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BRIEF

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Promoting Competition in Mobile Payments: The Role of USSD

Mobile network operators (MNOs) such as Safaricom in Kenya; Vodacom, Tigo, and Airtel in Tanzania; and Econet in Zimbabwe are collectively underscoring the importance and potential of MNO-led business models to advance financial inclusion. In each of these markets, and in a number of others, where MNOs are able to effectively compete in the provision of mobile financial services (MFS), there are more registered mobile wallets than bank accounts.[1] And in each of these markets mobile payment platforms are being leveraged to offer other financial services such as savings and credit at scale.

The immediate gains for financial inclusion are clear. At the same time, this relatively new role for MNOs can generate competition concerns for country regulators. This is because MNOs compete with banks and other MFS providers (third parties)[2] in the provision of mobile payments, but MNOs also own key communications infrastructure required to provide mobile payments.

Unstructured supplementary service data (USSD), a communications service controlled by MNOs, is believed to be a critical piece of infrastructure used 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 the MFS provider to send responses to clients and confirm transactions.

This Brief outlines why USSD is important for mobile payments and highlights the main types of complaints arising as a result of restricted USSD access for MFS providers. It then explores regulatory issues, including when regulatory intervention may be required, which regulator might be best placed to intervene, and what type of regulation is most appropriate (CGAP 2014).[3]

USSD and alternative communication technologies

USSD is not the only communication service available for mobile payments. Other options include short messaging service (SMS), SIM Toolkit (STK, a programming environment embedded on the user's SIM card), mobile internet, and newer innovations to interact with customers. MFS providers consider these options against several factors, including reach (compatibility with handsets), user experience, security, cost, and ease of deployment for the provider. Most providers agree that when all factors are considered, USSD is the best available option to serve low-income customers today. This view is supported by the fact that most large-scale deployments globally use USSD. This is because USSD works on the vast majority of phones, it does not require changes to the SIM or a new SIM (either of which can be complex and often costly steps), and it has important usability and security advantages over SMS.

There are some exceptions including M-PESA in Kenya, which uses STK technology together with encrypted SMS. However STK requires that the MFS provider has access to the SIM to load changes to it, which is seldom the case for non-MNOs. Other promising alternatives also have practical challenges that impede scale. Most notably, mobile internet requires that customers have access to internet-enabled phones, which is not currently the case for the majority of low-income users.[4] On the other hand, SMS is available on basic phones, but is not as secure as USSD and offers a less intuitive and more challenging user experience.[5]

USSD also has its limitations. The customer experience is not as smooth nor does it offer the same security capabilities as STK or mobile internet. Further, USSD sessions can be dropped, potentially raising costs and harming customer trust. Despite these and other challenges, the majority of leading MFS providers rely on USSD, including many MNOs. Large deployments that rely primarily on USSD include bKash in Bangladesh, WING in Cambodia, EasyPaisa in Pakistan, ZAAD in Somaliland, M-PESA and Tigo Pesa in Tanzania, and EcoCash in Zimbabwe.

1 The number of active accounts is a more meaningful measure; however, activity rates were not available for bank accounts (GSMA 2014b).
2 In this Brief, third parties include banks, other MNOs, and nonbank non-MNO MFS providers.
3 This Brief draws heavily from CGAP (2014), which is based on 40 interviews with MNOs, banks, regulators, and third parties and industry experts in over 18 countries.
4 GSMA estimates global smartphone penetration will grow to 32 percent in 2017 (20 percent in sub-Saharan Africa). These averages illustrate that ubiquitous access to mobile internet is likely still a number of years away, particularly for the unbanked (GSMA 2014a).
5 Further, combining SMS with interactive voice response has cost and usability constraints, while SIM overlay technology (see http://www.cgap.org/blog/china-%E2%80%93-future-leader-branchless-banking-poor) and other similar approaches require that each customer either make a change to his or her phone or SIM, thus adding cost and complexity to the deployment.

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Providing critical infrastructure to competitors

Non-MNOs that provide MFS have three types of complaints regarding access to USSD:

- **MNOs may deny providers access to USSD.** This has been the case in Pakistan, where MNOs are typically willing to provide USSD access only to their partner microfinance banks, which are effectively part of the same corporate group.
- **MNOs may provide access, but at a high price.** Such complaints have emerged in Nigeria, Kenya, and Bangladesh, for example.
- **MNOs may provide access, but with poor quality.** Quality issues are typically in the form of a high proportion of dropped USSD sessions that abruptly end before the customer is done. This impacts the customer experience, trust, and effective price.

In response to complaints related to access to USSD, MNOs often raise concerns over potential network congestion and implications for the quality of voice and SMS services. While none of the eight MNOs interviewed in 2014 (spanning seven countries) is currently impacted by USSD-related network congestion, the impact on MNOs' networks at greater volumes is difficult to predict and could potentially be detrimental for networks that are nearing capacity. MNOs also note the lack of operational billing facilities to charge for USSD (since USSD was initially used for MNOs' internal operations and not for customers). However, USSD gateway operators or aggregators, which sit between the MNO and the MFS provider, increasingly are able to bill end users or MFS providers directly.

MNOs also have strategic incentives to limit access to USSD. The right to provide USSD services was typically acquired (implicitly) as part of an MNO's telecommunication license. Some MNOs argue that this gives them a competitive advantage in the provision of MFS, which they intend to protect. There are, however, two complicating factors. The first is the licensed nature of telecommunications and the role of the regulator to foster effective competition, protect consumer interests, increase access to technology and services, and avoid market failures (World Bank, InfoDev, and the International Telecommunication Union 2011). The second is the aforementioned potential for those MNOs allowed to play an active role in providing MFS to foreclose competitors by limiting effective access to USSD.[6]

Regulatory considerations

The fact that MNOs compete in the provision of MFS and have control over USSD raises questions around when regulatory intervention may be required, which regulator is best placed to intervene, and what options there are for intervening.

Which regulator and which standard of competition?

There are typically three relevant regulators: financial, telecommunications, and competition regulators. The overlapping jurisdiction and differences in basis for assessment and process means that coordination among the different regulators is critical. The telecommunications regulator is typically best placed to lead interventions on USSD. Both the telecommunications and competition regulators have jurisdiction over the telecommunications services of MNOs. However, to intervene, a telecommunications regulator often needs only to demonstrate that the proposed remedy would maintain or enhance competition in the market or prevent a situation where anticompetitive behavior is likely.[7] By contrast, competition authorities have to pass a higher hurdle to intervene, typically needing to meet a strict definition of anti-competitive behavior. The competition authority would typically want to confirm that there is an "abuse of dominant position" that led to harm to competition and consumers. It would also need to determine whether USSD is an "essential facility"—a strict legal test.

Further, it would be more complicated, but not impossible, for a financial regulator to intervene.[8] For example, the financial regulator could license the MNO, or a special purpose vehicle (SPV) of the MNO, to do mobile payments subject to the MNO providing access to USSD to competing MFS providers.

One complication is the regulator that identifies the issue may not be the regulator best placed to intervene. This increases the importance of coordination among different regulators. For example, the financial regulator may identify potential

6 In competition economics, this is known as vertical foreclosure—a situation where a vertically integrated firm (i.e., a firm present in both the upstream and the downstream market) uses its market power in the upstream market to limit effective supply of its upstream product to its downstream competitors, preventing the downstream competitors from competing (CGAP 2014).

7 In line with their objectives, which typically include ensuring an efficient and competitive telecommunications market.

8 Complications can arise, for example, where the financial regulator has not licensed the MNO to provide mobile payments (e.g., issuing a letter of no objection). In such cases, the financial regulator would not have jurisdiction over MNOs.

USSD access issues (via its licensees) but need to coordinate with the telecommunications regulator to appropriately regulate the MNOs. This happened in Bangladesh, where Bangladesh Bank (the central bank) asked the Bangladesh Telecommunication Regulatory Commission to engage after it received complaints relating to difficulties accessing USSD.

Should USSD be regulated?

A guiding principle for regulation is that it should be the least restrictive (in this instance to MNOs) to achieve the intended objective (increased competition and consumer benefit) and should be proportionate to the extent of risk.[9] How this plays out in the context of USSD access will be market specific. However the following progression of options for regulators may be worth considering:

1. Market forces. The first best outcome for any market is for commercial agreements to emerge between MNOs and third parties for the provision of USSD. This would advance competition and the development of the MFS market without placing restrictions on MNOs.[10]

To encourage such an outcome, regulators could attempt a light-touch moral suasion approach, communicating a preference for MNOs to provide access to USSD (together with reasoning for this preference). Central banks, including in Kenya and South Africa, have communicated similar preferences for other competition-sensitive issues, namely, interoperability in retail payments.

2. Dispute resolution mechanism (DRM). In markets where commercial agreements are not forthcoming, a coordinated DRM, whereby the telecommunication and financial regulator (and potentially the competition regulator) jointly intervene, could be used to resolve access, price, and/or quality issues. This approach would allow the regulator(s) to understand the considerations of all stakeholders. This could give MNOs the opportunity to explain arguments for withholding access, including the potential impact that the provision of USSD at scale could have on an MNO's core telecommunications business. It could also give all parties a chance to communicate and detail their positions regarding USSD quality, pricing, and cost. Regulators in Bangladesh are taking a similar approach, forming a consultative USSD committee, including representatives from Bangladesh Bank, the telecommunications regulator, the telecommunications association, and multiple banks. This committee seeks to better understand the situation and serve as a mode for dialog on USSD access.

The result of a DRM, and engagement with the private sector, would ideally be a facilitated, mutually acceptable, agreement. A DRM may also need to remain in place for a period of time to allow newly emerging disputes to be resolved expeditiously.

3. Regulation. In the event that a DRM does not result in a mutually agreeable outcome, and the nonprovision of USSD is found to be a competition issue, regulatory intervention may be justified. In such instances, the appropriate intervention would be to mandate that MNOs provide access to USSD, without regulating the price. For example, this might be appropriate where the MNO has market power in the voice market and competes in the market for MFS.

Should concerns over the quality of USSD access arise that service-level agreements between the MNO and third-party MFS provider/s have not resolved, the regulator could consider introducing minimum quality standards. This could take the form of a maximum percentage of sessions that can be dropped, as a result of the MNO, before fines or other penalties are handed out. The Rwanda Utilities Regulatory Agency (RURA) has introduced similar regulations for voice, capping the dropped call rate at 2 percent per quarter (RURA 2013). A challenge of such a regulation would be to isolate the cause of the dropped USSD session. Poor quality could be the result of under-investment or selective degradation of quality by the MNO; however, it could also be unrelated to the MNO.[11]

Where pricing of USSD is used to foreclose competitors, particularly in the case of dominant MNOs, further steps may be required. Price regulation based on detailed cost considerations

9 For example, banning MNOs from the MFS market, with the objective of removing the incentive of MNOs to restrict USSD access, is more restrictive than a regulation mandating USSD access and could be unnecessarily harmful to consumers. Further, this would only limit the incentive for MNOs to foreclose their competitors if the MNOs believe these regulations are permanent. Given the increasing role of MNOs in mobile payments, MNOs in markets where their role has been restricted might still have an incentive to foreclose in case regulations evolve.

10 This could happen for a number of reasons, including fear of the alternative (such as direct price regulation); an MNO's perception that limiting effective access to USSD could impact the regulators' willingness to allow MNOs to provide MFS; MNOs believing USSD offers an important revenue generating opportunity; or a pre-existing (non-MFS) market for USSD.

11 Selective degradation is technically possible, but is reportedly difficult to do and extremely difficult to prove. Even if a discrepancy in quality of USSD is proven, it is not straightforward to identify the cause of the inferior quality. The point of failure could, for example, be with the MFS provider, the USSD gateway operator, or the MNO.

can be complex, time consuming to monitor, and extremely difficult to get right. It should therefore be avoided where possible.[12] However, a simple rule, such as requiring that USSD prices are applied in a nondiscriminatory fashion, including to the MNOs' own downstream MFS provider or partner bank, may be appropriate.[13] Peruvian regulators have taken this approach, including requiring that the MNO create a separate entity to provide mobile payments, which provides an opportunity to more easily identify discriminatory USSD pricing.[14]

The above provides a possible sequence of options for regulators to consider; however, ultimately specific market conditions will dictate the optimal role of the regulator. For example, the Comisión de Regulación de Comunicaciones in Colombia recently mandated access to USSD after prolonged discussions between banks and MNOs on USSD proved unsuccessful.[15] The regulator deemed this appropriate, without a DRM, in part due to previous practices of MNOs that charged very high rates for SMSs related to MFS. Given how recent this and other interventions have been, it is premature to draw conclusions on good practice.

Conclusion

From a financial inclusion perspective, the value in allowing MNOs to directly offer mobile payments is widely demonstrated, and there is still work to do to ensure more countries adopt regulations that allow MNOs to provide MFS. It is, however, similarly important to ensure banks and other suitably regulated third-party MFS providers are able to compete on a level playing field. Advocating improved access to USSD is an important step in this process, at least until there is more widespread access to mobile internet, which may reduce reliance on USSD.

This Brief has highlighted a number of key findings. First, USSD is still the best option available for MFS providers today. Second, while regulators have good reason to advocate that MNOs offer reliable access to USSD, this should be encouraged in a manner least restrictive to MNOs, ideally through commercial agreements with MFS providers. Third, where such agreements do not emerge, regulators should consider a coordinated DRM to better understand this complex issue and seek a potential mutually acceptable outcome, before direct intervention. However, if a DRM does not reveal such an outcome, regulatory intervention, in the form of a mandate to provide USSD access, may be appropriate. Last, throughout this process, coordination between the telecommunications and financial regulators is critical.

Looking forward, new technologies (mobile internet and beyond) are likely to emerge that are able to fulfill the function that is currently played by USSD. Where possible, regulators should look to monitor access to all technologies that can suitably fulfill this function rather than focusing exclusively on USSD.

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12 A price set too low may remove the incentive for the MNO to invest in USSD and maintain the quality of the service, while a price set too high may foreclose third-party MFS providers.

13 In South Africa, a market for USSD existed before the introduction of MFS, for example, for the sale of ringtones. Existing rules stating that value-added service providers are entitled to USSD at nondiscriminatory rates apply equally to MFS providers.

14 There is still the risk that the price to the MNO's SPV is inflated, as a transfer price, without impacting the group's profits.

15 See http://www.crcom.gov.co/ for more information (predominantly in Spanish).

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