the sorts of complexities described above, and it needs to be timed thoughtfully. For example, the Central Bank

⁹⁷ For example, in Tanzania, as of February 2016, all four MNOs providing mobile wallets have achieved voluntary, bilateral interoperability. Subscribers of each MNO can transfer mobile money to accounts of subscribers held through the other MNOs at no additional charge.

of Nigeria declared interoperability mandatory in 2012.⁹⁸ It may be more important initially to ensure the mobile money sector develops before imposing obligations of interoperability.

Indeed, there are arguments that introducing interoperability too early may be counterproductive. In the early stages of developing a market for mobile financial services, the opportunity to build network effects should lead to fierce competition. Competitors will seek to make an early lead.⁹⁹ Some consider that imposing interoperability while there is extensive experimentation with new business models before the market matures may reduce the incentives for innovation and investment.¹⁰⁰

However, some markets have developed network effects that may have become so strong that even the most innovative, best priced and highest quality new entrant mobile money service cannot make any headway in the market in face of the dominant service. Competition ‘on the merits’ is simply not possible because the mutually-reinforcing network effects of telecommunication and mobile money services make it extremely difficult to break into the market.

There is thus a risk that without interoperability, or introducing it too late, the market leader may become entirely invulnerable to competition.¹⁰¹ Where one service provider is dominant, these network effects can crowd out competition and entrench the current market structure.

The arguments against mandating interoperability weaken as the market becomes more mature, as agent networks are built out, as the lead firm earns the returns to recoup its investment, and particularly as its dominance becomes embedded. In such cases, interoperability may be essential to alleviate harmful network effects.

However, large MNOs with extensive infrastructure and upfront investment in mobile money networks have little incentive to voluntarily interoperate with smaller MNOs and other mobile financial services providers.¹⁰² In addition, interoperability may impose additional costs on service providers to allow for compatibility between diverse technologies and systems.¹⁰³ Most of all, nobody wants to give up protections against erosion of market share to competitors.

Given the challenges of complexity and unaligned commercial interests, the regulator’s ability to resolve failures to agree may be essential to success. Beyond technical interoperability, it will also be important to ensure that charges for making cross-network transfers do not discourage cross-network transfers.

Imposing interoperability may become easier as more countries adopt models that can be followed, but the technical and commercial issues do require significant facilitation and expertise. The trade-offs among the different interoperability models need to be considered in context. In countries where market power has become particularly entrenched, ensuring interoperability may be necessary to

⁹⁸ NCB order: [www.cenbank.org/out/2012/ccd/timeline for interoperability & interconnectivity.pdf](http://www.cenbank.org/out/2012/ccd/timeline%20for%20interoperability%20&%20interconnectivity.pdf). The Regulatory Framework for Mobile Payments in Nigeria provides in section 4: “All schemes shall be able to interoperate: 4.1.4.1 with other scheme or solution providers; 4.1.4.2 with other payment channels like cards, ATM, POS, etc.; 4.1.4.3 with the National Central Switch. 4.1.4.4 The National Central Switch shall provide scheme codes for the various operators of mobile payments services for the purpose of seamless operations and settlements, with the ultimate aim of giving immediate value to all user transactions.” <https://www.cbn.gov.ng/OUT/CIRCULARS/BOD/2009/REGULATORY%20FRAMEWORK%20FOR%20MOBILE%20PAYMENTS%20SERVICES%20IN%20NIGERIA.PDF>

⁹⁹ See Bourreau, M. and Valletti, T (2015).

¹⁰⁰ Early views on whether interoperability should be required by regulation have thus tended to shy away from the idea. In 2011, for instance, the view of authors of a Bank for International Settlements working paper was ‘the tentative answer should be no – at least for the time being.’ Dittus, P. and Klein, M., 2011, BIS Working Papers, No 347, *On harnessing the potential of financial inclusion*.

¹⁰¹ Bourreau, M. and Valletti, T (2015).

¹⁰² University of Washington: Review of Interoperability and Regulations of Mobile Money. EPAR request No. 313. https://evans.uw.edu/sites/default/files/EPAR_UW_Request_313_Mobile%20Money%20Regulations%20and%20Interoperability_10.7.15_0.pdf

¹⁰³ Clark, D and Gunnar C. (February 2014), *A2A Interoperability, Making Mobile Money Schemes Interoperate*, GSMA: www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/03/A2A-interoperability_Online.pdf