



# Mobile Platform Access for USSD-based Applications (MPA-USSD)

Market Assessment

Version 1.0

30 January 2015

Prepared for:



## Version History

Version	Date	Author	Changes	Distribution	Approval
1.0	30/1/15	Cartesian	Final version incorporating UCC feedback	UCC	T Twinemanzi

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## 1 Executive Summary

- 1.1 This document sets out an assessment of whether or not there is effective competition in the market for *mobile platform access for USSD-based applications within Uganda*, (MPA-USSD), particularly whether or not one or more communications service providers (CSPs) have significant market power (SMP). A firm or group of firms with SMP have the potential to either increase price above and/or reduce output below the competitive level. It follows that consumers will benefit less in a market where CSPs exercise SMP compared with a market in which competition is effective.
- 1.2 MPA-USSD services are supplied in Uganda by Airtel Uganda, MTN Uganda, Orange Uganda, Smart Telecom, Uganda Telecom and K2. Of these firms: Airtel, MTN, Orange, Uganda Telecom and Smart Telecom are mobile network operators (MNOs); and, K2 is a mobile virtual network operator (MVNO) with a wholesale supply agreement with Orange.
- 1.3 MPA-USSD refers to the provision of access to a mobile CSP's USSD platform for the purpose of offering USSD-based applications to the mobile CSP's subscribers. The market includes provision of access to USSD aggregators such that they can offer USSD services to application and content providers.
- 1.4 USSD and SMS value added services (VAS) have been established in Uganda for a number of years. However, unlike SMS services, the take-up of USSD applications has been limited. Stakeholder interviews have suggested that take-up of retail USSD VAS (other than MNO-owned mobile financial services) is not as high as it might be due to the high costs to service providers (SPs) to provide a retail USSD VAS service, and corresponding low returns due to poor revenue share ratios.
- 1.5 While USSD-based VAS penetration and usage is expected to grow in the near future as mobile penetration increases (with disposable incomes and falling mobile terminal costs), the overall growth of the USSD VAS market may be stymied by high prices for consumers.
- 1.6 The size of the CSP's customer base (i.e. the potential market for the services) is a key differentiator for USSD SPs as it represents the addressable customers for the retail USSD-based service. Given the USSD SP's costs of offering a USSD service include significant fixed costs, it may not be worth offering USSD-based applications to a CSP's customer base if it is small, as possible revenues from their subscribers would not justify the investment required.
- 1.7 Furthermore, USSD SPs have no alternative means of reaching a mobile CSP's customers in the absence of that CSP offering MPA-USSD directly to them or indirectly via an aggregator. In theory, a USSD SP connected to the MPA-USSD of one CSP could target the customers on another CSP, but this would require the consumers to switch CSPs.

### SMP assessment conclusions

- 1.8 MPA-USSD services are supplied in Uganda by Airtel, MTN, Orange, Smart Telecom, Uganda Telecom and K2. Each of the CSPs has SMP in the market of MPA-USSD on their own networks. This follows from the simple technical fact that a USSD SP that wants to offer services to mobile users on a particular CSP's network must acquire access to that CSP's MPA-USSD.
- 1.9 A key factor in assessing the effect of this SMP is the size of the CSP's share of the retail mobile market. On this basis, MTN and Airtel are currently able to exploit their SMP in the market for MSP-USSD to:
  - Limit competitive entry in the retail USSD SP market; and,

- Price MPA-USSD independently of cost to capture a disproportionate share of the USSD VAS value chain;
  - Refuse to accept service level guarantees and not compensate USSD SPs for poor performance.
- 1.10 Whereas, even though Orange, Smart Telecom, and Uganda Telecom do not currently have significant share of the retail mobile market, they would be able to exploit their SMP to:
- Price MPA-USSD independently of cost to capture a disproportionate share of the USSD VAS value chain; and,
  - Refuse to accept service level guarantees and not compensate USSD SPs for poor performance.

## **2 Introduction**

- 2.1 The purpose of this document is to set out an assessment of whether or not there is effective competition in the market for mobile platform access for USSD-based applications within Uganda, (MPA-USSD), particularly whether or not one or more communications service providers (CSPs) have significant market power (SMP).
- 2.2 CSPs with SMP have the potential to increase price or reduce output below the competitive level. This implies that customers would not derive the same levels of benefits from the MPA-USSD service as they would if there were effective competition. Therefore, it is important to identify whether or not firms have SMP.
- 2.3 If one or more CSPs are found to have SMP, then it may be appropriate to introduce regulatory measures. Properly designed and implemented, regulatory measures can ameliorate SMP and thus enhance market performance and economic efficiency in the relevant market.
- 2.4 This assessment commences with a description of the definition of the MPA-USSD market. This is followed by an assessment of the market performance, pricing structure and levels, amongst other factors. Market structure is then examined, which addresses recent developments and the concentration of market shares amongst CSPs. This is followed by an assessment of the conduct of CSPs in the market, and in turn a description of the basic market conditions. This report concludes with our initial overall conclusions regarding this assessment of SMP in the market for MPA-USSD with Uganda.

## **3 Relevant market definition and description**

- 3.1 The relevant market for MPA-USSD is defined in the report prepared by Cartesian, for the Uganda Communications Commission (UCC), *Review of Uganda Communications Markets: Relevant Markets Report*, dated 29th October 2014 (the “Relevant Markets Report”). The Relevant Markets Report identifies the MPA-USSD market as a priority for the SMP assessment.
- 3.2 The key features of the MPA-USSD market identified in the Relevant Markets Report are:
- The MPA-USSD market is a wholesale market;
  - The product provides access to the USSD platform of a mobile CSP in Uganda;
  - The product enables USSD messages to be sent between an application on a server and the mobile handsets of the MNO’s subscribers;

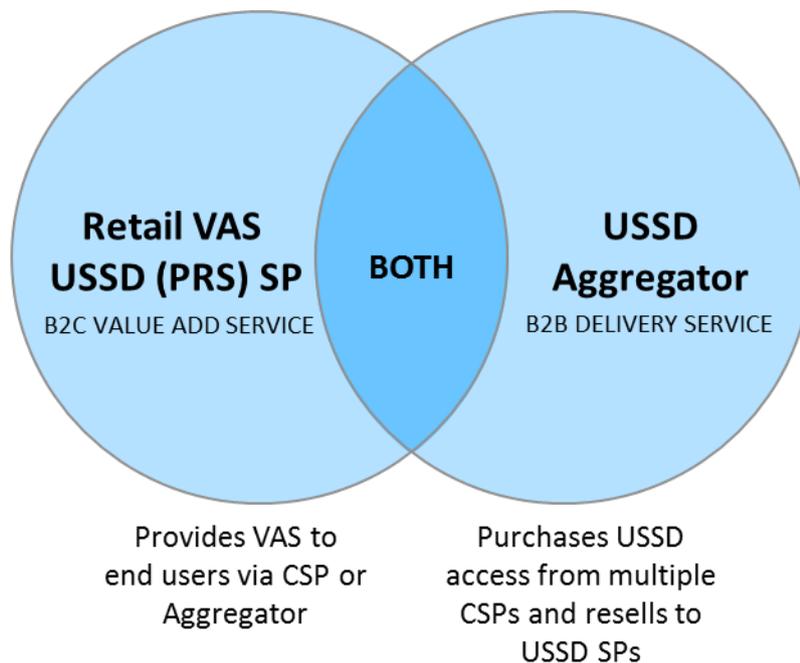
- USSD service providers (USSD SPs) purchase access to mobile CSPs' USSD platforms either directly, or indirectly via USSD aggregators; and
- The geographic scope of the market encompasses the whole of the geographic region of Uganda and does not differentiate between different regions within Uganda.

3.3 MPA-USSD services are supplied in Uganda by Airtel Uganda, MTN Uganda, Orange Uganda, Smart Telecom, Uganda Telecom and K2 Telecom. Of these firms: Airtel, MTN, Orange, Uganda Telecom and Smart Telecom are mobile network operators (MNOs); and, K2 Telecom is a mobile virtual network operator (MVNO) with a wholesale supply agreement with Orange.

### Overview of relationship between the relevant and related retail market

- 3.4 USSD SPs create USSD-based value-added services (VAS) such as news services, betting services and mobile financial services, and they offer these services to mobile users in the retail market. The potential range of USSD value added services offered in the retail market is not limited to these specific services, but in general they are informational or transactional in nature.
- 3.5 USSD SPs are responsible for developing and marketing the VAS to the mobile users in the retail market. In order to deliver these services to mobile users in the retail market an essential wholesale input that USSD SPs must acquire is access to the CSP's *USSD platform*. Access to a CSP USSD platform is necessary as it technically enables the delivery of the USSD VAS to the mobile users. It is the market for access to CSPs' USSD platforms, which is referred to in this report as MPA-USSD, which is the focus of the present SMP assessment.
- 3.6 Access to a CSP's USSD platform only allows delivery of USSD value added services to those mobile users connected to that CSP's network. Consequently, USSD SPs require access from at least one CSP to operate services to some of the mobile users in Uganda. If a USSD SP wants to offer its service to all mobile users in Uganda, then it would need to acquire access to all CSPs' USSD platforms.
- 3.7 USSD SPs can agree the commercial terms and interconnect directly with each CSP, or they can go through USSD aggregators that agree the commercial terms and make the technical arrangements with the CSPs. These USSD aggregators may themselves be service providers that develop their own USSD services.
- 3.8 The diagram below illustrates the overlap in these two functions.

Figure 1. Relationship between Retail VAS USSD SP and USSD Aggregator



Source: Cartesian

Retail market mobile user experience

- 3.9 A user initiates or requests the VAS – such as a news, betting or financial service – by entering the appropriate short code into their mobile phone or device. This is done by dialling a short code, for instance \*123#, and hitting the send or call button. A communications channel between the USSD SP's server and the customer's mobile phone is then opened, which lasts for the duration of that session.
- 3.10 Based on the user's input, data is transmitted and displayed on the mobile user's mobile phone, and the user can select from a menu of options. These options might allow the mobile user to check the news, place a bet, or transfer money to another mobile phone.
- 3.11 It is also possible for a CSP's network to push a USSD message to the user, in the form of a network SMS. This is primarily used for self-service by MNOs and not offered to third-parties as part of MPA-USSD.
- 3.12 In some cases, the completion of a service will trigger a confirmation SMS to be sent to the user. Sending SMS requires separate access to the CSP's SMS platform.
- 3.13 The CSP retains the billing relationship with its own subscribers. USSD sessions are charged to the customer per screen displayed. The USSD SPs enter into agreements with each CSP to share revenue received from the CSPs' customers. The CSP compensates the USSD SP on the basis of the revenue share, net of taxes and other agreed costs.

## 4 Market Performance Assessment

### Service Penetration

- 4.1 USSD SPs may seek MPA-USSD directly from MNOs. However, it is generally preferable for SPs to use aggregators as they offer better rates (due to volume discounts for the aggregator) and cost-effective access to more customers (as the aggregators will typically have interconnection with at least two MNOs).
- 4.2 All USSD aggregators take MPA-USSD from one or more CSPs. This is because MPA-USSD is fundamental to their core business.
- 4.3 There are between 5 and 7 significant providers of USSD services in Uganda, who all also provide SMS VAS and other services (e.g. IVR, bulk SMS). While reliable data on the revenues or volumes of the retail market for USSD VAS is unavailable, the penetration of the most significant use of USSD value added services, retail mobile financial services, can be used as a point of reference.
- 4.4 Mobile financial services, defined to include all mobile transactions backed by real currency, includes transactions such as transfers, remittances, airtime top-ups and bill payments. There are currently approximately 18 million mobile money users in Uganda, making 446 million mobile money transactions per year, worth a total of UGX 22.2 trillion. The number of users is growing at a year-on-year rate of 46%. With penetration of mobile financial services currently less than half of the population, there is potential for further growth.
- 4.5 USSD and SMS VAS have been established in Uganda for a number of years. However, unlike SMS services, the take-up of USSD applications has been limited. Stakeholder interviews have suggested that take-up of retail USSD VAS (other than MNO-owned mobile financial services) is not as high as it might be due to the high costs to service providers (SPs) to provide a retail USSD VAS service, and corresponding low returns due to poor revenue share ratios.
- 4.6 While USSD-based VAS penetration and usage is expected to grow in the near future as mobile penetration increases (with disposable incomes and falling mobile terminal costs), the overall growth of the USSD VAS market may be stymied by high prices for consumers.

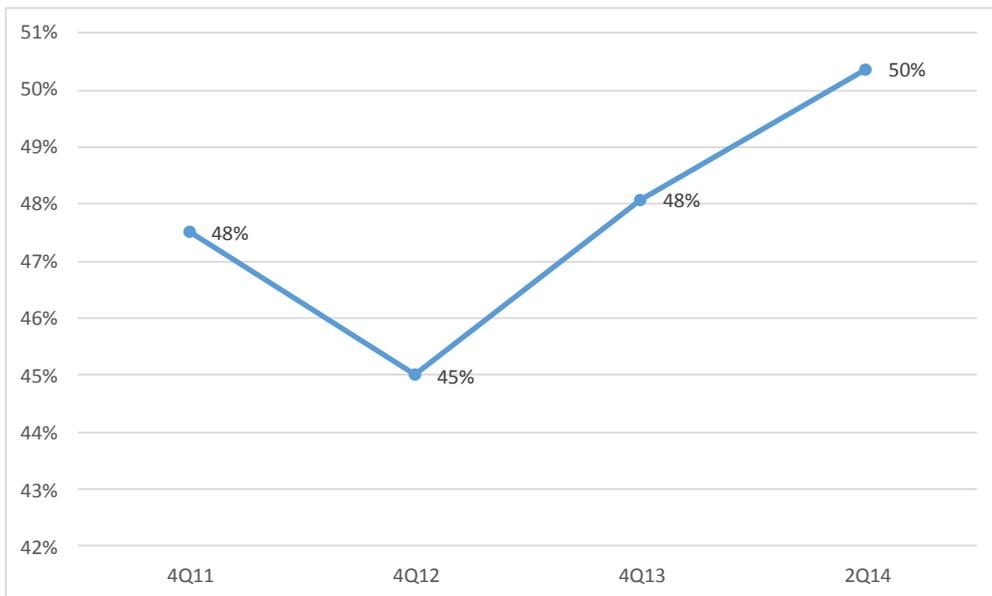
### USSD SP demand for MPA-USSD

- 4.7 To supply retail USSD services, a service provider requires MPA-USSD which may be obtained either directly from mobile CSPs or via an aggregator. This commercial decision will be made based on ease of access, costs and addressable market size.
- 4.8 Given that each MPA-USSD interconnection carries a fixed cost, a service provider may determine that it is not worth interconnecting directly with a CSP that has a small customer base, as the potential revenues would not justify the investment required. By using an aggregator the USSD SP can overcome this per-CSP interconnection cost. Alternatively, a USSD SP may decide not to serve the customers of a smaller CSP and focus only on networks with greatest market share.
- 4.9 In theory, a USSD SP connected to the MPA-USSD of one CSP could target the customers on another CSP, but this would require the consumers to switch CSPs. Whilst it is unlikely that a consumer would switch CSP for access to a single USSD VAS, it is more plausible that the range of available VAS on CSPs' networks may influence purchasing decisions. We discuss these potential network effects below.

Potential for Market Growth

4.10 Uganda still has significant potential for retail VAS penetration and usage, as mobile penetration and disposable incomes are expected to grow significantly in the near future. There is therefore still a strong likelihood that MPA-USSD revenue will also grow.

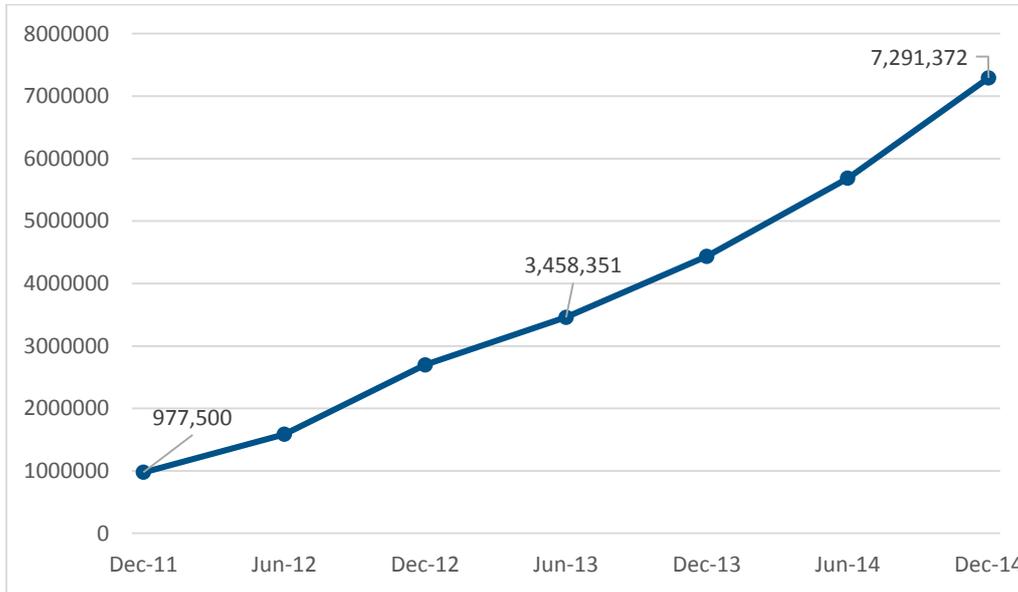
**Figure 2. Mobile Penetration in Uganda, Q4 2011 – Q2 2014**



Source: UCC, World Bank and Cartesian

4.11 On the other hand, revenue growth will be tempered as customers switch from USSD-based retail VAS to smartphones or WAP-enabled devices and consume application-based or web-based services. This will likely only be a small fraction of the market in terms of subscribers in the near future because of the limited uptake of smartphones, but they may represent a significant fraction of revenues as these tend to be higher-income customers who can afford more expensive handsets. This suggests that USSD-based VAS, WAP and web-based applications may be in the same retail market.

**Figure 3. Mobile Internet Penetration in Uganda, 2011 – 2014 (Forecast)**



Source: UCC, Cartesian

- 4.12 The figure above shows that mobile internet penetration is growing at a steady rate in Uganda, reflecting the growth in the number of smartphones, a primary contributor of mobile internet subscriptions growth.
- 4.13 If a growth rate of 28% is assumed (based on 6 month growth from Dec 2012 to June 2013) every 6 months, then penetration is forecast to be approximately 7.2M subscriptions in December 2014.
- 4.14 Regardless of this growth in smartphone use, USSD VAS will remain popular due to the penetration and growth of mobile financial services, which rely heavily on USSD, in Uganda.
- 4.15 As such, the MPA-USSD market will likely continue to grow in revenues and penetration from the significant feature phone customer base. As a result, CSPs will continue their attempts to maximise incremental revenues generated through USSD-based VAS services.
- 4.16 We conclude that this criteria is relevant and applicable to the SMP analysis.

Prices (Cost of access to MPA-USSD)

- 4.17 USSD SPs that take MPA-USSD from one or more CSP must pay for set-up costs and acquire their own customers. From stakeholder interviews, it is clear that USSD SPs do this with little support from the CSP.
- 4.18 Setting up a new short code with an MNO costs an average of UGX 250,000. It is noted that a new access connection at MTN costs a one-off UGX 12 million.

**Figure 4. Costs to USSD SP and Customer for MPA-USSD and Retail USSD VAS**

Categories	MPA-USSD Cost (UGX)	Retail USSD VAS Cost (UGX)
<b>Set-Up of Short Code</b>	250,000 on average	N/A
<b>One-off Fees</b>	Up to 12 million	N/A
<b>Per USSD Session</b>	40 to 60	Bill payment: Min. 100 Money transfer: Min. 450 Money withdrawal: Min. 300

Source: Stakeholder Data

- 4.19 The per-USSD-session rates are negotiated by WASPA on behalf of its association members. The other fees are set by the CSPs.
- 4.20 Charges can be calculated at a per-session level or per-hop (i.e. every time a user receives a new screen or menu), though per-session charges are prevalent in Uganda.
- 4.21 CSPs keep a fixed portion of revenue from each session (from UGX 40 to 60 per session) and in some cases a predetermined percentage of all additional transactional revenue net of taxes and government levies. The remainder is shared with the retail VAS SP (who is often also the access seeker).
- 4.22 CSPs have been known to use revenue share ratios ranging from 60:40 to 80:20, meaning that the MPA-USSD provider takes 60% to 80% of the service revenue (net of the fixed charge, taxes and government levies) made from all USSD sessions.
- 4.23 CSPs often have minimum guaranteed revenue thresholds in place whereby revenue below a certain amount per session or over a fixed period of time is not shared with the USSD SPs and kept in its entirety by the provider.
- 4.24 Additionally, some CSPs impose additional fixed percentage fees of 20% on top of the revenue share (termed “deemed costs,” for example) as a service provision fee. This results in some USSD SPs effectively receiving 10% of the total service revenue that is available for revenue sharing from the retail VAS.
- 4.25 As implied above, a USSD session in Uganda costs an access provider a minimum of UGX 40 per session. In South Africa and Kenya, a USSD session costs an access provider UGX 12.5 and UGX 30 per session respectively.

**Figure 5. Selected African MPA-USSD Cost Benchmarks, 2014**

Country	Typical Per Session Cost to USSD SP (UGX)
South Africa	12.5
Kenya	30
Uganda	40 to 60

Source: Business Daily Africa, Mobiforge, Cartesian

- 4.26 The price of USSD short codes is also very significant. The UCC charges UGX 32.8 million for a USSD short code. This is much higher than the UGX 6.3 million fee that the UCC charges for SMS short codes. It is also far higher than the fees for USSD short codes in other African markets such as Kenya, Nigeria, Rwanda, Tanzania, South African and Zambia which range from UGX 2.75 million to UGX 5.5 million. This high price for a USSD short code reduces the number of new entrants offering VAS in the retail market, as they find the charge prohibitive.
- 4.27 Stakeholder interviews suggested that some CSPs are in the process of appointing a designated USSD gateway provider to manage access to their SMS and USSD platforms to all third parties. This means that USSD aggregators would no longer be able to directly obtain MPA-USSD from the CSP, and would have to purchase from the designated USSD aggregator.
- 4.28 While a single aggregator may improve accessibility of the USSD platform to entities wishing to offer retail USSD VAS, it may lead to an increase in MPA-USSD costs. The designated USSD aggregator will likely charge an additional fee for providing an aggregation service that may previously have been self-supplied by the USSD SPs or procured more cheaply through another aggregator.
- 4.29 As discussed in the section on transparency below, price and product information for MPA-USSD services are not available publicly. Additionally, rate cards are neither requested by nor shared with the UCC.

**Service Quality**

- 4.30 In stakeholder discussions, USSD service providers indicated that there were issues with service quality. However, no hard evidence of poor service quality was provided.
- 4.31 USSD service providers reported that there was limited scope for negotiation of service level agreements with USSD access providers. Specifically, that it was not possible to negotiate the level of service availability. As a consequence, retail USSD VAS providers cannot guarantee a reliable service to their customers as they have no back-to-back guarantee from the USSD access provider.
- 4.32 Contractual terms are confidential and are not shared with the UCC. This is consistent with the view that the MPA-USSD market lacks transparency.
- 4.33 Furthermore, the reported inability of USSD service providers to secure service level guarantees indicates that there is a lack of countervailing buyer power in the market (see Section 6, below).

- 4.34 The lack of contractual guarantees, poor transparency and monopolistic control of USSD access, provide conditions under which USSD access providers have limited incentives to improve service quality.
- 4.35 As discussed in Section 5, below, the USSD access providers are vertically integrated and compete in the retail VAS market with the firms to which they supply MPA-USSD. This raises the potential that differential service quality in MPA-USSD could be used as a mechanism to gain competitive advantage in the downstream retail market.
- 4.36 Whilst no hard evidence of poor service quality was provided, the potential for abuse exists.
- 4.37 This criteria is therefore relevant to the SMP analysis in terms of competitive dynamics, buyer power and the potential for anti-competitive behaviour.

*Innovation*

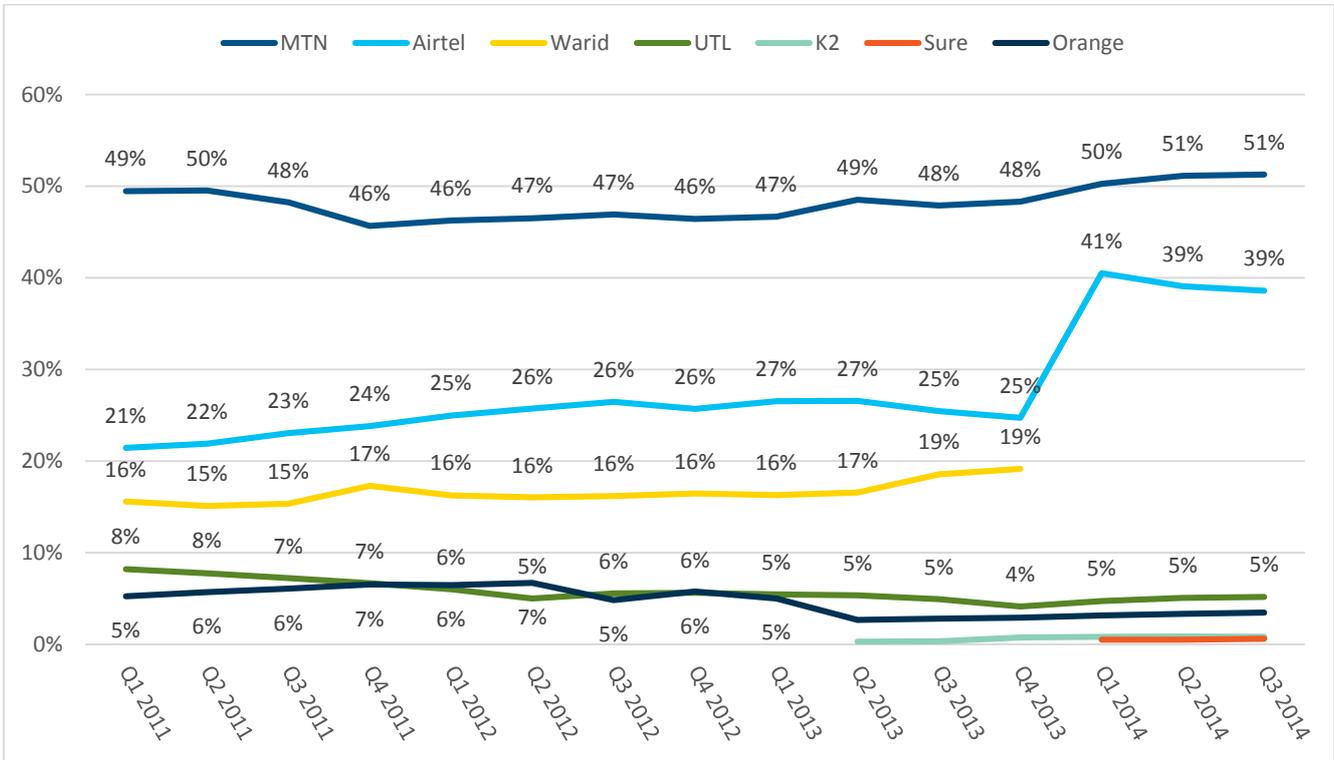
- 4.38 There is little innovation in the market for MPA-USSD itself, in contrast with the significant innovation in retail USSD VAS. The quality of service issues highlighted above suggests that there is potential for innovation and improvements in supply of MPA-USSD by the CSPs.

**5 Market Structure Assessment**

*Market Concentration*

- 5.1 The suppliers in the USSD platform access market are the mobile CSPs offering voice and SMS services. These are MTN Uganda, Airtel Uganda, Orange Uganda, Uganda Telecom, K2 and Smart. There is a separate market for MPA-USSD for each CSP as access to a CSP's USSD platform only enables communication with the subscribers of that CSP.
- 5.2 It follows that each CSP effectively has a 100% share in their respective MPA-USSD market as USSD SPs can only supply USSD value added services to mobile users connected to a CSP by accessing that CSP's MPA-USSD.
- 5.3 The value of connecting to a particular CSP's MPA-USSD will depend on the number of mobile users that subscribe to that CSP's mobile network. The larger (smaller) the number of users connected a CSP's network the larger (smaller) the USSD SP valuation of connecting to that CSP's network. This follows from the fact that USSD SP will be able to access a larger number of customers the greater the CSP's market share.
- 5.4 MTN is the market leader with 51% market share by subscriptions as of September 2014 (Figure 6). The second largest CSP, Airtel, has 39% of subscriptions. The remaining 8% of the market is shared among UTL (less than 5%), Orange (3%), K2 (less than 1%) and Sure Telecom (less than 1%).

**Figure 6. Mobile Subscriptions Market Share in Uganda, 2011 – 2014**



Source: UCC

- 5.5 As can be seen from Figure 6, the market structure is highly concentrated. In particular, Airtel and MTN have significant market shares, of 39% and 51% respectively. Hence, 90% of the mobile call and SMS market is held between these two operators.
- 5.6 Since the value of each network is proportional to their customer base sizes, the most valuable individual markets for MPA-USSD are those of MTN Uganda and Airtel Uganda. Indeed, conversations with stakeholders have suggested that it is not commercially viable for an SP to offer USSD VAS without having access to at least one of MTN or Airtel.
- 5.7 Consequently, the supply of MPA-USSD in Uganda is found to be made up of several monopoly markets (i.e. each CSP is its own market) and we consider the target customers for USSD SPs to be highly concentrated between MTN and Airtel.

Network Effects and Externalities

- 5.8 There is potential for network effects to develop, created by and then perpetuating the dominance of a particular CSP's MPA-USSD. One factor that will influence a USSD SP's valuation of acquiring access to a CSP's MPA-USSD platform will be the number of users connected to that CSP's network. That is, the greater (smaller) the number of users connected to a CSP's network the greater (smaller) the value of acquiring access to the CSP's MPA-USSD platform.

- 5.9 Similarly, a factor that may influence a mobile user's valuation of subscribing to a CSP is the range and number of USSD VAS available on the CSP's network. That is, the greater (smaller) the number of USSD VASs available over a CSP's network, the greater (smaller) the value of subscription to that network.
- 5.10 This positive feedback loop between the number of VASs available on, and the number of mobile users connected to, a network increases the utility to a user on that network. As a consequence the larger CSPs are likely to maintain, or further grow their large market shares. Conversely, the network effect hinders the growth of smaller CSPs by making it more difficult for them to attract and or retain either USSD SPs or users.
- 5.11 As such, CSPs with a large mobile subscriber base, such as MTN and Airtel, have a distinct advantage over smaller CSPs such as Orange, UTL and Smart Telecom.

### Sunk Costs

- 5.12 There are significant sunk costs in establishing a mobile network, for example in network electronics, IT systems and other infrastructure. These costs are incurred by the CSP primarily to enter the retail mobile markets for voice, SMS and data. Whilst this expenditure also enables the provision of MPA-USSD, this is secondary to the primary aim of retail market entry.
- 5.13 With regard to the specific provision of MPA-USSD, the sunk costs associated with access to the USSD platform are small in comparison with the overall network costs. Also, the capability to communicate using the USSD channel is integral to the network. The incremental cost of supporting USSD-MPA for external SPs is, again, relatively small.
- 5.14 As such, we do not consider sunk costs to be a material factor in the MPA-USSD market.

### Economies of Scale

- 5.15 CSPs invest large sums in order to build and operate mobile networks for the primary purpose of providing retail telephony and data services to customers.
- 5.16 To provide an MPA-USSD service itself, the incremental costs are small as a mobile CSP requires the addition of an external USSD gateway. As there are limited fixed costs, there are limited economies of scale that are specific to the MPA-USSD service itself.

### Economies of Scope

- 5.17 MPA-USSD is an incremental service that leverages the infrastructure established by the CSP to supply retail mobile services. The two principal shared elements are the mobile network and the USSD platform.
- 5.18 The mobile network is used in providing retail telephony and data services to consumers. USSD adds a very small incremental amount of traffic when compared to that associated with retail voice and data services.
- 5.19 The USSD platform is used by the CSP to provide its own services such as self-service airtime top-up and mobile financial services. Extending the use of this platform to third-party services can be achieved at relatively low cost.
- 5.20 Thus, offering MPA-USSD is incremental to CSPs' existing services and leverages common assets.

Extent of Vertical Integration

- 5.21 As we discuss above, USSD-MPA is an essential input to retail USSD applications. USSD SPs are reliant on CSPs for this input.
- 5.22 CSPs that provide access to the MPA-USSD platform also offer mobile VAS in the downstream retail market for VAS services. This raises the potential for CSP to abuse their position in the supply of the MPA-USSD to gain competitive advantage in the downstream retail market. This could be effected through either pricing or differential service quality.
- 5.23 We conclude that vertical integration is a relevant factor in the structure of the MPA-USSD market.

## **6 Market Conduct Assessment**

Control of Essential Upstream Inputs

- 6.1 MPA-USSD is a key upstream input to the retail VAS market in Uganda. As discussed in the section on Vertical Integration, MNOs that offer both retail VAS and MPA-USSD compete with USSD VAS SPs that purchase MPA-USSD from them.
- 6.2 As each MNO is a monopolist in its own market for MPA-USSD, each CSP fully controls an essential upstream input to retail USSD VAS.
- 6.3 Discussions with stakeholders have indicated that some MNOs have priced SPs out of specific high-value customer segments, such as postpaid mobile customers. These customers are known to spend more on retail VAS than the average consumer, and so are valued by all retail VAS SPs, including the MNOs.
- 6.4 As such, this is a relevant and applicable criteria for this SMP analysis.

Access to Sales and Distribution Channels

- 6.5 USSD SPs acquire customers through advertising to potential customers. This is done through online, broadcast and other physical (e.g. posters, billboards) media. This means that relationships with customers are formed indirectly.
- 6.6 MNOs, on the other hand, have an existing direct relationship with the entirety of their customer base through their provision of retail telephony and data services. This confers significant advantages to the MNO as it can directly access and advertise to these customers.
- 6.7 USSD SPs in this market have indicated that they have no access to the mobile CSPs' sales and distribution channels and are expected to acquire their own customers through other means. As advertising can be costly, this forms a significant cost to the USSD SPs.
- 6.8 CSPs control the customer billing relationship and access to individual mobile subscribers. MNOs can directly contact their own customers (e.g. via push USSD, SMS or IVR) as and when they wish to offer them competing retail VAS.
- 6.9 Additionally, as MNOs manage the billing relationship with the customers on behalf of the USSD SPs, this opens up the possibility for them to identify high-value customers and poach them by advertising their own services directly to the customer.

6.10 As such, we find this criteria to be both relevant and applicable to the SMP analysis, with each access provider retaining control over their own sales and distribution channels.

### Transparency

6.11 There is very little transparency in the commercial terms of MPA-USSD. Access agreements are negotiated individually between MPA-USSD customers and suppliers. These agreements are subject to confidentiality clauses, restricting public knowledge of agreed price and non-price terms. The terms of these agreements are not shared with the UCC.

6.12 Although WASPA-U, the service providers' association, agrees key terms in advance with the CSPs, it does not conclude agreements on behalf of its members. Negotiations are left to the USSD SPs and the CSPs.

6.13 A second issue regarding transparency exists in the reconciliation of revenues which is conducted primarily by the CSPs. USSD SPs have limited visibility of the access provider data on USSD sessions. Interviewees suggested that CSPs do the reconciliation without sharing their own data, and will prefer their own data to that of the USSD SPs. Occasionally, this will lead to reconciled figures that differ significantly from what the USSD SP has submitted to the CSP.

6.14 As revenue shares are determined on the basis of traffic volumes and revenues generated, CSPs have an incentive to understate the amount of revenue generated by USSD SPs. This then allows the access provider to underpay the SPs (i.e. as part of the revenue share agreement) for revenue generated by their retail VAS services.

6.15 As such, we find this criteria to be relevant and applicable in the analysis of SMP in this market.

### Ease of Consumer Switching

6.16 Given that the MPA-USSD market is comprised of a set of sub-markets, one for access to the subscribers of each CSP, it is unlikely that a USSD SP would benefit from switching.

6.17 That said, there are limited switching costs in this market should a USSD-SP wish to do so. Contracts are typically renewed annually and have break clauses for all parties involved, it is relatively easy to exit a contract or switch CSPs.

6.18 However, stakeholder interviews indicated that contracts are seldom negotiated beyond the minimum term and USSD SPs are expected to accept terms as-is.

6.19 Overall, we find this criteria to not be relevant or applicable to the SMP analysis.

### Countervailing Buyer Power

6.20 There are a number of USSD SPs in the market and one association, the Wireless Application Service Provider's Association of Uganda (WASPA-U), representing them.

6.21 There are six potential suppliers in this market, MTN, Airtel, Orange, UTL, K2, and Smart. MTN and Airtel have more than 90% of the subscribers in the market, and so they remain the most attractive suppliers to USSD SPs.

6.22 There is some evidence of countervailing buyer power, given that WASPA-U has previously managed to negotiate a standard baseline set of terms and conditions for MPA-USSD SPs.

- 6.23 However, it has been indicated that contracts are often drafted by the MNOs, and that USSD SPs are prevented from negotiating specific terms once baseline terms have been agreed. This suggests that individual USSD SPs have limited or no countervailing buyer power when concluding contracts with CSPs.
- 6.24 As USSD SPs require access to the USSD platform of at least one of Airtel or MTN in order for their retail VAS business to be profitable, and this is known to the MNOs, there is even less countervailing buyer power for the SPs when negotiating or renegotiating contracts annually.
- 6.25 MPA-USSD revenues are not significant enough to MNOs to be more than incremental to their core business, and so they can bear to lose customers that are not willing to accept their contractual terms. On the other hand, USSD SPs generally do not have this choice.
- 6.26 Some CSPs have also been singled out for not observing the terms of contracts.
- 6.27 In conclusion, SPs have no countervailing buyer power when negotiating with MTN and Airtel. Even with smaller CSPs, countervailing buyer power is limited. As such, we find this criteria to be relevant and applicable to the SMP analysis.

### Evidence of Dynamic Competition

- 6.28 We see little evidence of dynamic competition in the MPA-USSD market in contrast to the innovative, retail market for USSD VAS.
- 6.29 Given that the market consists of a sub-market for each CSP, and USSD SPs have a commercial incentive to maximise their reach, there is limited pressure on the CSPs to compete against each other for business. It is more likely that a USSD SP would seek additional agreements rather than substitutes.
- 6.30 This is consistent with the lack of innovation in the market for MPA-USSD. None of the mobile CSPs have announced any MPA-USSD-specific initiatives.
- 6.31 It is also aligned with the presence of service quality issues, and the lack of pressure on CSPs to address these or commit to service level guarantees.
- 6.32 We conclude that this criteria is relevant to the assessment of SMP.

### Joint Dominance

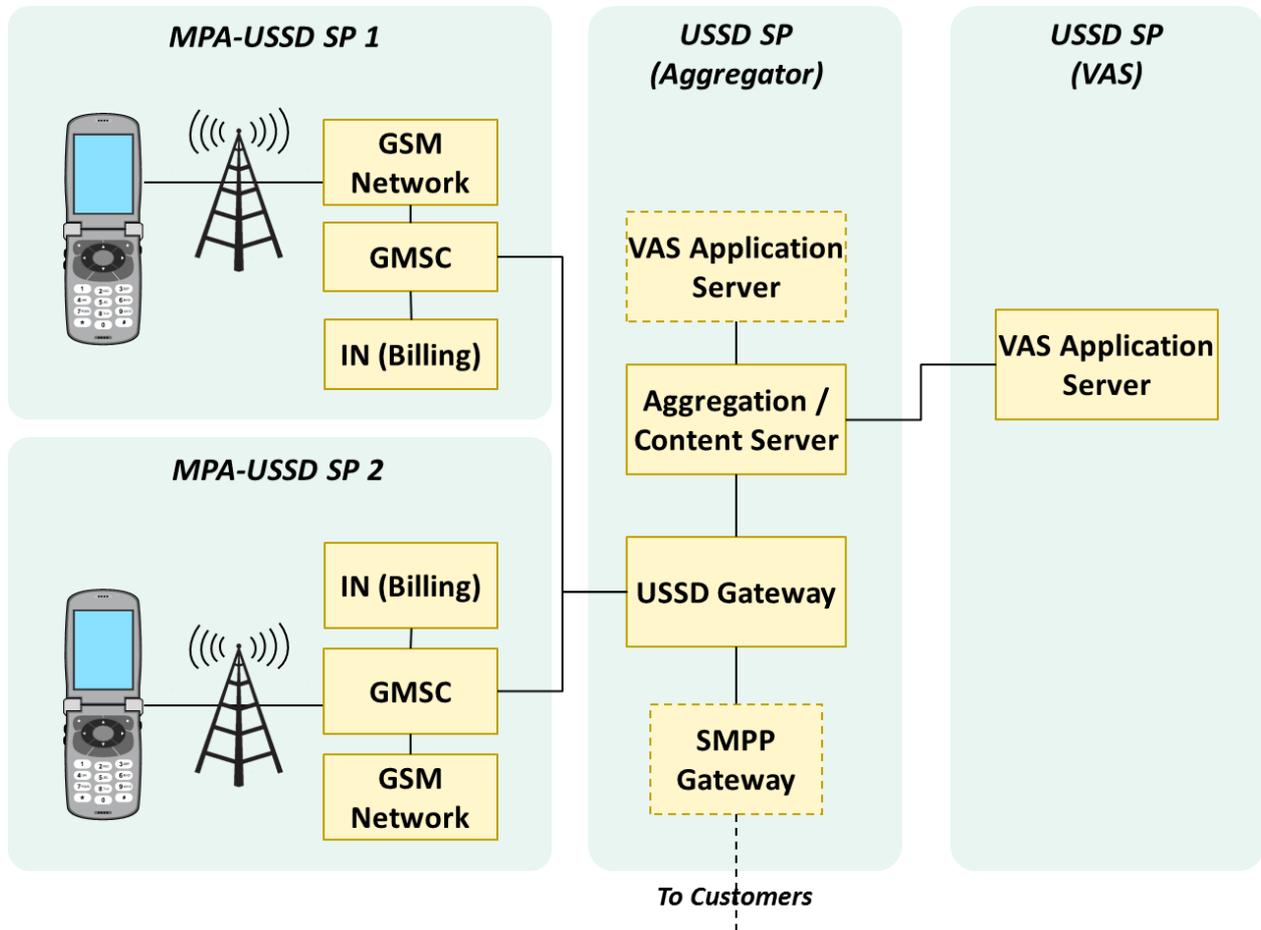
- 6.33 The market for USSD-MPA is composed of sub-markets, one for access to each of the mobile operators' subscriber bases.
- 6.34 While MTN and Airtel command the majority of value to USSD SPs by virtue of having the largest subscriber bases, they appear not to coordinate their behaviour to influence prices in, or access to, their individual MPA-USSD markets.
- 6.35 We thus find this criteria to not be relevant or applicable to this SMP analysis.

## 7 Basic Market Conditions

### Technology

- 7.1 USSD is a service based on international standards that allows a mobile user to initiate session-based exchanges of data using the built-in functionality of all GSM mobile terminals. All mobile CSPs in Uganda support USSD on compatible mobile terminals.
- 7.2 USSD is commonly supported on GSM-based mobile phones including both feature phones and smartphones. Whereas smartphones additionally support IP-based communications sessions, this is not the case for feature phones. As many Ugandan subscribers have feature phones, USSD is therefore an important and useful communications channel.
- 7.3 As multiple SIM ownership is common in Uganda and many consumers have dual-SIM phones, a significant number of Ugandans can use USSD via two different mobile networks without the need to switch devices or SIMs.
- 7.4 The quality of network coverage is variable in Uganda, with 2G and 3G coverage limited outside of urban areas. This may cause issues with initiating a USSD session. Unlike SMS, which operates on a store-and-forward basis, USSD requires network coverage to function properly. Moving out of coverage will interrupt a USSD session and it will need to be reinitiated when back in range of a signal.
- 7.5 Each USSD message includes up to 182 characters of text and is sent and received using the network's signalling channel while a session is open. The signalling channel is distinct and separate from the channel that is used to carry voice calls. Messages are not kept on the device after being presented to the user.
- 7.6 The diagram below captures the key components of a USSD-based service.

Figure 7. MPA-USSD and USSD SP Architecture



Source: Cartesian

7.7 The USSD gateway offers a number of functions to both the MNO and USSD SP. It enables, via the service manager, individual USSD sessions to be set up with end-users (i.e. mobile terminals). The service manager also ensures that USSD usage is recorded and stored for billing purposes.

7.8 Lastly, the USSD gateway provides access points and interfaces for USSD SPs to connect their application servers to the gateway. The application server transmits data to the USSD gateway during a USSD session, which is then routed on to the correct end-user. There are a number of components in this architecture, as summarised below:

- **Gateway Mobile Switching Centre (GMSC):** A logical or physically separate part of an MSC, the GMSC is responsible for routing USSD session data outside of the mobile network.
- **IN (Billing):** Responsible for the capture of usage records so that USSD SPs can be billed for their usage
- **USSD Gateway:** Allows a server to process incoming and send USSD data from and to a CSP network
- **SMPP Gateway:** Allows a USSD aggregator to provide service providers (e.g. banks) with an interface to connect their application servers to allow for USSD sessions between the entity and the USSD VAS subscriber (e.g. to provide banking services)

- **VAS Application Server:** Processes incoming USSD data from subscribers and sends appropriate responses; also manages VAS subscriptions

- 7.9 As shown above, the USSD aggregators may provide VAS services (with an application server) as well as USSD platform services to third-parties (using a USSD gateway).
- 7.10 Retail USSD VAS SP could offer services using other technologies such as SMS, IVR and Internet-based application. However, USSD provides security and functionality that SMS and IVR do not (such as session-based interactions), and internet-based (or over-the-top, OTT) applications are only available to a small subset of end-users (i.e. those with smartphones). These technologies are therefore not good substitutes for USSD.

### Cost Conditions

- 7.11 USSD SPs have fixed costs to procure application servers, and to set up interconnection to the CSP(s). The most significant variable costs are per session: USSD SPs can be charged per session or per screen displayed.
- 7.12 Platform costs for MPA-USSD (i.e. USSD gateways) are in the range of UGX 10M to UGX 20M, not including the cost to acquire the short code (approximately UGX 30M).
- 7.13 Given fixed and ongoing costs to set up and operate the business and CSP interconnection, and the capacity of USSD gateways, USSD SPs that directly interconnect with CSPs have the incentive to improve their gateway utilisation and spread this cost over multiple revenue sources.
- 7.14 Thus, the prevailing cost conditions of the market encourage aggregation, with a smaller number of USSD aggregators supporting retail USSD VAS SPs by providing them with interconnection services to one or more CSPs.
- 7.15 This aggregation also allows USSD SPs to benefit from volume discounts provided by the CSP. Rates of between UGX 40 to 60 per session are possible with volume discounts.
- 7.16 The MNOs have a cost structure with a lot of fixed costs in the network. The primary drivers of cost for suppliers of MPA-USSD are the costs of running the mobile network infrastructure (e.g. investment in and maintenance of towers, radio and network equipment) required to carry USSD sessions.
- 7.17 The MNOs also incur some fixed costs to interconnect with USSD SPs, though this is relatively small when compared to their overall costs. Indeed, USSD SPs have indicated that CSPs require them to pay an up-front fee for interconnection which may cover a proportion of the MNO's costs. This charge is separate from fees associated with usage of the CSP's USSD infrastructure.
- 7.18 Active equipment is primarily sourced internationally and so is subject to exchange rate fluctuations. This can drive costs up when the UGX weakens against the USD (or other international currencies). Equipment most relevant to the provision of the service are USSD gateways.
- 7.19 The marginal cost of a USSD session itself is very small compared to retail rates. While data for USSD cost to MNOs is limited, it is marginal as USSD is incremental to core MNO offerings such as voice and data services.

## 8 Overall Conclusion of SMP Assessment

### Competition Issues Identified

- 8.1 In this assessment we have identified several competition issues in the MPA-USSD market.
- 8.2 Access to the USSD platform is an essential technical input to the provision of retail USSD services to mobile users. CSPs have a monopoly for access to the mobile users that subscribe to their network. It follows that USSD SPs have no option but to access a CSP's MPA-USSD if they want to offer services to mobile users on that CSP's network.
- 8.3 CSPs supplying MPA-USSD are vertically integrated, i.e. in addition to MPA-USSD supply they also compete in the downstream market for retail USSD VAS. One implication of this is that a CSP may use its monopoly position in the upstream market for MPA-USSD to limit the level of competition in the retail market.
- 8.4 We find evidence to indicate that there is excessive pricing of MPA-USSD set-up and services, as well as short codes. There are reports that CSPs use price as a mechanism of restricting access to profitable customer segments.
- 8.5 MTN and Airtel, by virtue of their sizeable customer bases, have a greater degree of freedom from competitive constraint than other CSPs. This is evidenced by high pricing and contractual control of their respective MPA-USSD services. Pricing that is excessive will extract a significant proportion of the value created by USSD SPs, and can be considered as limiting new entrants into the USSD based VAS provision.
- 8.6 Despite the existence of an industry association representing USSD SPs, there is limited countervailing buyer power between the individual USSD SPs and the CSPs. As MTN and Airtel have a combined share of 90% of the retail mobile market, USSD SPs have no choice but to sign up with one or both of these CSPs to get their services to market. In negotiations with these two CSPs, USSD SPs effectively have no countervailing buyer power.
- 8.7 There is a lack of transparency in access provision, with limited publicly-available information on pricing and services. Terms of MPA-USSD as stated by the major CSPs are not negotiable and there is no visibility on the said terms due to overly restrictive non-disclosure provisions in agreements for MPA-USSD.
- 8.8 There are reported issues with service quality. As with price, USSD SPs reported that it is not possible to negotiate service level guarantees.
- 8.9 The MPA-USSD market exhibits network effects, which may affect the level of competition between CSPs in the retail mobile market. In particular, it may limit the ability of new CSP entrants to compete with the establish CSPs with large market shares.

### Evidence of SMP

- 8.10 Each access provider in this market uniquely controls access to their own USSD platform.
- 8.11 Access to a USSD platform is an essential input to the provision of retail USSD VAS. USSD SPs require access to the USSD platform to deliver retail VAS services. The USSD access providers are vertically integrated CSPs which also compete in the retail USSD VAS market.

- 8.12 There is a lack of countervailing buyer power. Prices and terms are effectively dictated by the access providers to the USSD service providers.
- 8.13 MTN and Airtel, by virtue of their sizeable customer bases, have a greater degree of freedom from competitive constraint than other CSPs.
- 8.14 However, all CSPs have some ability to act independently of one another and of their customers by virtue of their individual monopolies on MPA-USSD.

### Licensees with SMP

- 8.15 MPA-USSD services are supplied in Uganda by Airtel, MTN, Orange, Smart Telecom, Uganda Telecom and K2. Each of the CSPs has SMP in the market of MPA-USSD on their own networks. This follows from the simple technical fact that a USSD SP that wants to offer services to mobile users on a particular CSP's network must acquire access to that CSP's MPA-USSD.
- 8.16 A key factor in assessing the effect of this SMP is the size of the CSP's share of the retail mobile market. On this basis, MTN and Airtel are currently able to exploit their SMP in the market for MSP-USSD to:
- Limit competitive entry in the retail USSD SP market; and,
  - Price MPA-USSD independently of cost to capture a disproportionate share of the USSD VAS value chain;
  - Refuse to accept service level guarantees and not compensate USSD SPs for poor performance.
- 8.17 Whereas, even though Orange, Smart Telecom, and Uganda Telecom do not currently have significant share of the retail mobile market, they would be able to exploit their SMP to:
- Price MPA-USSD independently of cost to capture a disproportionate share of the USSD VAS value chain; and,
  - Refuse to accept service level guarantees and not compensate USSD SPs for poor performance.

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