

Roundtable
Background Paper



INTEROPERABILITY OF DIGITAL FINANCE IN BANGLADESH: Challenges and Taking-Off Options

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Interoperability of Digital Finance in Bangladesh: Challenges and Taking-Off Options

1. Introduction

In Bangladesh, in common with many other countries of the developing world, dramatic growth in digital financial services (DFS) have emerged as the most promising development in financial inclusion.¹ Mobile money solutions have grown steadily in Bangladesh and mobile financial inclusion has shown the promise of emerging as the most viable method of accessing financial services to rapidly expand the customer base.² Like other innovations, DFS have the potential to efficiently reach millions of people and present an opportunity to develop economically viable business models targeting low-income populations. The total number of mobile phone subscriptions has reached 129.6 million in February 2017 implying that most households have access to mobile phone in Bangladesh.



There are three key components of DFS: (i) a digital transactional platform; (ii) retail agents; and (iii) use by customers and agents of a device – most commonly a mobile phone – to transact via the platform. In practice, DFS build upon the transactional platform that allows payment instruments (e.g. cards, mobile phones and others) to be connected to storage accounts and allow users to make payments using any retail agent. The mobile phone network in remote and inaccessible locations allows mobile phones to be used by the financial service providers as an effective distribution channel to lower operational costs, increase financial services coverage, and extend financial services to unserved populations.

¹DFS include MFS, branchless banking, electronic money, digital payment solutions and other new technologies available to promote DFS as a major driver of greater financial inclusion.

²It must, however, be recognised that the implementation of DFS faces a number of hurdles related to infrastructure and ecosystem, product design, trust in financial system, and financial knowledge and capacities to make informed decisions.

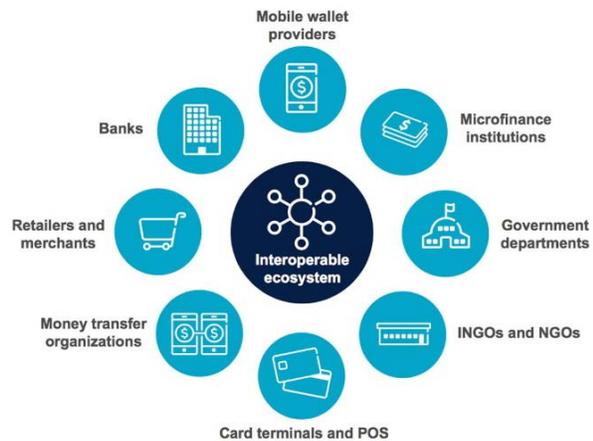


Bangladesh has one of the most successful mobile financial services (MFS) market globally, having 54.4 million registered clients, along with the possibility of developing a growing ecosystem of products such as savings, credit and microinsurance, riding on the mobile money rails.³ The market is driven by banks since Bangladesh has adopted a bank-led model. There are also possibilities of mobile network operator (MNO) partnerships with financial service providers to offer more products and services via MFS including savings, credit and microinsurance.

However, mobile money deployments operate as a ‘walled garden’ at present, meaning that transactions can only be performed between users of the same system, i.e. a user can only transfer electronic money to another user of the same mobile money deployment. A lack of interoperability acts as a major barrier to the development of the mobile money market. The strongest reason for enabling interoperability is the dramatic increase in mobile money transactions that will result. Transaction volume in any network is proportional to and driven by the number of interconnections possible between subscribers. Interoperability would give mobile money service providers the opportunity to increase the volume of digital transactions, improve the sustainability of mobile money services and contribute to an open digital financial ecosystem which promotes financial inclusion.

2. Interoperability

Overall, interoperability gives mobile money service providers the opportunity to increase the volume of digital transactions, improve sustainability of mobile money services, and contribute to an open digital ecosystem that promotes financial inclusion.



³In July 2017, the number of total transactions is recorded at 152.3 million involving BDT 233.7 billion. The total number of agents is more than 772 thousand. The transactions covered inward remittances; cash-in/cash-out transactions; P2P, B2P and P2B transactions; merchant and government payments; and others. Source: Bangladesh Bank.

For interoperability, there are three broad groups of players:



- **Financial regulators and central bank:** Regulators and the central bank need to create proportionate regulation and supervision to enable non-banks to compete with traditional banking players when providing financial services to the excluded groups.
- **Banking and traditional financial service providers:** MFS bring risks and opportunities to traditional financial service providers. There is clearly enormous potential from an untapped market made available by MFS channels, which allow banks to overcome infrastructural, geographical or information constraints. In addition, the wide acceptance for MNO payments and mobile money systems can increase consumer confidence in markets where trust in the banking system is low.
- **MNOs and non-banking players:** These include MNOs, affiliates and subsidiaries that may issue e-money and set up customer accounts. Local regulation may require that they establish a non-bank subsidiary. In many locations, non-traditional financial service providers are vital players and can often be the only providers of products and services to the financially excluded and under-banked.

With respect to account-to-account (A2A) interoperability, GSMA highlights four key requirements:

- Direct transaction between wallet accounts at different mobile money operators (MMOs);
- Direct transaction between mobile money accounts and bank accounts;
- Settlement of funds for transactions across schemes and between schemes and banks; and
- Adoption of common risk management practices that preserve the integrity of individual mobile money schemes.⁴

The GSMA also identifies different models to support mobile money interoperability. In countries where interoperability only interconnects mobile money service providers not banks, there can be: (i) bilateral agreements between mobile money schemes and banks; (ii) neutral processor between mobile money schemes and with banks; (iii) commercial processor between mobile money schemes and with banks; (iv) using a bank and a national automated clearing house (ACH) to interface with other banks; (v) direct connectivity to national ACH for all mobile money schemes and banks; and (vi) a mix of commercial processor for bank interface, bilateral between mobile money schemes.

⁴The GSM Association (GSMA) is a trade body that represents the interests of mobile operators worldwide. Approximately 800 mobile operators are full GSMA members and a further 300 companies in the broader mobile ecosystem are associate members. The GSMA represents its members via industry programmes, working groups and industry advocacy initiatives. The GSMA is headquartered in London.

In countries where there is a clear dominant player, the dominant service provider may be reluctant to support interoperability. As the leading mobile money scheme, it may not have incentives to open its solutions to others and make services accessible to customers not registered with it. This introduces the over-the-counter (OTC) money transfers which enable customers to send and receive money by relying on agent networks.

2.1 Mobile Finance and Interoperability

Mobile financial services (MFS) are rapidly emerging as the main drivers of financial inclusion in Bangladesh. For ensuring quality and diversity of MFS products, several requirements are necessary: (i) a competitive ecosystem facilitating easy entry into the market; (ii) development of innovative MFS products; and (iii) high quality, value-for-money services.

A competitive ecosystem
facilitating easy entry into the market



Development of innovative
MFS products



High quality, value-for-money
services



The priority competition issues cover a number of areas, such as channel access, transparency, interoperability, regulatory coordination, and data sharing. These are important elements for developing diverse and open MFS ecosystems. Further, as the ecosystem becomes more diverse through bringing in a wider range of providers and product types, the regulators will also have to ensure a market-wide jurisdiction to facilitate an equitable application of rules and requirements on fair play across banks, MNOs and other providers.

Global experience indicates that, for ensuring fair 'rules-of-the-game', several policy developments are necessary to ensure that the maturing MFS market can establish an ecosystem that better supports free and fair competition in the market. These include:

- National payments act to clarify questions of regulatory jurisdiction across regulators and set common standards for different types of institutions involved in offering MFS (e.g. banks and MNOs).
- Feasibility of offering mobile virtual network operator (MVNO) licenses that will allow new entrants to challenge MNOs by establishing own telecommunications networks on which they can offer MFS.⁵

⁵A mobile virtual network operator (MVNO) is a wireless communications services provider that does not own the wireless network infrastructure over which it provides services to its customers. An MVNO enters into a business agreement with a mobile network operator to obtain bulk access to network services at wholesale rates, and then sets retail prices independently. An MVNO may use its own customer service,

- Interoperability agreements to facilitate across-provider mobile money transfers.
- Possibility of allowing individual agents to serve more than one MFS provider.
- Greater transparency in pricing of mobile products.

2.2 Payments Interoperability

Payments interoperability enables different payment infrastructures and financial service providers to effect payments between customers. Through the mechanism, interoperability expands the reach of transaction accounts and retail payment instruments, making them more useful for end-users. Although payments are an essential financial service in their own right; when payments are made from a transaction account, they also serve as an important gateway for the delivery of additional digital financial services, such as savings, credit, microinsurance and even investment products. Digital transactional platforms that enable transfers, value storage and additional services — increasingly offered by banks, non-banks and nonfinancial entities such as retail networks and MNOs in complex partnerships — can target the financially excluded and the underserved. These efforts to deliver other financial services of a digitally accessed transaction account means that the expanded reach offered by interoperability can have greater significance for those who are financially excluded or underserved.

Lessons from the global experience suggest four key factors in facilitating payments system interoperability:

- First, economic incentives: participants agree to voluntary interoperability for economic gains; often determined by larger business objectives and not just related to costs and revenues of interoperable payments transactions.
- Second, effective regulatory framework: rapid voluntary interoperability can be fostered by encouragement from regulatory bodies.
- Third, government commitment on using digital payments system: government initiatives to use the new payments system can foster interoperability.
- Fourth, early dominance: Early dominance by one provider needs careful consideration as it can slow down interoperability.

Further, the technical structure of interoperability needs careful consideration. Worldwide, various options have emerged such as scheme

billing support systems, marketing, and sales personnel, or it could employ the services of a mobile virtual network enabler (MVNE).

interoperability, network interoperability, and parallel system interoperability; the regulators should consider all options.

The White Paper of the G20's Global Partnership for Financial Inclusion (GPII) in 2017 notes that, in the absence of interoperability, 'the early rapid growth of one system ... could have a 'tipping effect' such that no other system can compete,' with negative effects on efficiency and innovation and consequently on outreach, adoption and usage. A useful framework to consider interoperability and related issues is to adopt a three-tiered approach⁶ :

- **Platform-level interconnection:** If mobile money platforms are interconnected, a customer having an account with one service provider can send or receive money to or from the account of a customer with a different service provider. At present, the market has no interconnected mobile money platforms. When payment platforms are interconnected, a customer with an account/payment instrument with one service provider can send/receive money to/from the account/payment instrument of a customer with a different service provider.
- **Agent-level exclusivity:** Agent exclusivity revolves around the ability of a customer of one provider to use the agent of another provider for cash-in/cash-out services related to the customer's account. Agent interoperability is possible even when there is agent exclusivity, as long as platforms are interconnected (such as with interoperable ATM networks).⁷ This relates to ability of a customer of one provider to use the agent of another provider for availing services related to the customer's account.
- **Customer-level interoperability:** This relates to two interoperability scenarios of mobile handset (or accessed via cards or by other means): a customer's ability to (i) access his/her account using any phone with a SIM card on the same network; or (ii) access multiple accounts on one SIM.

The above framework helps the regulators (and the policy makers) to identify the big questions on interoperability and mobile money.

For effective agent level interoperability to emerge, there is a need for the regulatory regime to examine agent exclusivity and other issues of business correspondent (BC)/agent banking route to ensure adequate integration and interoperability of BC/agent banking channels.⁸ Adequate platform level interoperability, on the other hand, requires

⁶Also see, Kumar, K. et al. 2012, *Interoperability in Branchless Banking and Mobile Money*, CGAP.

⁷This is comparable to the evolution of ATM networks, which originally started as private networks and later on emerged as 'networks of networks'.

⁸For details, see Tarazi, M et al 2012, *Branchless Banking Interoperability and Agent Exclusivity*, CGAP

products built not as silos which will offer only very limited interoperability across payment instruments like card, mobile number, and NID. Further, mechanisms should be in place to include ‘virtual payment addresses’ that can be used for various electronic transactions in an interoperable way across all banks and regulated players. There should also exist unified layer that makes mobile applications (banking, wallet, etc.) to seamlessly integrate with these systems using a standard set of Application Programming Interface (API).⁹

2.3 Interoperability in Bangladesh

Interoperability has been attracting significant attention among the policy makers in Bangladesh. While strong evidence can be gathered to suggest that interoperability results in long term benefits for all stakeholders, success of interoperability depends on a number of elements, such as the level of development of the sector, state of the market, politico-economic landscape, regulatory maturity, and technological innovation.¹⁰ It also requires strong coordination between different regulatory agencies, such as the financial sector regulators: Bangladesh Bank (BB), Ministry of Finance, Microcredit Regulatory Agency (MRA), Insurance Development and Regulatory Authority (IDRA); telecom regulators: Bangladesh Telecommunications Regulatory Commission (BTRC) and Ministry of Posts, Telecommunications and Information Technology; as well as consumer protection and competition regulation agencies.

In recent years, Bangladesh Bank has issued various directives on mobile banking. For interoperability, one initial step is to launch a national unified USSD platform (NUUP) that can bring together all banks and telecom service providers. Overall, for deriving potential benefits of interoperability, Bangladesh needs to address several issues while considering the interplay between interoperability and financial inclusion.

First, achieving full interoperability across different payment service providers and digital transactional platforms means bringing non-banks, such as MNOs, into the network. This implies that the foundation for interoperability between banks and authorised nonbanks has to be laid by the regulators through a partnership involving the government, financial institutions and MNOs.

Second, ideally the regulatory approach should be to ‘follow the market’. However, as Bangladesh is passing through the early stages of development of

⁹For example, technology-enabled payment banks can usher interoperability in the financial services market in a significant way. However, regulatory relaxations (if any) for payment banks needs careful consideration as these may raise competition concerns vis-à-vis traditional banks and others.

¹⁰See, Rhyne, E. 2014, *The Political Economy of Financial Inclusion Policy*, Centre for Financial Inclusion Blog, 25 September.

digital transactional platforms, regulators should focus attention on ensuring that interoperability is technologically feasible. In this context, regulators should also be prepared to take action where there is evidence that a provider is exploiting its dominant position. The regulators may also mandate interoperability or specify a timeframe for interoperability.

Third, the regulators should develop a thorough understanding of the potential new risks posed by interoperability of banks and nonbanks (including legal, operational, and financial risks) and how to address such risks while maintaining a level playing field for all players.

Fourth, in the context of lowering security standards for lower-risk scenarios (e.g. small-value transactions or service providers serving specific customer groups), lower security standards should not come at the expense of the integrity of and interoperability with providers and markets that are required to comply with higher security standards.

Fifth, the lessons learned from the success of interoperability in different countries and the important insights on how and when to intervene to ensure interoperability are important to consider for Bangladesh. Some important lessons are:

- Interoperability progresses over time; and it takes years to build the volume of transactions of interoperable use cases that can contribute to robust policy conclusions.
- Three functional elements will have to come together for effective interoperability: (i) arrangement governance; (ii) business model, and (iii) technical integration. In practice, much focus is placed on technical interconnections at the expense of required focus on other two elements that are critical to creating volume and economic value.
- Interoperability may either be actively considered as digital financial services grow and mature or prior to digital financial services making a sizeable impact. There is no conclusive evidence to suggest the best time to consider and implement interoperability.



3. Landscaping of Interoperability

DFS interoperability is much more than technical tools that allow modern payment systems to work together. The existence of a well-designed technology connecting payment systems alone will not ensure that interoperability will reach its full potential unless the providers are incentivised to pass payments to each other. For the purpose, interoperability must balance the conflicting interests of different providers; and probably strike a middle ground between competition and coordination. Achieving the balance is one element which makes interoperability a complex issue.

In the MFS market, banks (and other financial institutions) are both customers of, and competitors to, MNOs. This creates a fundamental conflict as MNOs control access to mobile network and has incentives to restrict access to competitors. Restrictions in channel access can have a number of adverse consequences such as: (i) potential foreclosure of the market to providers constituting a barrier to entry; (ii) consequent limited product range in the market; (iii) limited scope for innovation with potentially high-value and high-demand products and services; and (iv) high price of products for consumers resulting from increased cost of channel access.

3.1 Interoperability Solutions

For effective interoperability, three functional elements are critical for creating volume and economic value:

- **Technical integration:** Technical infrastructure must be in place to connect participants and transfer payments and related data.
- **Business agreements/incentives:** Balanced models should be made operational that can serve economic interests of interoperability participants equitably.
- **Governance of interoperability:** Agreed decision making systems are available to manage shared processes, rules, operations and risks.

In a recent study on interoperability in 20 country markets, CGAP mentions that the focus in almost all countries is on technical connections and not on the remaining two elements (business agreements and governance) that are critical to creating volume and value. According to the CGAP study, some form of interoperability exists in each of the 20 countries; however, no country is found where all three elements are working optimally. In addition, the study notes that there is often not enough focus on governance and business agreements; and that too heavy focus on technical aspects may actually have hindered the scalability of interoperable transactions in many countries.

The CGAP 20-country scan to assess the state of interoperability identifies three broad types of interoperability at the technical level: (i) bilateral (two providers connect with each other directly e.g. through API); (ii) multilateral (e.g. any number of providers connects to a central piece of infrastructure (switch)); and (iii) third-party solution (e.g. a non-provider facilitates connection by holding accounts at two or more providers).

On the other hand, three arrangements are observed to have helped interoperability: (a) bilateral under which two providers negotiate directly to set rules and pricing; (b) three or more providers agree on shared common rules (scheme); and (c) third-party solution under which rules and pricing are set by third party which facilitates transactions between two or more parties and under which ability to negotiate depends on volume of transactions.

Beyond these elements, two broad patterns in the approaches to interoperability can be noticed from the inter-country analysis. Some countries have followed a market-wide approach aimed at building a centralised infrastructure across all use cases and providers. On the other hand, there are countries which have followed a more focused approach, first tackling a small number of use cases according to the needs of the providers involved.¹¹

Models can be difficult to get right. However, interoperable systems are important to achieving broader financial inclusion. Network effects from larger and more efficient systems promise expanded use of DFS by low-income populations. Expanded consumer use cases mean this access has the potential to enrich lives beyond the payment uses most common today.

¹¹Out of 20 countries, six countries are pursuing a 'market-wide' approach, whereby some type of central plan covers a majority of providers for a majority of use cases. Four countries are pursuing a 'focused' approach, whereby a subset of nonbank providers have joined together to make their own arrangement, which is largely separate from mainstream banking. The remaining 10 markets do not exhibit a dominant pattern; for these ten, a mix of these approaches may be happening simultaneously. See, Arabehty, P G, G Chen, W Cook, C McKay 2016, *Digital Finance Interoperability and Financial Inclusion: A 20-Country Scan*, CGAP Working Paper, CGAP Washington DC <http://www.cgap.org/publications/digital-finance-interoperability-financial-inclusion>

3.2 Interoperability in Bangladesh: Issues and Challenges

In Bangladesh, the front-end technology used in deployment of MFS is the unstructured supplementary service data (USSD) technology.¹² As channel access is one of the critical issues in MFS, two important elements are: first, price of channel access; and second, licensing framework for provision of fair access to USSD channel. Similarly, price transparency (e.g. P2P payment costs, C2B payments, etc.) is important in ensuring competition in the MFS market.

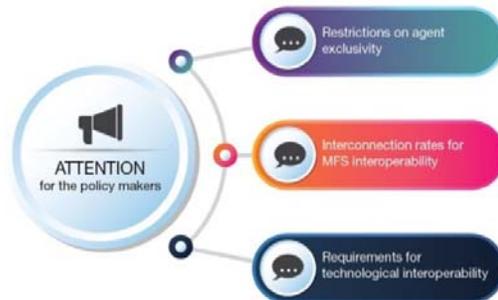
One possible factor for lack of interoperability in Bangladesh's MFS market is the concentrated market share across MFS providers. It creates both (i) less demand for interoperability from consumers since most of them use the same provider; and (ii) low willingness on the part of the dominant MNO to extend interoperability to protect its share of the pie rather than expand its size.¹³ While forcing interoperability in the early stages of a mobile money market may hinder market growth by discouraging first-movers to invest in building out their product lines, marketing, agent networks, platform and other up-front costs, the regulators should create a conducive environment for interoperability in the long run.¹⁴

¹² USSD, a communications service controlled by the MNOs, is considered a critical piece of infrastructure to provide MFS on nearly any phone at low cost and without requiring access to the user's SIM card. USSD enables customers to send instructions to the MFS provider along with their personal identification number (PIN) for authentication, while enabling MFS provider to send responses to clients and confirm transactions. Relative to other technologies, USSD is a cost-effective technology that involves simple operations that can be accessed from any mobile phone and is widely used in the provision of MFS. Unlike SMS which is 'store and forward', USSD is session based and can provide an interactive dialogue between the user and a certain set of applications. USSD requires no pre-configuration on the consumer's SIM or handset and is already built onto most GSM networks. See, Hanouch, M and G. Chen 2015, *Promoting Competition in Mobile Payments: The Role of USSD*, Brief, CGAP, Washington DC, <http://www.cgap.org/sites/default/files/Brief-The-Role-of-USSD-Feb-2015.pdf>

¹³For example, due to the concentrated market share across MFS providers, there has taken place no noticeable progress in interoperability in Kenya while less concentrated mobile money market share in Tanzania across MFS providers makes interoperability more appealing for both consumers and providers alike. See, Mazer, R and P Rowan 2016, *Competition in Mobile Financial Services: Lessons from Kenya and Tanzania*, CGAP, Washington DC.

¹⁴For example, the Centre for Global Development maintains that '...regulation should focus on ensuring that firms do not take actions that increase the barriers to achieving interoperability.' See, Bourreau, M and T Valletti 2015, *Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What Doesn't?* CGD Policy Paper 065, Centre for Global Development, Washington DC. <http://www.cgdev.org/sites/default/files/CGD-Policy-Paper-65-Burreau-Vallerri-Mobile-Banking.pdf>

Several areas need attention of the policy makers in Bangladesh. These are: (i) restrictions on agent exclusivity; (ii) interconnection rates for MFS interoperability; and (iii) requirements for technological interoperability.



The removal of agent exclusivity can support interoperability by reducing network effects (compulsion of using the same large network used by peers as the network is closed off to incoming or outbound to other similar networks) and thereby entry barriers to market. Agent non-exclusivity is an important first step in the process of interoperability as it establishes a business case for interoperability and makes agents familiar with a range of providers' services. However, an efficient transformation along these lines requires proper regulatory monitoring and enforcement of provisions for removal of agent exclusivity.

For interoperability, the issues of interconnection rates and technological interconnectivity are relevant for the regulators as these rates can encourage or discourage dominant providers to accept interoperability. A high interconnection rate may discourage consumers from transacting across networks. This may be a special concern for the smaller MNOs as users are more likely to call off-network to larger MNOs than users of larger MNOs calling off-network to smaller MNOs. Potential technological interconnectivity and agreement on principles of interoperability and commercial terms will allow for MFS interoperability as technical elements are put in place.

Although regulatory actions are powerful drivers of DFS interoperability, it is important to solicit agreements among the stakeholders prior to formalising through rules for ensuring consistency and sustainability. However, in a concentrated DFS market as in Bangladesh, a stronger approach may be necessary for encouraging interoperability. Hence, given the importance of local market contexts in moving towards NFS interoperability, it may be useful to begin with an in-depth analysis of the existing environment and identifying its implications for interoperability. The analysis should cover a number of interoperability dimensions:

- Potential benefits to consumers and market development; and desirability of interventionist policies for interoperability.
- Implications of removal of agent exclusivity and interoperability and its linkages.
- Potential changes in market behaviour in post-operability environment, including changes in off-net and overall mobile money transactions, channel access and pricing, mobile money wallet related issues, use of value-added services, and active SIM cards across providers.
- Nature of regulatory intervention on interconnection rates in mobile money.
- Interoperability issues for non-payment MFS such as savings account tied to mobile wallets.
- Switch between banks, MNOs and all providers offering financial services via mobile channels.

3.3 MFS Regulatory Framework

Broadly speaking, three different regulators operate in the MFS space in Bangladesh: overall regulators (relevant ministries), financial regulator (Bangladesh Bank), and telecommunications regulator (BTRC). These regulators have their own mandates, areas of focus, capacities and jurisdictions. For smooth and efficient operation of the MFS market, a critical concern is to ensure that many providers and different types of providers have entry into the market and are able to compete effectively with each other. This requires an open MFS ecosystem that is provider-neutral.¹⁵

Since different provider types (e.g. banks, MFIs) are regulated by different authorities and they compete in the same market, there is a need to work very closely for the regulators. This will help avoid regulatory arbitrage and bring coordination in enforcement and supervision. For Bangladesh to move forward, it is important to bear in mind that the adoption of country-specific means to achieving interoperability is important. It is desirable to set the stage for interoperability as the market for innovative platforms starts developing; understand potential new risks; and adopt measures consistent with existing landscape of interoperability scenario in the country.

¹⁵In Kenya, for example, the National Payment System Act 2014 adopts a functional (rather than an institutional) approach to regulation where banks and nonbanks, including MNOs, are permitted to provide mobile money services. In Tanzania, Payment Systems Act 2015 provides for both banks and nonbanks to be licensed and issuers of electronic money ensuring that the regulations do not favour one provider over others.

3.4 Challenges to Interoperability

While interoperability is expected to offer benefits to consumers and at the market level, its introduction faces several challenges in Bangladesh. One can list the following common challenges to interoperability:

- Lack of a common definition resulting in confusion as different operators have different ideas about what it is.
- Benefits associated with interoperability are not always immediately clear, with the true impact of interoperability felt over time.
- Potential mistrust amongst competitors can make it difficult for operators to collaborate even when the benefits of interoperability are realised.
- Understanding and agreeing to a technical and commercial model to govern the interoperable process.
- Conflicting organisational priorities resulting in the desire to delaying of becoming interoperable.
- Imposition of unfavourable regulatory regimes for mobile money and interoperability.

Technical standards and coordination

A first type of challenge to creating interoperability consists of the need to define and enforce a common set of rules and standards, both in the technical and legal realm.

A common switch, with its own set of rules for participation, technical and operational issues, improves coordination and customer experience, and allows for a much faster implementation of interoperability, as compared with private switches or bilateral agreements. A set of clear rules is essential to create trust in the mobile money network. At the same time, care should be taken to leave the necessary flexibility so that new technological developments can be taken into account, both at the design stage and later at the operating stage.

Dominant firms

Firms with a strong first-mover advantage, due to an early start and significant investments in rolling out their agent network, are understandably reluctant in opening their network of customers and agents to small competitors, as this reduces their competitive advantage. It is argued that voluntary interconnection is more likely to happen if mobile money networks are still small and of similar size; if one

network is larger (for example, the first mover) then it has less interest in interconnecting with others.

While the short-run effect seems to be negative for this operator, in the medium run agreeing to interoperability brings advantages, especially if the overall growth potential of the market is large. It may simply be better to be a less-than-dominant operator in a large market than a dominant one in a small market.

From a market perspective, a refusal of interoperability by the largest operator can result in a lack of competition, in particular if the number of viable candidates for agents is limited: It may be too costly for smaller networks to create their own separate agent network. Thus the refusal of interconnection can freeze a very asymmetric market structure, to the detriment of mobile money customers. Early dominance of one operator can mean that other operators cannot reach critical mass even if they decide to interoperate among themselves, and so the dominant operator may refuse interconnection. In this case, it is unlikely that interoperability among wireless carriers will be achieved without direct government intervention.

Competition policy

Still, competition policy concerns must be balanced with property rights (investments in platform development and agent network) and entrants' incentives to invest. This is a difficult balance to strike, similar to concerns in many other regulated markets. Agents need recruiting, training and branding--all of which are costly-- and investments are made to gain competitive advantage. Imposing interoperability should not destroy incentives to invest in agent networks.

Approach to interoperability

It is important for Bangladesh to decide: which of the two principal approaches to creating interoperability would it follow: the collaborative approach on the one hand, and mandating interoperability on the other. In the collaborative approach, the policy makers act as an intermediary. More precisely, the policy makers act as facilitators, helping providers to create the road map that they will be primarily responsible for designing and implementing. The regulators would only intervene if the market is sufficiently developed, with a functioning agent network and an active customer base.

The different approaches for interoperability (e.g. via the platform, via the agents, or via the SIM card) present different types of costs and regulatory risks, which the regulators can help to clarify. The regulators should also take care that interoperability does not stifle emerging competition, for example, investments in agent networks if third-party sharing is implemented in an immature market. In both approaches, it is considered necessary that all parties involved see the value of participating. In particular, instead of devaluing their investments the introduction of interoperability should be expected to increase the value of their infrastructure through higher usage. This is important even under mandated interoperability, since foot-dragging by unwilling operators can create unnecessary delays and reduce user benefits.

The KYC collection and maintenance process can be upgraded with the help of digitisation, which would benefit everyone. The future has the possibility to replace the entire manual, paper based, time consuming, expensive and inefficient process needed to maintain up to date records of customers. Digitising the process will provide an immense opportunity to maintain accurate information, at a low cost that is continually updated and can make transacting on the internet a process with genuine trust between parties.

A holistic approach is required on the part of the financial regulators and institutions in creating room for e-signing of agreements and OTP-based eKYC authentication, which are critical enablers for completely digital and paperless financial transactions. These processes enable consumers to digitally sign their agreements as opposed to having to visit the bank or having the bank send them many papers to sign.

Also, eKYC can be done via OTP on the mobile phone, which again reduces the need to manually collect and process copies of identity and address proofs; eKYC via OTP also removes the need for purchase of hand-held biometric devices by banks, and the need to meet consumers face to face for biometrics—which consumes time and money—thereby reducing the benefits of going instant and paperless. For the purpose, relevant acts (e.g. evidence act and information technology act) may have to be amended and updated to allow the use of e-signatures.

4. Conclusions

No doubt, establishing interoperability is a formidable task for which it is important to find the right balance between cooperation and competition. Despite the advantages that interoperability brings, not all market participants will necessarily embrace interoperability initiatives, e.g. if they fear to lose their dominant position and/or competitive advantage. Bangladesh Bank is a key driving force in interoperability, but it cannot – and should not – act alone. Other regulators – such as financial and telecom regulators – are also important to achieving interoperability.

The lessons learned from establishing the National Payment Switch Bangladesh (NPSB) can be useful in spurring competition, innovation, efficiency, safety and security. The bringing in of automated cheque processing system, electronic fund transfer network, mobile financial services, national payment switch and real time gross settlement system and the introduction of NPSB will facilitate interoperability of the different payment systems. In order to move forward, a taskforce among the market participants can be formed and the role of different stakeholders may be clarified and agreed upon in a memorandum of understanding.

The regulators in Bangladesh may adopt two basic methods of encouraging interoperability: setting standards for interconnectivity; and enforcing interoperability. Enforcing interoperability can happen by either setting interconnection charges or requiring the unbundling of platform provision from the provision of accounts. This, however, is not easy and has an overlap between regulation of telecom services and that of account providers.

Furthermore, in choosing future path to interoperability, regulators have to make a choice on how best to foster economic and social inclusion through efficient and wide distribution of DFS. It is true that limited or full interoperability may happen in the longer term



regardless of regulatory oversight. However, in such a case, it will depend on the choice of individual players to negotiate and establish a number of bilateral agreements. This requires enormous efforts and persistence by key players who may not necessarily have financial inclusion or the easy entry of new financial service providers as their top priority.

Considering the dynamics of interoperability, regulators should explore the pros and cons of both mandated interoperability and more market driven approaches and consider one of the following three approaches:

The last option means guiding the market by establishing interoperability as a policy objective and setting a timeline within which the market must move to interoperability before it is enforced by regulation. For moving along the line of encouraging interoperability, the government and the regulators should:

- Address the challenges of perceived competition that the private sector poses--within and between financial institutions and payment service providers--and the role that regulation can play in encouraging technology in existing business models.
- Facilitate new market entry and encourage the growth and expansion of non-traditional financial service providers, in particular MNOs, in a compliant and secure way.
- Encourage sector players to participate and engage in the interoperable network--merchants, agents, MNOs and consumers alike.
- Incentivise the market and encourage services providers to recognise the need for interoperability as part of their service, for example, through tax relief.
- Take the lead in encouraging consumers to transact digitally, for example by providing government services online and discounts for individuals who pay for these services through their wallet solutions.
- Ensure that the role of IT infrastructure can be appropriately positioned to realise an interconnected society – a society where IT infrastructure deployment reflects purpose-built regulations and policies, with tailored solutions designed around an agreed goal. MFS must evolve from being solely a tool for transferring money to being the means of empowering the poor with access to banking, credit and insurance markets.

It is recognised that in practice interoperability is 'complex and often messy' and multiple arrangements of interoperability co-exist in all markets. From the 20-country scan, a number of lessons can be drawn for facilitating interoperability in Bangladesh:

- **Create a space for the industry to define the rules:** Mandating interoperability through regulations may lead to creating market distortions.
- **Ensure close collaboration between regulators, financial service providers, and other stakeholders:** This is especially critical for setting ground rules and creating an enabling environment for multilateral interoperable scheme.

- **Identify an independent facilitator:** This brings in confidence among the participants that the process will not be influenced by any vested interests.
- **Plan for achieving interoperability in stages:** This helps all stakeholders to prepare for availing opportunities.
- **Adopt a detailed and coordinated plan:** The plan should outline the agreed issues, specific timelines, deliverables and required resources.

For the regulators, the key would be to craft regulations that allow technology-enabled business models to emerge, while balancing access and protection for the base of the pyramid customers.

In addition, moves to promote interoperability should be geared to harness, and not determine, the business case for the stakeholders to make required investments. For approaching interoperability, an important guide for the policy makers could be the following:

- Identify intermediate (e.g. stimulating competition) and ultimate (e.g. universal financial inclusion) objectives of interoperability and put in place appropriate mechanisms to achieve these.
- Since interoperability is not an all-encompassing proposition, it should be tailored to different payment use cases, such as by (i) account type (bank account, mobile wallet); (ii) transaction type (withdrawal, real time transfer); and (iii) channel (ATM, agent). For each use case, adopt a customised policy and commercial pathway for achieving interoperability.
- Adopt a balanced ‘managed approach’ to interoperability by establishing a sequence of milestones for achieving interoperability for clearly defined use cases.

It is also important to review the progress on interoperability at five different levels: (i) theoretical e.g. systems capability to connect with each other; (ii) technical e.g. points of interconnection/interfaces that make it possible to interoperate; (iii) functional e.g. capacity of points of interconnection to meet agreed technical standards; (iv) business-related e.g. business rules beyond technical standards that make interoperability commercially viable; and (v) effective interoperability that successfully meets financial inclusion and broader national goals.

A pragmatic approach for Bangladesh would be to let the market develop and DFS deepen and mature so that industry actors themselves feel the compulsion of embarking on interoperability initiatives; while simultaneously make a serious beginning in adopting relevant interoperability rules to enable the market to move towards implementing interoperability at the earliest possible time.¹⁶ To facilitate

¹⁶The rule sets may cover, for example, a number of transactions e.g. wallet to wallet (P2P), agent wallet to agent wallet (A2A), bulk payments (BP), cash in (CI) and cash out (CO) interoperability rules.

the above, the feasibility of introducing 'Regulatory Sandbox' may be explored such that the regulators would be able to analyse the impact, safety, and robustness of the business models and processes to devise effective DFS interoperability policies in Bangladesh.

Further, we must recognise that interoperability is not – or should not be – an end in itself; it is a means to a broader set of goals: to address market fragmentation; to avoid market tipping towards monopoly; to increase innovation irrespective of market power; and to address a perceived societal need for interconnectedness across DFS networks.

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