COMPETITION ASPECTS OF DIGITAL FINANCIAL SERVICES

ITU-T FOCUS GROUP ON DIGITAL FINANCIAL SERVICES

International Telecommunication Union

ITU-T

TELECOMMUNICATION
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ITU-T Focus Group Digital Financial Services

Competition Aspects of Digital Financial Services

Focus Group Technical Report

ITU-T

International Telecommunication Union

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The procedures for establishment of focus groups are defined in Recommendation ITU-T A.7. TSAG set up the ITU-T Focus Group Digital Financial Services (FG DFS) at its meeting in June 2014. TSAG is the parent group of FG DFS.

Deliverables of focus groups can take the form of technical reports, specifications, etc., and aim to provide material for consideration by the parent group in its standardization activities. Deliverables of focus groups are not ITU-T Recommendations.

Competition Aspects of Digital Financial Services

About this report

This technical report was written by Leon J. Perlman, PhD.

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Executive summary

Scope of report

This report enumerates a sampling of competition issues stemming primarily from access to, and the use of technology in, the digital financial services (DFS) ecosystem from the perspective of its stakeholders.

Stakeholders include regulators, technical service providers and aggregators, payment switches, agent networks, mobile network operators (MNOs), independent banks, payment service provider (PSP)-affiliated banks, MNO-affiliated banks, MNO-affiliated PSPs, mobile virtual network operators (MVNOs), and independent PSPs.

Market imbalances may result from unequal policy frameworks or from market conduct. The former may be from regulatory bans on or restricted access to: DFS ecosystems; disproportionate and unequal compliance and capital requirements; and inconsistent and disproportionate tax regimes. The latter could relate to a market participant's access to fair reasonable and non-discriminatory (FRAND) terms to technology; critical and scarce infrastructure, services used for channel or wholesale access, discriminatory pricing of services, cross-subsidization of services, quality of service, and access to big data.

The report outlines competition issues that have been identified by the author based on publicly available and ventilated examples and studies of DFS ecosystems worldwide, as of January 2017. Insights from market participants, analysts, and regulators participating in the ITU Focus Group on DFS and externally are also included.

Regulatory capacities and potential types of interventions to deal with these and other related competition and market balance concerns are detailed, as are the technical and commercial methods that have been employed by market participants to deal with competition-related issues in the absence of regulatory intervention.

Country examples are from: Bangladesh, China, Colombia, Georgia, Ghana, India, Jordan, Kenya, Malawi, Mexico, Nepal, Nigeria, Pakistan, Peru, Philippines, South Africa, Sri Lanka, Tanzania, Uganda, Zambia, and Zimbabwe. In some instances, multiple competition-related issues in the DFS ecosystem in a country may manifest.

As a pure information resource for the DFS Focus Group, this study does not make any conclusions or recommendations as to how the issues described may be approached or resolved.

Approach

For those not necessarily familiar with competition policies and laws, this study does not employ classic competition categorizations found in the literature and academic works for ease of reading.[1] Indeed, there are tensions and complexities in applying traditional competition precepts and terminology designed for traditional (and often) physical products to digital ecosystems, such as DFS.[2]

[1] The short competition law primer in Annex A provides further details.

[2] This tension in application was noted in a competition report by the GSMA. See GSMA (2016a) *ibid;* and *Concurrences* (2016) *ibid.*

Hence, instead of defining competition issues as per the 'vertical' or 'horizontal' terms of art usually employed – which includes defining a 'market'[3] - this study instead uses a functional (descriptive) approach to categorizing the identified or potential competition issues. It similarly uses an evidence-based approach to determine what issues have risen to a level of concern for entities and regulators, and how these have been dealt with – or not, as the case may be – either through market dynamics and/or regulatory intervention.

The country examples included below and the accompanying explanatory text reflect this approach, which first defines the context of the issue and any technical or other components outlines any related competition aspects, and then provides the country examples where the issue and any identified competition aspects have arisen and are dealt with (if applicable).

Similarly, a functional approach is used to describe any technical solutions that have been designed or employed to deal with any competition bottlenecks in DFS.[4]

The study also recognizes that where issues of dominance or significant market power (SMP) arise, this is usually only a determination that can be decided by the relevant authorities on a case by case basis after a market review and analysis. Indeed, market dominance with or without SMP and associated market conduct that invokes the ire of competitors, may or may not actually breach national competition law and/or related competition provisions of sectoral legislation and require specific regulatory determinations.

[3] There are various approaches to defining a market, the methods of which are beyond the scope of this paper. Briefly, a market definition is a tool used by regulators to identify and define the boundaries of competition between entities so as to establish the framework within which competition policy principles can be applied. This may identify in a systematic way competitive constraints that market participants face. For example, some regulators employ the 'Hypothetical Monopolist Test,' also known as the SSNIP (Small but Significant and Non-transitory Increase in Price) test. See further *Concurrences* (2016) *Glossary,* available at https://goo.gl/nR9pPK, and GSMA (2016a) *Resetting Competition Policy Frameworks For The Digital Ecosystem*, available at https://goo.gl/YHBMxv

[4] Because the country examples may have multiple use cases, for sake of completeness these examples may be duplicated in multiple sections.

Abbreviations used

3GPP	3rd Generation Partnership Project
ACH	Automated Clearing House
AML	Anti-Money Laundering
API	Application Programming Interface
ATM	Automated Teller Machine
BB	Bangladesh Bank
BOU	Bank of Uganda
BTRC	Bangladesh Telecommunication Regulatory Commission
CA	Communications Authority
CAK	Competition Authority of Kenya
CBK	Central Bank of Kenya
CBN	Central Bank of Nigeria
CFTC	Competition & Fair Trading Commission
CGAP	Consultative Group to Assist the Poor
CICO	Cash In/Cash Out
CTC	Competition and Tariff Commission
DFS	Digital Financial Services
EMV	EuroPay, MasterCard & Visa
ETSI	European Telecommunications Standards Institute
FRAND	Fair Reasonable and Non-Discriminatory
G2P	Government-To-Person
GPR	General Purpose Reloadable
GSM	Global System for Mobile Communications
GSMA	GSM Association
ICT	Information and Communications Technology
IFSC	Indian Financial System Code
IP	Internet Protocol
ITU	International Telecommunications Union
IVR	Interactive Voice Response
KYC	Know Your Customer
LONO	Letter of No Objection
MFI	Micro Finance Institution
MMI	Man Machine Interface
MNO	Mobile Network Operator

MO	Mobile Originating
MO-SMS	Mobile Originating SMS
MOU	Memorandum of Understanding
MT	Mobile Terminating
MT-SMS	Mobile Terminating SMS
MVNO	Mobile Virtual Network Operator
NFC	Near Field Communication
NI-USSD	Network Initiated USSD
NPCI	National Payments Corporation of India
NPS	National Payment System
NSDT	Near Sound Data Transfer
OS	Operating System
OTA	Over The Air
OTC	Over The Counter
OTT	Over The Top
P2A	Person-To-Account
P2M	Person-To-Machine
P2P	Person-To-Person
PCI-DSS	Payment Card Industry Data Security Standard
PIN	Personal Identification Number
POS	Point of Sale
POTAZ	Postal and Telecommunications Regulatory Authority of Zimbabwe
PSP	Payment Service Providers
QOS	Quality of Service
RBI	Reserve Bank of India
Regtech	Regulatory Technology
RTGS	Real-Time Gross Settlement
SIM	Subscriber Identity Module
SMP	Significant Market Power
SSNIP	Small but Significant and Non-transitory Increase in Price
SMS	Short Message Service
SP	Service Provider
STK	SIM Toolkit
TRAI	Telecom Regulatory Authority of India
TSP	Technical Service Provider

UCC	Uganda Communications Commission
USSD	Unstructured Supplementary Service Data
VAS	Value-Added Services

A OVERVIEW

1 BACKGROUND TO THE STUDY

As the digital financial services (DFS)[5] ecosystem grows and becomes more competitive, a range of competitive issues relating to and affecting existing and potential market participants have emerged.

The trusted internet connections (TIC) Working Group identified a number of these competition-related issues in DFS ecosystems worthy of additional study. These may include those relating to: market access and licensing; technical access to telecommunications and payment infrastructure; differential rules on the use of agents; ability to interoperate; capital requirements and safeguarding of funds; service pricing; cross-subsidization of services; quality of service (QOS); taxation; and access to big data.

These issues form the basis for this study and are approached from the respective perspectives of market participants in, and regulators of, the DFS ecosystem, all of whom may have their own sets of competition-related concerns. These market participants include: Independent banks; mobile network operator (MNO)-affiliated banks[6]; MNO-affiliated payment service providers (PSPs)[7]; independent PSPs; PSP-affiliated banks[8]; MNOs[9]; technical service providers (TSPs) and aggregators; payment switches; agent networks; and mobile virtual network operators (MVNOs).

While discussions of competition issues can often amount to a dystopic characterization of an ecosystem, this may not necessarily be the norm in DFS ecosystems. There are, of course, a number of examples where market forces in the ecosystem have sufficed to provide an equilibrium of service provision and access between market participants, and which then have obviated the need for regulator or competition authority intervention in relation to access to technology, services, and pricing thereof.

But, as revealed in the country examples below, the issues in areas such as market access; access to technology; data and services; and use of agents are manifest and may be of concern to a number of regulator, competition authorities, market participants, and consumers in a number of countries.

While there are significant market participants in the DFS ecosystem whose actions affect the market, it is trite to say that much of the competition-related focus in DFS has revolved around the activity of regulators with respect to MNOs and the access they provide to critical and scarce bearer infrastructure such as unstructured supplementary service data (USSD) and SIM toolkit (STK). Indeed, just through sheer weight of public examples, and their prominent role in the DFS ecosystem, there is often a large focus on MNOs when looking at competition issues in DFS-focused literature.

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[5] Digital financial services include methods to electronically store and transfer funds; to make and receive payments; to borrow, save, insure and invest; and to manage a person's or enterprise's finances. ITU DFS Focus Group (2016) *Glossary*, available at http://www.itu.int/en/ITU-T/focusgroups/dfs/Pages/default.aspx

[6] For example, payment banks in India such as those promoted by Airtel and Vodafone. These are regulated under a new bank-based regulatory regime.

[7] In some DFS markets, MNO subsidiaries are licensed as PSPs or e-money issuers, and are operationally distinct from the parent MNO. They may be regulated as financial service providers.

[8] For example, payment banks in India such as those promoted by PSPs like PayTM and Fino PayTech

[9] See Exhibit 1.

Therefore, the question may be asked as to why there is such an outsized competition-related focus on MNOs in many jurisdictions and less so on others. From one perspective, it may reflect the MNO's critical role in DFS infrastructure provision and their noted foundational 'first mover' role in building DFS ecosystems in some markets which, not only allowed them to build significant market presences, but also to potentially be in a position to restrict access to critical and scarce mobile infrastructure from direct DFS competitors. On the other hand, others[10] argue that the focus on bearer access and pricing has come from a relatively small number of 'hotspots,' coupled with a belief that *ex ante*[11] 'regulatory activism' is a quick fix in any market, but without recognizing the radically different market competition and context for DFS.[12] Similarly, the competition issues outlined below may be representative of market dynamics in a particular country, and may not necessarily be a global trend.[13]

Importantly too, the market conduct and competition issues raised in a particular jurisdiction, and which are enumerated below, may or may not actually breach national competition law and/or related competition provisions of sectoral legislation. This ultimately must be decided by the relevant regulators or competition authorities on a case-by-case basis after a full market review and analysis. In this respect, it should be noted that certain behavior which is acceptable for a market player with an insignificant market power could actually be considered a breach of competition law if undertaken by an entity with substantial market power (SMP). It is the responsibility, however, of regulators or competition authorities to make such a determination, if required.

MNOs and other non-banks may also have their own competition-related concerns, particularly with regards to market access and licensing, access to national payment systems, and proportionality of regulations that may affect them. In particular, incumbent banks and payment switches required for the integration of POS systems and for interoperability have often been accused of restricting access to critical financial and banking infrastructure to potential DFS competitors such as MNOs and non-banks. These issues and concerns are described in full below.[14]

From the perspectives of all market participants, there may also be cases of regulatory overreach in relation to market imbalances. As noted by the Consultative Group to Assist the Poor (CGAP), this may run counter to a key guiding principle for regulation: That the remedy for harmful conduct should be the least restrictive available to achieve the intended objective and should be proportionate to the extent of risk.[15] The intervention should therefore be justified by the risk to market evolution of anti-competitive behavior; the higher the risk, the stricter the rules that comprise the intervention.

Although not exhaustive, the study captures a number of countries where competition issues relating to the DFS ecosystem have been found to be manifest. It outlines the genesis of competition issues by the type of issue or market conduct that may have raised market opprobrium and regulatory focus

[10] MNO comments to the TIC WG.

[11] See Section 3.2.

[12] Indeed, in a number of markets using USSD and STK for DFS purposes, market forces have sufficed to ensure that no regulatory intervention has been required.

[13] The sense then from some is that focus on MNOs and provision of access is disproportionate to the scale and extent of the challenge in providing access to DFS, given the number of markets in which USSD and STK is being provided where commercial arrangements have been agreed on.

[14] Any competition-related concerns of MNOs and other non-banks are also described below.

[15] CGAP (2014) *Mobile Payments Infrastructure Access and Its Regulation: USSD*, available at https://goo.gl/IBu4sJ. In the context of sharing USSD, a least restrictive rule, notes CGAP, will be one that minimizes risk of anti-competitive behavior without putting unnecessary restrictions on MNOs. For example, banning MNOs from the mobile payments market is more restrictive than a regulation mandating USSD access. Other examples may include setting price caps or floor prices for bearer access.

or ire, and provides examples within different countries of how these issues have manifested and been dealt with by market dynamics and/or through regulatory intervention.

2 APPROACHES TO COMPETITION ISSUES

From the country evidence detailed below, many of the classic vertical and horizontal competition issues and behaviors outlined in Annex A may map to the DFS ecosystem.

In terms of market behaviours, regulators, competition authorities and some market participants may find the following behavior problematic from a competition perspective:

- Outright or unreasonable restrictions on or inordinate delays in access to scarce infrastructure, channels and services such as unstructured supplementary service data (USSD), shortcodes, and payment switches.[16]
- Bundling of services, or ability to provide scarce incentives, that create unfair competition.
- Collusive or unfair pricing of services for USSD, STK, and switching and interchange fees in payments switches.
- Lack of, or restricted, ability to participate in industry-led governance structures relating to infrastructure or services.
- Deliberate or unreasonable lack of QOS guarantees.
- Inability to, or unreasonable restrictions on, access to big data suites.

Market participants may believe that the following regulatory and policy approaches could affect their ability to compete on a level playing field, as summarized in Exhibit 1.[17]

- restrictions on licensing/market access and unequal unequal licensing provisions;
- asymmetric compliance requirements such as for agent know your customer (KYC), and cash handling and physical security;
- unequal tax treatment;
- unequal treatment of capital requirements required for licensing;
- forced or mandated pricing caps for channel access;
- bans on agent exclusivity.

[16] In scenarios where an entity controls the entire vertical chain of (scarce) access, this may result in 'refusal to supply' behavior.

[17] Depending on the behaviour, market participants outline in Exhibit 1 may be the cause or recipient of the behavior.

Exhibit 1 – Competition-related issues from the perspectives of DFS market participants

Type of behaviour	Independent banks	MNO/PSP-affiliated banks[18]	MNO-affiliated PSPs[19]	Independent PSPs	MNOs
Licensing					
Unable to operate at all in DFS ecosystem			X	X	X
Unable to provide full range of DFS services		X	X	X	X[20]
Unable to operate independently in DFS ecosystem			X	X	X
Only able to provide agent/non-financial[21] services to banks or PSPs			X	X	X[22]
Only one MNO allowed to offer services for DFS[23]	X	X	X	X	X
Infrastructure & service access					
Inability to obtain network initiated USSD (NI-USSD) services	X	X		X	
Only able to provide bearer services to banks or PSPs			X	X	X
Delays in obtaining shortcodes from MNOs	X			X	
Not given access to bank and/or national payment infrastructures			X	X[24]	X

[18] These may be specialized banks, for example the new payment banks authorized by the RBI in India. Competition issues between payment banks and independent banks are discussed in CUTS (2016a) *Understanding And Addressing Competition & Regulatory Barriers To Growth Of Payments Banks In India*, available at https://goo.gl/WW3oXv; and CUTS (2016b) *Research Project On Identifying And Understanding Competition And Regulatory Bottlenecks To Growth Of Payments Banks In India*, available at https://goo.gl/RzfhmS

[19] These may be specialized PSPs that are subsidiaries or co-owned by MNOs, for example PSPs authorized in Jordan.

[20] Even if they are allowed direct access to the market, they may be restricted from providing certain services deemed risky by the regulator, i.e. credit. Or they may be able to offer more risky services, but on less competitive terms than banks.

[21] Non-financial services include customer authentication and KYC checks.

[22] Even if MNOs are only allowed to provide agent services to banks or non-banks, these compliance rules may make even such an opportunity less profitable.

[23] For example in Ethiopia where only one (state-owned) MNO has been licensed.

[24] They may be forced to interoperate through a payment switch at terms and prices that are unprofitable.

Type of behaviour	Independent banks	MNO/PSP-affiliated banks[18]	MNO-affiliated PSPs[19]	Independent PSPs	MNOs
Inability to access APIs, or integration/testing of APIs is delayed	X			X	
Only one entity allowed to run critical payment infrastructures[25]					
Infrastructure pricing					
Differential, higher pricing on USSD, and/or STK access[26]	X			X	
Provision of bearer access at below cost					X[27]
Not given fair reasonable and non-discriminatory (FRAND) access to bank/national payment infrastructures		X	X	X	X
Bundling and cross subsidization					
Cross-platform subsidization and incentives	X[28]	X[29]		X	
Forced use of services to obtain technical access	X[30]	X	X	X	X
QOS					
QOS issues affecting access channels	X			X	

[25] For instance, in India where only National Payments Corporation of India (NPCI) - owned by banks - has been licensed to offer retail payment infrastructure services.

[26] When compared to the MNO/MNO-partner's access to similar services.

[27] These may be low-margin bearer service and they may be forced to provide access to their communications network at possibly below cost rates as a condition for their authorization to operate DFS.

[28] MNOs are able to provide services and incentives that banks and other PSPs may not be able to provide: For example, to incentivize customer DFS use by giving away free airtime minutes and SMSs when a MNO customer transacts.

[29] For example, MNO-affiliated payments banks in India offer free mobile airtime with promoter MNOs for opening of accounts with affiliated banks.

[30] For example the Vodafone India MyVodafone Android smartphone app, which reportedly forces MNO Vodafone India users to open up an M-PESA account with Vodafone's M-PESA subsidiary to pay for their telecommunications services. See Medianama (2017) *My Vodafone App Is Forcing Customers To Create An M-Pesa Wallet,* available from https://goo.gl/zYT7yI

Type of behaviour	Independent banks	MNO/PSP-affiliated banks[18]	MNO-affiliated PSPs[19]	Independent PSPs	MNOs
Lack of QOS terms in contracts[31]	X	X	X	X	X
Lack of optimal grievance redress in case of QOS	X	X	X	X	X
Big data					
Inability to get full access to proprietary data sets[32]	X	X[33]	X	X	X
Asymmetric compliance requirements					
Disproportionate general compliance requirements	X[34]	X[35]	X[36]	X[37]	X[38]
Higher security needs for cash handling	X	X			
Higher capital requirements	X[39]	X			
Higher KYC compliance requirements	X[40]	X		X	

[31] Versus other preferred parties who may not have the same restriction

[32] For example, for alternative credit scoring purposes.

[33] In India, payment banks have access to data sets available with respective promoter MNOs/PSPs but not of other market players.

[34] Compliance is more rigid for banks than non-banks for the same or similar service offering.

[35] Payment banks in India might be required to comply with stringent/multiple approvals compared with full-service banks. See CUTS (2016b) *ibid* and the Indian country example below.

[36] Capital requirements, agent approval requirements and/or KYC requirements may be too stringent relative to the risk offered by low-value DFS accounts.

[37] *Ibid.*

[38] *Ibid.*

[39] *Ibid.*

[40] Versus MNOs.

Type of behaviour	Independent banks	MNO/PSP-affiliated banks[18]	MNO-affiliated PSPs[19]	Independent PSPs	MNOs
Higher physical security requirements	X[41]	X[42]			
Taxes					
DFS transactions subject to special taxes not applicable to MNOs/PSPs	X[43]				
DFS transactions subject to special taxes not applicable to banks	X[44]		X[45]	X[46]	X[47]
Agents					
Need for agents to have insurance[48]			X	X	X
Disproportionate agent approval requirements	X[49]	X			
Disproportionate capital requirements		X	X	X	X
Disproportionate KYC requirements	X	X	X	X	X
Agent exclusivity	X	X	X	X	X

[41] Non-banks may not have the same cash-handling, physical branch, and cash storage requirements that are imposed on banks. For example, the requirement in Tanzania for banks to have security cameras at branches.

[42] *Ibid.*

[43] Their transactions are taxed at a high level, whereas non-banks are not taxed or taxed less.

[44] For example, in Pakistan.

[45] Transactions may be subject to special taxes not applicable to banks.

[46] *Ibid.*

[47] *Ibid.*

[48] For example, the requirement in Nigeria for MNO's DFS agents to have insurance.

[49] They may not be able to use agents to provide DFS-related services, or the approval and/or compliance requirements for their agents may in some cases be disproportionate to the risk.

3 ROLES AND RESPONSES OF REGULATORS IN COMPETITION MATTERS IN DFS

3.1 Remits of regulators related to competition matters

The DFS ecosystem usually touches on a number of regulatory domains and may involve multiple regulators or authorities: For example, the telecommunications regulator, central bank[50], payments regulator[51], financial intelligence unit, and a competition authority.[52] Generally, for DFS, the financial services regulator is the lead regulator, and is usually the central bank. Telecommunications regulators usually act in a supporting role, with their jurisdiction mostly limited to issues related to the telecommunications channel.

There are multiple theories about how competition-based precepts should be applied to the digital economy,[53] but generally competition-related jurisdiction and power is founded through *sectoral regulations* and *national competition law*.

Not all countries have a competition law or competition authority. Often, the competition powers are found in sectoral regulation, such that each of the sectoral regulators may have mandates that allow them to intervene in their sector if there is a competition-related concern.

In some jurisdictions, competition policies or laws are available to guide sector regulators to help them deal with competition-related issues. Because of jurisdictional conflicts, coordination on competition issues has been found to be useful in preventing regulatory arbitrage. This has usually taken the form of a memorandum of understanding (MOU) between the regulators which has outlined who has jurisdiction over a specific issue or sets of issues and the remedies available, if any.[54] Or, the legislature may intervene to specifically carve out competition-related roles.[55]

3.2 Application of regulatory remits

Sectoral regulations may contain competition provisions which apply *prior* to the occurrence of actions that may require intervention to ensure a fair and level playing field.[56] These are termed *ex ante*. For example, regulators have intervened to provide access to a USSD channel at FRAND terms.

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[50] This is typically the banking regulator. There may be dual remits on aspects of DFS. For example: In Indonesia between financial regulators (2011), the Indonesian Financial Services Authority (Otoritas Jasa Keuangan, (OJK)) replaced Bank Indonesia as the supervisory body for financial institutions, which includes Indonesian banks and domestic branch offices of foreign banks.

[51] This may or may not be independent of the central bank and the banking regulator.

[52] In Kenya, Uganda, Peru, Bangladesh, Colombia, and Jordan, the telecommunications regulators – often in concert with the central bank – have devised or are devising policies on wholesale pricing for USSD access.

[53] For good overviews on competition policies, see GSMA (2015) *Competition Policy in the Digital Age*, available at https://goo.gl/Q2Ceyc ; and GSMA (2016a) *ibid.*

[54] In Malawi, for example, there are MOUs between the Competition and Fair Trading Commission and other DFS regulators outlining their respective jurisdictions.

[55] For example, the Communications Authority (CA) of Kenya (the telecommunications sector regulator) lost its competition powers to independently monitor dominance and act against its abuse, leaving it with a narrow mandate of licensing new players and allocating frequencies. Under the new legal regime, the CA must consult the Competition Authority of Kenya (CAK) when assessing critical industry factors, such as SMP, before making a declaration of dominance. See Asoko Insight (2016) *Communications Authority Of Kenya Loses Power To Regulate Dominant Telcos,* available at https://goo.gl/OR5D14. In some jurisdictions such as India, consultations between sector regulator and competition authority are not mandatory but at the discretion of regulator in charge of the issue.

[56] As noted by Bourreau and Valletti, *ex ante* regulation is used when a regulatory or other relevant authority establishes that absent such *ex ante* intervention, the abuse of a dominant position some or other market failure will occur. See Bourreau, M & Valletti, T (2015) *Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What Doesn't*?, available at https://goo.gl/jAcViG .

Competition law is usually termed *ex post*, meaning that the competition authority or regulator has set rules in place to prevent and deal with anti-competitive behavior *after or when* it takes place.[57] It applies *after* an infringement, possibly leading to a fine and remedies imposed on the infringers.

Competition law may empower both sectoral regulators and competition authorities. This approach also allows for market investigations and inquiries to determine if an entity has what is termed dominance or has SMP based on its market size and other market factors.

Even if the regulator or competition authority determines that a certain entity does have SMP, the question is whether the entity is abusing this SMP to the determinant of other smaller entities, and what remedies and/or punishments are then necessary or appropriate.

3.3 Competition-related regulatory responses possible or seen in DFS Markets

3.3.1 Sectoral regulators

There are a number of methods[58] - which do not apply to competition authorities, who have very different tools and times to intervene - which sectoral regulators possessing competition-related competencies have employed to date to approach or resolve competition issues.

The country examples in this study demonstrate that the following methods, described stylistically below, have been used to intervene in competition issues:[59]

- **Regulatory forbearance:** Here the responsible regulator(s) - aware of a competition issue and having the power to intervene - instead allow the market to come to a solution.[60]
- **Use of moral suasion:** The responsible regulator(s) use a light-touch and coordinated approach to persuade the market participants to come to a satisfactory resolution to their competition dispute(s) on their own, and at the risk of the regulators stepping in to mandate a solution if they do not.[61]
- **Intervention:** If the parties are unable to, or will not, resolve their disputes, the responsible regulators may *intervene*.[62] The intervention may, for example, relate to pricing and/or access rights by competitors to a specific service.[63] The regulator may also intervene unilaterally, based on policy precepts without a competition issue necessarily being raised with them.[64]
- **Blunt instrument:** Here the regulator may employ a *blunt instrument* approach, by breaking up an entity - that a study has shown that has been abusing its vertically-integrated market power[65] - into two independent entities, say, for infrastructure and services. The newly-independent

[57] Although in regards mergers and/or acquisition that create entities with large overlapping market share, the competition authority may need to be notified prior to being implemented.

[58] For an overview of the potential tools available to regulators to deal with competition issues, see Sitbon, E (2015) *Addressing Competition Bottlenecks in Digital Financial Ecosystems*, available at https://ssrn.com/abstract=2673637

[59] The list below and terminology used is stylized and descriptive, and does not necessarily use terms of art usually associated with regulatory powers in competition-related matters.

[60] This has been the approach to date for example in Uganda. However the UCC appears to be set for a more interventionist approach.

[61] *ibid*. In Jordan, the Bank of Jordan (BOJ) has embarked on a collaborative effort with current and prospective DFS market participants to participate on a non-discriminatory basis, particularly in respect of participation in the JoMoPay interoperability switch.

[62] This may involve the financial regulators or telecommunications regulator.

[63] The telecommunications regulator and competition regulator have both intervened in the Kenyan market in response to the dominance of MNO Safaricom and its M-PESA DFS service.[63]

[64] See India and Zimbabwe as examples of implementation of price controls for telecommunications access in DFS.

[65] A determination of SMP involves competition law principles. It may be that an entity with SMP abuses that SMP to the detriment of competitors. The abuse is what usually triggers regulatory intervention.

infrastructure entity would then have to provide services to all market participants at FRAND terms. Similarly, the newly independent services entity is in the same position as all other market participants, and must now obtain its access from the new infrastructure entity at market-related prices.[66]

3.3.2 Competition authorities

Competition authorities have tools that are clearly delimited by legislation and which are executed within specific competition mandates.[67] While they may have some of the powers outlined above for sectoral regulators, their tools are usually a form of *ex post* intervention[68].

These include:

- **Investigations:** A regulator or competition authority may be able to initiate an investigation of anti-competitive behaviour. This may be done either on its own accord or based on industry complaints. Such investigation usually takes the form of a market review and analysis, and may include the sending of questionnaires to all of the market participants and economic modeling. If, after the review, a competition issue is indeed substantiated, the regulator may formally charge the relevant entity, whose final recourse then is to appeal through the judiciary or a specific competition appeals body. Sanctions for a finding of a breach of competition law may include fines, structural remedies, behavioural remedies, and possibility criminal penalties, such as prison sentences.[69]
- **Injunctions/interdicts:** Ability to request injunctions/interdicts to temporarily stop potential anti-competitive behaviour before it can complete any necessary market review if the harm is immediate and irreversible.
- **Merger reviews:** Ability to review certain types of mergers and acquisitions to ensure that they do not raise any competition issues post-merger, and in many jurisdictions, the ability to render such mergers and acquisitions conditional on its approval (possibly with conditions, including structural or behavioural remedies).[70]

B MARKET ACCESS

4 MARKET ACCESS AND LICENSING

4.1 Overview

The entry ticket to the DFS ecosystem is the legal and regulatory consent to do so.[71]This qualifier has been deemed to be a measure of whether a market has 'an enabling environment' for entities to

[66] Kenya's ICT secretary was quoted as saying he supports the breakup of Safaricom. A bill was published for public comment, and a companion market study on SMP was launched. See Nation (2015) *Matiang'i Backs Airtel In Push To Break Up Safaricom*, available at https://goo.gl/Va7QK8; *The Kenya Information And Communications (Fair Competition And Equality Of Treatment) Regulations, 2015,* available at https://goo.gl/MnKnEy

[67] A regulator's tools may, and frequently are, also so delimited.

[68] Except for merger reviews, which are *ex ante*.

[69] Post investigation, they also have the ability to recommend, or force, an entity found to have been abusing its vertically-integrated market power to split into two or more independent entities, or sell a component of its business.

[70] For example, mergers and/or acquisition that create entities with large overlapping market share in certain sectors may need to be notified to the regulator or competition authority prior to being implemented.

[71] In many jurisdictions this is permission to issue electronic money services (or equivalent). This is also called 'mobile financial services' or 'branchless banking' in some jurisdictions.

provide a suite of, at a minimum, transactional DFS stored value accounts.[72] However, since the dawn of the DFS ecosystem, various jurisdictions have applied different methodologies for allowing access to the DFS market. The permutations[73] usually seen include:

- **Closed:** Where only banks can provide transactional DFS services and where MNOs and non-banks, for example, may only provide ancillary services.[74] Or there may be a ban on MNOs investing in MFS companies.[75]
- **Semi-closed:** Where banks and non-banks can provide transactional DFS services, but MNOs cannot.[76]
- **Bank-based:**[77] A type of cooperative model, where an MNO can provide transactional DFS services but only in partnership with a bank[78] or via its investment as a shareholder in a bank subsidiary.
- **Open:** An open market access framework where all banks and non-banks may provide almost equal transactional DFS services on almost equal market access terms.[79]
- **Conditional:** These may encompass the following:
  - The regulator allows a non-bank to create a specialized financial service[80], or even banking entity[81], to undertake transactional DFS business, albeit in a restricted manner.[82]
  - Where the MNO has special conditions related to USSD access provision attached to its DFS licensing authorization.[83]

Services are now available in 93 countries via 271 providers,[84] with each jurisdiction applying variations of these regulatory frameworks.

A true enabling environment is said to exist when banks and non-banks are allowed to undertake almost equal market activities on almost equal terms[85] using a functional and proportional approach that reflects the risk profile of the service being offered,[86] rather than being based on the type of provider.[87]

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[72] di Castri, S (2013) *Mobile Money: Enabling Regulatory Solutions*, available at https://goo.gl/ur9AKN

[73] These are stylized classifications of market access to DFS. Often the terms of art used to describe market access to DFS is classified just as bank-based (or led) or MNO-based (or led). *Ibid.*

[74] For example, in Pakistan.

[75] For example as in Bangladesh.

[76] For example in in Nigeria.

[77] This has also been termed 'bank-led'.

[78] For example, in Indonesia and Mexico.

[79] For example, in Kenya and Sri Lanka.

[80] For example in Jordan.

[81] The new Payments Bank framework in India is essentially bank-based, allowing for a new specialized banking entity.

[82] For example, in Colombia and India. The entity may have restrictions on the provision of credit to its customers.

[83] For example, in Nepal and in the proposed draft 'MFS' Guidelines in Bangladesh.

[84] GSMA (2016b) *2015 State of the Industry Report Mobile Money*, available at https://goo.gl/XwJPDG. The GSMA does not count bank based DFS deployments where an existing bank account is needed and mobile is simply a new channel

[85] *ibid*

[86] This is akin to similar treatment of similarly placed entities to avoid any competition concerns. However, there might be instances of similar treatment of dissimilar entities resulting in competition concerns.

[87] The GSMA definition of an enabling environment includes non-banks, including MNOs or their subsidiaries being able to offer electronic money services; that they are able to use a network of third party agents to cash-in/out and register clients; and that there is a market led approach to interoperability. See di Castri (2013) *ibid.*

The lack of legislation, such as a national payment systems act and associated regulations, is not necessarily a handicap to non-banks being allowed market access: A central bank, and often the telecommunications regulator, may issue a letter of no objection (LONO) in advance of, or in the absence of an adopted regulatory framework. However, if the terms are not transparent and applied uniformly amongst market participants, this may result in certain entities being favored and subject to privileged terms.

4.2 Competition aspects

Consent by a regulator for an entity to enter a market is ground zero for the facilitation of a robust competition in a market. Without the consent, certain entities may be left to only provide ancillary services. And even where some participation is allowed from non-bank entities, there may be sectoral complaints.

Consent by a regulator for variety of entities to enter a market is precondition for robust competition in the market for DFS. Without the consent, new innovative providers will not be able to deliver DFS services at scale[88] and certain entities may be left to only provide ancillary services. And even where some participation is allowed from non-bank entities, there may be sectoral complaints.

4.3 Country examples

Bangladesh

Under the 'Mobile Financial Services Guideline 2011' issued by Bangladesh Bank (BB), only banks or their subsidiaries are eligible for a DFS license. Neither MNOs nor other non-banks can legally independently operate in the DFS ecosystem in Bangladesh, although non-banks can be investors in bank subsidiaries.[89] So far BB has not approved DFS licenses for bank subsidiaries that have MNOs as shareholders.

This regulatory situation has brought about a virtual monopoly in the DFS market, dominated by the DFS Service Provider (SP) bKash which holds over 90 per cent of the market share, even though 18 banks operate DFS.[90] There are 28 commercial banks with MFS licenses, but only three or four are effectively operating in the market.[91] The consequence of this lack of competition is seen as having created a situation of insufficient investment and innovation in the DFS market. [92]

In August of 2015, BB released draft MFS regulations meant to encourage greater competition by limiting the ownership structure of banks in MFS businesses. [93] However, the draft proved

[88] From an impact perspective, large-scale quantitative analysis on the success factors for Mobile Money demonstrates that MNO-Led MM deployments have been more successful in developing and delivering DFS: MNOs obtain an average of almost 45,000 active accounts within a year of launch – 60% higher than for non-MNOs. By the 5th year of launch, this difference grows to almost four-fold. See GSMA (2016) *Success Factors For Mobile Money Services: A Quantitative Assessment Of Success Factors* , available at https://goo.gl/epIufJ

[89] ADB (2016) *Digital Payment Systems, Mobile Money Services and Agent Banking: Bangladesh, Nepal and Sri Lanka*, available at https://goo.gl/KRZwyt .

[90] Between bKash and DBBL they have 95 per cent market share. See Dhaka Tribune (2015a) *Bangladesh Bank's Nuclear Option*, available at https://goo.gl/BVxvBT .

[91] *Ibid.*

[92] A recently published report by the Better Than Cash Alliance (BTCA) recommends improving the regulatory environment to achieve more competition in the DFS market. See BTCA (2016) *Building Digital Bangladesh: The Way Forward for Digitizing Payments*, available at https://goo.gl/FnIN8t .

[93] The draft guidelines set out that an individual company would be formed (an MFS platform) that would obtain approval as a PSP; this MFS platform would be led by a bank, and ownership in the MFS platform would limit providers to 15% per entity. It also contains a requirement that at least four banks must form a consortium to achieve a 51 per cent majority-ownership share, that the maximum cap on all MNO shareholding would be 30 per cent, and that "acceptance" of an MNO as equity partner in an MFS platform will be

controversial and its ability to support competition in DFS, amongst other policy objectives, was disputed.[94] The updated regulations and as yet have not yet been implemented. The MNOs are currently lobbying[95] the government to be able to provide a full suite of DFS services as offered by bKash, an effort supported by the State Minister for Telecom.[96]

MNOs have been providing different payment services, such as utility bill payment, train ticketing, cricket match tickets, airtime top-ups, and lottery tickets since 2006. For each of these services, the MNOs have obtained approvals from Bangladesh Telecommunication Regulatory Commission (BTRC) under the purview of the Telecommunication Act,[97] which incorporated the payment products within the jurisdiction of DFS when the 2011 regulations were promulgated.

The MNOs then obtained a LONO from BB for the services that had been initially approved under the Telecommunication Act, and have continued only a few of these services since that time. MNO GrameenPhone, for example, now has two services using the brand name GPAY to provide approved services, such as utility payments, train ticketing, lottery tickets, cricket match tickets, and airtime. They have an enabler-type system branded as Mobicash that partners with banks under the DFS Guideline of 2011,[98] which (under the agent banking regulation[99]) allows them to operate as partner bank agents to do partner banks; account registration and DFS cash-in and cash-out take place in these agent networks. GrameenPhone is not permitted to offer its own accounts and or the associated does not have any cash-in or cash out services of its own.

Colombia

Colombia initially had a bank-based model for DFS, but after an anemic take-up of services, in 2012 the government opened up the market to non-banks, creating a new type of financial institution called Specialized Electronic Deposit and Payment Institutions. Funds are covered by deposit insurance and can earn interest. Remote opening of electronic deposit accounts is allowed with a national ID.[100]

Georgia

The National Bank of Georgia has proposed making a determination of an SMP-type equivalence on entities based purely on systemic concerns related to the total volume and value of the DFS transactions it processes. Such a determination could result in restrictions on an entity's DFS market activities and higher capital requirements.

conditional on its extending reliable telecommunication access to all licensed MFS platforms at the same effective standard of ease of access and pricing." See ADB (2016) *ibid*.

[94] Some argued that the draft actually limited competition by creating a complex multiparty ownership structure.

[95] The MNOs have been lobbying the BB to open up the market to allow non-banks to participate. Dhaka Tribune (2015b) *Telcos, Banks Face off over Mobile Banking*, available at https://goo.gl/rslTSB .

[96] The minister indicated that she wants to improve competition in a market dominated by DFS SP bKash, who has 90% of the market. The move has been opposed by bKash. See Daily Star (2016) *Open up DFS to Telcos: Tarana*, available at https://goo.gl/ScIXqr.

[97] Telecommunication Act of 2011.

[98] Section 8.0.

[99] Section 5.0. VII.

[100] It also exempts electronic deposits (within limits) from banking transaction taxes. AFI (2015) *New Financial Inclusion Innovation in Colombia: Electronic Deposits*, available at https://goo.gl/o0XGRf.

Ghana

In 2015, and then again in 2016, Ghana revised its market access policy, moving away from the bank-based model to an open access model. This is part of a new National Payment Systems Strategy which seeks to promote the use of electronic payments. New Electronic Money Issuers and Agent Guidelines were also released.[101]

India

India moved away from a closed banks-only[102] model and introduced a new enabling framework characterized by the new 'payments bank' concept developed by the Reserve Bank of India (RBI). While the new payments bank framework is still a bank regulation-based model, RBI has allowed entities such as MNOs to apply for banking licenses as banks. They can accept deposits up to INR 100 000 (USD 1 466), provide payments and remittances services, and distribute third-party financial products. However, they cannot lend or issue credit cards, although they can provide debit cards and internet banking facilities.[103] India had previously allowed non-banks to issue prepaid payment instruments.[104]

Nigeria

Nigeria does not allow MNOs to independently operate DFS services, although other non-banks are able to do so.[105] MNOs can, however, provide agent services to banks and non-banks.

Sri Lanka

When DFS services were launched in 2007, the regulatory framework required customers to have a bank account. In 2011, the regulator changed the model, opening the market to both bank and non-bank providers. MNO Dialog now operates the largest DFS implementation, eZ Cash, which is interoperable with most MNOs, except Mobitel.[106]

Nepal

Until July 2016, DFS in Nepal was strategically linked to mobile banking initiatives and thus based on a bank-based model. This all changed with the issuance of new regulations[107] in early July 2016,

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[101] Ghana Web (2016) *Ghana Digital Financial Services Programme Launched*, available at https://goo.gl/V53zsF.

[102] Non-banks have been able to offer PPIs, however, the semi-closed PPIs (so called 'wallets') permitted for non-banks did not allow for cash-out. This made it difficult to offer a valuable product to unbanked and underbanked users.

[103] MNO Airtel was the first to launch a payments bank in India. Their customers use their mobile number as an identifier for the account number. The bank is fully digital and paperless, with even account opening being done using Aadhaar-based eKYC. Times of India (2016) *Airtel Rolls out India's First Payments Bank*, available at http://toi.in/G-ZL7b7. Airtel entered into a pact with Kotak Mahindra Bank, which agreed to acquire a 20 per cent stake in the new payments bank.

[104] The guidelines related to prepaid payments instruments. See RBI (2016) *Master Circular – Policy Guidelines on Issuance and Operation of Pre-paid Payment Instruments in India*, available at https://goo.gl/fl41Ns .

[105] The Central Bank of Nigeria (CBN) does, however, license other non-banks, the reason ostensibly being because the CBN felt that a dominant MNO-led model such as in Kenya could create a monopoly and pose a systemic risk for the country. See Mobile Money for Development (2013) *The Debate over MNO-led or Bank-led Mobile Money Strategy in Nigeria – the Perspective of a Super Agent,* available at https://goo.gl/0r9UTB.

[106] eZ Cash also partnered with the Commercial Bank of Ceylon (CBC) as part of their interoperability approach. This facilitates loading of the eZ Cash wallet from CBC bank accounts and withdrawals from CBC ATMs.

[107] Nepal Rasta Bank (2016) Licensing Policy for Payment Related Institutions/Mechanisms 2073, available at https://goo.gl/xJT9DF.

which allowed the licensing of both bank and non-bank entities as PSPs.[108] Both licensed banks and non-banks, including MNOs, are eligible to apply for such licenses. MNOs, however have to set up subsidiary entities to provide such services as well as a commitment in writing that access to its network to other PSPs will be provided on a non-discriminatory basis. Non-compliance to the latter obligation can result in cancellation of the PSP license.[109]

C ACCESS TO BEARER TECHNOLOGY

5 USSD ACCESS

5.1 Overview

USSD is a standard within the GSM and 3G specifications. As with SMS, USSD is an artifact of the original 1980s GSM specification, used by MNO engineers to send and receive test messages over the signaling channel of GSM networks without interrupting customer calls.

It is both a GSM[110] bearer technology and a DFS User Interface (UI). It does not require any additional installations by customers, nor does it require a IP-based data access connection by customers.[111] It can be used for transmitting information and accessing standard services and Value Added Services (VAS). As a result, USSD has been termed '*The Third Universal App*.'[112] USSD is session-based and activated either by users inputting a series of predefined star (*) or hash (#)[113] commands on the mobile handset, or via a session initiated by the MNO or a SP.

In both methods, the user is presented with a numbered menu and can use the mobile keypad to respond to, and to input in any data required. While the USSD specification allows a USSD session of up to 600 seconds, typical allowance by MNOs for third party services is up to 180 seconds, with 120 seconds being the typical maximum time allowed for the entire USSD session by MNOs.[114]

Access to USSD is usually via a MNO's USSD gateway.[115] MNOs may give access to their USSD facilities to third parties who can craft their own USSD menus and session timeouts, usually for VAS and DFS access. In many countries, a USSD gateway is also offered by third party aggregators, who may in turn resell turnkey USSD access to entities – such as banks and micro finance institutions (MFIs) - who may not have the technical ability to properly integrate into the MNO's USSD gateway.

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[108] For example e-Sewa, the most popular mobile wallet and digital payment portal in Nepal. See www.esewa.com.np

[109] ADB (2016) *ibid.*

[110] GSM (Global System for Mobile Communications, originally Groupe Spécial Mobile), is a standard developed by the European Telecommunications Standards Institute to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones, first deployed in Finland in July 1991. It has become the *de facto* global standard for mobile communications with over 90 per cent market share, operating in over 219 countries and territories. See www.gsma.org .

[111] As USSD is session-based, it can only be accessed or be consistently accessible when there is robust communication with MNO base stations. Poor mobile signals and substandard antennas in some mobile phones may cause USSD session initiation and sustainability issues.

[112] Perrier, T *et al* (2015) *USSD: The Third Universal App*, available at http://bderenzi.com/Papers/perrier-dev2015.pdf

[113] These relate to combinations of the use of the * [star] and # [hash] keys respectively on the mobile handset. The hash key is also known as the 'pound key'.

[114] Response times for the customer to answer challenge questions – such as a need to select 1, 2, 3, or 4 on a USSD-based DFS menu, or type in a recipient's phone number or name in a P2P transaction - may also have their own timeout sequences, either set by the SP, or aggregator or forced by the MNO.

[115] A gateway is the collection of hardware and software required to interconnect two or more disparate networks, including performing protocol conversion. See Exhibit 3 on how USSD gateways fit into overall MNO architecture.

Large deployments that rely primarily on USSD include bKash in Bangladesh, WING in Cambodia, EasyPaisa in Pakistan, MTN Money and Airtel Mobile Money in Uganda, ZAAD in Somaliland, M-PESA and Tigo in Tanzania, and EcoCash in Zimbabwe.[116]

The regulatory, commercial, and technical steps needed by a third party DFS SP to obtain access to a USSD gateway could include:[117]

- Obtain consent to integrate into the USSD or STK gateway of the MNO or aggregator.
- Obtain access to USSD or STK short codes.
- Being able to utilize the full capabilities of these access channels.
- Negotiate FRAND-based pricing for USSD and STK access.
- Obtain QOSS assurances from the bearer supplier.

5.2 Competition aspects

5.2.1 Overview

Because USSD can mostly only be offered by aggregators and licensed MNOs through their own USSD gateways, USSD is a scarce technology resource. If the MNO is in competition with the DFS SP over a DFS-related service, it could potentially block that service, either by denying the SP access to the gateway, or by not supplying it with short codes required for customer access.

This refusal to supply service is not necessarily the norm as there are many instances of sound commercial arrangements between MNOs and entities that may compete with it in relation to DFS. Robust competition between MNOs in Tanzania, Malawi and South Africa, for example, has made USSD access a very profitable revenue source for MNOs, even where provided to SPs who may compete with the MNO on some services.

However, the vertical integration between the MNOs infrastructure business and its DFS business has in some markets raised competition issues where there has been, objectively, a denial of service. These instances are outlined below.

5.2.2 Access to the USSD gateway or USSD components

5.2.2.1 Overview

As noted above, access to USSD is crucial to the business plans of SPs. Loss of this access may irrevocably damage their business.[118]

5.2.2.2 Competition aspects

Usually the access given by MNOs to SPs is the Mobile Originated USSD (MO-USSD) accessible via short codes.[119] Inability to access the gateway is fatal to a business predicated on USSD access. SPs denied access by the MNO could, however, approach aggregators, who have access to the MNO gateway, for access, but potentially at a higher price as the aggregator will charge a fee.

[116] Hanouch, M & Chen, G (2015) *Promoting Competition in Mobile Payments: The Role of USSD*, available at https://goo.gl/po24bd.

[117] The sequence and requirements for getting access to USSD short codes and a USSD gateway as described here are stylized, and will invariably differ in various jurisdictions.

[118] MNOs though may have legitimate reasons for denying a SPs access to their USSD gateway, for example a history of fraudulent use of USSD-based services with other MNOs or bad credit history. See also CGAP (2014) *ibid*

[119] See Section 5 on Short codes.

In some countries, MNOs have given MO-USSD access only to those banks that are in a partnership with the MNO.[120]

Besides MO-USSD, the provision of Network Initiated (NI)-USSD can provide a competitive advantage for SPs. For example, if there is a dropped USSD session and the transaction is not completed, the customer may not want to reinitiate the transaction so as to avoid potential double billing. NI-USSD will allow re-initiation of a dropped USSD-based transaction so that customers can complete their unfinished transaction.[121] However, even if NI-USSD is provisioned on the MNOs USSD gateway, the MNO may decide not to make it available to third parties.[122]

5.2.2.3 Country examples

Bangladesh

MNOs require approval from Bangladesh Telecommunications Regulatory Commission (BTRC) to provide USSD connectivity to the banks they partner with. Given the bank-driven regulatory framework, MNOs in Bangladesh indicate that they are not very incentivized to offer cheap USSD access or to enter into partnerships with banks. Access to USSD is provided on revenue sharing basis. That is, the MNOs are compensated at a very nominal rate for only those USSD sessions where the DFS providers earn revenue.

Colombia

After negotiations between banks and MNOs failed to resolve bank complaints over USSD pricing and access from MNOs, the Colombian telecommunications regulator, the Comisión de Regulación de Comunicaciones, mandated access to USSD and introduced a case-by-case resolution of complaints about price and quality.[123]

Pakistan

MNOs are reportedly[124] only willing to provide USSD access to their partner microfinance banks, which are effectively part of the same corporate group.[125]

Philippines

The two main MNOs in the Philippines are Smart and Globe.[126] Each have their own DFS operations, while Globe also provides USSD to BankO, which it partly owns. Similarly, SMART owns 40% of mBank and provides it with USSD access. Other banks have reportedly struggled to obtain USSD access from these MNOs.[127]

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[120] CGAP (2014) *ibid*

[121] TRAI (2016a) *Consultation Paper On The Review Of Regulatory Framework For The Use Of USSD For Mobile Financial Services*, available at https://goo.gl/dSSPLN

[122] *ibid*

[123] Hanouch & Chen (2015) *ibid*

[124] CGAP (2014) *ibid*

[125] Hanouch & Chen (2015*) ibid*

[126] CGAP (2014) *ibid*

[127] *ibid*

Uganda

Uganda has no separate competition law.[128] DFS SP Ezee Money sued MNO MTN Uganda for denying it access to its USSD gateway, and for thus breaching provisions of the Uganda Communications Act of 2013 which prohibits anti-competitive behavior between companies licensed to provide communications services. MTN's main defense was that Ezee Money is not a licensed communications SP protected by the Act, such that the law did not apply to it. The Commercial Court judge ruled however that Ezee Money's money transfer services were communications services, although Ezee Money is not registered. It awarded Ezee Money Sh 2.3 Billion (US$662,000) in damages. MTN Uganda has reportedly commenced an appeal.

Besides the refusal to allow access, DFS SPs have complained about 'unjustifiably high' or unfair revenue share structures for USSD session fees.[129] These, in the view of the Uganda Communications Commission (UCC), may be designed to foreclose independent DFS OSPs from the downstream DFS market segment.[130]

Zambia

Over The Counter (OTC) DFS SP Zoona sued MNO MTN Zambia for refusing Zoona access to its USSD gateway. The *Competition* and Consumer Protection *Commission* found MTN to have been engaging in anticompetitive behavior and fined MTN 2% of its annual turnover. The ruling has reportedly been appealed.[131]

5.2.3 Access to USSD Short Codes

The 'short code' access code numbers used to access USSD sessions may be assigned by the MNO at their discretion, although in some markets a regulator may do so.[132] This issue and the competition-related impact relating to short codes is outlined in more detail in Section 7.

5.2.4 Length of A USSD Session

5.2.4.1 Competition Aspects

The length of a USSD session may be restricted by the MNO for third party providers, such that there is not enough time for customers to input long account numbers when prompted. Similarly, MNOs may restrict the time allowed for the input or for the customer to provide input to advance to the next tree on the menu. MNOs may cite the so-called 'opportunity cost' inherent in providing USSD to third parties, since they argue that the GSM system design may mean that use of USSD (signaling) channel may block revenue-generating incoming and outgoing voice calls for the duration of the live USSD session.[133] Further, they believe that a commercially and technically viable arrangement would

[128] New Vision (2015) *MTN Ordered To Pay Ezeemoney Sh2.3b Over Sabotage*, available at https://goo.gl/y0FxA4

[129] UCC (2016) *Communication to the TIC WG*

[130] *ibid*.

[131] Personal communication with Zoona, August 2016; Personal communication *Competition* and Consumer Protection *Commission, September 2016.*

[132] See on USSD policy, TRAI (2016a) *ibid*

[133] See for example the responses the TRAI received when canvassing local MNOs on use of USSD. The MNOs indicated that any move to increase the number of stages in a USSD menu would put a load on their signaling infrastructure and, therefore, that there should be a commensurate increase in the ceiling tariff for USSD session from the present level if the number of menus available were increased. Other MNOs were agreeable to increasing the number of stages provided such USSD sessions were restricted to transactions related to financial inclusion only and not for any other additional financial services such a mobile banking. TRAI (2016a) *ibid*

allow for a price and length/stages of sessions that are commensurate since increased time increases the use of the USSD resource.

MNOs have discouraged sessions lengths being increased where, as in India, it is implemented in tandem with a cap on the pricing per session. While not necessarily a competition-related example, recent regulations in India may illustrate the tension between length of USSD sessions and profitability for MNOs: in November 2016, following a short consultation process[134] on its quality of service regulations, the Telecom Regulatory Authority of India (TRAI) increased the maximum number of USSD menu stages from five to eight per USSD session as it found the menu stages – and thus the total length of the USSD session - too short for users to properly input long account numbers[135] Simultaneously, TRAI cut the permitted cost of a USSD session by two thirds.

5.2.4.2 Country example

Uganda

In Uganda, one of the biggest MNOs charges USSD sessions in increments of 20 seconds while another MNO charges in increments of 100 seconds. The length, duration, quality and wholesale charges of USSD sessions used in DFS are the subject of an ongoing investigation into anti-competitive behavior by the UCC.[136]

5.2.5 USSD menu trees

5.2.5.1 Overview

Current ceilings for the number of stages allowed in a USSD session pose challenges in creating customer friendly menus for USSD-based access to DFS. These may result in input errors or time delays and may eventually lead to declines in transaction volumes.[137] To provide for richer service options and to compensate for customer input errors, menu trees could be increased to allow for example, a separate stage that prompts re-entry of an account number.[138]

5.2.5.2 Competition aspects

USSD menu trees may be restricted by MNOs to a maximum number of stages. As noted earlier, MNOs cite the 'opportunity cost' inherent in providing USSD to third parties, since the GSM system design may mean that use of the USSD (signaling) channel may block revenue-generating incoming and outgoing voice calls for the duration of the live USSD session. MNOs indicate that increasing the number of menu stages would put a load on their signaling infrastructure and any increase in the

[134] First Post (2016) *TRAI Lowers Tariff For USSD Based Mobile Baking To A Maximum Of 50 Paise Per Transaction*, available at https://goo.gl/zF9ggZ

[135] TRAI (2016b) *Information Note to the Press (Press release No 110/2016)*, available at https://goo.gl/V1qZJ0; and TRAI (2016c) *The Mobile Banking (Quality Of Service) (Second Amendment) Regulations, 2016*, available at https://goo.gl/XwPxzn

[136] UCC (2016) *ibid*

[137] The TRAI consultation paper indicated that, for example, while making a funds transfer using recipient's account number and IFSC code of the recipient's bank branch, the customer has to input about 23-29 digits (IFSC code-11 digits, account number-12-18 digits) in a single stage because the other four stages are used for (i) selecting bank; (ii) selecting transaction type; (iii) entering amount of money to be transferred; and (iv) entering mPIN. In general, input error is quite frequent when a customer is prompted to enter both the account number and IFSC code in one single stage. See TRAI (2016b) *ibid*; and TRAI (2016c) *ibid*

[138] As noted by TRAI, the lack of extended ability to correct mistakes during a USSD session has resulted in the success rate of USSD transactions being below expectations, particularly for P2P transfers. If customers have a number of transaction declines in their first few transactions, they may lose trust in the service and are unlikely to use USSD-based DFS service again. TRAI (2016a) *ibid*

number of stages contemplated is either practically impossible or should be accompanied by a commensurate increase in the ceiling tariff for USSD sessions.[139]

5.2.5.3 Country example

India

The TRAI in India has pushed back against linking the number of menu trees to an increase in USSD access costs, citing evidence that MNOs may, for their own customers, have more menus than they allow DFS SPs to have.[140] In November 2016, TRAI mandated an increase in the ceiling on number of menu stages from five to eight per USSD session and also reduced USSD pricing.[141] The outcome followed a consultation process initiated in August 2016.[142]

5.2.6 USSD pricing

5.2.6.1 Overview

While MNOs may grant third parties access to their USSD gateway facilities, the issue of USSD-related pricing often percolates. In some cases the USSD session is charged to the customer at a fixed rate no matter the length of the session; or the TSP or PSP is charged at wholesale rates for a transaction, no matter the length, or *pro rata*; or is charged via a percentage of the transaction value. The MNO may also charge the SP a setup fee for access to its USSD gateway, and/or a monthly facilities charge on top of any USSD session charges.

While some TSPs and PSPs absorb the USSD charge, others will recoup the USSD cost incurred by directly debiting the customers' wallet with the charge.[143]

Often pricing is a commercial negotiation that satisfies all parties, but sometimes disputes are escalated to a sectoral regulator or the courts. For regulators looking to regulate USSD charges, determining the 'correct' price level has not been an easy exercise, requiring sophisticated cost analysis measures.[144] Other regulators, however, may simply use blunt force: by slashing USSD pricing to a level they believe will stimulate the DFS market.[145]

Regulators may use a cost-based model to determine pricing, although there are only a few apparent cases of where this complex exercise has been undertaken, at least in telecommunication-cost related instances.[146] Where regulators have mandated – or proposed - USSD channel access prices, MNOs have complained that the set charges are below market value and do not compensate MNOs for the additional investments needed for network capacity to absorb increased traffic from USSD and ensure the sustainable delivery of quality service.[147] Further, MNOs may complain that they are then not

[139] TRAI (2016a) *ibid*

[140] First Post (2016) *ibid*

[141] TRAI (2016b) *ibid*

[142] First Post (2016) *ibid*

[143] Mazer, P & Rowan, P (2016) *Competition in Mobile Financial Services: Lessons from Kenya & Tanzania*, available at https://goo.gl/osF8Mo

[144] See below on the Bangladesh country example.

[145] See the India country example below.

[146] See for example in Zimbabwe, where the telecommunications regulator, POTRAZ, used a bottom-up costing model to set a floor price on mobile data and bearer access. This however resulted in large retail price increases for voice and bearer services, market confusion, and consumer anger.

[147] They also express concern that by mandating a price and commercial arrangement for the provision of USSD, regulators preclude businesses from striking innovative partnerships and commercial arrangements that may be more advantageous for consumers.

compensated for the opportunity costs of lost call revenue due to their signaling channel being used by low-cost USSD DFS sessions.[148]

5.2.6.2 Competition aspects

A regular feature of the DFS ecosystem is commercial disputes between MNOs and other SPs over the cost of USSD access and the consequence of dropped USSD sessions. Such complaints have emerged in Nigeria, India, Uganda, Zimbabwe, Kenya, and Bangladesh.[149] As noted above however, this is not necessarily the norm as there are many instances of sound commercial arrangements between MNOs and third parties, for example in Tanzania, Malawi and South Africa.

They may also relate to differential pricing, whereby the MNO provides cheaper access pricing to a favored party such as its DFS subsidiary.

Competition issues have been raised by MNOs in respect of being forced by regulations to provide access services to other SPs in the DFS ecosystem.

5.2.6.3 Country examples

Bangladesh

By regulation, MNOs in Bangladesh are mostly only permitted to act as bearers - usually via USSD - for banks and other DFS SPs. Currently, access to USSD is provided on a revenue sharing basis. That is, instead of a unit or time-based charge, the MNOs are compensated only for those USSD sessions where the DFS providers earn revenue. USSD usage charges vary from MNO to MNO for MFS providers.[150]

According to the MNOs, this revenue sharing model is unsustainable for them as the transactions which exhaustively use the USSD channel are extensively misused and mostly free of cost as 86% of USSD traffic and 100% of SMS are being provided for free. The MNOs indicate that they are not incentivized to provide access and sustainability depends on a justified return for the consumption of the used resource. Universal access is even more important to MNOs and overall Quality of service (QOS), they indicate, is being affected because of 'free' usage of telecom resources/ spectrum, which also reduces the value of spectrum if this is forced through.

The Bangladeshi MNOs have been lobbying for a change in the USSD charging model, which could result in large increases in USSD charges for SPs and customers if implemented.[151] Even so, there are complaints from SPs and banks that wholesale USSD prices are too high.[152]

This issue is especially championed by banks competing with bKash, whose current individual negotiating power is small given their high fragmentation.[153] bKash, however, given its large market share, has a much better bargaining position and is more likely to secure more competitive rates to

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[148] Mas, I (2012) *What is the Telecom Regulator's Role in Fostering Mobile Money*?, available at https://goo.gl/X9cDFQ

[149] Hanouch & Chen (2015) *ibid*

[150] Grameenphone, the largest MNO, charges all MFS providers - except bKash - up to 0.25% of the cost of the cash out value. Other MNOs charge 1.8 to 1.85% for cash out, of which the MNOs take 7% to 15%. For example, for a BDT 1000 cash out, the PSP charge to the customer is BDT 18.5. An MNO will get 7% of the BDT 18.5 amount.

[151] The Association of Mobile Telecom Operators of Bangladesh recently submitted its proposal to the Bangladesh Telecommunication Regulatory Commission to increase USSD fees. Daily Star (2016) *Telcos Propose To Hike Charge For Mobile Wallet Users,* available at https://goo.gl/TSrPLP

[152] Hanouch & Chen (2015) *ibid*

[153] ADB (2016) *Digital Payment Systems, Mobile Money Services and Agent Banking: Bangladesh, Nepal and Sri Lanka*, available at https://goo.gl/usuONK

USSD access, which in effect reinforces bKash's dominance. Although the Bangladesh Bank initially identified the issue via complaints from the financial institutions it regulates, it is currently engaging the BTRC and other stakeholders through a dispute resolution mechanism.[154] In this context, the BTRC is attempting to do a cost-based analysis of MNOs USSD channels to determine a price point for USSD access to DFS services.[155]

India

As noted above, the telecommunications regulator, TRAI, slashed USSD access prices by two thirds to INR. 0.50 per USSD session in November 2016 after complaints about the service ensuing form a public consultation on pricing.[156] A similar November 2013 initiative by TRAI who had prescribed a ceiling tariff of INR.1.50 per USSD session. However this did not lead to the desired result, as both the number of transactions and transaction completion rate were below TRAI's expectations.

Peru

The telecommunications regulator in Peru, Osiptel, issued standards to ensure fair and equal access of electronic money issuers to telecommunications services in 2014, including non-discriminatory pricing for access to USSD.[157] While these regulations were set by Osiptel, the central bank played a significant role in creating the regulatory framework around pricing for access.[158]

Uganda

A study on the wholesale USSD market as part of a broader Market Power Assessment by UCC found evidence of dominance by the MNOs with a potential to abuse.[159] A review of alleged price excessiveness is underway.

Zimbabwe

MNO Econet Wireless, through its EcoCash mobile money service subsidiary, was probed by the Competition and Tariff Commission in 2015 as to whether it contravened the competition law in dealing with banks. It had connected banks to its USSD platform for VAS, but charged the banks a higher fee for DFS transactions than what it had charged non-banks connected to EcoCash as well as its subsidiary, Steward Bank.[160]

In January 2017, the Zimbabwe Telecommunications regulator, POTRAZ set floor prices on access to MNO services. It had used a study of a bottom-up costing model[161] to determine pricing. Implementation of the new pricing, however, led to market confusion and massive retail price

[154] ADB (2016) *ibid;* Bangladesh Bank oral communication to the TIC WG.

[155] CGAP apparently submitted a report to BB on USSD access. See Business News (2015) *CGAP To Submit Report On USSD Charging Mechanism For DFS*, available at https://goo.gl/Y5e725

[156] TRAI (2016d) *The Telecommunication Tariff (Sixty First Amendment) Order, 2016 No. – 1 Of 2016*, available at https://goo.gl/7kHo45. These moves coincided with a sudden demonetization program in November 2016 by the government of India aimed at ridding the country of high value cash notes thought to be used for money laundering. DFS access surged in the wake of the demonetization announcement.

[157] Mas, I (2014) *Shifting Branchless Banking Regulation from Enabling to Fostering Competition*, available at https://goo.gl/1Fb48a

[158] CGAP (2014) *ibid*

[159] See Cartesian (2015) *Mobile Platform Access for USSD-based Applications (MPA-USSD),* available at https://goo.gl/8RrIq4

[160] TechnoMag (2015) *Econet Awaits Judgment From Competition and Tariffs Commission,* available at https://goo.gl/pivUkH

[161] There are two approaches to estimating unit costs: top-down, bottom-up. These can be combined to form a 'mixed approach'. A bottom-up approach is used to estimate the costs of service usage and involves identifying all resources used to provide a service, and then assigning a value to each of those resources. These values are summed and linked to a unit of activity to derive a total unit cost. Top-down costing is more amenable to estimating the society level costs which are often intangible and where data is scarce. See UK Cabinet Office (2017) *Top Down And Bottom-Up Unit Cost Estimation*, available at https://goo.gl/nZWX3M

increases in mobile data, USSD, SMS, and voice call costs. This led to recriminations between POTARZ, the MNOs and consumers. Ultimately the retail price increases were suspended by the MNOs a few days after initial implementation.[162]

5.2.7 Quality of service in USSD sessions

5.2.7.1 Overview

Often USSD sessions drop, leading to a poor customer experience and maybe even loss of funds. This may dissuade customers from using the DFS service again, instead opting to use an over the counter (OTC) provider to do a transaction for them. The reasons for the dropped USSD session may be poor GSM signal,[163] network congestion, or – as some TSPs and PSPs have alleged – deliberate throttling of their customer's USSD sessions. Such drops may reflect poorly on the TSPs and PSP's service offering.

5.2.7.2 Competition aspects

Complaints from SPs allege that while MNOs may provide access, the QOS is poor, characterized by a high proportion of dropped USSD sessions that abruptly end before the customer session is completed. As noted above, technical issues relating to GSM networks and coverage may be the issue, although some SPs have alleged that they are being handicapped through implementation of random throttling or prioritizing of access.[164] As a recent CGAP report noted, whether quality can be selectively degraded by the MNOs, and if they are doing so, is a factual issue that can be further explored by a regulator in markets where these allegations arise.[165]

5.2.7.3 Country examples

Uganda

Some TSPs and PSPs say that their customers experience QOS issues with USSD sessions, but the TSP/PSP is unable to 'fix' the issue because some MNOs refuse to provide a QOS guarantee to them in their service contracts.[166] SPs have also alleged to the UCC that they may not have visibility of some failed USSD transactions.[167] The length, duration, quality and wholesale charges of USSD sessions used in DFS are the subject of an ongoing exploratory investigation by the UCC.[168]

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[162] Techzim (2017) *New Tariffs - POTRAZ Says It Consulted The Mobile Operators, They Actually Wanted Even Higher Prices*, available at http://bit.ly/2isSXNz

[163] Mobile handsets & base stations must transmit enough power to maintain a call of acceptable quality or USSD session to completion without transmitting excessive power into the frequency channels & timeslots allocated to others. See Keysite (2014) *Understanding GSM/EDGE Transmitter and Receiver Measurements for Base Transceiver Stations and their Components*, available at https://goo.gl/n6kqnF

[164] See Further Chen (2015) *ibid*); and CGAP (2014) *ibid*. The BB and the BTRC are planning to investigate QOS issues, part of a larger study on USSD pricing. See also on USSD reporting for the BB, Business News (2015) *ibid*

[165] CGAP (2014) *ibid*

[166] In Uganda, service providers reported limited scope for negotiation of service level agreements with MNOs, that it was not possible to negotiate the level of service availability. Cartesian (2015) *ibid*

[167] UCC (2016) *ibid*

[168] *ibid*.

6 SIM TOOLKIT ACCESS

6.1 Overview

SIM Toolkit (STK) is a popular SMS-based remote access and UI GSM technology used to provide DFS and related services to markets where basic and feature phones are the plurality. It is currently one of the most extensively and globally used mobile interfaces in DFS, other than USSD.[169]

A specialized SIM to host the STK application and STK-compatible phone is required. The STK technology is embedded on the SIM card, allowing special applications for DFS and banking services to be accessed by the subscriber using custom menus stored on the SIM card.[170] On a 'basic' phone, the STK menu may appear as an additional phone menu item when scrolling through basic menus to access the phone's features.[171] On a feature phone or smartphone, the STK will usually manifest as a specific application icon that appears on the device's home screen.[172]

The STK will usually uses SMS as a bearer for communication with a host,[173] encrypting the (usually) cleartext SMS to/from the handset and STK server.

STK is implemented in three layers:

- A software application provided by a SP/bank
- SIM Toolkit Application Programming Interface (API) gateway service offered by a MNO that include the required encryption keys,[174] and
- Customer User Interface and STK 'translator' via the STK SIM card on handset

The handset will receive instructions from the SIM card to perform specific functions,[175] which are then communicated to an application server, usually but not always transiting a dedicated STK server housed at the MNO which acts as a translator of encrypted communications for transit to the SP.[176]

6.2 Competition Aspects

6.2.1 Overview

Key to providing STK-based services is that the MNO provides access to its STK gateway; allows the SPs menu to be placed on the MNO SIM; allows Over The Air (OTA) updating of the SIM menus

[169] As with USSD, STK is especially prevalent in developing nations where entry-level phones are mostly used.

[170] These commands are standard for all mobile equipment and defined by ETSI and 3rd Generation Partnership Project (3GPP) specifications.

[171] One popular STK application is a Wireless Internet Browser (WIB). The WIB is downloaded onto the SIM card before distribution and appears on the subscriber's telephone menu as a range of services. The WIB communicates with a server at the MNO, which then connects it to other servers offering the services.

[172] Many new smartphones do not have the STK 'translator' installed, meaning that services using STK-based menu items will not appear. This may impact those doing remote airtime transfer as a form of foreign remittance. Thereto, see the NoSTK Android smartphone app, which caters for smartphones without STK functionality. Available at https://goo.gl/fEg0PN .

[173] STK as a technology can use USSD as a bearer, but it is very dependent on the STK implementation on the particular handset. Some handset manufacturers have not adequately implemented STK support for USSD however. In practice though, STK will almost always use only SMS as a bearer.

[174] This is a simple machine code that converts the raw messages from the software to application-level message. This requires a special STK gateway at the MNO.

[175] The STK UI applications are usually protected by either the SIM PIN, phone lock PIN, or both. The applications are not visible when the phone is locked, when there are no SIM applications in the SIM, or when the phone does not have the physical SIM card.

[176] The MNO will then transmit the information on to a SP or bank who may be the ultimate provider of services.

as needed; and that the MNO provides the DFS SP with short codes the SP's customers will use to access the SPs DFS service.[177]

6.2.2 Access to STK Gateway

It is self-evident that for third party SPs to provide STK-based services to their customers, the MNO must provide these third parties access to their STK gateway. If this is refused, the third party may need to use another access bearer such as USSD, Near Sound Data Transfer (NSDT), Java applets, Wireless Application Protocol (WAP)-based access, or Over The Top (OTT) smartphone apps. Some of these alternate access mechanisms, however, may not have the same relative mass-market discovery potential as STK-based access.

6.2.3 SIM Menus

In terms of competition, issuance by a MNO of SIMs with STK and specific menus or icons may give the MNO and its partners a huge advantage over any other third parties that may want to provide similar services, since the discovery of the MNO's STK menu is persistent and does not require a download[178] to the handset by the third party.

To deliver SIM menu updates, either the SIM must be returned to a MNO or SP agent, as the case may be, and exchanged for a new one. Or, the application updates must be delivered OTA using specialized, optional SIM features and multiple binary SMSs sent to the mobile handset. Update limitations – and the fact that the MNO controls the STK gateway and pricing thereof - may hinder the number and frequency of STK application deployments and thus the ability to provide new user features. This is especially so for SPs dependent on the STK gateway access at the MNO, and who are sensitive to STK transaction pricing by MNOs.[179] Use of Thin SIMs may bypass competition-related access bottlenecks.[180] Even if access is made available to the necessary STK components, variable and often caustic pricing can make the transaction unprofitable.

6.2.4 Access to short codes

The 'short code' access codes numbers used to access STK may be assigned by the MNO at their discretion, although in some markets a regulator may do so.[181] See Section 7 for more detail on short codes.

6.2.5 Pricing of STK access

Pricing of STK access has an issue in some markets. This may relate to the charges for a transaction, which may be per transaction no matter how many SMS are used, or per SMS. The MNO may also charge for OTA updates to a SPs STK-based SIM menu.

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[177] Since MNOs own the SIM card and thus control anything on it, this includes controlling the ability of third parties to load and use their own applications and encryption keys for use by their own customers. And as only the MNO can provision the SIM, the ability of a SP to receive or gain access to the required mobile encryption keys independently of the MNO is usually a complicated and expensive negotiation.

[178] Or through some other discovery mechanism.

[179] See below on the case of Daviplata in Colombia who were affected by MNO STK pricing, rendering their already-launched G2P services unprofitable.

[180] See Section 12 on Thin SIMs

[181] See further Section 17 on Competition Aspects in DFS and technical solutions thereto. See also on USSD policy, TRAI (2016a) *ibid*

6.2.6 Country examples

Colombia

In Colombia, Daviplata – a low-cost mobile banking platform used primarily for G2P payments offered by Banco Davivienda - implemented a dynamic menu via STK designed to simplify the UI and make it more understandable by the target segments. As services increased, the number of SMS per update increased to 20 SMS per update. The MNOs, however, increased the cost to Daviplata from being a per-transaction charge to a per-SMS charge. This meant that the cost of over a month's usage of the mobile channel consumed the entire commission that the bank received for managing the payments. Even simple balance enquiries with no transactional revenue value cost the bank substantially in profits. The issue was referred to the telecommunications regulator for review.[182]

Kenya

Equity Bank complained of high STK access charges from market leader MNO Safaricom that made access to its mobile banking products uneconomical. It built an MNVO called Equitel and used thin SIM to bypass Safaricom, using instead cheaper STK from Safaricom competitor Airtel. [183]

7 SHORT CODE ACCESS

7.1 Overview

As noted above, short codes then are the consumer's primary access to USSD, STK or Interactive Voice Response (IVR) DFS bearer channels. The usability of these primary bearer channels is usually dependent on what specific codes the user must input into the mobile handset to allow them to access a service – the so-called Man Machine Interfaces (MMIs). In the case of access to services relating to DFS, the MMIs are specific short codes, which can be provider-specific or a generic single access number usable across all MNOs, meaning that a specific number for a specific service is the same across all MNOs.[184]

The short codes could manifest as 3, 4, 5, or even 6 digits the user will input to get direct access to a service, or access to a gateway of menu items which give downstream access to a particular service. In some cases the short code could be 'split,' prefaced with a 2 or 3 digit number mandated for DFS by the telecommunications regulator or the central bank. That number is then followed by a star (*) entry, and then a 3 or 4 digital number and then a hash (#) that is directed to a specific service or DFS SP.

7.2 Obtaining Short codes

Mobile phone and fixed line phone numbers are generally part of a national resource, usually controlled by the telecommunications regulator as part of a national numbering plan based on the

[182] Consultores. M (2015) *Going Mobile with Conditional Cash Transfers Insights and Lessons from the payment of Familias en Accion through DaviPlata wallets in Colombia*, available at https://goo.gl/fsvyfZ

[183] In the case of Equitel in Kenya, use of the shortcode *247# will divert the session to use the Airtel network. See Equitel (2016) *Get Activated*, available at http://www.equitel.com/my-phone/get-activated.

[184] Technically these are referred to as 'Common Short Codes,' usually cross carrier short numbers used to address USSD, SMS and MMS messages from mobile phones or fixed lines.

ITU-T E.164 specification.[185] Short codes, while not necessarily a direct ITU specification, are still a finite and scarce resource[186] and may be part of the national numbering plan.

While in many countries DFS access for consumer will be via a nationally mandated short code, in many others individual services may have a 3 or 4-digit short code that become the 'brand' of the provider.

Short codes can be obtained in the following ways:

a. Directly from the national telecommunications authority if that is the issuing authority for all short codes. [187]
b. From the MNO, who is allocated a numbering block or specific code by the national regulator.[188]
c. From TSPs acting as aggregators, who may themselves get the short code numbers directly from the telecommunications regulator or from an MNO who has been allocated the numbers by the telecommunications regulator.[189]
d. From a licensed MVNO, who may themselves get the short code numbers directly from the telecommunications regulator or from their home MNO, who in turn has been allocated the numbers by the telecommunications regulator.

7.3 Competition aspects

Generally, choices b, c and d (above) present specific competition issues for non-MNO entities if the codes are initially allocated to the MNO. In such scenarios, the MNOs control the entire vertical chain of access, from the infrastructure to the short code allocation and access, and may result in 'refusal to supply' behavior.

If a short code is obtained via a leasing agreement with an MNO, it remains the property of the MNO. If an MNO is involved in DFS, conflicts of interest may arise such that the MNO may decide not to allocate short codes to a potential DFS competitor; delay allocation of a short code to a competitor, or the correct pricing band thereof; or allocate and then withdraw the short code after DFS operations had begun.[190]

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[185] Numbering plans may be part of the E.164 ITU Recommendation called the international public telecommunication numbering plan that defines a numbering plan for the world-wide public switched telephone network (PSTN) and some other data networks. E.164 defines a general format for international telephone numbers. Plan-conforming numbers are limited to a maximum of 15 digits, excluding the international call prefix. See ITU (2010) *Recommendation E.164 (11/10),* available at https://www.itu.int/rec/T-REC-E.164-201011-I/en

[186] In many countries, numbering resources used in the provision of communications services are seen as a valuable scarce national resource, finite in size whose management and administration affects the national interest.

[187] In India, the national DFS access prefix is *99# is run by the NPCI.

In Tanzania, MNOs, third party providers of VAS and users such as banks receive USSD short codes directly from the regulatory authorities. See also Mazer, R (2015) *USSD Access: A Gateway and Barrier to Effective Competition,* available at https://goo.gl/za1P1C . By contrast in Kenya, licensing of USSD short code services is done by the regulatory authority, but it is the MNOs which issue the codes.

[188] In tandem with the increased popularity of short code services, there is also a growing demand for service interoperability and common codes between networks. Though many of these SMS short codes are network specific and therefore are not based on the international ITU-T E.164 standard, end-users of any network can use the same code to access the same services, if the service is accessible in their respective networks.

[189] In some cases, SPs may obtain secondary assignments from 'Network Facility Providers' and 'Application Service Providers' with primary assignments from a regulator for provision of short codes and even premium rate numbers. See CA (2012) *ibid*

[190] See the case of Ezee Money in Uganda, below.

7.4 Country examples

Kenya

The Communications Authority (CA) currently assigns certain categories of SMS short codes in blocks while giving the assignee MNOs the responsibility of undertaking secondary assignment of the codes to other SPs and end users. This, they say, is done for the convenience of quick industry operations, and because most of these codes are technically network specific codes and thus not based on the international ITU-T E.164 numbering standard.[191]

A recent report[192] noted that aggregators in Kenya, because they do not already have a short code when they go to MNOs to request services, believe that this causes negotiations with MNOs to be more challenging since they have less leverage. This is, they said, a 'subtle, but significant, impediment to fair access.'[193]

Uganda

As noted earlier, DFS SP and aggregator Ezee Money sued MNO MTN Uganda on the basis that, *inter alia*, MTN denied Ezee Money the use of short codes on its network once services had already begun. MTN's main defense was that Ezee Money was not a licensed communications services provider protected by the Uganda Communications Act; and further, that Ezee Money was a new company with no prior business with MTN and hence did not meet MTN's trade-vetting requirements. The Commercial Court ruled that MTN breached provisions of the Uganda Communications Act in regards to restricted and distorted competition, and awarded Ezee Money Shs 2.3 Billion (US$637,000) in damages. MTN Uganda has reportedly begun an appeal.[194]

Short Codes may be issued by UCC to the DFS SP. However this may not guarantee the SP quick activation as there are currently no reference activation time lines mandated by the regulatory authority. Some banks and independent TSPs and PSPs have claimed that short code activation may take more than 3 months.[195]

8 QUALITY OF SERVICE

8.1. Overview

Issues of Quality of Service (QOS) permeate the DFS ecosystem, some anecdotal and some identified by regulatory studies.

These QOS issues relate primarily to random, dropped USSD sessions affecting DFS SPs and aggregators. As noted by CGAP, selective degradation is technically possible, but is reportedly difficult to do and extremely difficult to prove.[196]

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[191] See CA (2012) *Procedures And Guidelines For The Management Of Telecommunications Short Codes And Premium Rate Numbers In Kenya,* available at http://bit.ly/2jlOjpe

[192] Mazer & Rowan (2016) *ibid*

[193] *ibid*

[194] Uganda has no competition law. New Vision (2015) *MTN Ordered To Pay Ezeemoney Sh2.3b Over Sabotage*, available at https://goo.gl/glTbes

[195] UCC (2016) *ibid*

[196] And as noted further by CGAP, even if a discrepancy in the 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 DFS provider, the USSD gateway operator, or the MNO. See CGAP (2014) *ibid*

Even so, minimum QOS standards may be embedded in MNO-SP contracts.[197] These may provide, in a USSD context, for the provision – if and where available - by an MNO to an SP of NI-USSD, which would be automatically initiated to resume a dropped user-initiated USSD session.

8.2 Country example

Uganda

A competition study commissioned by the UCC indicated that TSPs and PSPs reported issues with service quality and that it was not possible for them to negotiate service level guarantees, nor be compensated for poor QOS and dropped USSD sessions.[198]

D ACCESS TO PAYMENT INFRASTRUCTURE & SERVICES

9 PAYMENT INFRASTRUCTURE & SERVICES

9.1 Overview

Transfer of funds between stores of value such as DFS accounts and bank accounts, as well as integration into retail payment systems is key to building a DFS ecosystem and requires interoperability between systems.[199] This can be achieved by providers participating in a scheme, through a variety of bilateral or multilateral arrangements, or integration into automated clearinghouses (ACH), payment card processing platforms (payment switches), and national payment system (NPS) infrastructures such as Real Time Gross Settlement (RTGS).

Access to RTGS is usually controlled by the central bank. For example, SPEI is a RTGS system developed and operated by Banco de México in which banks and non-banks can participate.[200] In general, technical, risk and business rule issues need to be resolved for interoperability to work.[201]

9.2 Competition aspects

Access to existing payments infrastructure for non-bank payment service providers at FRAND is necessary to ensure a level playing field in the provision of DFS and efficiency and interoperability of DFS.

Even though interoperability in the DFS ecosystem is still evolving, there already appears to be examples where there is asymmetric access to existing infrastructures in a number of markets, primarily where the payment infrastructure is controlled by a payments association, bank, or consortium of banks. The Interoperability Working Group (IWG) of the ITU DFS FG identified access to payment infrastructures by non-bank PSPs as potential block to competition in DFS.[202] Specifically, the IWG pointed out that access to payment infrastructures such as RTGS, NPSs, ACHs

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[197] See ITU FG DFS (2016) *QOS and QoE Aspects of Digital Financial Services*, available at See http://www.itu.int/en/ITU-T/focusgroups/dfs/Pages/default.aspx . The report considers the appropriate role for telecommunications regulators in ensuring the provision of high-quality DFS and offers recommendations for telecommunications regulators on how to select Key Performance Indicators (KPIs) for DFS, including technical KPIs for bearer channels used with basic phones, feature phones and smartphones.

[198] Cartesian (2015) *ibid;* UCC (2016) *ibid*

[199] Note that while the ITU DFS FG WG on Interoperability has produced comprehensive overviews of issues, some of this work is summarized below to give this study completeness.

[200] See Banco de Mexico (2017) *Interbanking Electronic Payment System*, available at https://goo.gl/l8cD4o

[201] ITU DFS Focus Group (2016) *Glossary*, available at https://goo.gl/yrl1bk

[202] ITU DFS FG (2016c) *Interoperability*, available at https://goo.gl/oVmDhe

and payment switches is generally the domain of Tier 1 or 2[203] banks and bank-dominated payment companies.[204] Similarly, a key payment switch could be controlled by one private entity or one where there is private-public ownership.[205]

To date, at a global level, bank-based models of DFS have faced most favorable conditions in integrating with payments infrastructure.[206] Given the incumbent position of banks in the provision of DFS and their ownership and control of much of the existing payments infrastructure, there is potential for their dominant position in the provision of payments infrastructure to result in blocking competition in the downstream market for payments services. Pricing models and asymmetric contract power in interchange and switch fees negotiations may prompt competition concerns. Similarly, a monopoly over access to a key national payments interface has competition and systemic implications.[207]

In recognizing these concerns, the IWG report encouraged financial regulators to ensure that operators of payment infrastructures develop risk-based, objective criteria for direct access.[208] At the same time, the IWG recognized that it may be infeasible for many PSPs to comply with the financial and technical requirements for direct access; and that governance arrangements may create barriers to cost-effective indirect access. Therefore, the report recommends that payment system regulators work to ensure that PSPs can access payment services – whether through direct or indirect access – under FRAND conditions.

9.3 Country examples

Colombia

Although a new law on financial inclusion was passed, it did not take fully into account the need for non-banks to access national payment infrastructures or to have access to payment switches on FRAND terms. In particular, the ability for non-bank DFS SPs such as MNOs to distribute companion Visa and MasterCard General Purpose Reloadable (GPR) cards has been somewhat limited by the fact that the access is tightly controlled by two local franchises.

India[209]

Several payments systems are operational in India. These include the Real Time Gross Settlement (RTGS) system, National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Aadhaar Enabled Payment System (AEPS) and Unified Payments Interface (UPI).[210] The RBI, which is the banking and also the payments regulator, operates RTGS and NEFT payment systems. The National Payments Corporation of India (NPCI) operates IMPS, AEPS and UPI. In addition to operating the payment systems, NPCI has also been authorized to operate as a central unit for new

[203] The Tiers relate to the size and capital reserves of banks. Tier 1 banks generally are at the core of an NPS.

[204] See CGAP (2014) *ibid* See CGAP (2014) *ibid*

[205] See India and Nigeria below.

[206] For example SPEI in Mexico and 1Link in Pakistan

[207] See in particular below, the case in India with NPCI.

[208] ITU DFS FG (2016c) *ibid*

[209] All data in this section provided to the TIC WG by Consumer Unity & Trust Society (CUTS) India. See CUTS (2016c) *Competition And Regulatory Concerns In Payment Systems Ecosystem In India: Brief Note Based On Initial Literature Review*, available at https://goo.gl/cb090G

[210] Gandhi, R (2016) *Evolution of payment systems in India – or is it a revolution?*, available at http://www.bis.org/review/r161025f.htm

centralized bill payment mechanism: Bharat Bill Payment System (BBPS). Non-banks can access NPCI systems only with/through banks.[211]

The gamut of services offered by NPCI has made it a dominant player in several services - such as card payments - and the exclusive player in many. It is thus the only entity authorized by RBI as a retail payments organization,[212] which allows it to set standards, access criteria and service pricing. This has raised concerns that NPCI is increasingly turning into the exclusive service provider-cum-quasi regulator for payments systems in India. The Financial Sector Legislative Reform Commission Working Group on Payments for example has called for a level playing field within the payments industry and between bank and non-bank players.[213] A recent report from the Indian Ministry of Finance – known as the Watal Committee - made similar recommendations.[214]

Kenya

In August, 2015 Safaricom announced that it was increasing the rates charged for transfers from bank accounts to M-PESA to align them with the M-PESA P2P tariffs.[215] Rival Equitel MVNO complained to the CBK that this price change was not justified. This apparently prompted Safaricom to unilaterally rescind the planned price increase.[216] The retail banks in Kenya have not been fully been able to interoperate with M-PESA and as such are developing their own payments switch.

Jordan

In Jordan, interoperability has been mandated by the Bank of Jordan (BOJ). All bank and non-bank participants have to link the BOJ's switch JoMoPay. Final governance and commercial arrangements for the switch have yet to be established.[217]

E ACCESS TO AND USE OF BIG DATA SETS

10 BIG DATA AND DFS

10.1 Overview

As DFS evolves from its genesis as primarily a remittance-type service to a more transactional offering that includes services such as insurance, investments and credit provision, SPs may want better data sets to assist them to develop new products, to assess customer risk, and to target the correct market segments.[218]

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[211] Ministry Of Finance (India) (2016) *Committee on Digital Payments: Medium Term Recommendations to Strengthen Digital Payments Ecosystem*, available at https://goo.gl/cb090G

[212] RBI (2016) *Certificates of Authorisation*, available at https://goo.gl/14LHgS

[213] FSLRC (2013) *Report Of The Working Group On Payments*, available at https://goo.gl/PI4Zkt . See also Srikanth, L (2016) *UPI Is A Toll Road*, available at https://goo.gl/150ofa

[214] Ministry Of Finance (India) (2016) *ibid*

[215] Standard Kenya (2015) *Safaricom Hits Banks With New M-PESA Fees*, available at https://goo.gl/rgXDeE

[216] People Daily (2015) *Safaricom Withdraws New Charges On Equitel*, available at https://goo.gl/I1cNUL; and Mazer & Rowan (2016) *ibid*

[217] GSMA (2016c) *The Long Road To Interoperability In Jordan*: *Lessons For The Wider Industry*, available at https://goo.gl/6mnfT1

[218] See further on the nature of adverse selection and data sets, Mazer & Rowan (2016) *ibid;* and generally on big data and DFS, Chen, G & Faz, X (2015) *The Potential of Digital Data: How Far Can It Advance Financial Inclusion*?, available at https://goo.gl/dxxSIU

For provision of credit, be it short-term micro-credit or a longer term macro-credit product, providers need specific data sets to assess risk and credit worthiness.[219] The data is limited though: only 10% of people in eight sub-Saharan countries, for example, have verifiable online financial data.[220]

For many DFS markets, the most cogent data sets are often those that can be gleaned from mobile phone use, either from conventional telecommunications activity use, through transactional data in DFS or similar transactions obtained by DFS providers such as MNOs, or through third party smartphone app providers.[221]

In the telecommunications (use) context for example, Call Data Records (CDRs) captured in the course of their operations by MNOs are evolving from simply being flat records of telecommunications service use by individual customers to being the cradle of rich data insights made possible by the connective tissue of big data algorithms. This so-called 'exhaust' data scrapped from these data sources can reveal a lot more on customer behavior, and thus credit worthiness.[222] These metrics are the maximum types of data sets that can be derived from customers with feature phones,[223] augmented however if the MNO also provides DFS products.

Even richer data sets can be gleaned from users with smartphones, who may use apps that reveal further information about them. For example, some new smartphone apps from DFS credit providers will request and obtain from the user consent to mine their contact lists, get device details, obtain biographical data in registration forms beyond that can be obtained in (often mandatory) SIM card registration, as well as track their calls, SMSs, instant messages, digital purchase habits, and location.[224] Similar data and results can be obtained by messaging and social network apps who have payment components added, such as those from Tencent's 'WeChat Pay' application in China, and social network behemoth Facebook's 'Messenger' application.

This accumulated data becomes valuable in creating alternate credit scores and in then facilitating provision of credit to some of these profiled users. In many cases, however, users may not be aware data is being scrapped and used as a basis for developing an alternate credit score, or affecting current credit bureau scoring data. These privacy concerns have garnered the attention of some regulators.[225]

10.2 Competition aspects

Entities who may be in a position to accumulate data used to create alternative credit scores may potentially use the data to their own advantage by not providing the complete data sets as required to credit bureaus, and/or selectively providing the data only to preferred parties. Entities with SMP may be able to utilize their internal data to the potential detriment of smaller players.

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[219] This information asymmetry, in a credit-provision context, may result in what is termed adverse selection, such that without a credit risk assessment – or credit score – the borrower will seek and often be given credit by lenders who are unable to obtain enough information on hand to have made a more seasoned determination of whether the loan would be repaid. Thus, those with access to cogent data sets will mitigate the risks of adverse selection. See further Mazer & Rowan (2016) *ibid*

[220] Christensen P (2015) *Credit Where Credit Is Due*, available at https://goo.gl/h0Oapm

[221] Data can of course be gleaned from bank-related activity but this may be restricted through bank secrecy laws in some countries - for example Pakistan - which have often gotten in the way of sharing data that could otherwise be valuable in the hands of alternative financial providers. Here then, traditional credit providers benefit from their 'proprietary' data.

[222] See San Pedro, J *et al* (2015) *MobiScore: Towards Universal Credit Scoring from Mobile Phone Data,* available from https://goo.gl/Mkwp5T

[223] Also through some feature phones that have Facebook, Twitter, and Whatsapp installed. See further, Perlman, L (2017) *DFS Handset Overview: ITU FG on DFS*, available at http://www.itu.int/en/ITU-T/focusgroups/dfs/Pages/default.aspx

[224] In most cases prospective (and existing) users can only install and thus the app to get credit only if they agree to all these metrics being monitored.

[225] See Government Of Kenya (2016) *Gazette Notice No. 678: Proposed Market Inquiry And Sector Study On The Kenya Banking Sector-Phase II By Competition Authority Of Kenya,* available at https://goo.gl/wbqDX6

10.3 Country example

Kenya

The Competition Authority of Kenya in 2016 began a study to 'authenticate reports' on whether provider's 'mobile credit data' and other entities deliberately released information on bad borrowers while concealing information on good borrowers.[226] In particular, the study will assesses:

'*The level of equal compliance with Credit Bureau reporting by digital credit providers and if they report both positive and negative borrower data as required by law and if there exists disparate treatments that gives them anti-competitive advantage and inhibits consumers' ability to take advantage of their own data for financial access*.'[227]

The enquiry was apparently prompted by 'good' borrower's accessing loan while 'bad' borrowers were denied access to loans in other financial institutions since they lack access to any past credit information.[228] The CAK study also looks at current practices around consumer control over their transactional data and how this is sold or accessed by third parties such as the usage of mobile credit data to score and award credit offers without consumer consent.

F ACCESS TO AND USE OF APPLICATION PROGRAMMING INTERFACES

11 APPLICATION PROGRAMMING INTERFACES

11.1 Overview

Application Programming Interfaces (APIs) present a new innovation in technology and DFS. Common APIs are a very promising technical solution to reduce fragmentation amongst DFS players.[229] They provides a gateway for smaller SPs to utilize the capacity, reach and capabilities of larger entities who make their APIs available. Essentially, to gain access to the larger capabilities, all that is required is to integrate the API into a feature set or application being developed.[230]

The best known example in the mobile environment is availability of the Google Android Operating System API: developers can simply develop their products, integrate the Android API, and know that their app is compatible with Android phones.[231]

In the case of DFS, an API defines the way a developer should write a program that successfully requests services from the DFS platform. Any provider offering a DFS accounts could make an API available that allows any permitted entity to automatically debit (or credit) the DFS account, to simply be notified when a payment has been made, or add DFS payment capabilities to e-commerce web

[226] Daily Nation (2016) *Govt Launches Study On Mobile Money Practices,* available at https://goo.gl/h9OumW. This study is reportedly ongoing as of January 2017.
[227] Government Of Kenya (2016) *ibid*

[228] The CAK indicated that the study will establish whether consumers have been denied information on their DFS activities that could enable them get loans elsewhere in so far as assessing if there exists restrictions on consumers' use of their own digital transactional data and provision of the same to third parties for commercial use. CAK communication to ITU TIC WG; and Daily Nation (2016) *ibid*

[229] The GSMA is working to drive the adoption of standardized APIs. See GSMA (2016) *Launching GSMA Mobile Money APIs To Raise Industry Capabilities*, available at https://goo.gl/O4CkOP

[230] On the openness of DFS APIs, see Tellez-Merchan, C (2015) *Can Open APIs Accelerate the Digital Finance Ecosystem?*, available at https://goo.gl/1a6unm

[231] Android OS compatibility is not a given though, due to various changes to the OS by Google.

sites.[232] Alternatively, a forex provider could make an API available that allows entities who need forex components in their business – or smartphone apps – to gain access to these features by simply incorporating the forex API. The ability then to have seamless access to these facilities reduces fragmentation of services in the market and so benefits customers.[233]

A common API across all DFS SPs in a country could serve as a public good: for example, an API providing a common method for biometric data capture for KYC purposes, and then transmission directly to regulators.

APIs were opened up in 2015 for non-exclusive use by Safaricom Kenya for access to its M-PESA service;[234] Orange has opened up APIs via its Orange Partner program for developers in Africa.[235] In the absence of common APIs, some workarounds have been created by entrepreneurs, primarily for access to DFS accounts where individual entities are unable to do so.[236]

11.2 Competition aspects

APIs represent an enormous potential enhancement of DFS reach, in some cases making DFS payment methodologies mainstream. Integration of SPs using APIs into DFS systems of larger providers may, however, conflict with the business activities and plans of the latter. This could manifest as a delay in the vetting process for access to the API; continuous requirements to change the way their interface or app uses the API; refusal to accept the integration; or delay in allowing the interface or app to be used. Integrations and partnerships, however, may not necessarily be forged with every provider as this may be a business decision. As such, the existence of an API does not obviate the need to establish the appropriate commercial arrangements to accompany its use.

11.3 Country examples

Kenya

Kenyan-based remittance provider Bitpesa sued Safaricom over the latter's refusal to provide Bitpesa access to its M-PESA DFS platform as a payment option for Kenyan-based Bitcoin buyers.[237] The court refused the request to force Safaricom to provide the access.[238] There is still some controversy as to whether this refusal was a competition issue or a business decision based on compliance concerns. Safaricom cited the uncertain regulatory environment in Kenya around Bitcoin as the reason for blocking Bitpesa from its platform. Bitpesa's contention, however, was that the refusal was a competition issue: that its international remittance business competed with that of the non-Bitcoin remittance business of Safaricom.

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[232] See for example the MTN mobile money API being provided to Uganda e-commerce web sites. Its 'Request for Payment' API sends an authentication message (*Request for Payment*) to a customer's mobile phone if that number was inputted as a payment method on a web site. The customer then verifies the transaction with their MTN Mobile Money PIN number.

[233] A single API is the equivalent to a single common short code being available for customers across multiple MNOs, rather than requiring individual access number for each MNO.

[234] Safaricom's G2 API includes Automated Payment Receipt Processing; Automated Payment Disbursements; and Automated Payments Reversal. See further https://goo.gl/IcZG3w

[235] The APIs for its Orange Money include e-commerce web site payment integration; and creating your own USSD service.

[236] See for example PesaPI, an open source API for mobile money systems, released under the BSD(lite) license. It allows entrepreneurs to seamlessly integrate mobile money systems into their application, making it easy for your application to detect when a payment has been received. It currently supports DFS operations in Kenya, Tanzania, Ghana, Rwanda, Somalia, and DR Congo. See http://www.pesapi.com/

[237] CoinDesk (2015) *Kenyan Court Upholds Bid to Keep Bitcoin Startup Off M-PESA*, available from https://goo.gl/f27H23

[238] Bitcoin is a distributed cryptocurrency with no central issuer. Bitpesa enables the exchange of bitcoin for Kenyan Shillings, and allows users in Kenya, Nigeria, Uganda and Tanzania to send fiat funds to popular DFS wallets. It also has a corridor to China. See www.bitpesa.co

Uganda

MTN Uganda is providing APIs to e-commerce sites to use the MTN Money wallet as a payment instrument on the web. It is, however, reportedly restricting the number of those can integrate with the API to five.

G AGENTS

12 AGENTS IN DFS

12.1 Overview

One of the transformational components of the DFS ecosystem has been the emergence of agents as the frontline retail providers of service to customers. Agents, however, require training, marketing materials, liquidity management and replenishing, physical platforms for their locations, and incentives to signup up customers and do CICO transactions. Further, they often need to be notified to or approved by the relevant financial regulator. In all, these components require major investments to set up and manage effectively.

Those 'first to market' are usually the ones who have invested this time and money, and consequently wish to protect their investments. This need may however be counterbalanced by market forces, for example subsequent entrants who want to use these same agents to sell their DFS products. This commercial need is often hindered by so-called agent exclusivity arrangements that prevent an agent contracted to one DFS SP from doing the same DFS business with another DFS PSP.[239]

From a competition authority's or regulator's perspective, exclusivity arrangements in the DFS ecosystem may be seen as anti-competitive and hindering financial inclusion by decreasing the ability of customers to access multiple providers (and thus services) from an agent serving their location.

12.2 Competition aspects

In some instances, bans on agent exclusivity are motivated by competition concerns. In other respects, for example in India, the regulator has mandated exclusivity based on consumer protection concerns.[240] From a DFS PSP's perspective, however, a ban on agent exclusivity could depress its incentive to roll out comprehensive agent networks. Even where there are bans on exclusivity, there are reports of exclusivity prohibitions being flouted.[241]

There are also instances where there is an agent regulation for banks and another regulation for non-banks,[242] which may result in different approval conditions or criteria being imposed on agents offering identical types of services. This unequal treatment of bank versus non-bank agents could be motivated by issues of proportionality in risk mitigation rather than a competition issue *per se,* since banking agents may have a higher risk profile because of the activities they carry out and as such may warrant more stringent regulations.

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[239] This sharing of agents is not interoperability as it has sometimes been described, as there is no interconnection between the e-money accounts of the agent. The agent will hold two separate e-money accounts from two or more DFS SPs. Exclusivity could manifest not only as a provider not allowing its agent to serve other service providers but could include only allowing one company or person to serve a particular location.

[240] The recently issued operating guidelines on payments banks allow interoperability of banking correspondents (agents), except for customer acquisition. RBI (2016) *Operating Guidelines for Payments Banks*, available at https://goo.gl/lByJQp

[241] Mazer *et al* (2016) *ibid*

[242] See Section 7.3 below on Bangladesh and Kenya.

12.3 Country examples

Bangladesh

Bangladesh has an agent regulation for banks - *Guidelines on Agent Banking for the Banks 2013* – as well as slightly different rules for MFS agents in their *MFS Guidelines*. Although many of the provisions are similar between the two regulations, there is a restrained requirement for country wide networks for MFS agents, but not bank ones. And bank agents, but not DFS agents, can facilitate loans/collect loan documentation, but not actually appraise the loan.[243]

Kenya

MNO Airtel in 2014 complained about agent exclusivity arrangements enforced by competitor Safaricom for their M-PESA agent network. Safaricom countered that it had invested in building an agent network and should not be required to share agents with competitors and lose its return on investment. A ruling by the CAK ordered Safaricom to open up its M-PESA agent network to rival DFS firms.[244] A recent report, however, indicated that there are aspects of exclusivity being enforced through marketing requirements.[245] Airtel lodged a complaint with the CAK thereto.[246]

There is also inconsistency in the agent guidelines: banks using agents are subject to the *Guideline on Agent Banking*[247] issued in 2010 and revised in 2013, but these rules are stricter than the rules imposed on non-bank SPs[248]

Malawi

In Malawi, the Competition and Fair Trading Commission (CFTC) has outlawed agent exclusivity *per se.* However, it allows MNOs to have exclusivity for their airtime-selling agents, but not for their DFS agents even though these may be the same person. It does, however, not appear to tightly enforce the DFS agent exclusivity rule, allowing some DFS SPs to have exclusive agents.

Mexico

Mexico has an agent regulation for banks using retail agents[249] and a separate regulation setting different rules for banks using agents managed by MNOs.[250]

Uganda

In Uganda, the Bank of Uganda stipulated in its 2013 Mobile Money Guidelines[251] that agent agreements should not provide for agent exclusivity. A recent report from CGAP, however, indicated that some MNOs were switching off agent accounts if they served another provider's customers.[252]

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[243] ADB (2016) *ibid;* Bangladesh Bank (2016) *ibid*

[244] The ban on agent exclusivity was further solidified in the National Payment Systems Regulations of 2014, which prohibited exclusivity in agent contracts of payment service providers such as mobile money providers. See CBK (2014) *National Payment Systems Regulations of 2014*, available at https://goo.gl/f9cnLc

[245] CGAP reported that interviews with agents indicates that one MNO requires that a minimum of 75% of signage must be for their brand. See Mazer *et al* (2016) *ibid*

[246] Business Daily (2015) *Competition Authority Of Kenya Asks Airtel For Evidence Against Safaricom In Mobile Cash Agents Row*, available at https://goo.gl/F4x2Rm

[247] CBK/PG/15

[248] As reported by CGAP (2015) *Supervision of Banks and Non-banks Operating through Agents,* available at https://goo.gl/47yZqM

[249] For example, convenience stores and pharmacy chains

[250] CGAP (2015) *ibid*

[251] BOU (2013) *Mobile Money Guidelines*, available at https://goo.gl/fCr0Nu

[252] Mazer *et al* (2016) *ibid;* UCC (2016) *ibid*

H TECHNICAL AND COMMERCIAL RESPONSES TO COMPETITION BOTTLENECKS

13 THIN SIMS

13.1 Overview

One novel technical method to compensate for restricted or unfavorable access to STK and USSD is to use what is known as 'thin SIMs,' also known as 'sticky SIMs.' Technically a SIM overlay technology, a thin SIM is a paper-thin plastic sheet embedded with a number of contact points and a chip on top of a standard SIM card.[253] Thin SIMs provide an alternative and often cheaper access method for SPs and other third parties, by allowing access to networks that ostensibly provide standard QOS, better reliability, and cheaper rates for USSD and STK access.

Despite its 'thin' form factor, it is a full-featured SIM.[254] Once placed over a larger SIM, the thin SIM essentially converts any handset into a dual-SIM phone.[255]

Switching between MNOs is done either manually via the accompanying STK menu, or by inputting a specific short code to do the selection.

The thin SIM will 'listen out' for a specific DFS-linked short code and if the short code belongs to a MNO or SP supported by the thin SIM, any DFS-related USSD or STK traffic will be directed to the alternate network or provider. Any voice traffic linked to the original, larger SIM underneath the Thin SIM will remain unchanged.[256] The solution is device agnostic so it works with feature or smart phones. It is also MNO-agnostic, so it works with any MNO operator independent of the underlying SIM card.[257] This technology is now in use in a number of countries for DFS purposes, but is as yet not in widespread use.[258]

13.2 Country examples

China

Chinese SP F-road has used Thin SIMs to enable access for over 15 million users from 1,300 banks in 27 of China's 31 provinces.[259] Its pre-programmed Thin SIMs are distributed to customers via financial institutions, and are inserted in phones to ensure encrypted SMS. F-Road's technology can be used on over 95% of the phones in the local market including smart phones.[260]

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[253] The technology was developed in China by Shanghai-based tech company F-Road in 2005, primarily as a mobile phone solution to support multi-operator access, designed to avoid roaming fees.

[254] The thin SIM supports GSMA/3GPP/ETSI standards, making it compatible with all standard devices from older feature phones to the latest smart phones.

[255] Users can then access services on both networks and having two SIM cards in one slot of the device which means the user does not have to physically remove and exchange the SIM card when the user travels, eliminating the possibility of losing and misplacing the cards.

[256] Therefore users can keep their original voice number on MNO 1, but use USSD and STK services on MNO 2.

[257] It also has a patented secure, encrypted SMS technology.

[258] A CGAP report identified only a few instances where thin SIMs were being used because of competition-based issues with access to USSD and STK bearer channels. See Hanouch & Chen (2015) *ibid*

[259] It handles more than RMB 5 billion daily transactions. See Micro Finance Gateway (2016) *Shanghai F-road Wins 1st Prize in Wall Street Journal's Financial Inclusion Challenge*, available at https://goo.gl/DLn9Ur.

[260] F-Road follows a B2B2C model—its customers are financial institutions that, in turn, serve individuals. The company's technology platform enables financial institutions, mainly Rural Credit Cooperatives and Rural Commercial Banks, with mobile-based secure DFS access. See Shrader, L (2013) *China – The Future Leader in Branchless Banking for the Poor?,* available at https://goo.gl/C3cEZw . See also IFC (2016) *F-Road Company Profile*, available at http://goo.gl/9C1lP8

India

In India, Yes Bank, India's fifth largest private sector bank, has also launched its own Thin SIM payments solution for feature phones.[261] Its Thin SIM installs a STK-based app linked to a prepaid wallet.[262]

Kenya

As noted above, Kenyan MVNO Equitel[263] – the telecommunications arm of Equity Bank – uses its thin SIM to bypass market leading MNO Safaricom, using instead cheaper bearer services from Safaricom competitor Airtel. [264]

14 SOUND-BASED PAYMENT ACCESS

14.1 Overview

Acoustic-based access technology – also known as sound-based, or NSDT[265] allows the microphone of any basic phone, feature phone, or smartphone to be used for data capture, while the standard MNO voice channel acts as the data transporter. Transaction data is encrypted through the phone's audio channel using a 'cryptosound.'[266]

In a merchant/agent environment, the merchant or agent enters the amount on the POS terminal device. The customer then enters their phone number and PIN. On the terminal, the acoustic platform dials the customer's phone. The customer then answers the call and places the phone next to the terminal or agent's handset. A one-time encrypted password is exchanged via the cryptosound between the two devices and the transaction is complete. Similarly, users can transfer funds to one another by both the sender and recipient calling a sound-enabled server. The system may be especially suited for use by merchants in India, where there are more than 20 million merchants but only around one million POS machines.[267]

Using NSDT, DFS SPs are not reliant on an MNO for access, since no special MNO gateways are required. However, there is limited mass-market discovery and penetration. Voice calls to link the POS, handset, and server to complete a transaction may also be relatively costly.

14.2 Country Examples

The technology is used by Yes Bank (India), Pepele Mobile (DRC); Netcash (Zimbabwe); MoboMoney (India); UltraCash (India); and Alipay (China).

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[261] ETCIO (2016) *Yes Bank To Launch SIM Sleeve Payments Solution For Feature Phones*, available at https://goo.gl/ybICxl

[262] The transactions currently offered are P2P fund transfers, Person to Account (P2A) fund transfers using NEFT and IMPS, balance checking, payments to merchant for small and large value purchases and payment of bills; top-ups, and recharges

[263] http://www.equitel.com

[264] In the case of Equitel in Kenya, use of the shortcode *247# will divert the session to use the Airtel network. See Equitel (2016) *Get Activated*, available at http://www.equitel.com/my-phone/get-activated.

[265] NSDT is the trade name for the acoustic access service offered by Tagpay. See www.tagpay.fr.

[266] Zhang, B (2013) *PriWhisper: Enabling Keyless Secure Acoustic Communication for Smartphones*, available at https://eprint.iacr.org/2013/581.pdf

[267] NFC World (2015) *Ultracash Launches Sound-Based Mobile Payment Service In Bangalore*, available at https://goo.gl/kKV7JU

15 JAVA APPLETS

15.1 Overview

Icon-based Java applications are being used in a number of DFS implementations around the world.[268] As menus are icon-based, this makes it easier for illiterate/semi-literate users to navigate DFS options presented in the UI.

Technically, small[269] Java 'applets' are installed on compatible phones either via Bluetooth or OTA using WAP. The Bluetooth loading method – called 'sideloading[270] – requires the consumer to have a phone that has Bluetooth and to travel to a DFS agent, who would load the applet onto the phone through Bluetooth transfer. In the alternative OTA method, the SP simply sends the user a WAP download link for the Java application via a simple plaintext SMS. The small amount of data required for the OTA applet download to the handset can be zero-cost rated to the customer by a MNO or SP just for this applet download.[271]

Java-based DFS apps are generally more efficient and cheaper to operate than STK access to DFS, since multiple SMSs for facilitating transactions are usually not required: usually only one MO-SMS and one MT-SMS is required per transaction. And as Java applets mostly use bank-grade security using encryption up to and exceeding Payment Card Industry Data Security Standard (PCI-DSS),[272] each transaction and maintenance SMS message is encrypted with a unique set of keys.[273] Using Java applets, SPs are not reliant on an MNO for access, since no special MNO gateways are required. However, there is limited mass-market discovery and penetration because of the need to load the applet onto a phone.

15.2 Country examples

India

State Bank of India's uses a secure Java-based DFS application on a feature phone.

Nigeria

GT Bank uses a secure Java-based DFS application on a feature phone.[274]

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[268] Java is a programming language and computing platform first released by Sun Microsystems in 1995. It is the underlying technology that powers state-of-the-art programs including utilities, games and business applications. See Java (2011) *FAQ: Mobile Java*, available at http://goo.gl/Lo SFO.

[269] This method is similar in principle to a smartphone app, but running on a less sophisticated type of handset operating system. Many feature phones will have sufficient storage for this.

[270] The process of transferring data between two local devices.

[271] Zero-rating of the data cost of an application download and/or its use on a mobile network is an emerging trend worldwide. See Fierce Wireless (2014) *Report: 45% Of Operators Now Offer at Least One Zero-Rated App,* available at https://goo.gl/jF0mw9. The small data cost can be reverse-billed, such that the DFSP is charged by the MNO for the data required for the download to the customer.

[272] PCI DSS is a proprietary information security standard for organizations that handle branded credit cards from the major card schemes including Visa, MasterCard, American Express, Discover, and JCB.

[273] As the transaction server and Java application is supplied by one vendor, the entire system may be dependent on that vendor however.

[274] Available for download at https://goo.gl/kGmM82

16 SMARTPHONE-BASED INTERFACES

16.1 Overview

The first smartphone-based OTT apps for DFS in developing markets emerged around 2010[275] and have grown in use as cheaper smartphones emerge. Compared to WAP, USSD, STK, and even Java apps, these apps provide a rich-media user experience that utilize smartphone device features that include large color screens, touch access, faster access through 3G, as well as more context-sensitive access to DFS services, including NFC-based merchant payments. Most run on Google's Android Operating System (OS).

There are, however, some caveats with OTT apps that are specific to the DFS ecosystem. For example, not all smartphones being sold in developing markets have 3G capabilities, often because the manufacturer wants to save on 3G chipset licensing costs in price-sensitive markets. Nor is 3G mobile coverage always available.[276]

Another potentially limiting factor is that not all DFS apps are usable across all Android versions since design changes across Android versions are not necessarily backwards compatible to previous versions.

Using OTT apps, SPs are not reliant on an MNO for access, since no special MNO gateways are required.

There may be 'net neutrality' issues that could arise where the app access is throttled. Similarly, integration with APIs needed for the app to operate could be delayed or halted.

17 MOBILE VIRTUAL NETWORK OPERATORS

17.1 Overview

A number of banks around the world have expanded their business models to become what are called Mobile Virtual Network Operators (MVNOs).

The bank then provides (mostly) mobile telecommunications services to its customers by piggy backing off the GSM infrastructure of a licensed MNO. This allows the bank to provide almost the same GSM-based facilities as the 'home' MNO it uses. For the MNO – usually a smaller MNO in a market – it is often a guaranteed income from the MVNO, usually in the form of a commitment by the MVNO to buy a set number of airtime minutes, SMSs or megabytes of data. The MVNO may issue its own full-size SIM card to its customers, or may use a Thin SIM which sticks on top of a customer's own 'home' SIM. This allows the bank customer to use their current MNO for voice calls, but automatically switch to cheaper USSD or STK access when accessing their bank accounts via mobile access channels such as USSD or STK.

Although in the developed world the primary reason a bank may become an MVNO is to create 'stickiness' with its clients so as to prevent customer churn, for banks in the developing world it appears to have become a matter of survival to compete on an almost equal footing against non-banks such as MNOs who may provide cheaper bank-like services.

[275] Times of India (2010) *Transfer Funds to Any Bank A/C Via Mobile App*, available at https://goo.gl/KrZEIJ. See also GMA (2012) *Globe to launch GCash mobile app for iPhone, BlackBerry*, available at https://goo.gl/FmdBeJ

[276] Handsets supporting 3G and higher speeds invariably also require higher capacity batteries, and larger and more power-hungry touch screen displays, all of which are incremental costs.

Simply, the bank may need a cheaper access channel to provide similar services to its customers, and so will form a subsidiary to become an MVNO, a step often required by the telecommunications regulator.

By partnering with another MNO, it allows the bank to access and use USSD, SMS or STK or any other facility offered at a far lower cost than the MNO the bank may primarily be competing with in their DFS product portfolios.[277]

17.2 Country examples

Colombia

Bank BanColombia entered the telecommunications market by acquiring a majority share of MVNO *Uff*!.

Kenya

As noted above, licensed Kenyan MVNO Equitel[278] – the telecommunications arm of Equity Bank – uses its thin SIM technology to bypass market leading MNO Safaricom, using instead cheaper bearer services from Safaricom competitor Airtel.[279] Equity Bank has also begun to loan Equitel subscribers money to buy dual SIM smartphones.[280] Safaricom reportedly lowered many of its transaction fees in response to the emergence of Equitel.[281] As of mid-2016. Equitel had over 2m million subscribers.[282]

South Africa

First National Bank, one of the largest retail banks in South Africa, in 2015 launched its own MVNO using its own SIM and billing systems.[283]

18 NEW PAYMENT RAILS AND INTERFACES

18.1 Overview

As noted above, access to payments infrastructure is often unavailable to entities, or if it is, is not at FRAND terms. While bank-based models of DFS have faced most favorable conditions in integrating with payments infrastructure, situations may arise where a non-bank incumbent has such large market penetration, that the accessing of their large customer base by banks and other non-bank PSPs, or at FRAND terms without regulatory intervention, is challenging. There could also be challenges in accessing card networks or due to the excessive costs relative to the amounts transacted in relation to card networks.

In all cases, developing enabling payment switches using existing technologies and standards, or introducing new alternative, technologies such as Distributed Ledger Technology (DLT) are seen as

[277] Of course, besides boosting its DFS business through increased usage through cheaper access channels, the bank may even profit from provision of telecommunication services to its customers and other looking for a cheaper telecommunications alternative. It also allows the bank to participate on relatively equal terms with its MNO rivals by being able to incentivize customer DFS use through giving away free minutes and SMSs when their customer transacts.

[278] The holding company is called Finserve Africa.

[279] In the case of Equitel in Kenya, use of the shortcode *247# will divert the session to use the Airtel network. See Equitel (2016) *Get Activated*, available at http://www.equitel.com/my-phone/get-activated.

[280] The Star (2016) *Equity Bank To Loan Equitel Subscribers Money To Buy Dual SIM Smartphones*, available at https://goo.gl/S8nzt8

[281] Mazer & Rowan (2016) *ibid*

[282] The Star (2016) *ibid*

[283] It also sells mobile hardware on credit and at discounted prices.

solutions for both actual access and for lower access fees. These are shown in the country examples below.

DLT[284] in particular is a new type of secure database or ledger that is shared across multiple sites, countries or institutions with no centralized controller. In essence, this is a new way of keeping track of who owns a financial, physical or an electronic asset. A primary incarnation is blockchain technology. All blockchains operate by taking a number of records and putting them in a block and then chaining that block to the next block using a cryptographic signature. While the data (blocks) are stored one after the other in a continuous ledger, they can only be added when the participants reach a quorum (consensus) over their validity. Each record is time/date stamped and provided with a unique cryptographic signature, which is designed to ensure the authenticity and integrity of the ledger. This distributed design eliminates the need for a central authority or intermediary to process, validate or authenticate transactions and data.

One prominent DLT application has been through the crypto currency Bitcoin, which uses blockchains to be cheap and fast international remittances, to a large extent bypassing bank and MNO DFS systems, and simply using MNO bearer infrastructure to facilitate transactions using either feature phones or smart phones.

At a broader, alternate infrastructure level, DLT is being used to create alternate settlement transaction interfaces, aiming to replace for example the international SWIFT and other local centralized payment switches. Under development is the Corda DLT, a DLT technology offered by R3, a consortium of more than 70 of the world biggest financial institutions in research and development of blockchain database usage in the financial system. Similarly, Fuzzo has developed BitSIM, a thin SIM technology with a Java applet into a secure Bitcoin mobile wallet.[285] Blockchain technology built into the system reportedly gives regulators real-time access to transactions data for regtech purposes.

18.2 Country examples

India

The Government of India in December 2016 launched BHIM (Bharat Interface for Money), a rebranded version of UPI (Unified Payment Interface) to minimize what it said was the outsize role in the Indian economy of magstripe and EMV-based General Purpose Reloadable plastic cards and POS devices, and concomitantly to remove or reduce the need to connect to card switches such as those from Visa and Mastercard. The BHIM app is linked to the national Aadhaar biometric identity system. Merchants download the merchant app to their smartphones, which are in turn connected to a biometric reader. When transacting, customers input their Aadhaar number in the merchant smartphone, select the bank to be used for payment, and do a biometric scan to be authenticated. There is no need to carry a phone or Aadhaar card to make a payment. The app also allows you to scan a QR code. The system also allows merchants to generate their own QR code through the BHIM app.

While all UPI-connected banks accept BHIM, banks not connected to UPI can receive money through BHIM through IFSC, a 11-digit code assigned to every bank branch by the RBI.[286] However, BHIM

[284] For further information on DLTs, see Perlman, L (2016) *Aspects of The Legal and Regulatory Issues In Blockchain Technology*; and ITU Focus Group Digital Financial Services Technical Report*: Distributed Ledger Technologies and Financial Inclusion* (2017)

[285] They also indicate that the thin SIM can be used for blockchain-based mobile ID, mobile banking and mobile remittance Java Apps. See Fuzzo (2015) *BitSIM*, available at http://www.bitsim.co/#what-is-bitsim.

[286] There is a Rs. 10,000 per transaction limit, and Rs. 20,000 per day for BHIM. See Airtel (2016) *BHIM App Launched by PM Modi, Explained in 10 Points*, available at https://goo.gl/jC1ogx

was launched by NPCI, the sole payment infrastructure provider. Concerns have been raised with respect to infrastructure providers using its dominance to push BHIM, which competes with applications of banks and non-banks.

Kenya

The Kenya Bankers Association formed the Integrated Payments Service Limited, a company that will facilitate direct transfer of money between banks through their own bank to bank Real Time Interbank Switch. They indicate that the need arose for banks to bypass Safaricom's M-PESA, the market leader, for P2P transactions. Consumers will register their phone number with their bank, indicating a nominated account to be linked to be used for transactions initiation and notifications purposes.[287] The switch will also maintain the look-up table, provide guidance for processing fees and set up SMS and e-mail notification template preparation for alerts.[288] The launch of the switch has repeatedly been delayed however, most recently due to apparent delays in regulatory approvals.[289]

Safaricom at the end of 2016 indicated however that 'it is in discussions with five companies' to broaden the availability of M-Pesa services though interoperability.[290]

Philippines, Mexico, Kenya

Coins.ph, Abra, Bitpesa, and Bitso are some of the DLT and Bitcoin-based startups targeting the remittance market component of DFS. Many claim to have less of a forex risk, have faster transactions times, and lower transaction fees.[291] They bypass the traditional payment and switching 'rails' for international funds transfers but still need to be integrated into a local infrastructure components and are subject to local anti-money laundering (AML) regulations to do cash in and cash out from Bitcoin.

[287] Kerich, M (2015) *Kenyan Banks Launch Real-Time Interbank Switch in Response To Mobile Money,* available at https://goo.gl/y28ff6

[288] All Africa (2016) *Kenya: Roll-Out of Banks' Joint Mobile Cash Transfer Platform Postponed*, available at https://goo.gl/5eZmkz

[289] BD Africa (2017) *Banks' Plan To Set Up Mobile Money Transfer Platform Stalls*, available at https://goo.gl/FOsMlP

[290] Standard (2016) *Safaricom In Talks With Five Firms On M-Pesa's Future,* available at https://goo.gl/Acm0Fa

[291] With Abra – which claims to be the first digital cash peer-to-peer network - sending and receiving funds is free, as is adding and withdrawing funds using a partner bank account. See Abra (2017) *Fees*, available at https://www.goabra.com/fees/

ANNEX A
Competition Primer[292]

1. Horizontal cartels

Defined as collusion between entities on the same level of the value chain.

Examples include the following types of behavior:

- Horizontal price fixing
- Horizontal market sharing
- Quotas and other restrictions on production
- Collusive tendering
- Agreements relating to terms and conditions
- Exchanges of information
- Advertising restrictions
- Anti-competitive horizontal restraints

Some jurisdictions require that the collusion has an effect on the market, while others require only that there was an intention to collude (EU). Such behavior, if it fits the required constitutive elements of the offence, is always considered anti-competitive.

2. Vertical restrictions

These are defined as restrictions imposed in vertical relationships in the value chain.
Examples include:

- Single branding
- Limited distribution[293]
- Resale price maintenance
- Market partitioning
- Direct and indirect export bans
- Territorial and customer restraints on buyer's rights

They may or may not be considered anticompetitive; these restrictions will only have an effect on competition when the entity imposing restraint has some market power, although this does not have to be dominant/SMP.

Even if the restrictions have an effect on competition, whether or not there is an actual offence is very dependent on national legislation.[294]

3. Abuse of SMP

All these types of behavior are only anticompetitive if undertaken by a dominant/SMP firm, otherwise the behavior is not problematic in itself. To prove dominance/SMP, you need to look at market share

[292] This Annex was contributed by Ariadne Plaitakis of Mondato, a member of the TIC WG.

[293] Includes exclusive distribution, exclusive customer allocation, selective distribution, franchising, and exclusive supply tying agreements.

[294] The US is much more lenient on these types of restraints than EU.

of entity[295] and its competitors on the relevant market, but also other factors, such as (i) barriers to entry – legal barriers (IP, regulatory monopoly, licensing), economic advantages (ex. economies of scale), cost and network effects and (ii) countervailing buying power.

Ultimately, these include:

(i) Constraints imposed by the existing supplies from, and the position on the market of, actual competitors;
(ii) Constraints imposed by the credible threat of future expansion by actual competitors or entry by potential competitors; and
(iii) Constraints imposed by bargaining strength of company's customers.

It should be noted that certain commercial behaviors - such as the bundling products, tying and predatory pricing - may be consider acceptable competitive behavior for market participants who do not have SMP, but may be considered as an abuse of a dominant position for SMP participants. These SMP participants have a special responsibility *vis à vis* the market due to their market size and influence. Thus the determination of SMP status by the regulator is key in determining if concretely there has been any anti-competitive conduct.

An in-depth market analysis should always be taken before any allegations of abuse of dominance are made.

Problematic behavior includes:

- Excessive purchase or selling prices
- Other unfair trading terms
- Margin squeeze[296]
- Bundling of rebates
- Discriminatory pricing
- Refusal to deal
- Exclusive dealing agreements[297]
- Predatory pricing
- Tying of products/services: contractual tying, refusal to supply, withdrawal of guarantee, & technical tying
- Vexatious litigation
- Refusal to supply
- Loyalty rebates[298]

[295] Under EU law, there is a presumption of dominance if the entity has more than 50% market share; such presumptions vary between jurisdictions.

[296] Here a dominant firm leaves insufficient margin between upstream and downstream products, squeezing competitors downstream.

[297] Buying all from one supplier.

[298] Volume rebates are allowed under EU law

4. Market imbalances created by regulatory policy

These are actions undertake by the state/ a regulator that can make an effect on the dynamics of the market, and can cause market imbalances similar to those created by anti-competitive actions taken by market participants. From the market participant's perspective, these include:

- Inconsistency in the application of related rules, leading to one market participant being advantaged versus others without justification
- Inconsistency in the licensing of institutions
- Bans on licensing of specific types of institutions, or restrictions on institutions with a similar focus to licensed institutions
- Inconsistent tax regimes
- Inconsistent capital requirements
- Setting of inconsistent pricing without justification