



# Mobile Money for the Unbanked

## Annual Report 2009







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## Financially Connecting the Unbanked Through Mobile

### Foreword

Mobile money activity continues to grow exponentially worldwide. At the Mobile Money Summit in Cairo in 2008 the GSMA announced 54 known initiatives at varying stages of deployment. A year on, we are already speaking of more than 120. Mobile is evolving financial services and mobile operators are at the heart of this revolution.

#### Is Mobile Money Mainstream Business for Mobile Operators?

Over the past year, there has been momentous progress for mobile money on the African continent, with the success of M-PESA in Kenya and the demonstrated multi-market strategies of other mobile operators. Developments such as Vodacom Tanzania's deployment of M-PESA, Orange's announcement to deploy mobile money in the Ivory Coast, MTN's announcement of its intention to deploy mobile money in 21 countries across Africa and the Middle East (and their subsequent launch in Uganda), Orascom's move to open the financial services subsidiary that they described at the Summit in 2008, and Zain's launch of ZAP in Kenya, are all indications of the mobile industry's strong intent to offer mobile money to its customers.

At the GSMA's Mobile Asia Congress in 2008, we heard operators ask whether there is money in mobile money, highlighting that there is yet to be a profitable deployment in the world. Today, profitability remains unproven, however, with many operators foraying into the mobile money space, it is evident that the industry believes the potential is there. This year, we see M-PESA contributing 4.1% to Safaricom's revenues. We also see Zain's entry into the Kenyan market with Zap attracting consumer take up of 200,000 within two months of launch. These developments prompt the question, is mobile money a mainstream business for mobile operators in Kenya and would a new mobile operator consider entering the market without a mobile money service?

The success of M-PESA has contributed to making mobile money mainstream business for mobile operators, however we lack additional successes outside of Kenya and the Philippines – granted the other deployments may be too new to judge. We still have a way to go before mobile money is considered globally to be as key to a mobile operator's strategy as SMS or voice. The GSMA is committed to supporting mobile operators by accelerating learning, disseminating relevant knowledge and promoting industry action. This will help mobile operators bridge the gap from the initiation of a mobile money deployment to the development of a mainstream business which is profitable and stable.



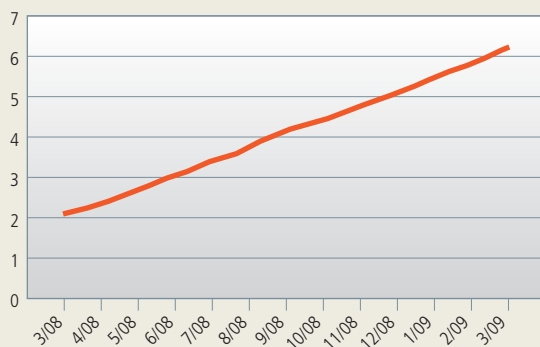
**Safaricom: Annual Results March 2009 and related press releases from [www.safaricom.co.ke](http://www.safaricom.co.ke)**

“Total MPESA revenue in the year increased to Kshs2.93bn from Kshs0.37bn growing to 4.1% of total revenue from 0.6% in the previous year.”<sup>1</sup>

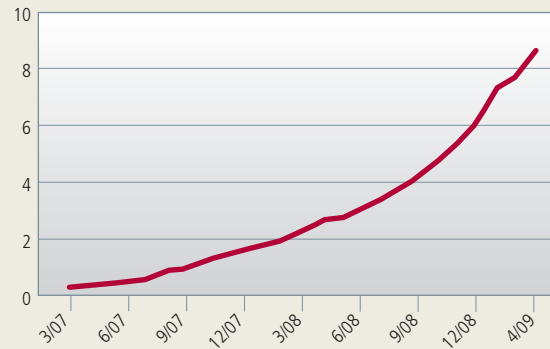
**M-PESA - A runaway success story**

- 6.175 million registered users as at 31st March 2009 (2.075 million in March 08)
- 12 month growth rate at 198%
- Average of 11,580 registrations per day during March 2009 (9,965 in March 08)
- Distributed through 8,650 retail outlets countrywide (2,262 outlets in March 08)
- 51 bill payment partners
- Churn lower than industry average
- Continued positive impact of Bonga and M-PESA<sup>2</sup> on churn

**Cumulative number of registered users (millions)**



**Number of agents (thousands)**



**Safaricom Appoints Former Bank Boss to its Board**

“May 21, 2009...Safaricom has today announced the appointment of immediate former KCB Group chairman Susan Mudhune as a non-executive director. A seasoned banker, Ms Mudhune made history when she became the first woman to chair the board of KCB in 2003; one of the largest publicly-quoted banks by market capitalisation. She still sits on the board of the bank, which is also the country’s largest by branch network. This appointment will further strengthen the competencies and experience of the Safaricom Board. Ms Mudhune, who is a fellow of the Kenya Institute of Bankers (KIB) and Kenya Institute of Management (KIM), brings to the board valuable experience in banking and finance.”<sup>3</sup>

**Zain Enters The Kenyan Mobile Money Market With Zap**

“We have opened more than 3,000 Zap outlets countrywide and enrolled more than 200,000 subscribers. This has enabled us to transfer more than Sh12 million a day,”

Zain Managing Director Rene Meza – The Standard Online<sup>4</sup>

1 [http://www.safaricom.co.ke/fileadmin/resources/downloads/Summary\\_comments\\_on\\_trading\\_2009\\_\\_2\\_.pdf](http://www.safaricom.co.ke/fileadmin/resources/downloads/Summary_comments_on_trading_2009__2_.pdf)  
 2 <http://www.safaricom.co.ke/fileadmin/resources/downloads/FY09ResultsAnnouncement210509.pdf>  
 3 [http://www.safaricom.co.ke/fileadmin/resources/downloads/PRESS\\_RELEASE\\_FOR\\_NED\\_APPOINTMENT.pdf](http://www.safaricom.co.ke/fileadmin/resources/downloads/PRESS_RELEASE_FOR_NED_APPOINTMENT.pdf)  
 4 <http://www.eastandard.net/InsidePage.php?id=1144015196&cid=14&j=&m=&d=>



## Progress Report

The GSMA Mobile Money for the Unbanked (MMU) initiative was launched in February 2009 at the Mobile World Congress in Barcelona. Since then, the team has been busy promoting the initiative, and has engaged with operators and key industry players across Africa, Latin America and Asia to understand the industry's needs.

The first two Working Group meetings have taken place. At the meeting during the Mobile World Congress, we introduced the programme, Working Group structure, key partnerships and deliverables, and we convened again in April in Cape Town, to

discuss agent distribution, consumer adoption, financial inclusion and regulation.

We also published our first Quarterly Update in March which provided the latest commercial and regulatory developments in mobile money. The first issue shone the spotlight on Africa and included interviews with some of the industry's key players and regulatory analysis.

The Annual Report aims to communicate the progress of the MMU initiative as well as provide significant research into key mobile money issues. This Annual Report includes:

Title	Description	Purpose
<b>Overview of the Mobile Money for the Unbanked Initiative</b>	Outlines the purpose of MMU Programme Goals, objectives, activities and deliverables	To provide clarity to Working Group members, and to the wider industry, on the initiative's purpose
<b>The Mobile Money for the Unbanked Fund – Catalysing Mobile Money Deployments in Developing Markets</b>	Update on the level of interest that the Fund has generated, and the types of applications received % Fund allocated (as of end May)	To highlight the purpose of the Fund To promote the Fund and drive further applications
<b>Understanding the Unbanked Customer and Sizing the Mobile Money Opportunity</b>	The output from a the CGAP-GSMA Mobile Money Market Sizing Study which was conducted by McKinsey & Co., to establish a baseline for the mobile money industry Shares key learnings from consumer insights studies which were conducted in the Philippines and Kenya	To quantify the size of the mobile money opportunity - the report highlights how fast the industry has grown, and its potential for further growth To help the mobile money industry to better understand target customers and the importance of establishing customer need before deploying a mobile money solution
<b>The GSMA's Mobile Money Business Model Framework</b>	Framework to help mobile operators to think through what is required for a successful mobile money deployment – what are the key stages and what do they need to consider for each, in order to achieve success?	To help accelerate deployments in new markets Subsequent MMU deliverables will then drill deeper into the various aspects of this framework (e.g. follow up later this year with an in-depth piece on mobile money distribution strategy) – the framework helps to position these future pieces
<b>Designing Mobile Transfer Services: Lessons from M-PESA</b>	Written by Ignacio Mas, Bill & Melinda Gates Foundation and Olga Morawczynski, University of Edinburgh Designing Mobile Transfer Services Lessons from M-PESA	To share lessons with the industry on mobile money deployments To help shape the industry's thinking about best practice
<b>Case Study: Zambia</b>	Describes the mobile money ecosystem in Zambia – the key players, their distribution, marketing, technology, etc. as well as the regulatory environment	To share lessons with the industry on mobile money deployments from around the world To help shape the industry's thinking about best practice
<b>Interoperability of Mobile Money Services</b>	The challenges of interoperability from a regulatory perspective	To begin the dialogue on interoperability with the industry – one of the key factors to be addressed to achieve scale
<b>Capabilities of Mobile Operators from the Perspective of a Financial Regulator</b>	Presents how mobile operators can contribute to the delivery of financial inclusion objectives, and how they can launch successful mobile money services that meet global regulatory requirements, and do not compromise the integrity or security of existing global financial systems	To promote dialogue with the industry on what mobile operators need to consider from a regulatory perspective, when launching a mobile money deployment

**What's Next From MMU?**

The Mobile Money Summit in Barcelona in June is the world's premier event on mobile in financial services and will provide the platform for our third Working Group meeting, as well as a Leadership Forum focused on regulation and financial inclusion through mobile.

Two further Working Group meetings are planned for Q3 and Q4 of this year in Latin America and Asia, and Quarterly Updates will be published in September and November.

**How to Connect with the MMU Team**

The team looks forward to collaborating with Working Group members and the wider industry to ensure our work is relevant, actionable and plays a leading role in advancing the market on key issues.

In order to provide valuable and timely resources for the mobile money community, including analysis of the latest commercial and regulatory issues, in-depth case studies, photos and videos of deployments are available at [www.gsmworld.com/mmu](http://www.gsmworld.com/mmu). Be sure to interact with us on our blog at [www.gsmworld.com/mmublog](http://www.gsmworld.com/mmublog).

I trust you will learn from the valuable data and knowledge sharing that this annual report brings and wish you all success in your endeavors to provide access to financial services through mobile.

Regards



**Gavin Krugel**  
Director



**Gavin Krugel**, Mobile Money Director, creates the strategy and sets the direction for the programme.



**Marina Solin**, Regulatory Director, leads the regulatory work stream of the initiative. Her aim is to accelerate discussion in the industry and with regulatory authorities to provide decision makers with information that helps them to create a regulatory framework conducive to banking the unbanked and making mobile money a mainstream business for mobile operators.



**Seema Desai**, Programme Manager, defines and delivers the programme work plan, ensures that the MMU Fund performs and also ensures we deliver to a high quality by monitoring and evaluating all aspects of the programme.



**Paul Leishman**, Knowledge Manager, leads the development and dissemination of commercial content, including business strategy analyses focused on mobile money business models, and case studies profiling key success factors of deployments.



**Amaia White**, Programme Coordinator, is responsible for Working Group communications, logistics and general team support.







## Overview of the Mobile Money for the Unbanked Initiative

Gavin Krugel and Jesse Moore, GSM Association

The GSMA Mobile Money for the Unbanked (MMU) initiative aims to connect the unconnected and improve the social and economic well-being of the world's population living on less than US\$2 a day by supporting and encouraging the development of sustainable mobile money solutions.

The purpose of the GSMA's MMU initiative is to accelerate the availability of mobile money services for the poor, in terms of (1) speed (number of mobile money deployments) (2) scale (number of subscribers) and (3) sophistication (evolving from individual platforms enabling cash transfers to interoperable platforms, or moving beyond cash transfers toward savings, credit and insurance.)

### **A Huge Opportunity Exists in Developing Markets**

There are more than three and a half billion mobile phones in the world today, the majority in developing countries. The explosive growth of mobile in developing countries over the past decade has created significant excitement in both the private sector and the development sector, since it puts the benefits of technology directly into the hands of base of the pyramid consumers, profitably.

Now that mobile phones are poised to connect the majority of the global population, the question is what else can they do for base of the pyramid consumers besides phone calls? Many, including the GSMA, believe that mobile phones are for the base of the pyramid what PCs have been for the wealthy, and that mobile networks can be as transformative for unconnected populations as the internet has been for the connected. Of course, there are significant differences between these technologies, and there are formidable limitations with mobile phones and

networks when compared to computers and the internet. But innovative approaches have already begun to show us what progress can come from even simple SMS messaging.

Financial services is one principal way in which mobile is transforming life and business in developing countries. Over the past decade, a nascent industry has been developing, referred to here as the mobile money industry. There is little doubt that this new industry is going to grow. But there are questions about how fast, how far, and how sophisticated it can become.

Our purpose at the GSMA is to work with mobile operators in developing countries to accelerate the economic and social benefit of mobile, particularly for those living on less than US\$2 per day. Through the MMU initiative, we hope to build upon existing GSMA expertise in mobile money to help our industry deploy mobile money services faster, further and better.

### What is Mobile Money?

Numerous terms are being used to describe the ways that mobile phones facilitate financial services: mobile banking, mobile payments, mobile transfers, etc. At the GSMA, we have adopted the term mobile money to describe services that connect consumers financially through mobile. Mobile money allows for any mobile subscriber – whether banked or unbanked – to deposit value into their mobile account, send value via a simple handset to another mobile subscriber, and allow the recipient to turn that value back into cash easily and cheaply. We believe that successful mobile money services originate as simple transfer products, but will become more sophisticated in time and will enable lower cost savings, credit and insurance offerings than traditional branch or ATM banking currently allow.

### The Benefits of Mobile Money for Base of the Pyramid Consumers

The MMU initiative seeks to provide mobile money to the unbanked. Mobile money provides access to financial services in the fullest sense; it is cheap, convenient, flexible, user friendly, reliable and continuous.<sup>1</sup>

### Why Impose Financial Services on Base of the Pyramid Consumers?

Access to financial services increases the income and welfare status of the unbanked.

1. CGAP provides evidence of the impact of improved access to financial services such as loans and savings both in terms of income and welfare indicators, including the Millennium Development Goals relating to: eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality and improving maternal health; and ensuring environmental sustainability.<sup>1</sup>
2. An example is a study in Ethiopia based on household surveys from 1994 to 2000 which showed that access to finance was in the top five (out of seventeen) determinants of poverty, with a strong and statistically significant effect.<sup>1</sup>

Access to financial services has a positive impact on pro-poor growth. Firstly, economic growth raises overall income levels including those of the poor. Secondly, there is evidence that financial sector development brings more growth to the poor than to other parts of society.

3. "Finance can more specifically help by distributing opportunities more fairly. There is evidence that finance matters especially for poor households and smaller firms."<sup>1</sup>
4. Cross-country studies on the link between finance and poverty include Beck, Demirgüç-Kunt and Levine who show that financial development encourages social mobility across generations: "The empirical literature suggests that financial development reduces the persistence of relative incomes across generations".<sup>1</sup>
5. Clarke, Xu and Zou (2002), also find that inequality decreases as finance develops, and, since the more concentrated income the higher poverty, finance thus helps reduce poverty.<sup>1</sup>

### Why Mobile Operators are Important

"In the convergence of banking and telecommunication companies, who is taking the lead? It appears that while many banks are deploying mobile banking capabilities to make banking more convenient for their existing customers, those ventures that have attempted to reach new client segments that are new to banking have usually been done in partnership with, if not been led by, a mobile operator."

CGAP Focus Note:

"The Early Experience with Branchless Banking", April 2008

The term mobile money inherently points to a convergence of two industries that have been traditionally separate: mobile telecoms and financial services. Indeed, the advent of mobile money has stirred interest and action from both banks and mobile operators, and often raised concern from both sides about who is going to earn what from the mobile money value chain. But as the CGAP report quoted above suggests, so far it seems that mobile operators have been most successful in reaching the unbanked.

<sup>1</sup> Finance and Economic Development: Evidence, Indicators and Policy Choices, Asli Demirgüç-Kunt, World Bank Development Research Department, February 2007.

At the GSMA, we have concluded that there are several reasons why mobile operators have paved the way:

### Mobile Operator Assets for Mobile Money

#### 1. Brand Strength

Mobile operators have some of the strongest brands with base of the pyramid consumers and have targeted these low-income people as core clients. The brand strength can be easily leveraged to introduce new services built upon the existing mobile phone platform.

#### 2. Distribution

In pursuit of low-income clients, mobile phone operators have created extremely large, low-cost distribution networks to sell airtime. These airtime agents, whose shops are in the immediate vicinity of where the base of the pyramid live and work, can become branchless banking agents that provide cash-in and cash-out services to consumers at a fraction of the cost of conventional bank branches or ATMs.

#### 3. Identification

Via the SIM card (which identifies each individual subscriber) the IMEI number (which identifies each device) and personal PIN numbers, mobile operators have the capacity to identify users and authenticate financial transactions. While these still may not achieve formal KYC requirements in some countries, the prevalence and use of mobile identification for financial services is becoming more appreciated by regulators and is proving, thus far, a successful proxy for traditional forms of identification.

#### 4. Low margins

Mobile operators in developing countries have achieved growth and profitability by going for high volumes at low margins. They receive a wide majority of revenues from pre-paid subscribers who often purchase airtime in tiny increments – as low as US\$0.10. As such they have developed business processing systems that can support transactions of this nature.

#### 5. Need to differentiate

Mobile operators in many emerging markets face stiff competition from other mobile operators. Since the cost of an individual SIM card is very low, many users have more than one of them and can switch networks based on call rate cuts and special tariffs. Accordingly, mobile operators are searching for value added services such as mobile money which can help reduce churn (movement of a customer to another network) and increase revenues per user.

We do not imply that mobile operators can do it alone. Indeed, the GSMA encourages mobile operators to partner with financial service providers to conduct mobile money services. We also hope that in later stages of any particular market's evolution, banks will become the providers of mobile-based financial products, such as savings, credit and insurance, and mobile will provide the extended reach to deliver these services to the base of the pyramid. But we do believe that mobile companies are the key actors which, at the outset, are required to extend simple money transfer services to the mass market. We think this early scaling by mobile operators will provide the base upon which sophisticated mobile financial services can be built.





### Mobile Money Today

Pioneering mobile payment platforms in the Philippines, South Africa, and Kenya have demonstrated the potential of mobile money services by collectively accruing an estimated ten million subscribers as of early 2008. These initial deployments typically provide basic person-to-person cash transfer functionality, sometimes complemented with other payment services such as airtime purchasing, bill payments and salary payments.

In the past two years, the marketplace has become particularly active with dozens of mobile operators keenly trying to enter the market. Much of the commercial impetus has been focused on the international remittance market, as supported by the GSMA's Mobile Money Transfer initiative, initiated in 2006 and ongoing today.

While mobile operators have been active in all sorts of markets from the USA and Western Europe, through to Afghanistan and Haiti, the success of services in places where there is a high proportion of base of the pyramid consumers has begun to influence commercial strategy. Many mobile operators have taken note of the remarkable growth of Vodafone and Safaricom's M-PESA service in Kenya. Launched in March 2007, it already has over six million users – more than the banked population of Kenya. With this remarkable growth, M-PESA marks the beginning of a commercial movement for extending financial services to the unbanked.

### Challenges for Mobile Operators

Exciting as it may appear, the notion of deploying mobile money services for base of the pyramid consumers and the unbanked unveils major challenges for mobile operators.

We believe the overall issue is that mobile operators are already overstretched with the task of providing basic mobile services and coverage. The mobile industry in developing countries is still very young with most operators established less than ten years ago. Meanwhile the remaining growth potential for basic voice and data services is huge. Market penetration across Africa as of Q1 2009 stands at 42%<sup>2</sup>;

with over 60% penetration expected by late 2011. Where such significant growth opportunities exist it is understandable that mobile operators are mainly focused on growing their core communications business and may not be able to devote full attention to mobile money.

Even for the forward thinking emerging market operator, the capital pressures from investors are discouraging new risky projects. Recent business headlines such as the Safaricom IPO in Kenya and attempts by various companies to acquire (or merge with) MTN demonstrate there is strong investor appetite for mobile technology in emerging markets. But this means capital pressures and return expectations on mobile operators are high, and these expectations are usually developed around growth in basic voice and data services. As such, there is not a lot of scope for developing world operators to allocate financial resources and/or top staff to focus on introducing new mobile money services that may not pay off for several years.

Aside from the overarching challenge of being stretched to keep up with basic business growth, we see four key barriers to deploying mobile money:

#### 1. Regulatory barriers

Mobile money typically falls within the scope of existing financial services regulation, which may prevent mobile operators from offering innovative mobile money services. In those markets, operators must either wait for regulatory change or in markets where mobile money regulation is unformulated, risk launching mobile money services and hope that regulation will be shaped positively in response. In either case there is significant risk that prevents mobile operator activity and investment.

#### 2. Costs of new technology

Mobile money requires a mobile wallet application and a payments processing system. Traditionally, these have cost in excess of US\$2 million to buy or build. In addition mobile operator unfamiliarity with the technologies and complications associated with linking mobile phones to existing billing and processing systems add uncertainty and increase risk.

### 3. Unproven business case

Mobile money services are new and still unproven commercially. They require a significant upfront investment, ongoing costs of regulatory compliance, and achieving large scale before paying back.

### 4. Complicated cross-industry work

In the longer term, mobile money will require commercial collaboration between financial institutions, mobile operators and other non-traditional partners. Mutual skepticism between mobile operators and banks is particularly rampant as each side wonders how much of the value chain they can acquire at the expense of the other party. Legacy systems – technological, reporting, physical infrastructure – can all act as a barrier to try new approaches. New business models and incentives for both parties need to be found and promoted to increase mutually beneficial collaboration.

### Overcoming the Challenges

To address the challenge of mobile operators being overstretched, we believe the industry would benefit from external support and incentives. Accordingly, our initiative is designed specifically to provide support directly to mobile operators, through an approach described later in this article.

As for the four key barriers, we believe three of the four require ongoing effort and the fourth is resolving itself:

### 1. Overcoming regulatory barriers

Mobile operators need information and assistance to understand regulators' concerns; mobile operators and regulators need to be brought together to share perspectives in order to accelerate the regulatory changes to reduce the uncertainty which restricts mobile operators from launching mobile money services; industry needs to better educate regulators of the positive social benefits of mobile money; and provide input to new regulation which will enable mobile money, especially for base of the pyramid consumers without endangering financial stability. The GSMA will work with its development partners (e.g. CGAP, DFID, IFC) in this field.

### 2. Overcoming the cost of new technology

N/A – Fortunately the cost of new technology for mobile money has steadily dropped over the past few years, from over US\$2 million in 2006, to US\$1 million by late 2007, to US\$0.5 million by mid 2008.

### 3. Overcoming an unproven business case

There is a need to quantify the business case for basic mobile money services in emerging markets, to create and share case studies on what works and what doesn't work in the field, to be responsive to day-to-day business challenges and constraints facing developing country mobile operators, and to pilot new service models targeted at the sub-US\$2 per day population.

### 4. Overcoming complicated cross-industry work

Trust needs to be built and we aim to encourage collaboration between mobile operators and financial institutions (including banks and microfinance institutions) and pilot more sophisticated mobile money services such as savings, loan disbursements and repayments, and insurance.



## Initiative Objectives

### The Vision and Overall Objectives of the Initiative

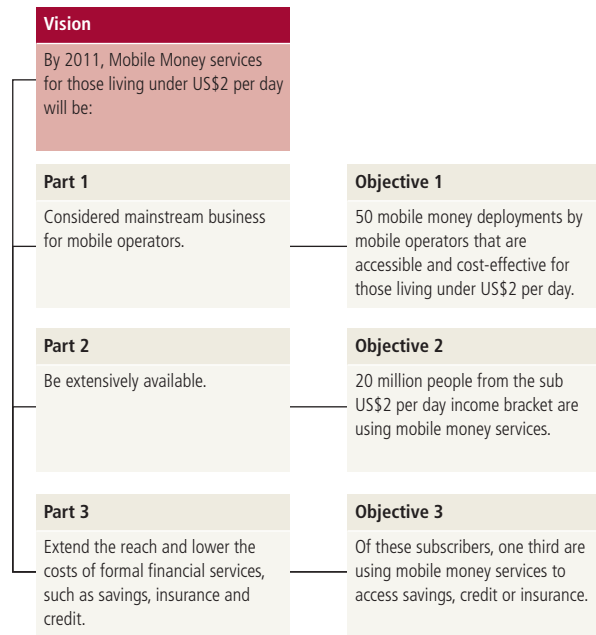
The mobile money sector is relatively new, and is complex in that it straddles both the fields of telecommunications and financial services. The purpose of this initiative is to help mobile operators - which have in select instances demonstrated the ability to successfully serve base of the pyramid customers at scale – grow these services to many more low income markets, and extend the functionality of these mobile money platforms to deliver more sophisticated financial services to the unbanked.

#### The vision for the MMU initiative is:

“By 2012, the MMU initiative will have made mobile money services available to 20 million new unbanked customers living under US\$2 per day. Furthermore, mobile money will (1) be considered mainstream business for mobile operators, (2) be extensively available to those who have been previously unbanked, and (3) extend the reach and reduce the costs for formal financial services such as savings, insurance and credit.”

We have developed three objectives for the MMU initiative which align with the three phases.

#### The objectives of the MMU initiative are:



The objectives and related figures outlined above are early estimates based on GSMA and CGAP’s individual assessments of the size of the current mobile money marketplace (sources: CGAP Focus Notes, GSMA Mobile Money Transfer presentations, and Cairo Mobile Money Summit 2008 presentations). The growth rate of the marketplace is estimated based on the time that it has taken existing 'success cases' in the market, namely M-Pesa, G-cash and Smart Money, to scale.





### Accelerating the Market

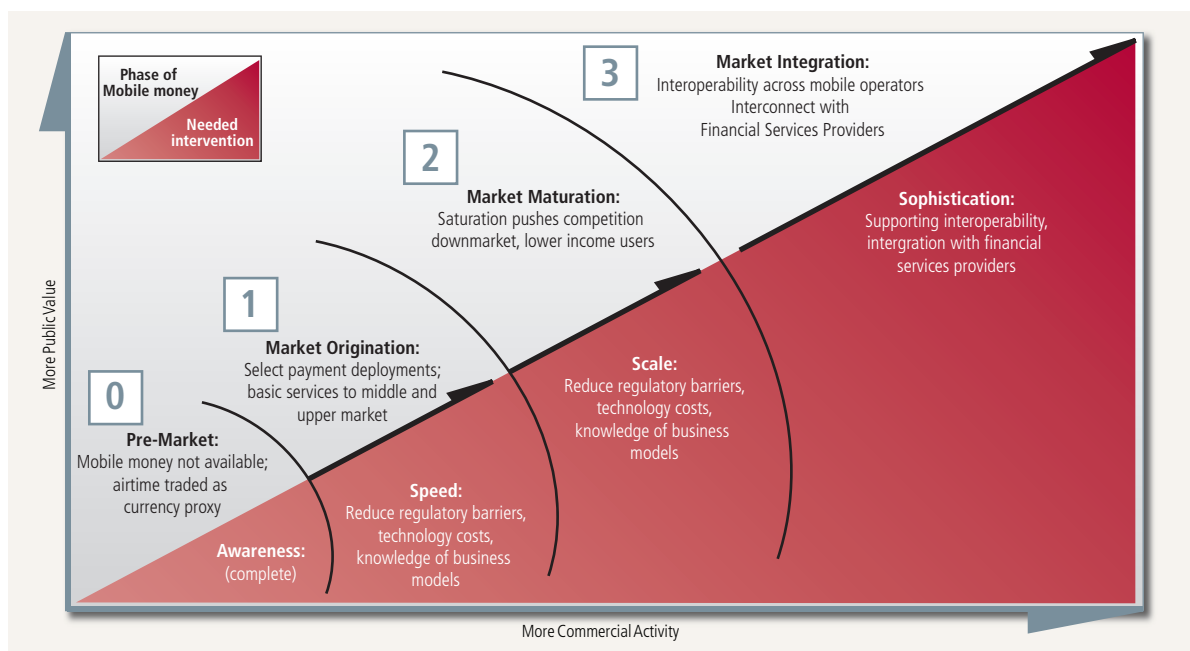
The MMU initiative is designed to help accelerate mobile money services in different ways, depending on each market's particular phase and dynamics. At a high level, the interventions can be described across the stages as follows:

Phase	Intervention	Actions
0: Pre-market	Awareness	N/A (Awareness is now prevalent due to GSMA Mobile Money Transfer, the Mobile Money Summit, global media attention, the research of CGAP and others, etc.)
1: Origination	Speed	Reduce regulatory barriers Share knowledge of what works Create market of consultants, suppliers, capable staff, etc Create a market of consultants, suppliers, capable resources, etc to successfully launch mobile money Provide market intelligence which highlights the opportunity to capitalise on the needs for mobile money in new markets
2: Maturation	Scale	Remove regulatory barriers that specifically restrict access for poorer users (i.e. KYC/AML) Conduct market sizing for low-income users Develop business strategies to grow user base
3: Integration	Sophistication	Support interoperability across mobile operator platforms Assist integration with financial service providers Promote financial literacy among end-users

### How the Outputs and Outcomes will Move the Field Forward

Given that the initiative is designed to accelerate market activity, successful outputs and outcomes should be seen to further move the field forward. Scale, profitability and integration of financial services will make more mobile operators and financial services providers work more urgently to deploy services. Research and analysis of the size of the low income subscriber base, along with success stories from new deployments, will create more interest and activity. The impact on end users, in combination with regulatory advocacy, will help improve regulation in more markets to be conducive to mobile money for the unbanked.

The key to maximising the benefit of the activities that take place through the initiative will be knowledge sharing across the global industry.



## Design and Implementation Plan

The MMU initiative is comprised of two major elements:

- **MMU programme:** a suite of activities run by a core team at the GSMA, including convening of Working Group meetings, training, reports, advocacy and events.
- **MMU Fund:** a quick-release grant fund to encourage risk taking and exploration by mobile operators and financial services partners, managed by a third-party specialist in private sector development funds.

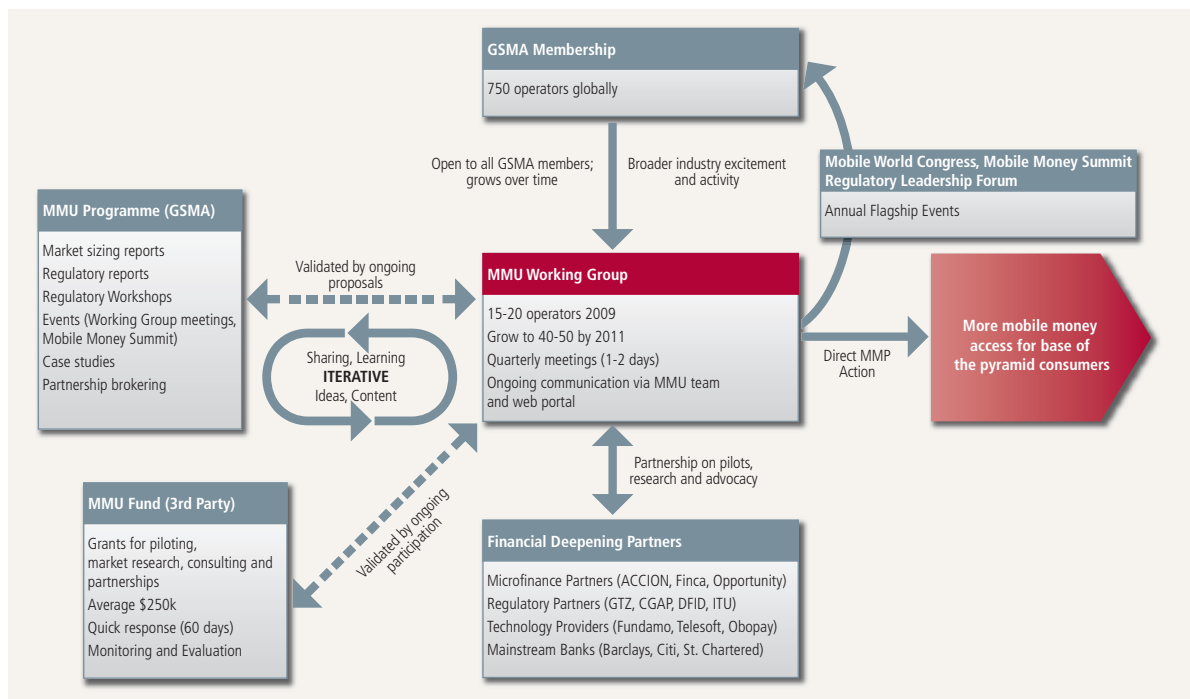
Both the Fund and the programme are closely interrelated and mutually reinforcing; a part of an integrated initiative. The integration hinges on the formation and ongoing participation of mobile operators in a Working Group, as shown below.

### MMU Programme Implementation Plan

### The MMU Working Group

A Working Group is a forum for mobile operators to exchange their commercial experience and learn from each other and external actors about new business approaches and regulatory updates. Working Groups typically meet once per quarter in varying locations. The Working Groups are open to all GSMA members that wish to join. It also includes a select group of non-mobile operator industry experts to provide guidance and knowledge sharing. The purpose is to share learning and business models, discuss regulatory issues, receive training and form partnerships with organisations from outside the mobile industry.

A Working Group provides a tangible opportunity to move the mobile industry forward – we are able to encourage entry into new markets that would not have been addressed as quickly or as effectively without the Working Group’s support.



Each quarter, the MMU Working Group meeting will involve one to two days of training, knowledge sharing, and partnership development. The MMU team, in consultation with the Working Group, will set the agenda for each meeting.

Much of the value of the Working Group approach is that the content of the meetings and the regulatory and commercial research undertaken between meetings will be validated in real time by the mobile operators. They will bring their ideas and experience in the field, and these may lead to new research activity and/or proposals to the MMU Fund.

The benefits of participation in the Working Group are clear for both advanced mobile operators as well as new entrant mobile operators who have an interest in the mobile financial service market:

- New entrant mobile operators will learn the basics of how to deploy a mobile money service in their own market, they will have access to various advanced tools that will aid the development of their business model and will also be able to leverage the shared learning environment of the Working Group to seek solutions to any challenges they face in their deployments.
- Advanced mobile operators will be able to confirm or benchmark their strategies and approaches against the rest of the industry by also leveraging the tools created within the programme and the shared expertise of the rest of the Working Group. Advanced mobile operators will also be able to address regulatory challenges and receive guidance on how to progress consumers from basic access to a source of funds to a more sophisticated financial services offering including savings, insurance and access to credit.

### **Regulatory Research, Training and Advocacy**

In order to overcome the regulatory barriers, the initiative involves a robust regulatory programme that seeks to improve the capacity of mobile operators to address mobile money risks and to improve the dialogue between financial regulators and the mobile industry. We will do this by conducting research, providing training to mobile operators and also facilitating dialogue between the mobile industry and financial regulators.

### **Commercial Advocacy and Market Research**

In order to address the unproven business case issue as described above, the initiative will work to bring clarity to the size and nature of market demand for mobile money services, report on successes as well as failures in the market, and promote partnerships and pilots between mobile operators and financial service providers (mainstream banks and/or microfinance institutions).

### **The MMU Fund**

The MMU Fund is conceived as an added incentive to engage mobile operators in the activities of the MMU initiative and to ensure that quick action can be taken by mobile operators when opportunities arise. It is, first and foremost, conceived of as a quick-response source of capital. The Fund is capable of providing decisions to applicants within 30 days of receiving a proposal and providing capital within another 30 days.

The MMU Fund is a discretionary social investment fund to accelerate the advent of pro base of the pyramid mobile money services. Grants will be used for consulting inputs, discrete market sizing activities, training, software integration and designing services that have high social value and commercial potential. Concepts for funding will come from members of the Working Group, or from the broader GSMA membership of 750 mobile operators.



## Conclusion

As noted in CGAP's Focus Note, "The Early Experience with Branchless Banking," it is estimated that only 10% of existing mobile money users were previously unbanked. The same note however, makes some bold predictions about how the mobile industry is poised to move down market and extend financial access to the poor and unbanked. Concluding predictions included:

- #1: Poor people will use mobile banking more than rich people.
- #4: Mobile banking will be used by large numbers of poor, currently underserved people in about three years, as a result of competitive market entry.

We believe that with the GSMA's active support through the MMU initiative, the growth of services – in terms of speed (number of deployments), scale (number of subscribers) and sophistication (types of mobile money services offered) – can be accelerated to benefit the base of the pyramid and the unbanked.

## Strategy – Connecting the Unbanked Consumer to Financial Services through Mobile

<p><b>Purpose</b></p> <p>By 2011 the MMU initiative will have supported mobile money services being made available for 20 million previously unbanked customers who live on under US\$2 per day.</p>					
<p><b>Objectives</b></p> <table border="1"> <tr> <td> <p><b>Speed</b></p> <p>Mobile money is considered mainstream business for more mobile operators and appropriate regulation for mobile money services is adopted in relevant countries.</p> </td> <td> <p><b>Scale</b></p> <p>Mobile money is extensively available to 20 million previously unbanked customers and the regulatory barriers preventing mobile money services from being offered to unbanked consumers removed.</p> </td> <td> <p><b>Sophistication</b></p> <p>Mobile money is extending the reach and reducing the costs of formal financial services such as savings, insurance, payment and credit and is supported by enabling regulation to do so.</p> </td> </tr> </table>			<p><b>Speed</b></p> <p>Mobile money is considered mainstream business for more mobile operators and appropriate regulation for mobile money services is adopted in relevant countries.</p>	<p><b>Scale</b></p> <p>Mobile money is extensively available to 20 million previously unbanked customers and the regulatory barriers preventing mobile money services from being offered to unbanked consumers removed.</p>	<p><b>Sophistication</b></p> <p>Mobile money is extending the reach and reducing the costs of formal financial services such as savings, insurance, payment and credit and is supported by enabling regulation to do so.</p>
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<p><b>How We Will Deliver</b></p> <p>Create trust between mobile operators and regulators, by increasing the understanding about risks of moving money via mobile, including:</p> <ul style="list-style-type: none"> <li>- Dialogue between regulators and mobile operators</li> <li>- Research into risks and the capabilities of mobile money services</li> <li>- Awareness building among mobile operators of the risks of providing mobile money services</li> </ul> <p>Create awareness of the viability, sustainability, commercial benefits and key challenges of mobile money within the mobile operators through:</p> <ul style="list-style-type: none"> <li>- Case studies highlighting known deployments</li> <li>- Establishing business models and best practices to promote lesson learning and lesson sharing among mobile operators around the globe</li> <li>- Provision of MMU Fund to support mobile money deployments in new markets</li> </ul> <p>Support understanding of commercial viability via:</p> <ul style="list-style-type: none"> <li>- Develop business strategies for mobile money to grow user base</li> <li>- Provision of customer insights information and market research that will help to scale deployments more successfully</li> <li>- Support interoperability across mobile money platforms</li> <li>- Provision of the MMU Fund to extend risk capital grants for mobile operators to implement these models</li> </ul> <p>Promote regulatory changes to increase reach to unbanked customers:</p> <ul style="list-style-type: none"> <li>- Easier and more efficient registration of unbanked customers</li> <li>- Agency regulation to leverage mobile operator distribution</li> <li>- Enable mobile operators to offer payments (promote regulation of services rather than regulation of players)</li> <li>- Develop a roadmap for moving customers towards more sophisticated products</li> <li>- Provision of customer insights around the needs for financial services beyond payments for low-income customers</li> <li>- Support this road map with understanding of risks, and research into how they can be managed, in order to appropriately meet regulatory requirements</li> <li>- Provision of MMU Fund to support projects looking to offer savings, credit, etc. via mobile</li> </ul>					







## The Mobile Money for the Unbanked Fund – Catalysing Mobile Money Deployments in Developing Markets

Seema Desai, GSM Association

The MMU Fund exists to accelerate mobile money deployments which target base of the pyramid consumers who are unbanked. The Fund was made available to mobile operators in February this year, and in May the first three applications were approved, which in total will receive almost 20% of the total value of the MMU Fund. These projects will not only provide mobile money to the unbanked, but they will also provide lesson learning and lesson sharing with the rest of the mobile money industry, which will help to catalyse other deployments elsewhere in the world.

### The Purpose of the Fund – Accelerating Deployments and Sharing Lessons with the Industry

The Mobile Money for the Unbanked (MMU) Fund was created in order to provide grant funding to projects that increase the speed, scale and sophistication of mobile money deployments in developing markets. Given the opportunity that still exists in many developing markets to generate profits from acquiring new basic voice and data customers, the MMU Fund is available to help increase the priority of mobile money within the corporate agenda. Its purpose is to make these deployments happen sooner than they would otherwise happen, and to speed up the delivery of their associated social and economic benefits to base of the pyramid consumers.

One of the key criterion against which applications are assessed is the degree of lesson learning and lesson sharing that each project offers. Lessons will be shared from each project via the development of case studies, replication toolkits, and presentations to the MMU Working Group on the critical success factors. Sharing this knowledge with mobile operators in other markets will improve the likelihood of success for future deployments. A full list of the assessment criteria is outlined in the panel opposite.

### Assessment criteria

Each project is assessed by an independent Fund Panel against the following criteria:

- How the project is likely to result in significant lesson learning and sharing
- The commercial viability of the product
- Why grant funding for the project will not create unfair advantage
- That the project is cost effective and likely to result in a sustainable impact such as encouraging investment in mobile money services
- Management's commitment to adopt the initiative after it has demonstrated commercial viability
- The organisation has adequate internal capacity to implement and undertake the project within the agreed timeframe

### US\$5 Million for Projects Around the World

The total Fund value of US\$5 million was provided by the Bill and Melinda Gates Foundation. The MMU programme has a target of funding up to 20 projects across Asia, Africa and Latin America, all of which need to be completed before the end of 2011. Mobile operators can apply for funding alone, or can partner with other organisations (e.g. banks, MFIs, vendors). Applicants are expected to contribute a minimum of 25% of total project costs in cash and in kind.

An independent Fund Panel meets monthly to assess applications, and once approved, funding is provided within 30 days. The GSMA recognises that in a rapidly evolving market such as mobile money, the sooner the funds are received by the operator then the more valuable the funding becomes towards moving the industry forward. Therefore this rapid disbursement maximises the benefit of the allocated capital, and allows lesson sharing to begin sooner with the rest of the industry.

### The First Round - US\$1 Million for Approved Projects in May

The first three applications, worth almost US\$1 million, were approved for funding in May. These projects will provide valuable insights into:

1. The potential for mobile money to succeed in a market where no deployment currently exists, but which has a significant number of low income and unbanked consumers - almost half of the population live on between US\$1 and US\$2 per day
2. The commercial viability of deploying a proven mobile money model in a marginal community which represents a completely new customer segment
3. The diversification of a distribution network to include new types of agents (e.g. women entrepreneurs) in order to further extend the reach of an existing mobile money deployment to the unbanked

In addition, a number of other project concepts have been discussed with mobile operators. Examples include applying mobile money to disburse government social payments, development of best practice training for agents in order to create scale, and the use of mobile money to sell insurance products.

The pipeline for applications is strong - to date, the Fund Managers have received over 30 enquiries from mobile operators and other mobile money industry players around the world. The team are keen to help generate further applications and ensure a diverse portfolio of projects, in terms of both their nature and their geography.

### How to Apply

Mobile operators can apply for the Fund right now. Projects must be completed by November 2011, so applications for projects must be received as soon as possible in order to maximise the time available for the projects to run. The eligibility criteria are outlined in the panel below.

#### Eligibility criteria for the MMU Fund

- The project must involve providing mobile money services to unbanked customers living on under US\$2 per day
- The mobile money service proposed must be innovative, market based and its development likely to be accelerated with the support of the MMU Fund
- Applicants must explain why the project cannot readily obtain commercial finance or other sources of finance (including internal corporate capital allocation)
- Funding must be utilised within the project timeframe (by end 2011)

The GSMA and our Fund Managers Coffey International are available to answer questions about the Fund and also to help shape applications.

To find out further details about the Fund, and to access an application form, please go to:

[www.gsmworld.com/mmufund](http://www.gsmworld.com/mmufund)

Or contact: [mmufund@gsm.org](mailto:mmufund@gsm.org)



## Understanding the Unbanked Customer and Sizing the Mobile Money Opportunity

Paul Leishman, GSM Association

Understanding the best way to serve the unbanked through mobile money is a challenge faced by every mobile operator, whether they have millions of customers or are months away from acquiring their first one. Using data collected in the Philippines and Kenya, this report provides insights into the financial lives of the unbanked, including a view into how they save, send, spend and borrow money, as well as analysis of the ways they have adopted, used and plan to use mobile money. It also provides a snapshot of the mobile money market in 2009. The five key sections include:

### 1. Current State of Mobile Money

120 mobile money deployments will have been launched by the end of 2009, driven largely by the desire to capture high value customers. Research from the Philippines suggests that mobile money user ARPU is 74% higher than non-user ARPU, and that SIMs used for mobile money are more likely than not to be used as the customer's primary SIM.

### 2. Financial Lives of the Unbanked

58% of unbanked Filipinos indicate that they do save, though entirely using informal methods, such as with friends or village savings clubs. Informal savings approaches are selected by the unbanked since they offer quick access to cash in case of emergency, and are perceived to be safe.

### 3. Driving Mobile Money Adoption

Best practices from the Philippines and Kenya reveal that focusing on key activities within the buckets of 'driving awareness', 'creating demand' and 'optimising trial' will drive adoption of mobile money. One key finding is the importance of positioning mobile money as a product that the unbanked believe is 'for people like them' – something that just 24% of unbanked Filipinos believe.

### 4. Understanding Current Use, Satisfaction and Future Use

To date, mobile money offerings have been oriented around domestic transfers, airtime purchases, and payments. Savings appears to present an opportunity for mobile money deployments to add sophistication to their offering, with 54% of Filipino mobile money users confirming that they 'may' or would 'definitely' access savings via mobile in the next six months.

### 5. Role of Regulation in Accelerating the Speed, Scale and Sophistication of Mobile Money

Analysis of the Philippines and Kenya highlights the important role that regulation plays in contributing to the success of mobile money. Optimal conditions for customer adoption, specifically by the unbanked at the base of the pyramid, are markets that have enabling payment regulation for non-banks, allow cash-in/out functions to be performed by non-bank agents, and enable quick registration by way of proportionate Know Your Customer (KYC) rules.

## Methodology

Findings and recommendations are based on the CGAP-GSMA Mobile Money Marketing Sizing Study – consumer surveys and focus groups, as well as a census of mobile operators active in mobile money. These resources provide insights into unbanked mobile money users and non-users.

### 1. Primary quantitative consumer survey

A survey was completed of 1,042 unbanked Filipino consumers from different income bands, ages and urban/rural areas who have access to mobile phones. Face to face interviews were conducted in March 2009 with otherwise unbanked mobile money users as well as unbanked non-users who have access to a mobile phone. Results from an FSD Kenya survey of 3,000 Kenyan households are also included in this report.

### 2. Focus groups

Four focus groups, each with ten participants, were conducted in Kenya. Two groups were urban participants and two groups were rural participants. Likewise, in the Philippines, two focus groups, each comprised of ten participants, were conducted. One group was active mobile money users, and the other was unbanked non-mobile money users who had access to a mobile phone.

### 3. CGAP-GSMA global mobile money census

More than 40 participants, including mobile operators and technology vendors participated in the census, providing a data set that covers nearly seventy markets and over 500 million mobile users. The survey was designed to provide perspectives on the number of mobile money deployments, take-up rates, proportion of unbanked customers and usage characteristics.



## Current State of Mobile Money

### 120 Mobile Money Deployments Launched by the End of 2009

According to a GSMA survey of mobile operators conducted in March 2009, over 120 mobile money deployments will have been deployed across developing markets by the end of the year. The majority of these deployments target currently unbanked customers and are distributed across 70 markets in Africa, Asia and Latin America. The mobile operators behind these deployments are confident in their growth prospects, with over half of respondents indicating that they believe their deployments are poised to grow by more than 50% in the coming year.

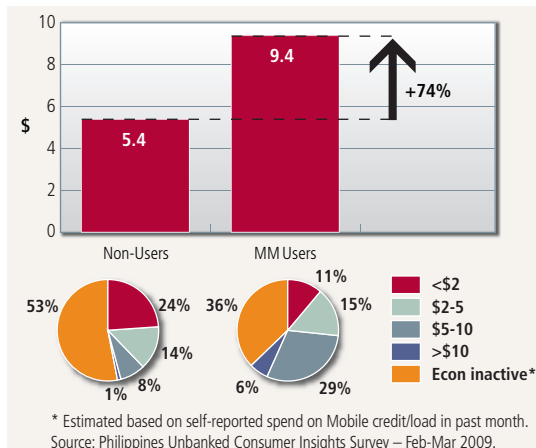
### Mobile Money Users Provide Higher ARPU to Mobile Operators

The prospect of earning additional ARPU, reducing churn, and attracting new high value customers are key drivers of momentum behind mobile money. The study in the Philippines represents the first effort to quantify these benefits and confirms that mobile operators behind deployments that achieve scale stand to benefit because:

#### 1. Mobile money users are a high value segment

Mobile money user ARPU is 74% higher than non-user ARPU, with unbanked users on average spending US\$9.4 per month and non-users spending US\$5.4 per month in the Philippines. Early adopters of mobile money in the Philippines typically have higher income, which make them an attractive segment for mobile operators to capture,

#### ARPU and income of mobile money users and non-users



Mobile money users are a high value segment, with higher incomes and monthly ARPU than non-users.

but also underscores the progress that needs to be made for mobile money to reach base of pyramid customers. Likewise in Kenya, early adopters of M-PESA have been richer and better educated than non-users.

#### 2. Mobile money is a 'sticky' offering

Mobile money SIMs are more likely to be "primary" SIMs, with 68% of multi-SIM mobile money users in the Philippines indicating that they use their primary SIM for mobile money. This is important since it allows the mobile operator offering mobile money to capture a greater 'share of wallet' especially in prepaid environments where many people carry multiple SIMs. Research in the Philippines indicates that 24% of non-mobile money users and 44% of mobile money users carry multiple SIMs.

#### 3. Mobile money is a large and growing market opportunity

Mobile money has the potential to deliver up to US\$5 billion in direct fees for mobile operators by 2012 on the basis of being adopted by up to 364 million unbanked customers. This projection is based on an unconstrained regulatory environment, implying that regulators enable mobile operators to deploy mobile money in any market and at their own pace.

#### Summary of Market Sizing Approach

Direct benefits for mobile money were calculated for 150 emerging markets with GDP below US\$15,000/person.

#### Key assumptions:

- Deployments are able to develop in an enabling regulatory environment
- Average take-up rate of 17% of base is achieved (compared to 50% for highly successful deployments)
- ARPU from mobile money estimated to be US\$1.1 per user per month (note "active" ARPU potential is higher, but activity rates are assumed to be similar to those of prepaid overall (57% active))

**Truly Meeting the Needs of the Unbanked Customer  
Remains a Key Challenge for Mobile Money in  
Developing Markets**

While M-PESA, SMART and Globe have been successful in achieving scale, many other deployments have been slower to move from the starting line. Deploying a mobile money offering is complex and many factors can be identified as barriers to achieving scale. The biggest barrier that exists is the struggle to effectively understand and serve unbanked customer needs. While mobile operators have successfully served the base of the pyramid for many years, mobile money represents the most significant attempted foray into the financial lives of this segment. Not surprisingly, some operators have struggled to effectively address the complex needs of unbanked customers – especially those at the base of the pyramid.

In recognition of this challenge, a detailed profile of the financial lives of the unbanked is offered; first highlighting the way that they use financial services, and then examining the path that prospective unbanked customers would take to adopting mobile money.



## Financial Lives of the Unbanked

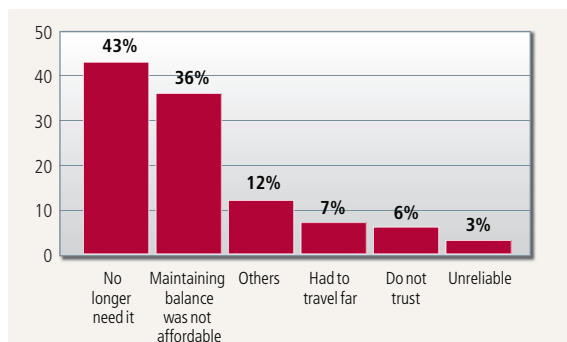
### 1.7 Billion Unbanked Customers with Mobile Phones by 2012

The unbanked market size is large, with an estimated 3.5 billion people worldwide who currently lack access to formal financial services, particularly in developing markets. In Kenya and the Philippines for example, 90% and 74% of the population respectively lack access to formal financial services. As penetration rates continue to rise in these markets, mobile has become uniquely positioned to play a role in delivering financial services to the unbanked base. Across Africa, Latin America and Asia, the number of people who do not have a bank account but do have a mobile phone is set to grow from 1 billion today to 1.7 billion by 2012. These 'unbanked mobiled' individuals represent a compelling market opportunity for mobile operators. However, to successfully address this opportunity, mobile money offerings must be based on a thorough understanding of the complex financial lives of the unbanked.

### Mobile Money Offerings Must be Designed with an Understanding of the Pressure the Unbanked Face to Manage Risk and Liquidity

People who are unbanked, particularly those at the base of the pyramid, live complex financial lives and have needs that are often not well met by formal financial services<sup>1</sup>. Survey findings suggest that as many as 16% of unbanked non mobile money users in the Philippines have in fact been banked in the past but have abandoned banking since the service was too expensive or failed to meet their needs. The unbanked

#### Why the formerly banked become unbanked



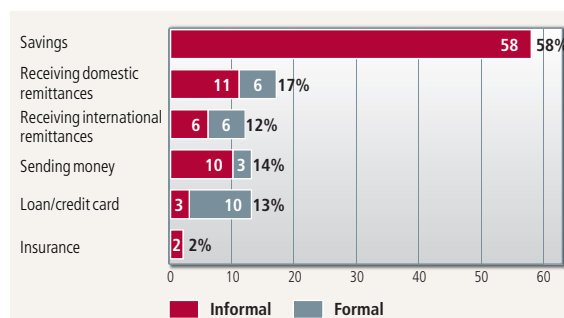
The unbanked often stop using bank accounts since they can no longer afford minimum account balances. This suggests that mobile operators can capture a large market by designing mobile money offerings with low minimum balances and fees.

have a distinct approach to using financial services. Whereas a banked customer might store money in a savings account, send funds via a bank transfer or draw on a line of credit, the unbanked will store cash under a bed, send a remittance with a bus driver or borrow from their personal network. These methods used by the unbanked, particularly by those at the base of the pyramid, help them maintain financial liquidity and manage risk. While most people face pressures to manage risk and liquidity in making financial decisions, this is especially true for poor unbanked customers given the devastating impact of making the wrong financial decision. Consider the hypothetical impact of an attempted money transfer that fails to reach its destination. For those living below the poverty line, with little by way of savings and heavily reliant on remittances for core income, this would affect their ability to feed their family or pay rent. It may also result in the need to make a number of rapid and painful financial decisions, including the sale of productive assets like livestock or tools.

	Formal <sup>2</sup>	Informal
<b>Save money</b>	Store in bank account	Store under bed or with friend
<b>Send money</b>	Bank transfer or postal service	Ask bus driver to deliver envelope of cash to rural recipient
<b>Borrow money</b>	Micro-finance loans	Borrow from neighbours, employer or a money lender

The table below reports the use of formal and informal financial services by unbanked Filipinos. Informal methods are used almost exclusively for savings and borrowing, whereas formal methods are more common for money transfer.

#### Formal and informal financial services used by the unbanked



The unbanked currently save and borrow using informal approaches, but send and receive money formally and informally.

<sup>1</sup> Even the financially included use a mix of formal and informal financial services. The FinAccess 2006 survey showed that only 8.5% of the financially included only use formal financial services, and the vast majority supplement the offering from banks with other services providers.

<sup>2</sup> Mobile Money is considered to be 'formal'.

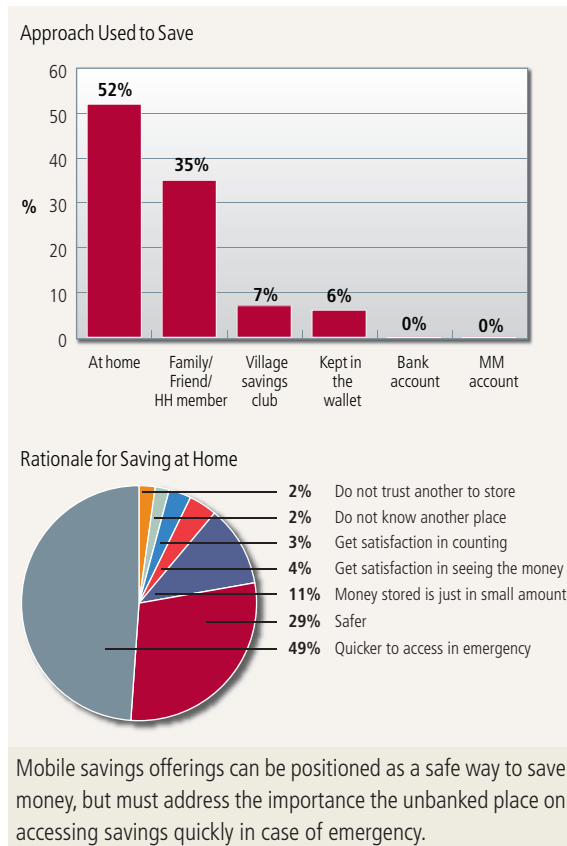


### Savings

More than half of unbanked mobile phone users in the Philippines have some savings

While they do not have bank accounts, the unbanked do save. 58% of unbanked Filipinos indicate that they save money, though entirely via informal mechanisms like home-savings or village savings clubs. The average unbanked Filipino has about US\$34 in savings and indicates the strongest preference for keeping money at home, citing key advantages as being 'quicker to access in emergency' (49%) and 'safer' (29%). This rationale speaks directly to the challenges faced by the unbanked to manage liquidity and risk. A similar savings story is evident in Kenya, where half of the population currently identify themselves as savers.

#### How the unbanked save and why they prefer to do so at home

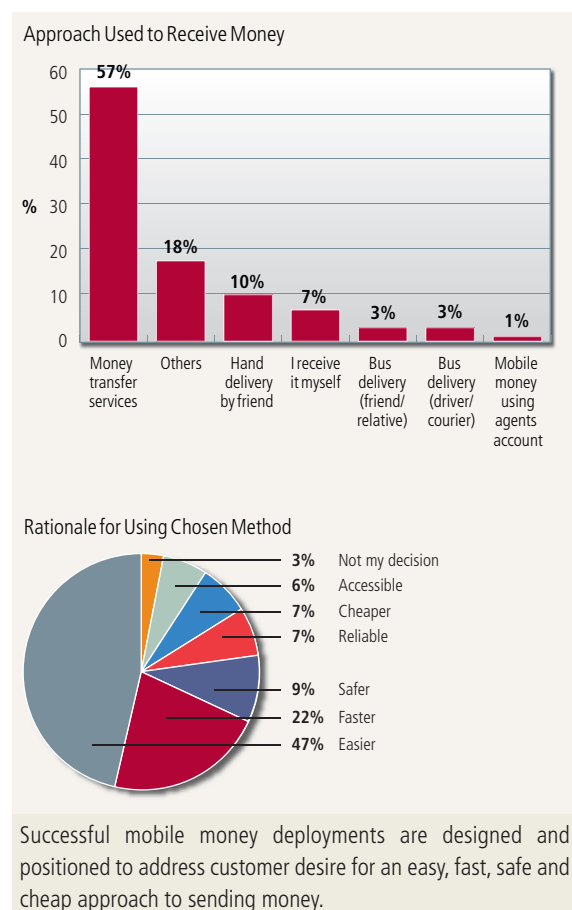


### Money Transfer

The unbanked are net recipients of money transfers

In the Philippines, 14% of the unbanked have sent money, and 17% and 12% have received it domestically or internationally respectively. Money transfer in Kenya is even more common, with 40% of individuals indicating that they use M-PESA. Over 60% of Kenyan remittances originate in urban areas, which highlights the role that money transfer plays in managing family liquidity by transferring cash from urban bread winners to rural recipients.

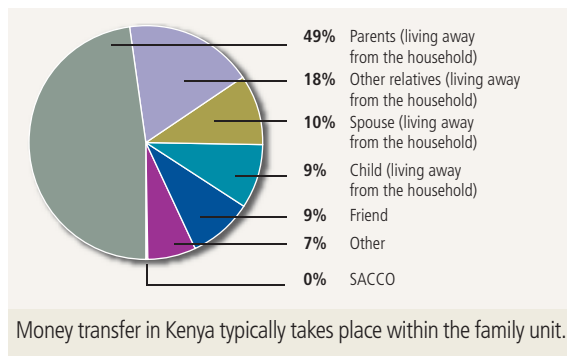
#### How the unbanked receive money and why they prefer their chosen method



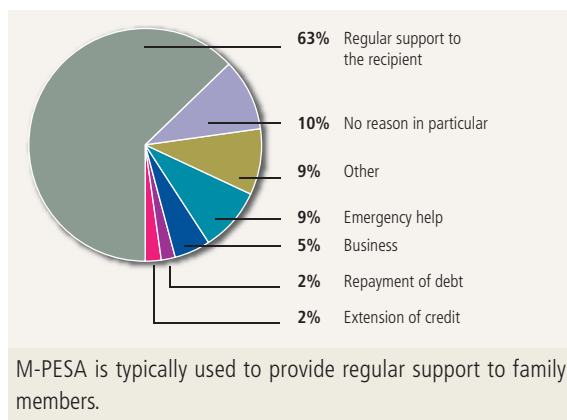
The approach used for money transfer varies by market. In the Philippines, formal services are used by 57% of money transfer recipients who indicate that they use this method since it is easier (47%), faster (22%) and safer (9%) than alternatives.

On the other hand, just prior to the 2007 launch of M-PESA, most Kenyans moved money informally, relying on friends and family (58%) and bus companies (27%). Since then, M-PESA has rapidly formalised the Kenyan money transfer market. This transformation has taken place on the basis of M-PESA's compelling proposition: 96% of current users indicate that it is more convenient, 98% indicate that it is safer, and 96% indicate that it is cheaper than their previous remittance service. 86% of M-PESA money transfer recipients are family members (including parents, spouse, child, or other relative) and 9% are friends. Thus, money transfer typically takes place within the family unit or group of close friends. Not surprisingly, senders indicate that M-PESA is used primarily for regular support of their family members (63%) or emergency help (9%). It is used less commonly for business, debt repayment or extension of credit.

### Money transfer recipients



### Purpose of money transfer

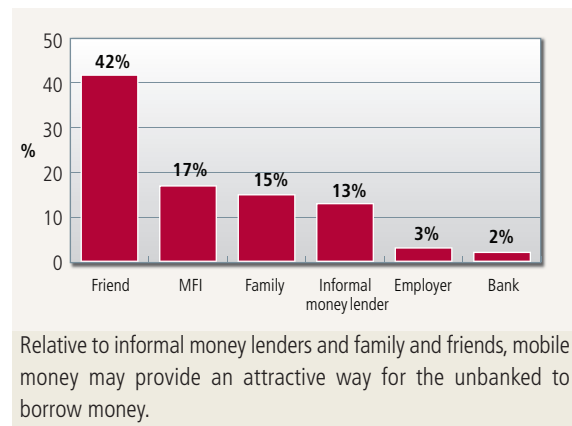


### Credit and Insurance

Use of credit and insurance is relatively low among the unbanked

The unbanked are less likely to borrow money than they are to save or send it. While the incidence and approach used to borrow varies significantly by country, in the Philippines 13% of the unbanked indicated that they had borrowed money in the past month. These borrowers rely heavily on informal sources, with over 70% coming from family, friends, or informal money lenders. This reliance on informal sources may introduce a level of risk in the community given that the economic fortunes of close networks are likely to be closely correlated. Hence, if disaster strikes and one person needs money, then everyone around them is likely to as well. The incidence of formal MFI use is low in the Philippines as well as Kenya, with just 2% and 9% respectively borrowing using this approach. While both figures are low relative to the use of other financial services, the variance between the two countries is significant and underscores the importance of understanding the unique customer needs and behaviours in each individual market.

### How the unbanked borrow money

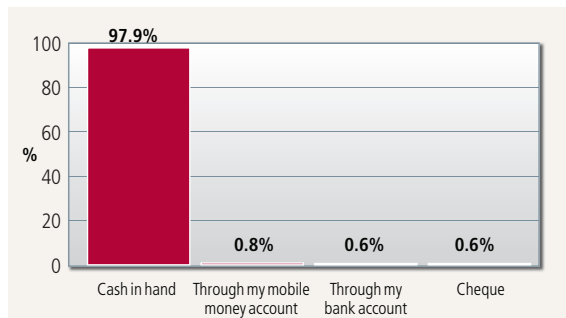


### Micro Payments

The unbanked purchase telecom services in small increments

Unbanked customers, particularly those at the base of the pyramid, operate in a cash economy and make payments in small increments due to liquidity constraints. More than 97% of those surveyed in the Philippines receive their income in cash. In the consumer products space, the 'sachet' revolution is well known for driving down the 'out of pocket' prices for small increments of products ranging from US\$0.15 toothpaste sachets to US\$0.10 200mL bottles of Coke in India. This approach is well known to the mobile industry, where US\$0.4 all-day texting cards and US\$0.30 top up options with one day validity are available in the Philippines, for example. The notion that unbanked customers will be more likely to purchase in high frequencies and low values is confirmed from findings in the Philippines, where unbanked mobile money users purchase basic mobile services (i.e. airtime and SMS) in tiny increments an average of fourteen times per month.

### Method of receiving last wage payment



The unbanked receive their salaries almost entirely in cash.

### Sub-US\$5 Per Day Segment

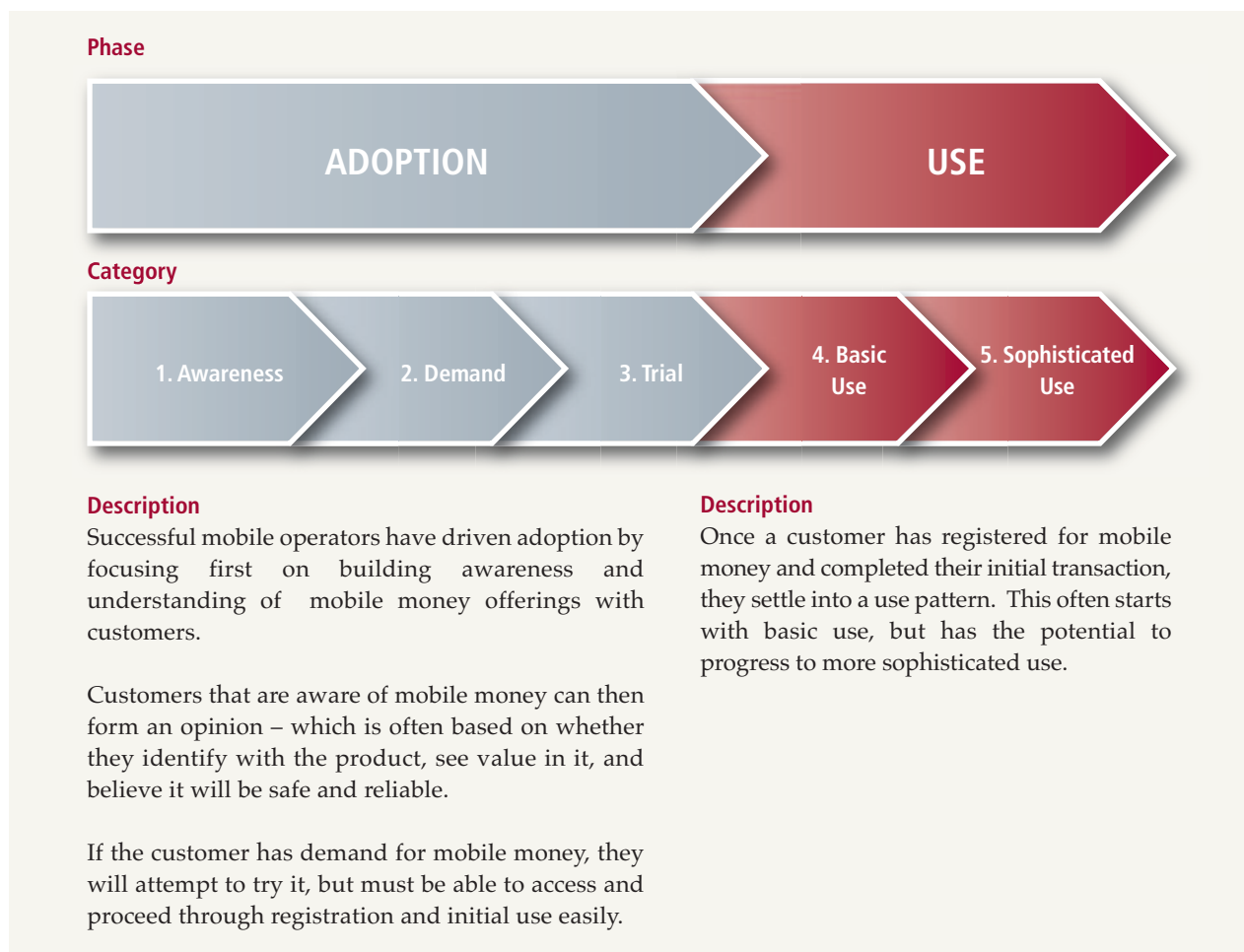
The financial lives of the unbanked at the base of the pyramid have both similarities and differences from the general unbanked population. Those at the base of the pyramid exhibit a similar propensity to save, with 57% saving money in the past month and a strong preference for the same informal methods used by the general unbanked population.

However, the extent to which they are net recipients of transfers is much greater, with 20% indicating that they had received a money transfer and 5% that they had sent one, compared to 17% and 14% respectively for the general unbanked population.





## Driving Mobile Money Adoption



With an understanding of how the unbanked save, send, spend and borrow money, mobile operators can move beyond designing a mobile money offering and focus on ensuring it is adopted and used. Analysis of successful mobile operators and in-market customer research in the Philippines and Kenya suggests that the best practice for driving adoption includes focusing on three distinct strategies: 'driving awareness', 'creating demand', and 'optimising trial'. The following section provides insights into how successful mobile operators have approached each element.

The structure, metrics and best practices detailed in the funnel are based mostly on analysis of advanced countries where mobile money is relatively established, like Kenya, the Philippines, and South Africa, but they can be applied to many markets.

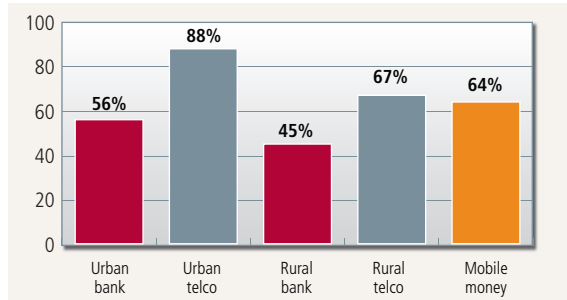
### Driving Awareness of Mobile Money

Mobile operators in Kenya and the Philippines have focused on driving awareness and understanding of mobile money. These two elements are key enablers of adoption.

#### Media and word-of-mouth have driven mobile money awareness and understanding in Kenya and the Philippines

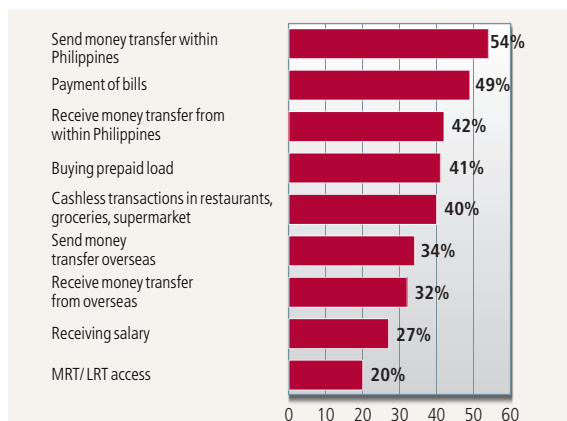
With mobile operator brand awareness roughly 50% higher than that of banks, deployments in the Philippines were able to leverage existing trust in their brand to build awareness and understanding of mobile money offerings. Nearly two thirds of the unbanked are familiar with the concept of mobile money. This awareness level is high, given that it is close to overall mobile operator awareness and actually exceeds bank brand awareness. SMART and Globe have achieved this awareness through extensive investments in marketing at the point of sale and in media.

### Mobile operator, bank and mobile money awareness



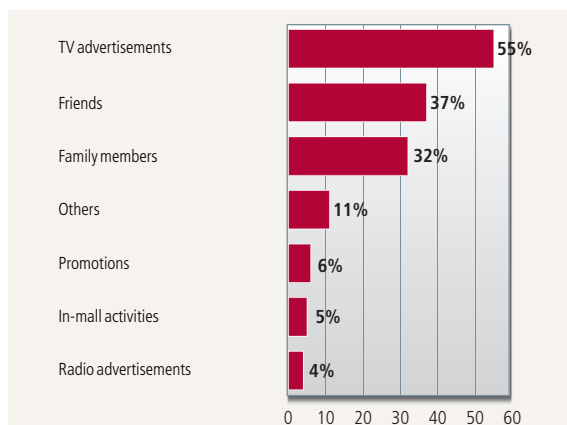
Awareness of mobile money in the Philippines is higher than bank brand awareness and on par with mobile operator awareness.

### Mobile money awareness by service



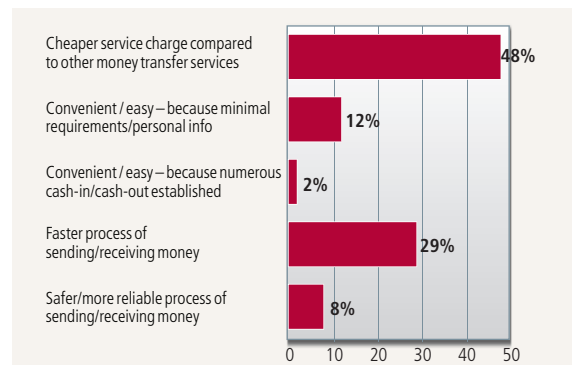
Customers are most aware of specific mobile money services that are promoted in marketing materials, or are used by friends and family and subsequently discussed.

### Awareness drivers



Customers in the Philippines learn about mobile money from TV advertisements, friends and family.

### What customers say when they talk about mobile money



When asked what they would say when recommending mobile money, advocates highlighted the relative cost and speed.

The key drivers of mobile money awareness are media and word-of-mouth. By way of media, most Filipino survey respondents heard about mobile money from TV advertisements, which is not surprising given the high TV penetration rate in the country. In a market like Kenya, where fewer households have TVs, different marketing mediums may be more effective. In fact, M-PESA customers cite adverts (42%) and a combination of TV/radio (30%) as their primary sources of learning about the service. Word of mouth has also driven awareness of mobile money, with 32% and 37% of Filipinos citing family and friends respectively as awareness drivers. Given the prevalence of word of mouth, mobile operators should design positioning statements that reflect what customers are saying about mobile money (in other words, what they value). Cost (48%) and speed (29%) are the two elements that Filipino mobile money users indicate that they highlight when recommending mobile money to someone else.

Beyond basic awareness, successful deployments have also focused on driving understanding of mobile money. Looking again to the Philippines, 54% of respondents who are aware of but do not use mobile money understand that it can be used to transfer money within the Philippines. While most customers understand this core offering, fewer understood that other offerings like overseas money transfer (34%) were also possible. Not only is creating an understanding of what mobile money can do important, so too is helping customers understand how much the service costs – particularly when it is

cheaper than alternatives. In Kenya, each M-PESA agent displays a detailed tariff guide at the point of sale. Subsequently 66% of customers indicate that they understand the fees.

**Best practices:**

- M-PESA uses the phrase ‘Send Pesa By Phone’ to clearly describe their service offering. This simple positioning helps customers understand what the service can do.
- M-PESA agents must meet point-of-sale branding requirements, which creates a high level of brand visibility and helps ensure customers understand tariffs.

**Creating Demand for Mobile Money**

Once prospective customers are aware of a mobile money offering, they decide if it is something worth trying. Experience in the Philippines and Kenya suggests that there are three elements that mobile operators can focus on to create demand for a mobile money offering. Customers must believe that mobile money is ‘a product for people like them’, is ‘easy and inexpensive to use’, and is ‘safe and reliable’.

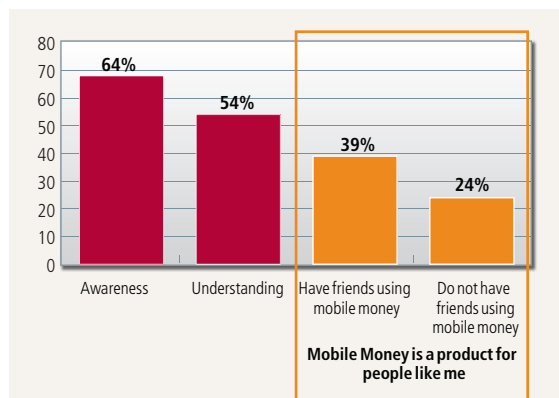
**"Mobile money is a product for people like me"**

In the Philippines, awareness of mobile money is 64%, but only 24% of unbanked mobile owners indicate that ‘mobile money is a service for people like me.’ This finding also holds true for base of the pyramid customers, of which 21% feel that ‘mobile money is a service for people like me’. Anecdotally, participants in the Philippines focus groups suggested that seeing advertisements and promotions in fancy shopping malls made them feel that the service was not in fact for ‘the masses’. Safaricom made a conscious decision to use images in their advertisements that would emphasise M-PESA is in fact a product for the masses. As demonstrated in the adjacent Safaricom Kenya advertisement, the sender of money is an urban worker, and the recipient is a rural family member. These images played a powerful role in communicating how M-PESA is a service for unbanked senders and receivers of money in urban and rural areas.

**"Mobile money is easy to use and inexpensive"**

Prospective customers must also believe mobile money will be easy to use and inexpensive. Successful deployments have effectively communicated that mobile money is ‘easy to use’ in recognition that

**Progression from awareness, to understanding, to identification**



Prospective customers are more likely to believe mobile money is ‘a product for people like them’ if they know someone else who uses it. This underscores the importance for mobile operators to drive word of mouth.

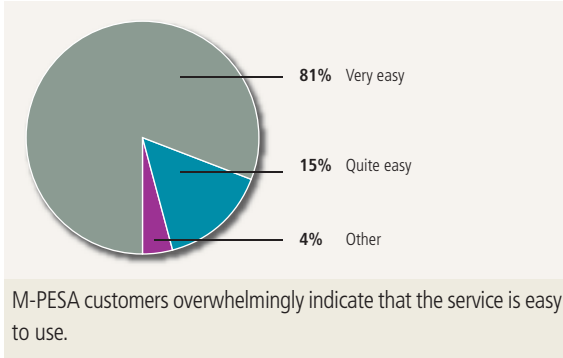


**Safaricom Kenya advertisement**

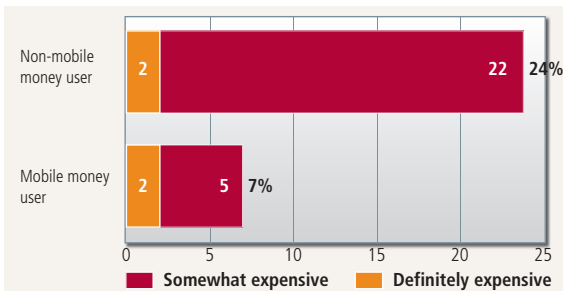
unbanked customers must be comfortable and familiarised with the use of new technology. In the Philippines, 72% of respondents who are aware of mobile money transfer offerings believe they are ‘easy’ or very easy to use, and in Kenya, 81% of M-PESA users indicate that the service is very easy to use.

In the Philippines, current mobile money users perceive the service to be less expensive than non-users. This observation holds true even for low-income groups, which suggests that price perception was not driven by the fact that users had higher incomes, but that upon trial users discovered that the service was reasonably priced, especially when compared to the more expensive alternatives. This suggests that price perception is something that mobile operators should proactively address with prospective customers.

### M-PESA ease of use



### Perceived cost of mobile money

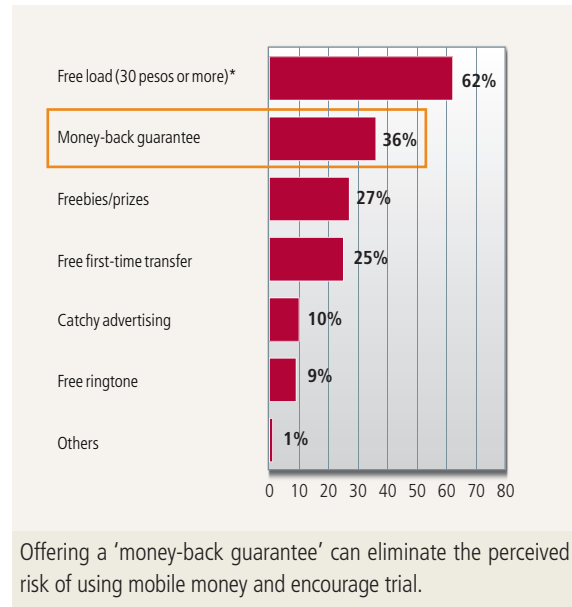


Non mobile money users perceive mobile money to be more expensive than users. This may reveal an opportunity for mobile operators to invest in 'first time free' trial offers to encourage customers to try mobile money and understand the actual cost.

### "Mobile money is safe and reliable"

Focus group participants in both Kenya and the Philippines indicate that a lack of trust in network quality can be a barrier to adoption. For example, non-mobile money users who have experienced problems with basic voice and SMS services indicated that they were reluctant to entrust a mobile network with something as critical as a money transfer. The insight that customers are reluctant to use services perceived as potentially unsafe is confirmed through analysis of 'trial incentive offers'. Offers like 'money back guarantee', which emphasise that there is no risk to customers of losing the value of their money transfer are very well received. This finding underscores the need for mobile operators to emphasise the safety and reliability of mobile money offerings.

### Effectiveness of potential adoption drivers



### Best practices

- Safaricom has positioned M-PESA as a service for the unbanked by ensuring messaging and images are aspirational but do not alienate unbanked or low income prospective users.
- Standard Bank Community Banking have selected specific townships in South Africa to pilot their mobile money offering. This decision was based in part on the importance of launching in areas where network coverage is strong, and also in recognition of the potential for word-of-mouth benefits to accrue in a contained environment.
- Mobile Transactions in Zambia has invested heavily in agent training, even sending prospective agents on 'scavenger hunts' in which new agents are required to withdraw money from the agent network to travel to the next destination to drive home to them the importance of liquidity. With over a quarter of mobile money users in the Philippines indicating that agents were the ones who taught them how to use mobile money services in the Philippines, investment in merchant education and incentives is worthwhile.



### Optimising Trial of Mobile Money Services

Prospective customers must be able to access registration points, proceed through a simple registration process and have access to customer support immediately following registration for successful trial to take place.

#### Mobile operators uniquely positioned to leverage agent network to access prospective customers

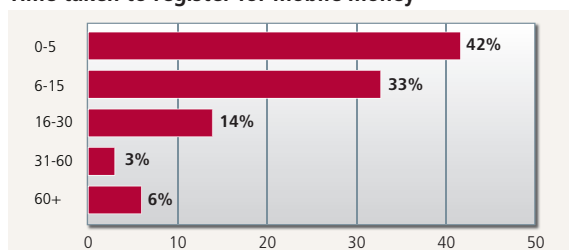
Unbanked urban Filipinos have on average nine mobile load agents within fifteen minutes of their residence. A significant disparity between the number of mobile load agents and bank branches is apparent in rural areas, with mobile load agents being five times as ubiquitous as banks or ATMs. Similarly, the reach advantage that mobile operators have relative to bank branches, ATMs and post offices in Kenya is significant – there are about seven times more M-PESA agents in Kenya than there are bank branches.

	Kenya
Bank Branches	876
ATMs	1,424
Post Office Branches	1,025
M-PESA Agents	6,104

#### Five minute registration process identified as a key enabler of adoption

In addition to access, interested prospective customers must be able to register for mobile money quickly and easily. The scale achieved in the Philippines can be partially attributed to the speed at which customers can register. 42% of Filipino mobile money users indicate that it took less than five minutes to register, and 75% were able to register in less than fifteen minutes. Similarly in Kenya, 41% of registrations are completed in less than five minutes. Technology selection has a significant impact on the ease of registration – in M-PESA where Safaricom has 80% market share, their SIM-tool kit offering delivers a positive customer experience during the registration process, since most of the Kenyan market can easily sign

#### Time taken to register for mobile money



75% of customers in the Philippines were able to register for mobile money in less than fifteen minutes. Keeping registration time below fifteen minutes is an enabler of success.

up without the need to conduct a SIM-swap. Registration is free, can be done by any agent, and applicants only need to provide a national identification document to begin using the service immediately. In addition to technology, regulation has a significant impact on the ease and speed at which customers can register for mobile money. Markets like South Africa and the Philippines have benefited from proportionate KYC regulation that enables some customers, whose transaction values will not exceed thresholds, to register with just a national ID document.

#### Proactive agents follow up with the customers they register to drive initial use

Finally, to ensure initial registration translates into actual usage, successful deployments in advanced markets have provided ongoing support in the period immediately following registration to ensure customers have a positive trial experience. Site visits with agents in South Africa reveal that customers make a connection with the specific agent who registered them for mobile money. This agent becomes a main point of contact for questions. Proactive agents in successful deployments often follow up with customers after registration through text messages to ensure they are able to use the service.

#### Best practices

- Standard Bank Community Banking encourages agents to provide ongoing support to customers by providing roughly half of the commission upon registration, and the remaining half when a customer completes a certain number of transactions.
- Offering customers relevant incentives has helped drive trial of mobile money in many markets. However, selecting a relevant incentive requires a close understanding of customers in the market. In the Philippines for example, customers indicate the strongest preference for incentives which offer them a free top-up, followed by incentives that reduce the risk of trial to zero.
- M-PESA in Kenya and Mobile Transactions in Zambia have both positioned their agents close to informal channels, like bus stations, which customers currently use to send money to make trial convenient.
- With roughly just one in ten customers learning to use mobile money on their own in both Kenya and the Philippines, successful deployments have also addressed the key role that influencers play in encouraging trial. This includes friends and family, whom over half of Filipino users cite as teaching them to use mobile money. Agents are also cited as an important source of mobile money 'training' for more than a quarter of respondents.

## Understanding Current Use, Satisfaction, and Future Use

### Current Mobile Money Usage

Mobile operators launching with domestic transfer, airtime purchase and payment offerings

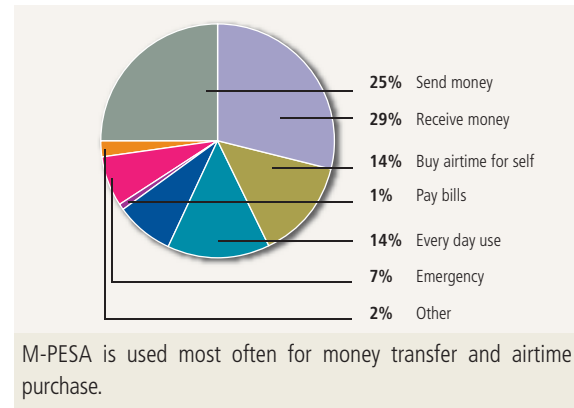
According to a CGAP-GSMA census of mobile operators that have launched mobile money, most deployments currently focus on domestic transfers and payments. In many cases, this has been a product of regulatory environments which often prohibit sophisticated mobile offerings such as savings or credit. This approach also applies to non-mobile operator led models. Standard Bank Community Banking in South Africa is an example of a deployment that has led with a payments offering, but has plans to extend it to other areas. Their go-to-market offering enables social grant recipients to receive payment on their mobile phone, but the notion is that once customers trust the offering, they will leave some money behind on the phone rather than withdraw it all at once. This will enable Standard Bank Community Banking to offer a number of other services. Since mobile operators are not deposit taking institutions, sophisticated offerings such as savings and credit would need to be added to the product mix through partnerships with organisations licensed to offer these services.

### Use of mobile money

	Mobile money user product usage	Frequency, # uses/month	Average value, US\$
Send money	52%	2.4	57
Receive money (dom)	37%	3.4	48
Buy airtime	23%	3.9	7
Receive money (int)	16%	2.8	277
Send & receive airtime	17%	2.9	14
Cashless payments	10%	2.0	22
Store money	6%	1.9	40
Receive salary	5%	6.9	93
Receive payment	2%	2.8	17

Most Filipino customers use mobile money to send money, and do so 2.4 times per month, sending on average US\$57. The extent, frequency and value of use are key inputs into mobile money business models.

### Primary use of M-PESA



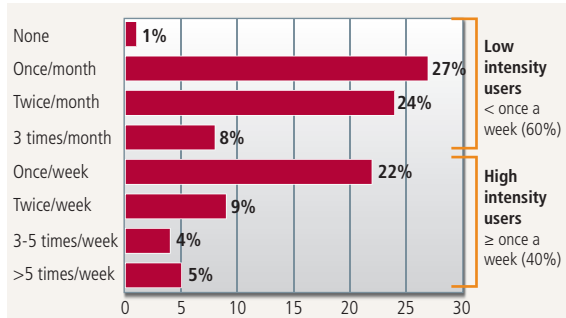
Filipino and Kenyan customers are adopting what they are aware of and see most value in money transfer and airtime purchases

Filipino customers have responded to mobile operator efforts to promote core offerings: 52% of mobile money customers use the services to send money, 37% to receive money domestically, and 23% to buy airtime. Awareness of additional offerings like bill payments is relatively high, however customers have been slower to adopt these services. Mobile operators projecting adoption patterns should consider this data in designing product mix and pricing strategies, but should also consider anticipated frequency of use and transaction value. For instance, salary payments are used by a small segment of the market, but the frequency and value is very high, and the flows are predictable. On the other hand, money transfer is used less frequently, but by a larger base and for slightly smaller values. Kenyan customers have exhibited similar adoption behaviours, with 29% using M-PESA to receive money, 25% to send money, and 14% for airtime purchases.

Distinct segments have emerged in the Philippines and Kenya based on frequency of use

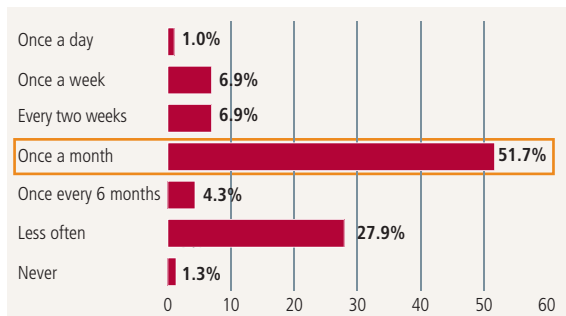
A simple and practical way for operators to segment mobile money users is by intensity of use. High frequency users in the Philippines, or those who use mobile money services more than once per week, account for 40% of unbanked mobile money users. Low frequency users account for the remaining portion and use mobile money once, twice, or three times per month. A similar approach can be applied in Kenya, though the threshold for frequency of use appears to be slightly different, with just 8% of respondents indicating use more often than weekly. The attributes of high frequency users in the Philippines are instructive to operators seeking to drive sophisticated offerings.

**Frequency of use: Philippines**



40% of Filipino mobile money users use mobile money once per week or more. Identifying the distribution of high vs. low intensity users is a key input in mobile money business models.

**Frequency of use: Kenya**



Most M-PESA customers use the service monthly.

**Customers who live close to an agent use money transfer more frequently**

High and low frequency users have similar incomes, though high frequency users are much more likely to live close to an agent and use mobile money for services beyond basic money transfer. Segmenting based on frequency of use is practical for operators since it can provide the basis for launching targeted SMS marketing campaigns to a user base that exhibits a particular set of behaviours.

	Low Frequency	High Frequency
Frequency of use	Less than once per week	More than once per week
Percent urban	46%	31%
Full time employment	41%	52%
Income (per day)	US\$3.4	US\$4
Percent multi-SIM users	38%	55%
% Living within five minutes of mobile money agent	33%	50%
Percent mobile money usage on transfer	80%	50%
Interest in savings	45%	48%

**Mobile Money Satisfaction**

Current mobile money users are strong advocates – a sign that mobile money is providing real value to the lives of the unbanked. Consider the high scores mobile money users report on the following three dimensions:

**My money is safe with mobile money**

**90%** of users in the Philippines feel that their money is safe with mobile money

**90%** of users in Kenya feel that their money is safe with mobile money

**I would recommend mobile money**

**92%** of users in the Philippines would recommend mobile money to friends or family members

**I want mobile money to continue to be available**

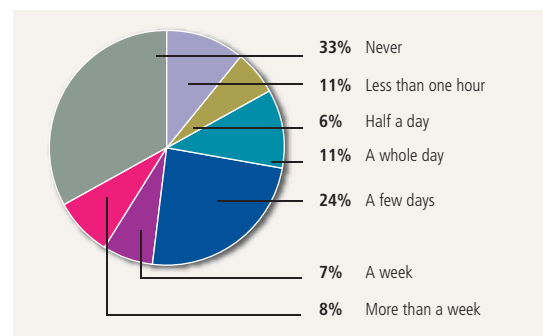
**83%** of M-PESA users in Kenya indicate that if mobile money went away, it would have a significantly adverse affect on their lives.

While customers regard mobile money as a safe option that they would recommend to friends, there are some areas for improvement that mobile operators should consider. Focusing on the following three key areas would improve the customer experience for users and lay the groundwork for sophisticated use.

**Reduce risk of human error**

While respondents believe their money is safe with mobile money, there are opportunities to reduce the risk of human error that may lead to loss of funds. Focus group participants in Kenya and the Philippines as well as site visits revealed a common fear: sending money to the wrong person. This fear

**Time required to recover money sent to the wrong person**



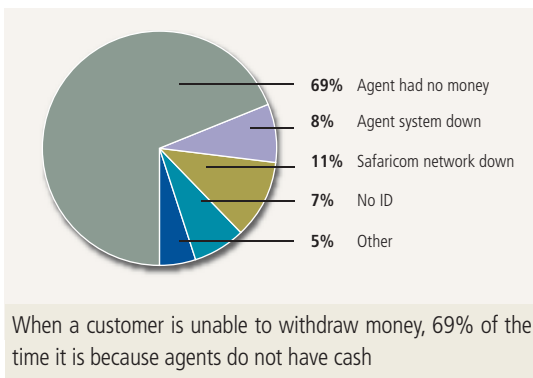
A third of money transfers sent to the wrong person are never recovered.

is well founded, with a third of M-PESA users who have made the mistake indicating that they never got their money back. Potential solutions could include more personalised verification procedures when sending money (like Zain has done by creating 'nicknames' for users) or integration with handset phonebooks.

■ **Improve agent cash-out liquidity**

20% of M-PESA users indicate that at one point they were unable to withdraw money from an agent. 69% of the time, this was because the agent did not have cash. Customers may also be refused cash when visiting an agent for the first time in an area where they are not known and request to withdraw a suspiciously large value of money. Agents are keen to avoid sending signals to robbers that they maintain high cash balances, so may reject the request to withdraw cash outright (claiming that they do not have that amount of money) or offer a smaller amount of money<sup>2</sup>. Mobile operators can reduce the likelihood of this happening by creating agent codes of conduct and contact lines for customers to report legitimately unacceptable behaviour.

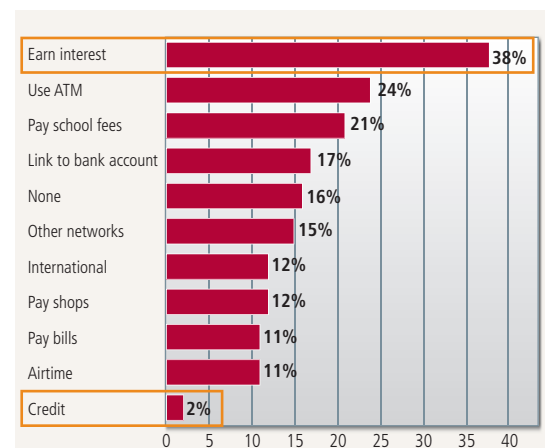
**M-PESA challenges with cash-out**



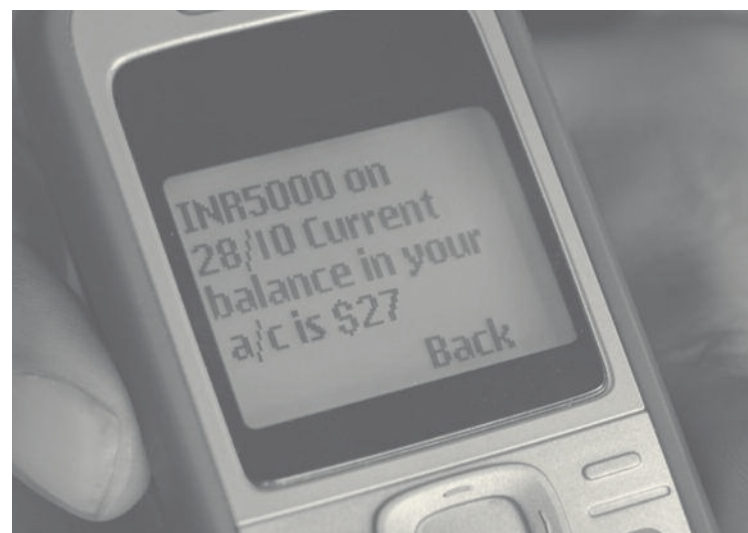
■ **Move beyond basic product availability**

Just as many mobile operators have begun to consider the next phase of mobile money, customers have their own views for what offerings should come next. M-PESA users in Kenya indicate a desire to earn interest<sup>3</sup> on their money and to use ATMs. It is important to note, however, that M-PESA is not a deposit taking institution and subsequently cannot deliver on the 'earning interest' request. The desire to use ATMs<sup>4</sup> is instructive for mobile operators in other markets who are developing product road maps. Customers also have a desire to use more sophisticated offerings, like paying for school fees, paying in shops and paying bills.

**Desired enhancements to M-PESA**



M-PESA customers indicate a strong desire to earn interest on their money.



2 This behaviour can also reflect fraud since M-PESA agents can earn two commissions rather than one by making a customer take out money in multiple instalments.  
 3 This is not permitted by the Central Bank of Kenya  
 4 This need was addressed shortly after the survey was conducted – M-PESA users can now access their money 24-hours a day through any of the 110+ PesaPoint ATMs

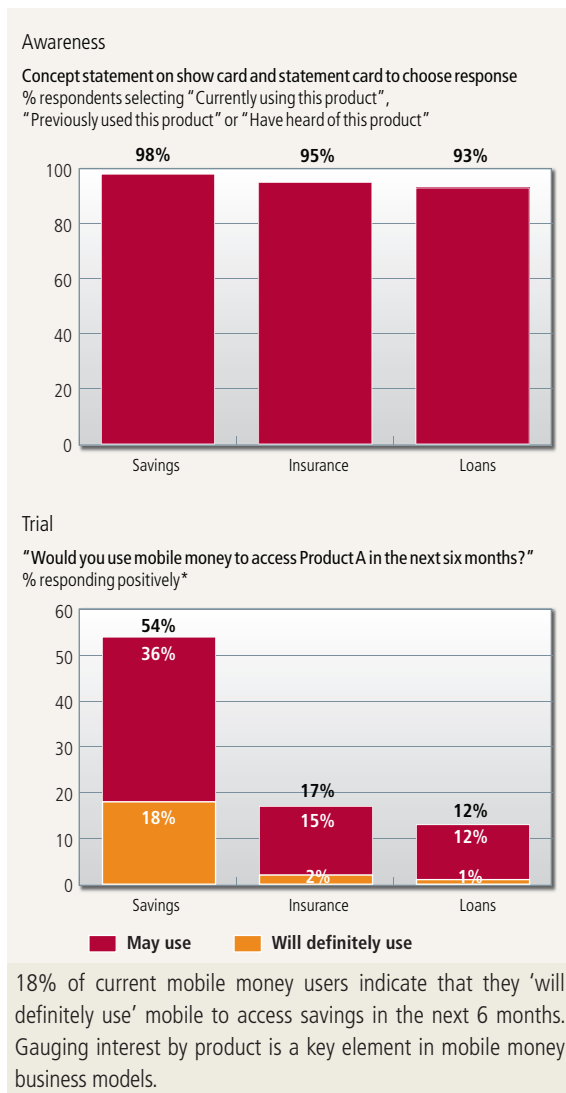


**Sophisticated Use**

The unbanked have a strong demand to access savings products via mobile

There is evidence from two of mobile money’s most advanced markets that the unbanked view savings as the next frontier of sophistication. In the Philippines, the unbanked are well aware of most types of financial services but express the highest likelihood of using savings in the near term, with more than half indicating that they may or will definitely access savings via mobile money in the next six months. Furthermore, the most common request that M-PESA users make is to earn interest on their account balance.

**Interest in sophisticated mobile money offerings**



These findings suggest that the unbanked are keen to embrace mobile money as a means of saving money.

While M-PESA users have demonstrated a willingness to use mobile to save money, just 2% indicate a desire to use it to access credit. Similarly in the Philippines, interest in accessing insurance and loans via mobile is significantly lower.

**Sub-US\$5 Per Day Segment**

Saving via mobile is an equally compelling proposition to those living at the base of the pyramid. In the Philippines, 16% say they would definitely use, and 49% say they may use mobile money to save in the next six months.

## Role of Regulation in Accelerating the Speed, Scale and Sophistication of Mobile Money

Regulators will play a key role in enabling the mobile money market to reach 364 million currently unbanked customers by 2012. Analysis of Kenya and the Philippines has revealed that:

**Regulation frameworks which enable payment offerings by non-banks can contribute to financial inclusion**

Both Kenya and the Philippines are the most successful countries with regard to customer adoption. One of the reasons is that both countries allow mobile operators to offer payments. Whilst the Philippines has the most advanced regulatory framework, Kenya currently has no legal certainty but allows M-PESA to offer de facto payments as a non-bank. Ideally, financial regulators take a proactive and open approach (to banks and non-banks), as seen in the Philippines where the regulator has worked closely with the mobile operator to provide a supervisory structure that gives them comfort whilst encouraging innovation and competition.

**The markets with quick and simple registration processes are the ones that have reached scale**

Mobile money adoption has been most rapid in the Philippines and Kenya, where the registration process is simple – either on account of proportionate KYC rules and/or by enabling customers to register at locations aside from bank branches and with a level of information that is proportionate to their level of risk. Subsequently, in both markets nearly 50% of registrations take place in less than five minutes. By minimising the barrier to entry that a difficult registration process may present, regulators can help enable the success of mobile money in a market.

**Enabling non-bank agents to perform cash-in and cash-out functions is key to success**

Kenya and the Philippines are two examples of markets where non-bank agents are permitted to perform cash-in and cash-out. This has enabled deployments to rapidly develop large agent distribution networks that extend far beyond the reach of bricks and mortar bank branches to promote financial inclusion.

**Customers want to save money on their mobile phone**

Mobile payments offer a clear route to savings. Once customers get used to simple and easy to use mobile payments, they become increasingly sophisticated users and demand savings. Customers have clearly expressed a desire to access savings products via their mobile phone, with a majority of Filipino mobile money users indicating that they would do so in the future. The next regulatory challenge will be to harness the potential of mobile payments as an entry route for unbanked customers to other traditional banking services. Appropriate and proportionate regulatory solutions must be sought to move the mobile money customers up to more sophisticated financial services, possibly in partnership with deposit taking institutions.



## Summary of Key Findings

### Additional Resources

In addition to the findings in this article, additional resources are now available to mobile operators, including:

- **Mobile Money Toolkit**  
A reference guide has been created for operators to help size the opportunity in their market, develop a product mix, create a business plan, and conduct primary market research. This can be accessed by contacting the MMU team.
- **Further Results from Philippines Market Research**  
Additional analysis from the survey and focus groups in the Philippines will be conducted and made available on the MMU website at [www.gsmworld.com/mmu](http://www.gsmworld.com/mmu).
- **Mobile Banking Database**  
Relevant mobile money data will soon be available on Wireless Intelligence, including estimates of the number of 'unbanked mobile' people in each country.

### Market Size and Drivers:

- 120 mobile money deployments launched by the end of 2009
- Filipino mobile money user ARPU 74% higher than non-user ARPU
- 68% of multi-SIM Filipino mobile money users use primary SIM for mobile money

### Seven Key Insights for Mobile Operators and Regulators:

1. Current mobile money users have a desire to access savings via mobile
2. Enabling customers to register for mobile money in less than five minutes is a key success criterion for adoption
3. The unbanked will only consider mobile money if it is marketed as a service designed for 'people like them' rather than simply for wealthy people
4. Pricing must be designed with consideration for how prospective customers buy (i.e. Filipinos buy airtime and SMS an average of fourteen times per month), and what matters to them (i.e. the unbanked manage liquidity and risk, and value incentive offers like 'money-back guarantee' which help them achieve this)
5. To ensure customers who register become regular users, agents should be provided with incentive to provide ongoing support for their customers immediately after registration
6. To achieve scale, mobile money offerings must be widely perceived to be 'easy to use'
7. An enabling factor for customer adoption is allowing non-banks to offer simple payment services

## Methodology

Five key sources were used to develop this report.

### 1. Industry contributors

**Martin Sjolund**, McKinsey & Company  
**Jonathan Petrides**, McKinsey & Company  
**Caroline Pulver**, FSD Kenya  
**Mark Pickens**, CGAP

### 2. Primary survey

A survey was conducted of 1042 unbanked Filipino consumers of varying ages and incomes and from both rural and urban areas who had access to mobile phones. Face to face interviews were conducted in March 2009 with otherwise unbanked mobile money users as well as unbanked non-users who had access to a mobile phone. For the purposes of the survey, 'unbanked' was defined and articulated as someone who did not have a bank account at the time of survey. 'Mobile money users' were defined as people who had used SMART money or G-Cash in the past three months. The survey covered 120 questions and included topics like mobile usage, formal and informal financial services usage, and mobile money awareness and usage. Random incidence sampling was used exclusively through house-to-house interviews. A 20% call-back rate was used to validate encoding. A 'booster' sample was conducted to collect further incidence on low-income mobile money users. Sample sizes imply a margin of error of +/- 3% to 5% assuming a 95% confidence level and a maximum variability (0.5).

### 3. Focus groups

Four focus groups of ten people per group were conducted in Kenya. Ages ranged from 25-45 and incomes from US\$60 to US\$300 per month. There were two groups of unbanked mobile money users and two groups of unbanked non-users. Additionally, two focus groups of ten people per group were conducted in the Philippines. One group were active mobile money users and the other were unbanked non-mobile money users who had access to a mobile phone.

### 4. CGAP-GSMA global mobile money census

The census was conducted between February and March 2009 and attracted responses from more than 40 participants, covering nearly 70 markets and over 500 million mobile users. The survey was designed to provide perspectives on the number of mobile money deployments, take-up rates, proportion of unbanked customers and usage characteristics. The survey also posed a number of questions about business models as well as what the GSMA should be doing to help grow the industry. Findings have been aggregated to a regional level to protect respondent confidentiality. The overall mobile money baseline was established by combining census responses with extrapolations made on a market-by-market basis where there were known deployments but no survey responses.

### 5. Third party research materials

FSD Kenya surveyed 3,000 homes in Kenya to study the impact of M-PESA. The survey was conducted in districts that account for 92% of Kenya's total population. Excluded districts were areas where usage of M-PESA and mobile phones were much lower. The sampling frame for the household survey was the National Sample Survey and Evaluation Programme (NASSEP IV) of KNBS (Kenya National Bureau of Statistics). Sampling was multi-staged. Firstly, administrative locations with M-PESA agents and the corresponding clusters (enumeration areas in which KNBS has administered regular survey updates) were identified. Of these locations, 119 were picked with probabilities proportional to the number of agents in each. The idea was to oversample in areas with more M-PESA agents so as to get a sufficiently high number of M-PESA users in the sample. The probabilities of picking a location ranged from 0.6% to 5%. Using the targeted sample size of 3,000, a total of 300 clusters were selected in these 119 locations. From each of the selected clusters, a total of ten households were randomly picked. KNBS therefore provided the lists of the original locations from which to draw the sample and then the corresponding lists of clusters and households in each cluster to be interviewed.







## The GSMA's Mobile Money Business Model Framework

Paul Leishman and Seema Desai, GSM Association

Mobile money provides a significant opportunity for mobile operators to increase revenues and reduce churn, but it also presents a number of challenges strategically, operationally and commercially.

Recent success stories, like M-PESA in Kenya, or SMART and Globe in the Philippines, highlight the importance of developing a clear and simple value proposition that addresses a customer need, and appropriately engaging with the right partners such as banks, agent distribution outlets and technology vendors to execute it. The success of these early deployments can partially be attributed to enabling regulatory environments that have made it possible for non-banks to offer basic payments services, but they should equally be attributed to a well designed and executed business model.

This article is designed to provide mobile operators with a clear framework for the mobile money business model and to explain the relevance of each component. The framework can be used by operators who are considering launching a mobile money offering in the future, and also by those who already have. The framework does not intend to offer solutions, but rather to leverage the lessons from previous launches and to help decision-makers ask the right questions when designing or refining their mobile money business model. To provide context for the questions proposed within the framework, examples are offered that detail the experiences to date of mobile operators, banks, distributors, technology vendors and regulators in the mobile money ecosystem.

The GSMA will use this article as a foundation on which to build guides to best practice as well as toolkits which will help define the business model for mobile money. The content for this guide will come from a number of sources, including case studies of existing deployments around the world, ideas and discussions from the Mobile Money for the Unbanked (MMU) Working Group meetings, and thought leadership from industry experts over the duration of the MMU initiative.

The framework below (Fig. 1) presents the key components that a mobile operator should consider when developing a mobile money business model. The relevant MMU programme deliverables are also highlighted within each component, some of which are already available (contact mmu@gsm.org).

**Qualification – Is There a Market?**

Mobile operators who are considering launching a mobile money offering will first need to establish the size of their target market. Three key questions to help start this process are:

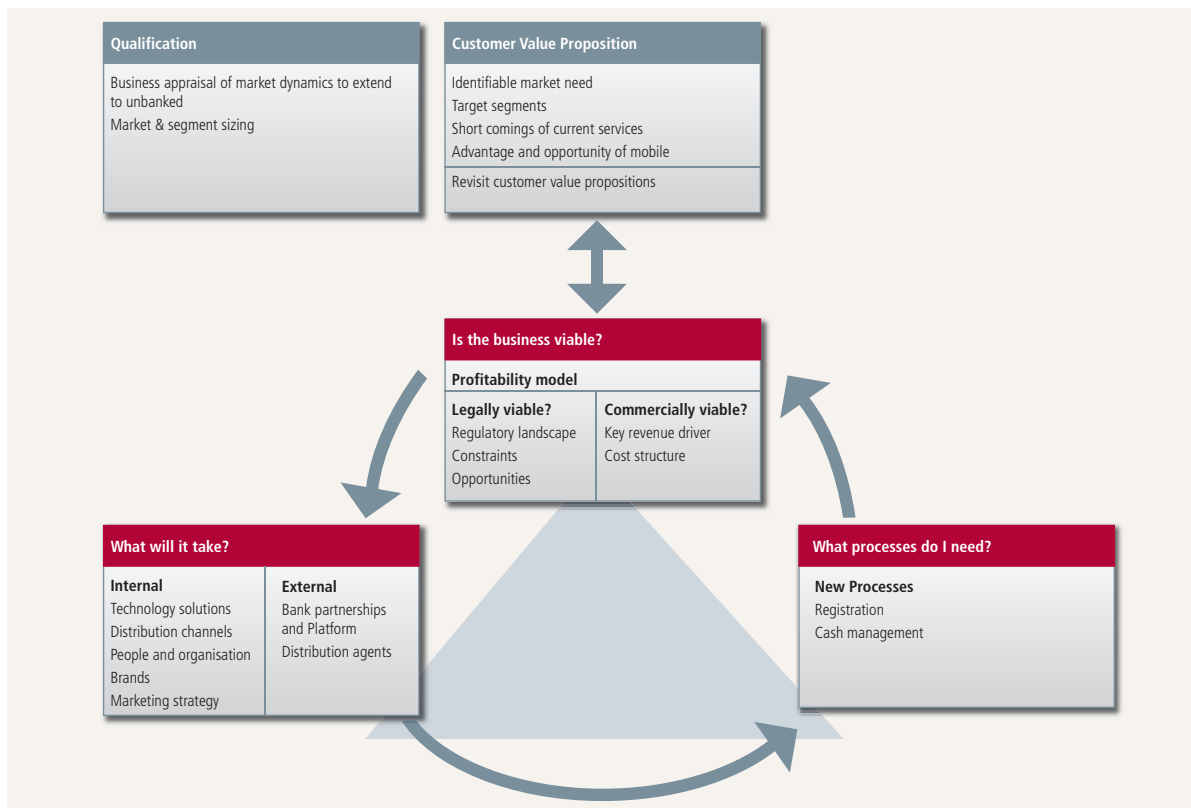
- What is the percentage of unbanked people in the market relative to mobile users (i.e. is there a potentially unserved market?)

- What formal or informal options for financial services do target customers currently have (i.e. are there products already available to this market?)
- Can the mobile operator better address the needs of target customers than traditional providers would be able to (i.e. is the mobile operator well positioned within this market to offer services?)

**GSMA provides:**

- Market Sizing Toolkit – a toolkit for the industry to size the opportunity for mobile money within specified geographies (currently available)
- Market Survey – baseline survey that outlines the size of the market and its potential for growth (currently available)

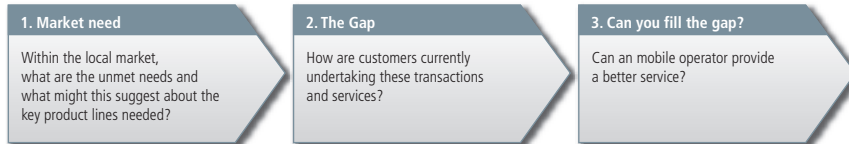
**Mobile money assesment framework**



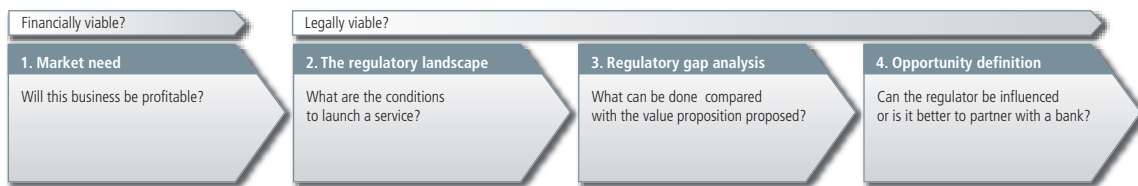


## The Customer Value Proposition and Viability of the Offering

### What is the customer value proposition?



### Is the business viable?



To capture a qualified market opportunity, successful mobile money offerings have been able to meet a specific customer need which was previously not being effectively met. Mobile money has typically provided a solution that is cheaper, safer, faster, or more accessible than existing alternatives.

For example, in Ghana the bank charges associated with a typical consumer money transfer of US\$20 to US\$30 are often too expensive for individuals living on US\$2 per day. As a result, customers resort to carrying cash over large distances to pay bills or support relatives. By launching mobile money transfer offerings which offer greater convenience, security and speed at an affordable price, mobile operators in Ghana (such as MTN) have created a value proposition to meet this customer need and have had initial success converting their customer base to this service. In the Philippines, a country that is made up of many islands, jungles and mountains, many rural customers have difficulty accessing banks. Since wage earners in urban centers or abroad need to send money home, the mobile money offerings from SMART and Globe have been widely adopted.

#### GSMA provides:

- The results of consumer insights studies in the Philippines and Kenya are available in this Annual Report, and further analysis and findings will be released on the MMU website ([www.gsmworld.com/mmu](http://www.gsmworld.com/mmu))
- Articles, photos and videos focused on helping mobile operators understand customers and develop value propositions will be released on the MMU website ([www.gsmworld.com/mmu](http://www.gsmworld.com/mmu))





**Profitability**

To ensure mobile money deployments are commercially viable, mobile operators will need to build a financial model that incorporates realistic projections for key revenue and cost drivers.

**Key revenue drivers**

Mobile operators need to understand what price is affordable and acceptable to their target customers. The price of a money transfer offering should be considered relative to non-mobile alternatives as well as informal options, like sending money via buses, friends and taxis. Even informal options which have no direct associated cost can be compared by considering how much value the mobile offering would add by way of speed or safety.

Mobile operators will also need to project the number of customers they intend to reach with mobile money, the rate at which customers will adopt it and the frequency with which customers will use it. Driving service awareness and understanding, creating demand, and encouraging trial are the necessary steps that precede use. This process usually requires a major change in consumer behaviour and presents a significant challenge for mobile operators.

Some of the key revenue drivers (both direct and indirect) are summarised here:

**Key cost drivers**

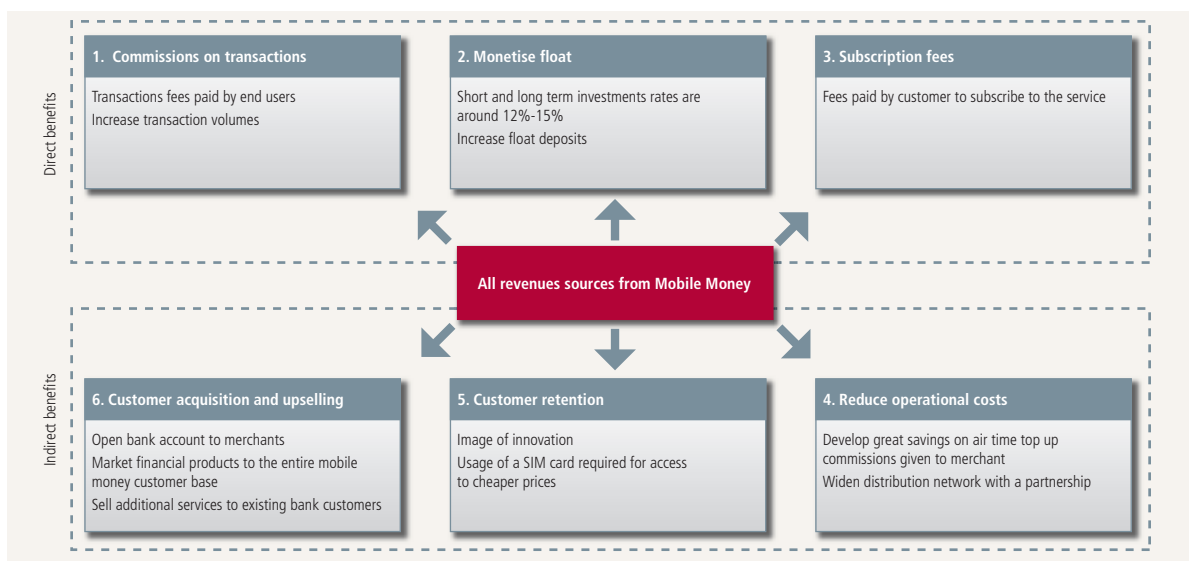
Financial products often have lower margins than telecoms products, so setting an appropriate profit margin can be a difficult part of the internal negotiation process. Once a profit margin has been established, and the potential revenues have been sized, it is relatively straight forward to calculate the cost threshold at which the deployment will be commercially viable. Once this threshold has been established, mobile operators should focus on creating the best possible customer value proposition that can be delivered at a cost that does not exceed that threshold.

Key capital investments that mobile operators should consider include technology license and platform development, marketing investment, and agent training. Key variable costs include agent commissions and communications expenses (if applicable).

**GSMA provides:**

Profitability Toolkit

- A tool to help build a financial model for a mobile money deployment
- Best practices on managing cost drivers – a summary of strategies used by mobile operators to reduce costs
- Pricing framework for mobile money – an overview of the different approaches taken by mobile operators when setting the pricing structure for consumers



### Regulatory Analysis

Mobile operators need to first understand the regulatory landscape and identify whether it will enable or prohibit the value proposition that has been proposed. Generally, the regulatory environment will encourage the mobile operator to cooperate with a bank, because there is no scope for a mobile operator to offer payments or e-money as a non-bank. The lack of a regulatory framework in the early adopter mobile money markets, like Kenya, poses another type of challenge for mobile operators: regulatory uncertainty. Uncertainty arises when there is no legislation (or no clear legislation) for mobile banking; in which case mobile operators may choose to partner with banks to avoid the cost and time required to deal with the lack of transparency in the regulatory environment.

Where a gap exists between what regulatory framework is desired and what is allowed, a dialogue must immediately begin with the financial regulator, or the mobile operator must partner with a bank and engage with regulators in this context. The cost in terms of time, resources, certainty and long-term strategic positioning of a mobile operator should be taken into account when deciding which option to choose.

Angola and Brazil represent interesting case examples. Areas of the financial regulatory environment within Angola are relatively inflexible, especially in allowing operators to manage distribution. This is an area where the regulator has stipulated that the banking industry is required to take responsibility for this part of the value chain. Unless mobile operators successfully engage with the regulator to change the regulatory framework, it is likely they will need to partner with a bank.

By comparison, regulators in Brazil have chosen a different path. Even before the growth of mobile money, a Latin American banking association called Banco Interamericano de Desarrollo was formed. This Association agreed to broaden access to banking by allowing non-banks to become agents to reach the unbanked. In creating twelve practical initiatives through its programme to extend financial services in the Americas, it increased the opportunities for agents such as supermarkets, small retailers and pharmacies to offer branchless banking and financial services.

Often mobile operators may decide that partnering with a bank on some level makes sense since it can reduce the time to market through rapid rollout of the capabilities and skills required to run back-office processes, or meet 'Know Your Customer' (KYC) and Anti-Money Laundering (AML) obligations.

Mobile operators can start their regulatory analysis by asking three simple questions in their own markets:

- Can non-banks offer payment or e-money?
- Can non-banks open accounts or serve customers through their distribution channels?
- Is the regulator open for change accommodating mobile operators to offer mobile money?

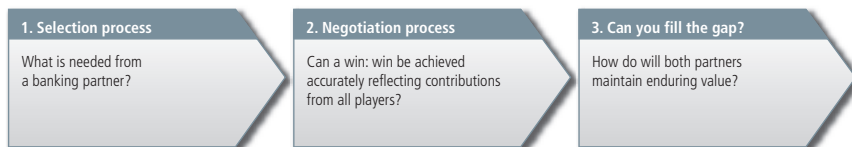
#### GSMA provides:

- Regulatory training for mobile operators
- Best practice and regulatory research
- Promotion of dialogue between financial regulators and mobile operators at the MMU Leadership Forum (first to take place on 25th June in Barcelona)

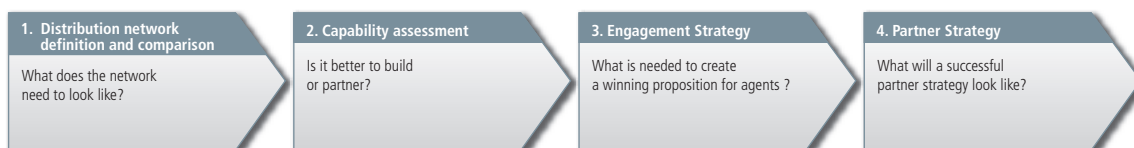


## Taking the Product to Market

### Bank partnership/alliance



### Distribution channels



### Banking Partners

A mobile operator's choice of banking partner will depend on the value proposition. Prior to selecting a banking partner, mobile operators should first consider whether a bank is required to simply hold pooled and/or mirrored funds, or whether they will be asked to play a more strategic and integrated role by facilitating the offering of savings or credit (i.e. services that cannot be offered by mobile operators since they are not banks).

Beyond this fundamental consideration, different mobile operators have prioritised different attributes when selecting their banking partner. For example, Orange Money was keen to gain scale from a commercial partnership with the top tier bank BNP Paribas, which already had extensive operations throughout its target region (Ivory Coast, Mali and Senegal). In contrast, MTN has formed a variety of joint ventures and commercial partnerships with Standard Bank, SGBCI, and EcoBank based on local relationships and market conditions. MTN chose to prioritise brand relevance to the target demographic above scale in their choice of bank partner.

When finalising a banking partnership, the roles and responsibilities of both the mobile operator and the bank must be agreed and documented, and clear processes for monitoring systems must be developed.

### Other Partnerships

Beyond banks, partnerships with other organisations may be required to deliver on the proposed value proposition. For example, mobile operators proposing to offer bill payment services would require partnerships with third parties like TV companies or electric companies. These partnerships with third party organisations enable mobile operators to provide additional services to customers that they may not have been able to do on their own, or on account of regulation. Further, many third party organisations will welcome partnering with mobile money deployments since it provides them with a competitive advantage or can help address a strategic need. For example, Celpay, a mobile payments company in Zambia, administers a large portion of bill payments for a TV provider, enabling them to concentrate on their core business. Similarly, the use of stand-alone bill payment applications from third parties can offer a new route for them to augment the mobile operator's overall value proposition with a new feature set such as managing monthly credit repayments to micro finance institutions.

Through registering customers for financial services, mobile operators are also starting to consider how the database of financial history can be utilised more effectively to offer third party consumer credit profiling in segments and markets that have been untapped until recently. This can open up new credit offers from related business partners based on history built up through mobile transactions and prepaid purchases.

### The Distribution Network

To effectively reach their target customers, mobile operators need to proactively define the target footprint of their agent distribution network for mobile money. The agent distribution network must have the right density of outlets in the right locations to ensure that transaction levels and revenue assumptions that have been incorporated in profitability models can be achieved. The need to create a broad distribution network to support projections may present a challenge for mobile operators – distribution scale is important, but finding a distribution partner can be challenging if the customers do not yet exist. Likewise, customers will not use mobile money unless they can easily access the service through an appropriate distribution network. With this challenge in mind, it is important for mobile operators to select a distribution partner that is committed to driving consumer adoption and building the customer base hand-in-hand with the mobile operator. One of the other challenges with scaling distribution is that it is time consuming and costly to train agents to comply with anti-money laundering regulation. This can slow the growth of agent distribution networks.

Many different approaches have been taken by mobile operators towards designing agent distribution networks – even in the same country. For example, in the Ivory Coast, MTN predominantly uses its own shops and network of indirect distribution channels without using the banking network. On the other hand, Orange Money uses its own point of sales as well as BNP Paribas outlets for distribution. It is also important to note that the design of an agent distribution network in one market is not necessarily transferrable to others. For example, the approach used by MTN in the Ivory Coast may not be as successful in other African markets because the incentive for merchants to promote mobile money relative to other mobile products in other countries may be too low.

Safaricom has grown its agent distribution network for M-PESA from 2000 to over 9000 outlets within a year. Its network is made up of agents such as supermarkets, post offices, banks, and airtime resellers but has also extended services further by building a partnership network with PesaPoint ATM's in over 45 towns to offer self service cash-out services.

It is worth building into planning phases the concept that not all outlets need to offer the same functionality; e.g. some can simply be registration points. Wizzit in South Africa has used an innovative approach to building scale by employing around 800 unemployed people, referred to as “Wizzkids”, to sign up new customers.

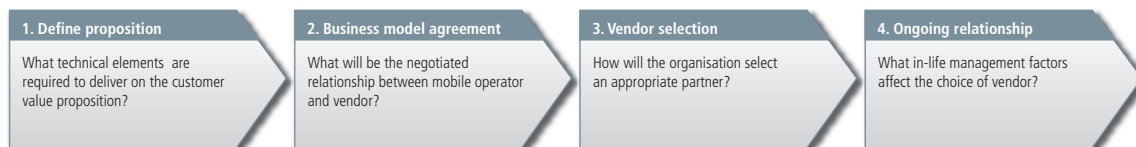
#### GSMA provides:

- A case study detailing the approaches used for customer registration and liquidity management in Zambia – currently available
- The GSMA will provide analysis of approaches to liquidity management in the future

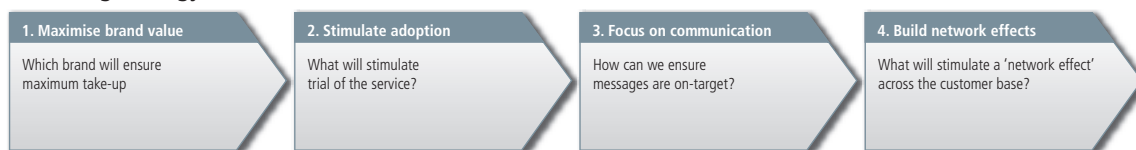




### Technology (solutions providers)



### Marketing strategy



### Technology Partners

Depending on which business model a mobile operator pursues (i.e. whether the mobile operator acts as a bearer, implements a mobile banking platform or even becomes a bank itself), they will need to make a number of technology decisions. Once the business model has been selected, some degree of integration will be required between the bank and the mobile operator. At one end of the spectrum, the mobile operator acts as the bearer, hosting the service via the USSD2 gateway or IVR platform; this would require the network to develop the USSD2 menus or the IVR voice flows. At the other end, the mobile operator may enter into a joint venture with the bank or obtain a license to be a bank. In this instance, the mobile operator owns the entire value chain. The latter model is significantly more resource and technology intensive and will take time to implement. This level of involvement would require banking hosts, switches, customer management systems, bearer channel development, audit trails, reporting, etc. Mobile wallet, or 'mWallet', is an industry term used to describe this technology.

Technology vendors typically play a pivotal role of integrating the bank and the mobile operators, as well as technically delivering the application to the consumer. The number of technology vendors has increased significantly over the last five years – which in some instances has helped to bring the cost of technology down and provide greater choice of solutions to the market. Safaricom built their own platform to launch M-PESA, which took significant time and investment. However, given the number of

vendors that exist within the space today, such in-house builds are rarely required. Where a partnership is required with a mobile money vendor, then careful selection must be made to ensure that:

- The ability of the technology provider to effectively deliver on the value proposition
- The technology must deliver not only the functionality but also convey the appropriate customer experience
- The technology fits alongside customer needs, literacy levels and behaviors
- The vendor offers appropriate ease of implementation, licensing, and product support in order to manage the upfront technology cost and maintenance of the system

Three key questions that a mobile operator should ask when selecting a vendor are:

- How closely can the vendor's solution deliver the value proposition? What are the key aspects of the value proposition which cannot be compromised, and can the technology deliver them?
- How much customisation would be required? (this could significantly impact timescales to launch)
- How much control does the mobile operator want to retain over the infrastructure – is either a hosted model or a licensed model preferable?

#### GSMA provides:

- GSMA Mobile Banking Vendor Analysis – delivered by the Mobile Money Transfer programme (currently available)

### Organisational Structure

Comittment from the right internal stakeholders is essential for mobile money to be successful. Internal support will be important when scaling up the business. If key executives do not fundamentally believe in the mobile money opportunity, gaining the resources to effectively scale a deployment will present a challenge and potentially jeopardise success.

Once support has been gained, the question of where mobile money should sit within the organisation should be addressed. The two fundamental options that exist are to either integrate mobile money into the existing organisational structure, or to create a completely new business unit. While this general decision is important, there are many additional questions mobile operators should also ask, some of which include:

- What business division will mobile money will report to (i.e. marketing, new business)?
- What skill-sets will be required during each phase of the deployment?
- Will dedicated staff be allocated, or will the team be comprised of shared and part-time resources?

A single mobile operator may even choose different models in different markets. MTN in West Africa operates mobile money as a distinct business unit, whilst in South Africa it has a joint venture with Standard Bank, which operates as a separate legal entity from both partner organisations.

#### GSMA provides:

- Case studies describing the organisational structure of mobile money deployments

### Marketing Strategy

The marketing approach used by mobile money deployments has a significant impact on adoption. Key questions that must be addressed within marketing include which brand, communication and outreach strategies are best suited to drive adoption.

The choice of which brand to promote can be difficult as it often will balance service legitimacy offered by the banks against ownership of the customer. Target segments may have a lower brand affinity with

international lead players as compared with the demographic relevance shown by local players whether it is a bank or a mobile operator.

Mobile operators also have to consider the brand risk associated with a wide-spread service failure. Some mobile operators have created sub-brands such as Smart Money (Smart Communications), G-Cash (Globe) and M-PESA (Safaricom) potentially as a way to manage this risk. While others using their own brands such as Orange and MTN potentially see the service as a brand enhancer and differentiator.

A relevant communications and customer education strategy are both vital for success. With much diversity in the target segment base including language differences and literacy levels, mobile operators must build a clear strategy around the key customer touch-points within the service. Many of the banking concepts may be alien to customers, making education a key driver towards consumer adoption.

The strategy Wizzit employs in South Africa, of using 'WizzKids' to promote the service, represents a useful case study on stimulating trial, communication and building network effects. These agents are paid commissions but are also offered an ongoing annuity, based on the level of transactions from their account holders. This incentivises the Wizzkids to not only register individuals to Wizzit services, but also to encourage and foster usage. These previously unemployed individuals are local people, who are trained to educate users and connect people within a local community.

#### GSMA provides:

- Marketing Best Practice Guide
- Working Group session on marketing (part of Q2 Working Group)

## What Processes do I Need?

When a mobile operator launches mobile money, new processes must be created to support the offering that were not previously needed for traditional voice and data businesses. The need to create new processes stems from the fact that mobile money is a financial service, and not a simple telecom value-added service offering like a ringtone or voicemail. Customer registration and agent liquidity management represent two new processes that mobile operators will need to establish. These are not the only new processes that will need to be created to support a mobile money offering, but they both merit careful analysis on account of their regulatory and cost implications.

### Registration

The regulatory environment of a market will impact how easy or difficult it will be for customers to register for mobile money. Mobile operators should assess two key elements of their market's regulatory environment that will impact the customer registration process. The first is whether customers will be allowed to register for mobile money at locations that are not bank branches. If non-bank agents are not permitted to register customers, this will limit the number of potential registration points and subsequently the potential speed of adoption. The second element is

whether proportionate KYC rules have been created. In markets where proportionate KYC exist, customers that will transact below predetermined thresholds will be permitted to register with less information than is required for other customers. For deployments targeting the base of pyramid, where customers may have difficulty accessing certain types of documentation (i.e. proof of address), these rules will make the registration process much more effective.

For mobile operators in markets where KYC requirements have not previously been relevant for voice and data businesses, creating this new process may result in a need to add resources for development and administration (i.e. time and resources to develop a process wherein agents take a photo of a customer on their mobile phone and then message it to a back office where the photo is verified against an official database).

Deployments in advanced markets have proven that enabling regulatory environments are a key element of registration and subsequent adoption – in both Kenya and the Philippines, nearly 50% of customers are able to register for the services in less than five minutes. To ensure mobile operators get the registration process right, a number of key questions should be asked, including:

- Will a new compliance department need to be created and will specialist resources for regulation need to be acquired?
- What type of experience will the proposed registration process deliver to customers, and to each type of agent in the network?
- How will agents be compensated for registering customers?
- How will training and compliance be handled in a manner that is reassuring to regulators and cost-effective?
- What types of documents will need to be distributed to agents and at what cost?
- How will customer problems be addressed? Will agents be compensated for supporting customers they register?
- How will prospective agents be screened? Will agents that register customers be held to the same standards as agents who perform cash-in/out?



## Summary

### Managing Liquidity for Cash and e-Cash

Mobile operators launching mobile money must also have a plan for managing agent liquidity. There are two elements of the agent liquidity challenge: cash in, and cash out. Successful deployments have created processes that enable them to monitor cash-in liquidity (i.e. ensuring agents have enough e-cash to be able to accept physical cash from a customer) by creating systems that enable them to monitor the balances of e-cash agents and outlets on an ongoing basis. When the e-cash value drops below a threshold, alerts are raised and administrators can take action. Developing an e-cash monitoring system represents a financial investment, and administering it represents a new process. Cash-out liquidity processes (i.e. for ensuring that agents can give customers physical cash in exchange for e-cash) must also be developed, but are less likely to have associated technology solutions. Operators should consider developing processes that monitor incidences where agents have experienced challenges around providing physical cash to customers. Gathering this information, and acting on it, will ultimately improve the agent distribution network. However, the development and administration of this new process will require dedicated resources.

An additional question mobile operators should consider is how liquidity requirements will change based on the mix of products offered and supported by agents (i.e. bill payments would mean additional cash coming into the system, whereas the effect of money transfer would vary by region, and time of month).

Mobile operators will need to invest time and effort in building out each component of the mobile money business model, and ensuring that this is done with the right level of rigor to achieve a successful deployment. The GSMA is keen to actively support each stage of this process, through sharing key learnings from existing deployments around the world and also working with the industry to develop future strategy and new approaches to further enhance the mobile money business model.

MMU deliverables listed as being currently available can be obtained by contacting [mmu@gsm.org](mailto:mmu@gsm.org). Other deliverables listed will be developed over the lifetime of the MMU initiative and made available via the website, blog and via the MMU Working Group.







## Designing Mobile Transfer Services: Lessons from M-PESA

Ignacio Mas, Bill & Melinda Gates Foundation and Olga Morawczynski, University of Edinburgh  
Forthcoming in *Innovations: Technology, Governance, Globalization* (Tagore, LCC and MIT Press), volume 4, number 2, Spring 2009  
Summary written by Paul Leishman, GSM Association

### Summary

M-PESA is the most widely adopted mobile money deployment in the world today. Since its launch in March 2007, the service has been adopted by over six million Kenyans, accounts for 4% of Safaricom revenue, and has been cited by the operator for helping to manage churn.

The following case study profiles the key service features that have facilitated the rapid adoption and frequent use of M-PESA in Kenya. While latent demand, poor alternatives for domestic money transfer and the dominant position of Safaricom in Kenya have all contributed to the deployment's success, other mobile operators can learn from the approaches used to design customer registration processes, pricing, and agent distribution networks. This case study has been contributed by Ignacio Mas, Deputy Director of the programme on Financial Services for the Poor at the Bill & Melinda Gates Foundation, and Olga Morawczynski, a doctoral candidate at the University of Edinburgh, who has spent fourteen months in Kenya examining the adoption, usage, and impact of M-PESA.

### Key Findings:

Ten key service features have facilitated the rapid adoption and frequent use of M-PESA:

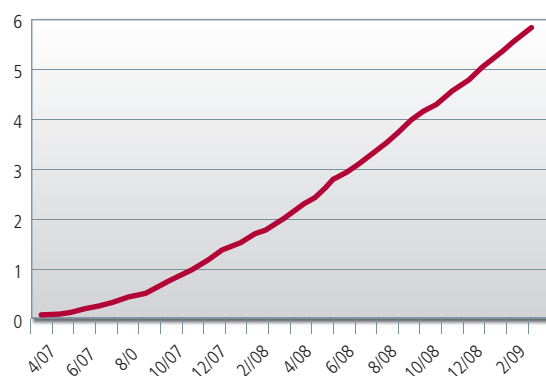
1. Strong branding and simple messaging for an easy-to-use service
2. Frequent and consistent monitoring of retail agents
3. Scalable agent distribution structure for liquidity management
4. Using an agent log as a tangible expression of the service
5. Easy and quick customer registration, with rewards for agents
6. Simple and transparent retail pricing
7. Free deposits, with no minimum balance requirements
8. An ability to send money to non-customers
9. Enabling ATM withdrawals
10. Maintaining a balanced growth of customers and retail agents

### Introduction: Accounting for the Success of M-PESA

M-PESA, the Kenyan mobile transactions service, has seen exceptional growth since its introduction in March of 2007. Six million customers have registered with the service (see Exhibit 1). This constitutes nearly half of the customer base of Safaricom, the mobile operator that launched M-PESA. This is a level of penetration in the mobile base which no mobile phone-based service has achieved beyond voice and text messaging. The figures for person to person (P2P) transfers are equally impressive: over USD 1.6 billion (120 billion Kenyan Shillings (KSh)) worth of such transfers have been transacted through the system. The M-PESA agent network has grown in conjunction with the customer base. The service can be accessed at nearly 9000 retail outlets nationwide. These outlets are located in both urban and rural areas.

M-PESA facilitates a variety of financial transactions through the mobile phone. To access M-PESA services, individuals must register at an authorised M-PESA retail agent outlet. They then get an individual

Growth of M-PESA customer base





electronic money account which is managed by Safaricom. Safaricom deposits the full value stored by its customers in M-PESA accounts at a pooled account in a regulated bank. Thus, the issuer of M-PESA accounts is Safaricom, but the value in the accounts is entirely backed by highly liquid deposits at a commercial bank. Users can use their mobile phones to check their account balance, pay bills, purchase mobile phone credit, and transfer money balances to other users. They can also deposit cash into and withdraw cash from their M-PESA account by visiting an authorised M-PESA agent.

M-PESA is not the only mobile transaction service to be launched in Africa. However, it is the most successful. For example, South Africa's Wizzit has managed to attract 250,000 customers in over four years of operation. Neighboring Tanzania also launched its own version of M-PESA in April of 2008, but it has only recently crossed the 100,000 customer mark. So why is it that this service has grown so rapidly within the Kenyan context?

A latent demand for money transfer services has encouraged such growth. This demand is driven by rural-to-urban migration flows in Kenya. Because of the uneven structure of the economy, it is common for a member of the rural household to seek employment in the city. In most cases, it is the male household head who migrates. The wives and children usually remain in the rural area. Most urban migrants retain a strong attachment to their rural homes whilst residing in the city. This is exemplified most powerfully by the wish people have to retire and be buried on their ancestral

land. Several strategies are taken to maintain such relations. This includes regular home visits. It also includes frequent money transfers.

Poor alternatives for domestic money transfers, and in particular the absence of technology-enabled or retail-based alternatives with a broad network of service points also encourages growth. The majority of low-income Kenyans use informal methods to send money home. Some would give money to friends and family members travelling back to the rural area. Although this method is the cheapest, it may also be the riskiest. Some, or all, of the money may be lost along the way. Money is also traditionally transferred through bus and matatu (shared taxi) companies. These companies are not licensed to transfer money, with the consequent risk of money not arriving to its final destination. PostaPay, a money transfer service offered by the post office, is another popular option. Although PostaPay has presence in rural areas, many complain that the service is inefficient and frequent cash shortages are reported. There was thus a significant gap in the domestic remittance market when M-PESA was introduced, and it had a significant role in filling this gap.

The market dominance of Safaricom, the mobile operator that introduced M-PESA, also has a significant role in the current success of M-PESA. The company has a market share of 77% in voice telephony, with a customer base of 13.3 million Kenyans. It has a strong brand presence, playing on nationalistic sentiments in its marketing campaigns. The company has been involved with people's associations of a modern Kenya, and has made efforts to negatively portray nepotism, inefficiency and corruption.

Due to Safaricom's size, not only can the new mobile money service be offered to a larger potential customer base, but Safaricom also has a larger pre-existing network of airtime resellers which could be converted to cash in/out points. Moreover, Safaricom is more likely to be interested in customer retention schemes, which makes it easier to justify the business case for the mobile money service.

Beyond these environmental factors, key service design features also facilitate rapid adoption and frequent usage of M-PESA. Below we describe ten salient features.



## Good Service Design Features of M-PESA's Money Transfer Service

### Strong Branding and Simple Messaging for an Easy-to-Use Service

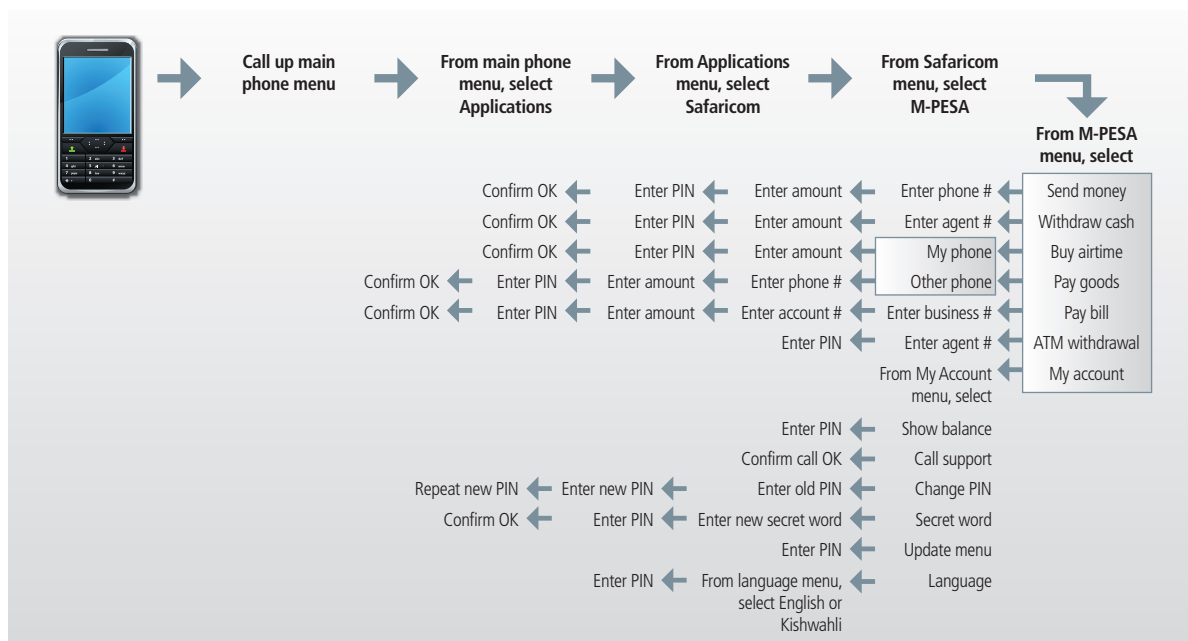
M-PESA has benefited directly from strong binding of the M-PESA product brand to Safaricom's strong corporate brand. Many of the M-PESA retail agents are required to maintain strong operator branding, sometimes painting the entire store Safaricom green. This makes it much easier for the customers to locate the service. The agents are asked to become exclusive to Safaricom (not selling any products of other mobile operators), which gives the mobile operator greater control over the service provided. This is not required of airtime resellers who do not become M-PESA agents.

Sending and receiving money with a mobile phone is not a very intuitive idea for many people. It is important therefore that the messaging around how the service works and its benefits to users be very simple and clear. From its inception, Safaricom has been communicated to the public on the basis of a simple service proposition – "send money home". This basic remittance product has become the must-have or "killer" application that continues to drive service take-up. M-PESA's marketing campaigns have

worked well. Most Kenyans, when asked, know that M-PESA can be used for money transfers.

The simplicity of the messaging around the usefulness of the service was matched by the simplicity in the usability of the service. The M-PESA user interface is driven by an application that runs from the user's mobile phone. This has several advantages. The service can be launched right from the phone's menu, and hence it is easy for users to find. The menu loads up quickly because it is resident on the phone itself, and does not need to be downloaded from the network each time it is called. The menu prompts the user for all the necessary information, one piece at a time, based on the transaction type requested by the user. Once all the information is gathered, it is sent for processing through the air interface in a single text message. This reduces messaging costs, as well as the risk of the transaction request being interrupted half way through. A final advantage is that the application can use the security keys in the user's SIM card to encrypt messages end-to-end. This begins from the user's handset and extends to Safaricom's authorising entity. Exhibit 2 shows schematically the structure of the M-PESA user menu.

### M-PESA phone menu structure used to initiate customer transactions



**Notes:** The pay goods item on the menu is at this point not being used. For cash withdrawals, retail agents and ATM networks have a special agent number which users can find posted at those locations. There is no menu item for depositing cash, as that is an agent-initiated transaction (the agent must send electronic value to the customer in return for receiving the customer's cash). The update menu item allows users to refresh their M-PESA phone application so that they can take advantage of the latest features.



### **Frequent and Consistent Monitoring of Retail Agents**

Safaricom's power with the individual agents extends well beyond branding and signage. Safaricom has maintained a very tight control over the M-PESA customer experience, even the portion delivered by the distributed base of retail agents. This helped convey trust on the platform and the agents, and created a consistently positive view of the service among customers. Safaricom manages the agent training programmes itself (though they are executed by an outsourced company), rather than relying on agent aggregators or superagents to cascade these programmes through participating retail shops.

Safaricom territory managers monitor retail agents on a monthly basis with on-site visits. Each agent is rated on a variety of criteria, including visibility of branding, agent number and tariff poster; availability of cash and M-PESA electronic value to meet customer transactions, as well as replacement SIM cards for new customers; and the quality of record-keeping and processes followed (see sheets below). In order to keep it simple, retail agents are scored on each item either zero (deficient) or one (acceptable). No punitive measures are taken on the basis of these sheets; rather, the intent is trigger appropriate conversations with the agent when something is not working as well as might be desired, and to motivate the agents to make improvements.

### **Scalable Agent Distribution Structure for Liquidity Management**

Probably the single most important aspect that Safaricom needs to monitor is the availability of working capital by retail agents. This means having sufficient cash in the till to meet customer requests for cash withdrawals. It also means having sufficient value in the agent's M-PESA account to meet customer requests for cash deposits. If customers are unable to transact due to lack of agent liquidity, the service will be less useful. This could further lead to a deterioration of trust in the entire system. If customers are denied access to their stored value, they cannot validate whether it is due to a specific agent's cash constraint or a more fundamental breakdown in the system.

Safaricom relies on superagents to facilitate liquidity management. Most agents are Safaricom's own airtime resellers, but others include Group 4

Securicor, the branches of Equity Bank, and some larger supermarket chains. Retail agents are attached to, and managed by, some 300 superagents. In the first instance, superagents buy and sell M-PESA electronic value from their retail agents, thus giving the retail agents the means to rebalance their relative positions in M-PESA electronic value and cash, on a day-to-day basis. Most often, this is done through the banking system. Superagents set up accounts in banks that have presence near their retail agents. Retail agents typically go daily to the nearest bank branch to either deposit or withdraw cash from their account. Transfers of money between the bank accounts of retail agent and superagent are then offset by opposite transfers of M-PESA electronic value. In other cases, the superagent will physically pick up or deliver cash from retail agent locations, or will ask the retail agent to go to a nearby office of the superagent to do so. In this case, any cash exchanged between master and retail agents is directly offset by an opposite transfer of M-PESA electronic value.

At an aggregate level, superagents help to balance out the net cash requirements of the various agents under their management. They in effect provide ways for moving money from retail agents in areas with net cash in (which experience more deposits than withdrawals) to retail agents in areas with net cash out. Safaricom originally required each superagent to operate in at least two provinces to increase the likelihood that the net cash requirement would balance out at the superagent level.

To the extent that a group of retail agents have a net cash in or cash out position, the superagent buys and sells M-PESA electronic value for cash from Safaricom itself. As an M-PESA issuer, Safaricom did not want to have to manage individual purchases and sales of M-PESA value with all retail agents, so instead it does so through a limited set of superagents who in turn 'wholesale' M-PESA electronic value to individual agents. It reportedly takes as much as three days for superagents to be able to retrieve the value of M-PESA balances they wish to sell back to Safaricom. This long delay is a function of the relatively unsophisticated systems in place with Safaricom's settlement bank, the Commercial Bank of Africa, and partly by normal inter-bank settlement arrangements in Kenya. In return for these liquidity management services,

superagents typically get around 30% of the total agent commissions paid by Safaricom, with the retail agents getting the remaining 70%.

Each superagent is further responsible for the payout of M-PESA commissions to retail agents. In order to help superagents manage agent liquidity and commissions, Safaricom provides superagents with access to a website where they can access information on all the transactions done by their agents. There are tools in the system that allow superagents to move e-money liquidity around their own retail stores.

### A Tangible Expression of the Service: The Agent Log

Each transaction made using M-PESA is confirmed via an SMS from Safaricom to both transacting parties. The confirmation SMS constitutes an electronic receipt which can be used in dispute resolution. Two examples of SMS receipts are given in the box below. The receipt confirming the money transfer details the name and number of the recipient, and the amount transferred. This allows the sender to confirm that money was sent to the right person – a not infrequent source of error. In addition, the receipt shows a unique transaction number and the current balance on the customer’s M-PESA account.

#### Confirmation SMS for deposit

G57GG043  
[receipt number]  
Confirmed on 20-4-09 at 4:50pm  
[transaction date]  
Give kshs.1555cash to  
Olga Morawczynski  
[name of account holder]  
Kakamenga [place of withdrawal]  
new M-pesa balance is ksh.1555  
[M-PESA account balance]  
sender M-pesa  
message centre  
+254722 5000000  
[number of customer]

#### Confirmation SMS for money transfer

G57GV140  
[receipt number]  
Confirmed kshs.1500 [amount sent]  
send to  
Ignacio Mas [name of recipient]  
254715 00000 [number of recipient]  
on 20-4-09 at 4:56pm  
[date and time of transaction]  
new M-pesa balance is 20  
[balance in M-PESA balance]  
sender M-pesa  
message centre  
+254722 5000000  
[number of customer]

Most of the M-PESA users we talked to kept the SMS receipts on their phones, even months after conducting the transaction. Some explained that this helped them to track their finances. Urban men, in particular, would check the receipt to see when they had last remitted money back home. Others kept it in case “issues” arose with their relatives. They had evidence that the transfer was made.

While the SMS receipt is the official confirmation of transaction finality, it is an elusive proof of transaction in the minds of many customers. This is especially the case with cash transactions at retail agents, where a third party is in some way mediating transactions between them and Safaricom. Safaricom takes the extra step of requesting agents to record all transactions they undertake on a paper-based agent log book. This log book is branded Safaricom and has the same format for all retail agents.



In fact, the consistency of the customer experience across all M-PESA retail agents and the degree of control by Safaricom over them is epitomised by the agent log. For each transaction, the agent writes in a row on the log the following information: the agent’s M-PESA balance, date, agent ID, transaction ID, transaction type (customer deposit or withdrawal, agent cash rebalancing), value, customer phone number, customer name, and the customer national ID number. The bulk of this information is copied from the agent’s confirmation SMS. Customers are then asked to sign for each transaction on the log, which might help discourage fraud and also gives agents the possibility to undertake first-line customer care for customers querying previous transactions.

Many customers draw comfort on seeing their electronic transaction recorded on paper as well. The log is vitally important in building rapport with the agents. Many Kenyans are reluctant to hand over their cash. Some tell stories of losing money in pyramid schemes or fear that “fake” M-PESA agents could be operating.

Each entry in the log is written into three triplicate copies. The top copy is kept by the retail agent for his own records, a second one is passed on to the superagent, and the third one is passed on to Safaricom. It must be remembered that all the information contained on the agent log (except for the customer signature) is captured electronically by Safaricom at the time of transaction origination and made available to the superagents via their web management system. Hence, it is unlikely that they make any direct use of their copies of the agent log.

**Customer Registration: Easy and Quick for Customers, Rewarding for Agents**

Safaricom designed a very simple and quick process for customer registration, which customers can do at any retail agent location. It is free for customers to register, and the agent does most of the work during this process. First, the agent will hand a paper-based

registration form, where the customer enters his name, identity number (from passport or national ID), date of birth, occupation, and Safaricom phone number. The agent then checks ID and inputs the customer’s information from the registration form into their phone. The agent will replace the customer’s SIM card if it is an old one that is not preloaded with the M-PESA application. The customer’s phone number is not changed even if a SIM card swap is required. After this, both the customer and agent receive an SMS confirming the transaction. The SMS provides customers with a four digit start key, which they use to activate their account. After the start key is entered, customers input their secret PIN and ID number. This completes the registration process. Besides leading customers through this process, retail agents also provide customers with information on the various usages of the application as well as transaction costs. Such early agent support is particularly important in rural areas, where a significant sector of the potential user base is illiterate or unfamiliar with the functioning of their mobile phone.



Agents are incentivised for registering customers. Initially, Safaricom offered an upfront fee of KSh 80 (around US\$1.30 at the time of launch of the service) per customer registered. This helped enroll the cash in/out agents as selling agents by giving them possibility of a substantial early cash flow. It further allowed agents to become actively involved in the expansion of the customer base. This broke the ‘chicken and egg’ problem. Stores were interested in acting as agents because of the rapidly growing customer base. Kenyans began to sign up with M-PESA because the service was made both visible and accessible by the retail agents.

Such upfront commissions, however, were not without their problems. Some of the agents spent more time registering customers than they did providing M-PESA services. Some further did not properly complete the registration process. This left a burden on other agents to fix the problem. To avoid these problems, Safaricom changed the commission structure in two ways: it deferred half the registration commission to be payable only when the customer made the first deposit, and it limited agents to register customers only within a certain radius of their store.





### Simple and Transparent Retail Pricing

M-PESA pricing is transparent and predictable for users. All customer fees are subtracted from the customer's M-PESA account, and agents cannot charge any direct over-the-counter fees to customers. Thus, agents collect their commissions from Safaricom (through their superagents) rather than from customers. This reduces the potential for agent abuses. Customer fees are uniform nationally, and they are prominently posted in all agent locations.

There is, however, one situation which may lead to pricing confusion for customers. It is cheaper to send money to a registered user than a non-registered one, but the system does not tell the sender whether the user is registered when the transaction is made. Hence, the cost of the transaction can be higher than expected if the sender wrongly believed the recipient to be a registered customer. M-PESA chose to specify its fees in fixed currency terms (in KSh) rather than as percent of transaction. This makes it easier for customers to be aware of the cost of transactions. It also helps the customer to think of the transaction fee in terms of the absolute value of undertaking the transaction (e.g. sending money to grandmother), and to compare the transaction cost against alternative, and usually costlier, money transfer arrangements (e.g. matatu fare plus travel time). Withdrawal charges are 'banded' (i.e. larger transactions incur a larger cost) so as to not overly discourage smaller transactions.

It is also noteworthy that M-PESA has maintained the same pricing for transactions in the first two years,

despite the significant inflation experienced over the period. This has helped establish customer familiarity with the service. But Safaricom has changed the pricing for two non-transaction related customer requests: balance inquiries (since the initial low price generated an overly burdensome volume of balance inquiry requests), and PIN changes (since it was found that customers were far more likely to remember their PINs if the fee to change them was higher). The volume of both types of requests was brought down substantially after this price changes. As noted earlier, SMS confirmations of transactions contain the available balance, which also helps cut down on the number of balance inquiries.

### Free Deposits, No Minimum Balance

While the minimum deposit amount is KSh100=US\$1.25, there is no minimum balance requirement. Customers can deposit money into their wallet for free, so there is no immediate barrier to adoption. M-PESA charges customers only for 'doing something' with their money, such as a transfer, withdrawal or prepaid airtime purchase. But agents are rewarded for taking deposits in, otherwise there would be a risk that they would only accept withdrawal business or locate in communities with net cash out requirements. In effect, Safaricom 'advances' fees to agents at time of customer deposits. For instance, on smaller-sized transactions, the customer pays a KSh25=US\$0.30 fee to Safaricom on cash out, but Safaricom 'splits' this between an agent commission of KSh10 payable at the time of deposit and an agent commission of KSh15 payable at the time of withdrawal.

Free deposits do raise the risk that customers may circumvent the P2P transfer charge by depositing money straight into the account of the recipient. In order to protect its P2P revenue stream, Safaricom needs to ensure that its agents are checking the IDs of their customers in order to ensure that customers deposit money strictly into their own accounts.

### Ability to Send Money to Non-Customers

Customers can send money to non-registered mobile phone users, on any phone network. In this case, non-registered recipients get a code by SMS which they can convert into cash on presentation at any M-PESA retail



agent. This capability enabled early adopters to use the system from the beginning, when there were few other customers on M-PESA. It also created an incentive for money sending customers to convince recipients to register for the service.

The pricing of this service, sending money to non-customers, is designed to maximise customer growth. As shown in Exhibit 4, sending customers pay a higher (roughly triple) P2P charge when sending to non-customers than they would if the money was sent to a customer. On the other hand, non-customers can cash out the amount received for free, whereas registered customers pay a cash-out fee of at least KSh25=US\$0.30. Why 'penalise' the customer rather than the non-customer? Safaricom understood that the sender has power over the receiver, so it chose to put the pressure on the sender to require the receiver to sign up to register with M-PESA. Furthermore, the non-customer gets a great 'first experience' with M-PESA when he gets money for free – prior to conversion into M-PESA. Safaricom's plan to instigate growth via the pricing structure worked well. Many of the rural cash recipients asserted that they were persuaded to sign up with M-PESA by their urban relatives, who were the senders.

#### Enabling ATM Withdrawals

A year after launch M-PESA partnered with PesaPoint, one of the largest ATM service provider in Kenya. The PesaPoint network includes over 110 ATMs. These are



scattered all over the country, having presence in all eight provinces. This partnership has given PesaPoint a new role—as an M-PESA superagent. Customers can retrieve money from any of the PesaPoint ATMs by selecting “ATM withdrawal” from their M-PESA menu. After this selection is made customers receive a one-time ATM authorisation code, which they use to make the withdrawal. No bank card is needed for this transaction.

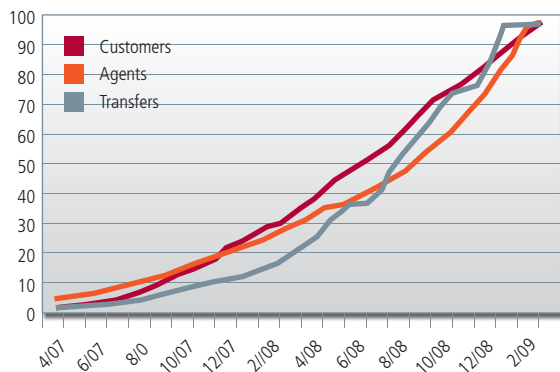
The linkage with an extensive PesaPoint ATM network has provided numerous benefits to the customers. Firstly, money is more accessible, at least in urban areas. Customers can make withdrawals at any time of the day or night. This is not the case with M-PESA agents, who usually terminate operations before sunset because of security risks. Secondly, these ATMs also help to alleviate liquidity constraints. Because of cash float constraints, agents cannot always meet requests for withdrawals. This is especially the case when these withdrawals are of greater value. Furthermore, the agent commission structure disincentivises agents from handling larger transactions. As a result, customers are forced to spread out these transactions over a few days. Rather than withdrawing a lump sum, they take out the money 'in bits'. This adds both cost and inconvenience to the customers. It further undermines customer trust in M-PESA as a savings mechanism for higher-balance, longer-term accumulation. Providing customers with a sort of liquidity mechanism of last resort through ATMs bolsters the credibility of the system.



### Maintaining a Balanced Growth of Customers and Retail Agents

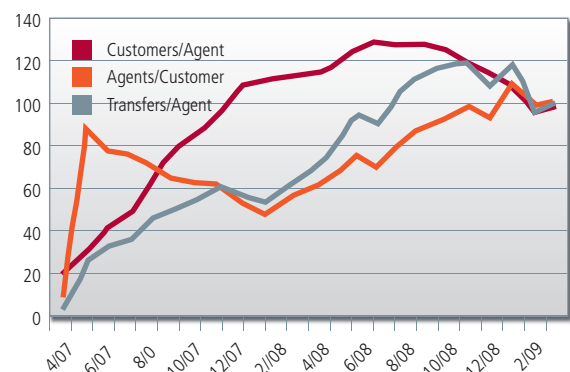
Safaricom has maintained an orderly growth in the number of agents, in relation to the growth in customers and the number of transactions flowing through the system. The left-hand panel of Exhibit 3 shows the growth pattern of each of these three variables, while the right-hand panel shows the evolution of the key ratios between these variables. The growth shows index numbers, such that the data in each month for a given variable or ratio is expressed relative to the corresponding value of that variable or ratio in the last month for which data is available (i.e. February 2009=100).

Monthly growth in the number of registered customers, number of authorised retail agents, and the value of P2P transfers (index numbers, February 2009 = 100)



These graphs show that the original impetus was on customer growth, which outstripped both agent growth and transaction value growth for the first six months after launch. But after that, the number of customers per retail agent has roughly remained constant. The number of agents has been managed to maintain steadily growing profitability for agents, as reflected by the generally increasing ratio of value of transfers per agent. Agent commissions are driven by the number of cash in and cash out transactions; under the assumption that a P2P transfer involves one cash-in and one cash-out, the ratio of transfers per agent is a direct measure of agent profitability trends.

While Safaricom considered the spread of the agent network as the key to customer growth, it was careful not to flood the market with agents whose profitability could not be maintained or strengthened with time. This has resulted in an incentivised, committed agent base.



Source: Safaricom

## Final Thoughts

The success of M-PESA cannot be boiled down to any specific factor. In fact, it is the consistency among all the different elements of the customer proposition and the attentive monitoring of all the elements of the system by Safaricom that best explain its success. Moreover, M-PESA's managers understood from the very beginning that the success of the system centered less on the optimal management of mobile network resources than on the marshalling of retail agents.<sup>2</sup> Customers needed to have a good experience at the points of cash in and cash out, where the bulk of transactions were undertaken. This meant establishing sufficient physical retail presence, reminding customers that they were transacting with Safaricom at all times, ensuring the retail agents had enough cash to meet customers' transaction requests, and above all motivating the agents to promote the service.



This focus and determination was built up after a long, rigorous service trialing process. During this process, Safaricom's basic beliefs about the usefulness of the service were shaken dramatically. Initially Safaricom had thought that the service would be centered on enabling microcredit repayments, but they reoriented it towards domestic remittance payments after monitoring transaction patterns during the pilot and assessing customer feedback. Such feedback not only helped test the design of the service it actually informed on its basic purpose. This crucial role played by early test customers perhaps set the tone for a listening process that has served Safaricom very well.

Despite its stunning early success, M-PESA still has many ways in which it can further develop. Safaricom

can build a more robust business ecosystem around M-PESA and promote its use more specifically to cater to periodic, structured transactions such as salary distributions and bill payments. Although Safaricom has started this process (signing up with a leading electric utility for bill payment and with several organisations to facilitate salary and social payments), the partnership base needs to grow if such an ecosystem is to develop. M-PESA can play a much bigger role as a savings vehicle for poor people (see box). Its pricing can also be adjusted to open up a much larger market of microtransactions, by reducing the minimum transaction size (currently KSh 100=US\$1.25) and by introducing lower-priced pricing tranches for smaller withdrawals and person-to-person transfers. At this time, such transactions are fairly expensive if under US\$10.

The competitive environment is now changing quite significantly. In February of 2009, mobile operator Zain introduced its mobile money product called Zap money. (See the picture on the right for the new colors of competition in Kenya, showing two co-located retail agents for M-PESA and Zap.) Zap is being advertised as a mobile wallet solution, rather than just a money transfer service. It provides numerous functionalities that M-PESA does not. For example, Zap customers can move money between their Zap wallets and bank accounts. They can also pay for their groceries at Nakumatt, one of the largest supermarket chains in Kenya. The most interesting differentiation is not in the functionality but in the fee structure. Unlike M-PESA, the cash in/out fees are recommended rather than set. This allows the customer to negotiate transaction fees with individual retail agents. If, and how, such flexibility will be valued by customers is yet to be seen.

Thus far, the growth rate of Zap has matched that of M-PESA. Over 200,000 customers have registered with the service since launch (M-PESA had achieved nearly 256,000 customers in the three months after it was introduced). Orange, the third mobile operator, is also planning to roll out a money transfer product. It remains to be seen whether the new entrants can position themselves in an increasingly saturated market. It will be particularly interesting to monitor how M-PESA will alter its service design features to suit this newly competitive environment.

<sup>2</sup> For a detailed account of the origins of M-PESA written by its creators, see Nick Hughes and Susie Lonie, "M-PESA: Mobile Money for the Unbanked," Special Edition for the GSMA World Congress 2009, Spring 2009.

### Acknowledgments

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Olga Morawczynski is a doctoral candidate at the University of Edinburgh. She spent fourteen months in Kenya examining the adoption, usage and impact of M-PESA.

### Could a Service Like M-PESA Be a Useful Vehicle for Savings?

While M-PESA was not originally conceived as a savings service, the system is sometimes used by people as a safe store of value. For unbanked customers, it may be the first experience with electronic forms of savings. Even for banked customers, it may play an important role in the savings portfolio of poor people – somewhere between the bank (used for larger, longer-term savings) and the home bank (used for day-to-day cash management).

M-PESA does have several shortcomings as a savings product. First, it does not pay interest. This has been particularly an issue in the last year when Kenya experienced a double-digit inflationary spike due to rising fuel and food prices. Second, it is not prudentially regulated by the Central Bank of Kenya. This has important implications on the way that the service is promoted. Although Safaricom does not

openly discourage M-PESA being used for savings, it certainly does not encourage this type of usage. Most customers had to find out on their own, or through others, that money could be stored with M-PESA. Third, the M-PESA mobile money account is a purely transactional account without any kind of commitment savings features.

The savings value proposition cannot be improved until Safaricom, and the regulators, acknowledge that M-PESA is being used as a savings product. The mobile operator is in a very strategic position. It has access to over six million Kenyans. A large segment of these are low-income and under-served by financial institutions in Kenya. This means that the company can play a significant role in mobilising community savings as it did in powering payments across the country. For this to occur, the company must focus on forming strategic partnerships with banks and other financial service providers.







## Case Study: Zambia

Paul Leishman and Seema Desai, GSM Association

With contribution from Jenny Hoffman, Risk Frontier Consulting

To understand the current landscape and potential for growth in mobile money in Zambia, Paul Leishman and Seema Desai visited Lusaka in April 2009. Given the well documented scale that has been achieved by M-PESA in nearby Kenya, we had a particular interest in gauging the potential for success in Zambia. By spending time with the Bank of Zambia as well as two market incumbents – Celpay and Mobile Transactions Zambia Limited, we gained a thorough understanding of the commercial and regulatory environment. In short, we found that the Zambian regulators are relatively open to new models and are eager to learn from other countries in pursuit of their goal of banking the unbanked at an affordable cost. There is a high degree of commercial activity in Zambia, though it is largely concentrated in the B2B and P2B space and notably lacks a mobile operator-led mobile money deployment. However, with the recent debut of Mobile Transactions and the Celpay decision to target the P2P space, mobile money at the base of the pyramid is set to become an area of focus.

This case study presents the marketing, distribution, technology, and business models of Celpay and Mobile Transactions – the two deployments most relevant to banking the unbanked. It also provides an overview of the regulatory and market conditions that will contribute to the speed of mobile money adoption in Zambia.

### Key Learnings

**Service Design:** Zambian mobile money offerings have been designed around a key challenge – low mobile penetration in rural areas where money transfer recipients typically live. Both Celpay and Mobile Transactions have designed offerings that enable rural recipients who lack mobile phones to receive cash, while also providing full services to users who do have mobile phones.

**Distribution:** Cash-in liquidity challenges in Zambia have been addressed by creating processes to monitor e-cash levels on a daily basis and by extending e-cash floats to selected new agents. Cash-out liquidity challenges have been left to agent judgement. When designing and growing an agent network, a unique category of agent outlets has been designed for select ‘strategic locations’. These agents are selected based on proximity to competitors; they have their exteriors painted with deployment branding, are staffed with employees for two weeks for training, and receive unique credit privileges.

**Regulatory:** Regulators in Zambia plan to introduce proportionate Know Your Customer regulation (KYC) by the end of 2009 and have a requirement to demonstrate that they have sought examples from other markets in the process of designing their rules.

**Technology:** Both third party led mobile money deployments in Zambia have selected USSD2 for their consumer offerings since it eliminates the need to perform a SIM swap during registration.

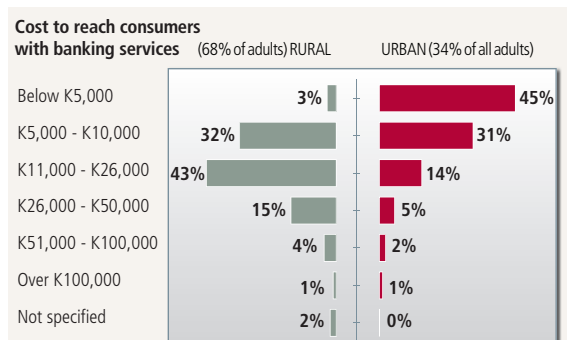
**Marketing:** Deployments have focused on creating clear and simple positioning that reflect their core offering. Celpay, a mobile payments company, uses ‘A more convenient way to pay’. Mobile Transactions, whose core offering is money transfer, uses ‘Save on Sending’.

## Zambian Financial Services Industry Landscape

### Access to Finance

#### Cost, access and trust – key barriers to banking in Zambia

Zambia currently has sixteen registered commercial banks to serve the country's total population of fourteen million, but just 15% of individuals are actually banked. The barriers to financial inclusion in Zambia are similar to those observed in other developing markets and include cost, access and trust. In an attempt to address the cost element, banks have begun offering 'zero maintenance fee accounts', but their effectiveness is questionable since customers must maintain very high account balances to benefit from the zero fee promise. For example, 'Zambia's First ZERO Maintenance Account' offered by Barclays requires customers to keep a 2,500,000 Kwacha balance (about US\$490), which clearly excludes those with low or cyclical sources of income and little by way of savings. With just 1.5 bank branches and 0.7 ATMs per 100,000 people<sup>2</sup>, just getting to a bank branch is a challenge – especially for the 66%<sup>3</sup> of Zambians who live in rural areas where branches and ATMs are particularly sparse. Even those who are banked have access difficulties, with just two thirds of currently banked customers being able to access a bank branch within 20 minutes. On top of cost and access, a lack of trust in banks presents an additional barrier to financial inclusion. "When people say they don't 'trust' banks, they often actually mean that they are 'intimidated' by banks" says Miyanda Mulambo, Managing Director of Celpay Zambia. A number of factors contribute to this intimidation in Zambia, including signage and physical layout of branches, a lack of emphasis on integration with the community, and few educational programmes on banking. Zambians also indicate that a lack of savings and irregular income are barriers to banking.



### Zambian Banks<sup>1</sup>

Access Bank  
African Banking Corporation  
Bank of China  
Barclays  
Cavmont Capital Bank  
Citibank  
Ecobank  
Finance Bank  
First Alliance Bank  
First National Bank  
Indo-Zambia Bank  
Intermarket Banking  
Investrust Bank  
Stanbic Bank  
Standard Chartered  
Zambia National Commercial Bank

### Money Transfer Services

While formal bank accounts are not common in Zambia, money transfer services are used often by comparison, with 20% of the population indicating that they have sent money in the last twelve months. Zambians send money for many of the same reasons Kenyans, Filipinos or South Africans do, but their methods and frequency are slightly different.

#### Money transfer offerings target the post office as a key location

With over 200 post offices and agents across the country<sup>4</sup>, Zambia's postal service, ZAMPOST, has broad reach and has become a common place for non-mobile based money transfer offerings to create outlets. The key money transfer players in Zambia are listed below – each have locations directly in or near Zambian post offices.

### Current Money Transfer Options

<b>Swift Cash</b>	A domestic money transfer service operated via booths in ZAMPOST.
<b>Cash4Africa</b>	A domestic and international money transfer service available at stand-alone outlets typically located near post offices.
<b>Western Union</b>	International money transfer services with wide accessibility in malls, post offices, and other high traffic locations.
<b>Moneygram</b>	International money transfer services with wide accessibility in malls, post offices, and other high traffic locations.

1 www.boz.zm

2 http://www.finmark.org.za/documents/Zambia\_supply\_pres.pdf

3 http://www.finmark.org.za/documents/Zambia\_supply\_pres.pdf



### Pricing (% of transaction value)<sup>5</sup>

	Domestic	
	Swift Cash	Cash4Africa
US\$1-100	12%	12%
US\$101-200	8%	8%
US\$201-300	7%	7%
US\$301-500	7%	7%
US\$500+	6%-7%	6%-7%

### Zambians move money in a similar way to Kenyans

A leading contributor to M-PESA's adoption was the large number of unbanked Kenyans sending money using informal channels that were slow, dangerous and expensive. A similar number of Zambians move money – 20% compared to 17%<sup>6</sup> of Kenyans just prior to the launch of M-PESA, and they seem to be reliant on some of the same dangerous and slow methods that Kenyans were in 2006.

### Zambia: Methods of Money Transfer

	Zambia 2005 <sup>7</sup>
Telegraphic transfer	2%
Postal money order	1%
Post office	1%
Swift transfer	1%
Cash delivered in person	26%
Cash through third party party (i.e. taxi)	26%
Courier service	1%
Funds money transfer agency	9%
Cheque	1%
Bank transfer by mobile phone	0%
Bank transfer at branch	19%



### Zambians use informal banking methods

With the exception of money transfer, few Zambians use financial services – and when they do, informal approaches are most often used. It is uncommon for Zambians to have checking accounts, insurance policies, credit cards or loans from banks or micro finance institutions. By comparison, use of savings and informal borrowing from friends or money lenders is high.

	Never Had It	Used to Have It	Have Now and Use	Have Now But Don't Use
<b>Bank Products</b>				
Checking account	94.8%	2.8%	2.2%	0.2%
Savings account	78.4%	8.2%	12.8%	0.6%
Credit card	99.2%	0.5%	0.3%	-
<b>Credit Products</b>				
Loan from bank	97%	2.6%	0.4%	-
Loan from MFI	96.5%	3%	0.5%	-
Loan from family/friend	87.4%	11%	1.5%	-
Loan from informal money lender	85.3%	12.3%	2.3%	0.1%
<b>Insurance</b>				
Funeral	98.8%	0.4%	0.7%	-
Agriculture	99.4%	0.3%	0.2%	-
Health	98.5%	0.6%	0.9%	-

8

### Potential government payments opportunity may arise as pension scheme is finalised

The Zambian Government is in the process of developing a social cash transfer scheme. Planned for release by 2012, the scheme would pay 10% of the population an average of K47,500 per household every two months<sup>9</sup>. Delivery of funds, specifically to the large base rural residents, could create a business opportunity for the mobile money provider with the right agent network and business model.

An analysis of the current state of mobile money in Zambia will provide insight into how the money transfer, savings, loan, credit and government payment business opportunities may be captured.

4 [http://www.zm.celpay.com/index.php?option=com\\_content&task=section&id=4&Itemid=36](http://www.zm.celpay.com/index.php?option=com_content&task=section&id=4&Itemid=36)  
 5 Celpay analysis  
 6 FSD Kenya 2006  
 7 The Landscape of remittances in Zambia – Centre for Financial Regulation and Inclusion

8 Finmark Trust  
 9 <http://www.finmark.org.za/documents/RemittancesZambia.pdf>



## Mobile Money in Zambia

### Mobile Money Deployments

Mobile money has only recently been seriously leveraged in Zambia to deliver social and economic benefits to base of the pyramid customers. In selecting go-to-market offerings, money transfer has been the main focus. This stems from the number of people moving money in Zambia, and the limited options they have to do so in a cost and time effective way.

Until recently, Celpay was the main mobile money player in Zambia and their business was characterised by a focus on:

■ **Person-to-Business (P2B)**

Enabling customers to pay television and water bills by visiting an agent who facilitates payment using their GSM handsets or POS device

■ **Business-to-Business (B2B)**

Enabling businesses to reduce their theft and cash risk by eliminating the need for physical cash in dealings between head office and mobile staff (i.e. delivery trucks)

As of 2009, there are five main existing or potential mobile money players in Zambia:

1. **Celpay**

Initially developed and launched by Celtel<sup>10</sup> in 2001, Celpay is now an independent mobile payments and banking solutions company. Until recently, they have focused primarily on their B2B and P2B offerings, but plan to promote their P2P money transfer service in June 2009. Celpay does not target base of the pyramid customers, but instead targets mid-market customers with more convenient bill payment options through their distribution network. The company also targets businesses that have distribution challenges, like mobile operators with airtime dealer networks or breweries with delivery vehicles.

Celpay's model is unique for a number of reasons. First, their marketing and organisational capabilities are currently oriented around providing solutions to businesses rather than end customers. Second, their nascent P2P model is primarily used by customers that do not actually have mobile phones, but rather rely on agents who have phones to perform money transfers or payments. This offering presents an opportunity to bank base of the pyramid customers who do not have mobile phones, but can access an agent that does.

Celpay is growing, and currently processes US\$25 million per month<sup>11</sup> in gross transactions, of which 85% are attributed to B2B and 15% to P2B. They are in the process of incorporating their business in Zimbabwe and Kenya, and already have a market presence in Tanzania and in Democratic Republic of Congo where their solution is used to distribute government payments to former soldiers who have turned in their guns.

Celpay is in the process of integrating their solution with commercial banks to address a major challenge: the difficulty customers face getting money into the system. Currently, a customer must go to an agent and hand over cash to pay their bill using Celpay on their mobile. Bank integration would enable customers to automatically transfer money from a bank account to Celpay to enable seamless bill payments or money transfer.

### Celpay: Examples of Offerings

**Person to business (P2B)**

Pay TV customers can pay their monthly bills at any of Celpay's 100 agents, over and above the 3 outlets operated by the Pay TV company. This service is valued by customers since they no longer have to spend time in long queues to pay their bills. On the other hand, the Pay TV company saves money as they do not need to operate a large payments channel.

**Business to business (B2B)**

Airtime dealers can purchase airtime directly on their handset. This makes the administration of airtime sales easier and more cost effective.

2. **Mobile Transactions Zambia Limited**

Mobile Transactions are targeting the unbanked segment with P2P and B2P money transfer and transaction account services. The company's pricing structure for money transfer reflects their commitment to targeting base of the pyramid customers, and their pricing strategy demonstrates that they plan to accommodate low value transfers with four price tiers for money transfers below US\$100. Mobile Transactions has priced their money transfer offering considerably lower than the alternatives for base of the pyramid customers. Transaction fees for money transfers below US\$100 are more than 100% less expensive than the next lowest priced alternative. Mobile Transactions' money transfer fees are paid entirely up front by the sender, whereas other models like M-PESA also charge recipients at the time of withdrawal (unless the recipient is not a customer).

10 In May 2005, Zain acquired Celtel International. There is no longer any connection between Celpay and Celtel or between Celpay and Zain.  
11 [http://www.zm.celpay.com/index.php?option=com\\_content&task=section&id=4&Itemid=36](http://www.zm.celpay.com/index.php?option=com_content&task=section&id=4&Itemid=36)

### Mobile Transactions: Money Transfer Fees<sup>12</sup>

Minimum	Maximum	Fee	%
US\$.96	US\$29	US\$2.01	14%
US\$29	US\$48	US\$2.87	7%
US\$48	US\$77	US\$3.83	6%
US\$77	US\$144	US\$5.74	5%
US\$144	US\$335	US\$10.05	4%
US\$335	US\$575	US\$17.22	4%

### Mobile Transactions: Examples of Offerings

<b>Transaction Account</b>
Enables customers to send money to other Mobile Transactions customers via their mobile.
<b>Payment Services</b>
Enables companies to make salary payments to the unbanked who currently receive cash. Payees do not need a mobile phone and can collect their payment at a Mobile Transactions agent with a reference number.
<b>Town Transfer</b>
Enables customers to send money from one Mobile Transactions agent to another. Customers do not need to own a phone, but if they do, the transaction can be tracked via SMS.

Still in the midst of deploying their offering, Mobile Transactions are intently focused on creating an agent network and have already signed up 58 agents since launching in March 2009, with plans to expand to 1,000 by December 2009. Agents will play a key role in the Mobile Transactions model. Like Celpay's P2P offering, customers without mobile phones will be able to send money or receive salary payments via their agent network using the agent's mobile phone. Brett Magrath, Managing Director for Mobile Transactions, comments on the process of sending and receiving a Town Transfer and the role that mobile plays: "when somebody receives a Town Transfer, they get an SMS with the amount and a reference code. The sender still must call the recipient and provide a secret 4-digit PIN code. The recipient then goes to an agent with these three pieces of information to get their cash. As soon as this is complete, the sender receives a separate SMS notifying them that the transfer has been collected. It's important to note that owning a mobile phone is optional. Someone without a mobile phone could send a Town Transfer from an agent, write down the reference number, amount, and PIN on a piece of paper and send that to the recipient. This process will enable us to reach the rural population, the majority of whom still do not have mobile phones."

### 3. Xapit

Launched by Zanaco (Zambia National Commercial Bank), Xapit enables customers to transfer money, draw cash, buy airtime and pay utility bills from their mobile phones. Zanaco has leveraged the bank's 48 branches across Zambia as an agent network.<sup>13</sup>

### 4. Standard Chartered

Standard Chartered offers additive mobile banking services to their customers. Customers can use their mobile to view account balances and previous transactions.

### 5. Zain

While Zain has launched 'Zap' in Kenya, Uganda and Malawi, they have not launched in Zambia. Zain has a 70%<sup>14</sup> market share in Zambia and a broad distribution network of airtime dealers. As marketed in other countries, Zap is positioned as offering 'much more than money transfer', notably through integration with customer bank accounts.

### Summary of Services Offered

	Zain	Celpay	Mobile Transactions	Standard Chartered	Xapit
Person to business		■			■
Business to business		■			
Person to person		■	■		■
Government to person		■			
Business to person		■	■		

<sup>12</sup> [http://www.mtzl.net/info/index.php?option=com\\_content&view=article&id=7](http://www.mtzl.net/info/index.php?option=com_content&view=article&id=7)

<sup>13</sup> <http://www.zanaco.co.zm/Retail%20Banking%20-%20Xapit.htm>

<sup>14</sup> Wireless Intelligence

## Regulatory Environment

### Zambia's regulatory environment: enabling, but with caution

The Bank of Zambia has created a relatively enabling regulatory environment<sup>15</sup>. This finding is based on an assessment of the regulator's openness to allowing new models to be tried, and the degree of certainty they provide to reduce the risk for deployments at start up and over time.

On certainty, the Bank of Zambia scores well. The regulator is open to dialogue and prefers to work closely with prospective mobile money deployments as they evolve their offering and business model prior to launch. The outcome of this collaborative process for successful applicants is a letter of recognition which provides explicit rights and obligations that enable deployment. Brett McGrath, Managing Director of Mobile Transactions commented that "The Bank of Zambia has handled our discussions and regulatory approval in a professional, open and supportive manner. We have established a strong relationship with the Bank of Zambia that has allowed us the entrepreneurial flexibility to launch our services within a controlled, but non restrictive manner".

By way of openness, the Bank of Zambia has given non-banks the opportunity to deliver payments solutions and is relatively open to new models. Mobile money deployments, whether third party or mobile operator-led, are classified as 'transaction processing organisations' rather than deposit taking institutions, which would necessitate a banking license. However, mobile money deployments must still be backed by a bank to ensure that funds are pooled and mirrored in a bank account. Thus, the total value processed by a mobile money deployment is held in a pooled account at a bank, and the individual customer balances within this total pooled balance are tracked by both the mobile operator and the bank.

### "We will provide openness and certainty – you provide clarity"

The Bank of Zambia requires mobile money deployments to provide clarity to both the regulator and the end consumer. In a mobile operator-led model, providing clarity to a regulator would mean distinguishing between 'mobile' and 'mobile money' businesses. In practice, the Bank of Zambia would like mobile operators to incorporate a new company in which the 'mobile money' business can be accounted

for and is completely distinct from their existing 'mobile' business. From the Bank of Zambia's perspective, delineating 'mobile' and 'mobile money' businesses is important since this measure ensures that the funds held on behalf of customers will be clearly distinct and visible in relation to the financials of the mobile operator parent company. Further, the financial performance of the 'mobile money' business can be judged on its own, rather than being confused with a much larger and different business. Ultimately, ring fencing of the activities helps the Bank of Zambia protect consumer interests.

The Bank of Zambia also seeks clarity when it comes to branding – this helps them to prevent consumer confusion. Mobile operator-led deployments can brand their mobile money offerings such that a relationship with the mobile operator parent is implied by the name, as long as the branding appropriately represents the ownership of the company. This approach can become complicated. Consider the brand confusion that arose from Celtel's decision to spin off Celpay. The naming convention was designed to create a connection between Celpay and the parent company, but presented a challenge when ownership changed. Ultimately, the issue was overcome when Celtel was bought and rebranded by Zain.

### Proportionate KYC regulation ready by end of 2009

The Bank of Zambia is currently developing proportionate KYC regulation and anticipates it being ready by the end of 2009. As they draft this regulation and determine what transaction and balance thresholds make sense, the Bank of Zambia is looking to their South African and Filipino counterpart to gather learnings. Mr. Willie Chishimba, Assistant Director of Payment Systems at the Bank of Zambia, notes that "it is actually an internal requirement that we document how other countries have approached areas that we are developing policies on, so it's very important for us to learn from others." Key items the Bank of Zambia are keen to understand as they develop proportionate KYC and other elements of mobile money regulation are the reporting requirements to regulators, risk management and security issues with different mobile money technology solutions, and finally, approaches to interoperability.

<sup>15</sup> Porteous: An enabling environment is one that allows and may even encourage, the introduction and development of new business models that meet a defined public policy objective. In this case, the objective espoused by many countries is that of increasing financial inclusion.

#### Desire for interoperability between deployments

The Bank of Zambia prefers, but has not mandated, that mobile money solutions be interoperable. Their position is that interoperability does not have a negative impact on competition. With this approach, a customer would be able to transact with anyone else, regardless of which network operator they are affiliated with. In practice, Celpay's solution is not fully interoperable because money cannot be transferred from a user to a non-user. However, from the customer perspective users can send money to an agent location, where a non-user can present positive identification and receive their transfer. This is neither technical nor commercial interoperability, but does ensure that the solution is not a completely closed loop.

The Bank of Zambia is encouraging interoperability through the development of a national switch. All payment transactions will be switched through the national switch for the purposes of safety and efficiency.

#### Acting on their vision: Bank of Zambia hosts conference for industry in Lusaka

The Bank's eagerness to find new models that will accelerate financial inclusion was demonstrated in April as they convened representatives of financial services institutions and mobile operators, as well as financial inclusion specialists at a conference on alternative payments in Lusaka. The purpose of the event was firstly to take a measurement of what is currently important to industry, and secondly to reiterate their desire to be presented with innovative models that will enable financial inclusion. The event was successful in the sense that it strengthened the working relationship between the Bank of Zambia and industry. The event also showcased the agenda of the Bank of Zambia. As with most regulators, they are concerned with efficiency and the stability of the financial systems. However, they also pay consideration to competition and recognise that the market must be competitive to encourage cost-effective service delivery and innovation.





## Distribution

Celpay and Mobile Transactions' approaches to selecting, incentivising and managing agent liquidity present a number of methods that deployments in any market should consider.

Agents are selected based on their location, cash handling ability and their ability to maintain a float

Celpay and Mobile Transactions have both built agent distribution networks based on criteria that align with their business strategies. Given that Celpay agents will predominantly accept cash from customers paying bills, the company looks for agents that are proficient in handling high volumes of cash and have an ability to meet e-cash float requirements. Mobile Transactions places an emphasis on selecting agents that are cash rich and can provide strong service, branding and deliver locations that would enable them to target and convert prospective base of the pyramid customers.

### Agent Network: Summary

	Celpay	Mobile Transactions
<b>Size</b>	100 agents	58 agents created since February 2009, with plans to grow to 1,000 by end of year
<b>Composition</b>	<ul style="list-style-type: none"> <li>- 40% post office locations</li> <li>- 55% supermarkets</li> <li>- 5% chemists</li> </ul> Plan to create additional 100 post office locations	<ul style="list-style-type: none"> <li>- Independent agents</li> <li>- Petrol filling stations</li> <li>- Family bus services</li> </ul>
<b>Criteria</b>	<ul style="list-style-type: none"> <li>- Minimum float</li> <li>- Rural presence</li> <li>- Staff comfortable handling high volumes of cash</li> </ul>	<ul style="list-style-type: none"> <li>- Cash rich</li> <li>- Strategic locations</li> </ul>

Mobile Transactions' executive team have been closely involved in agent selection – specifically for a unique programme they have created, called 'Champion Agents'. The team proactively selects these agents based on their proximity to other money transfer service outlets, markets or border posts. After signing an agreement, Mobile Transactions paints the shop with their branding and staffs 'sales generators' to draw in customers and originate money transfers. After two weeks, the sales generators move on to the next location, but leave behind a fully trained shop staff. Brad Magrath, Sales and Marketing Manager, comments that "our first Champion Agent in downtown Lusaka has been very successful. We identified the shop – a shack selling airtime next to the post office, and found two young guys playing checkers inside. We painted the shop, planted grass in front of it, and a week later the guys inside were

run off their feet from the increase in foot traffic. They now process about fifteen Town Transfers per day."

Strategic relationships are being used to grow the agent network; audit teams are used to manage quality

Zambian deployments have applied Safaricom's approach of developing several relationships with organisations that have many outlets, like Nakamatt supermarkets, to rapidly grow their agent network. Mobile Transactions have a contract with a major petrol chain to create agent outlets at 67 filling stations across the country. They also have a contract with a major bus line to use the ticket kiosks that they have in seven towns as agent outlets. To date, Celpay has built their agent network by developing relationships with independently owned outlets.

Agent audit processes have been developed by both Celpay and Mobile Transactions to ensure agents deliver good customer experience. Celpay has four team representatives (two in Lusaka and two in rural areas) responsible for managing their agent network. The team conducts regular audits to ensure agents are adhering to brand guidelines, have a functional POS terminal, and deliver a good customer experience. Similarly, Mobile Transactions has sales coordinators in each province who are responsible for recruiting and managing agents.

Deployments use different approaches to managing cash-in liquidity vs. cash-out liquidity challenges

Celpay and Mobile Transactions both face two distinct liquidity challenges. The first is cash-in liquidity, wherein the challenge is ensuring that each agent has enough e-cash on hand to accept a physical cash payment from a customer. The second is cash-out liquidity, wherein the challenge is ensuring that each agent maintains enough physical cash to be able to meet the needs of customers trying to withdraw money from the system. In addressing the agent liquidity challenges, both deployments have designed systems to address the cash-in liquidity challenge, and have relied on agent judgement to address the cash-out liquidity challenge.

### Agent Liquidity Challenges

	Cash-In	Cash-Out
<b>Challenge</b>	Agents must have enough e-cash in their account to issue to customers who want to deposit money	Agents must have enough physical cash to issue to customers who want to withdraw money
<b>Solution</b>	Agent selection	Agent judgement

**Cash-in liquidity solution: first, create a customised minimum e-cash threshold for each agent**

Celpay creates a customised minimum e-cash threshold for each agent on the basis of their geographic location and anticipated volume of business. In Lusaka, Celpay agents are typically advised to maintain an e-cash minimum of ten million Kwacha at any given time<sup>17</sup> (approximately US\$1,900). This would enable the agent to handle 27 customers coming to the store and paying their US\$70 satellite television bills each day. To ensure their agents will be financially sound enough to meet minimum e-cash requirements, Celpay examines the cash flow histories of an applicant in advance. Similarly, Mobile Transactions manages cash-in liquidity using minimum e-cash requirements, but the typical float level has been set at four million Kwacha (US\$780) for urban locations, and three million Kwacha for rural locations (US\$575).<sup>18</sup> This does not imply that Mobile Transactions agents will be less busy than Celpay ones – rather that they are likely to have a more balanced mix of cash-in and cash-out compared to Celpay’s cash-in structure that stems from their P2B focus.

**Cash-in liquidity solution: second, monitor agent e-cash levels regularly and take action**

Beyond creating an e-cash minimum and selecting businesses that can achieve it, both Celpay and Mobile Transactions have created systems for ongoing monitoring of agent e-cash balances.

Celpay has developed a web-based system that enables them to view the e-cash balance of each agent on a daily basis. Agents who fall below their established e-cash minimums will receive a phone call from the Celpay call centre notifying them to increase their e-cash balance. At this stage, it becomes the agent’s responsibility to convert physical cash into e-cash to meet customer needs. Mobile Transactions uses a similar approach to monitoring agent balances and enable agents to view their e-cash balance on their mobile phone. They have also created a team of District Sales Managers and empowered them to manage an e-cash float. Managers can instantly extend e-cash to agents in their territory but have full responsibility for collecting the cash. In this sense, District Sales Managers become accountable for managing the cash-in liquidity of agents in their territory. This measure is designed to ensure Mobile Transactions delivers a good customer experience through new agents who are still determining the amount of e-cash they will need to maintain.

<sup>17</sup> Less for rural areas

<sup>18</sup> Or at least 2 million Kwacha in rural areas



As agents become more skilled at assessing their e-cash needs, this system will be used less frequently. To ensure this liquidity management solution is not considered by regulators to be 'creating money', Mobile Transactions restricts the float that sales managers are able to advance and ensures the value is reconciled with funds held within their formal bank account.

**Using training to emphasise the importance of cash-out liquidity to agents**

Whereas systems have been designed to manage cash-in liquidity, both deployments in Zambia rely on agent judgement to manage cash-out liquidity. Experience in other countries like Kenya suggests that a learning curve exists before agents truly understand their cash-out requirements, which typically vary by day and time of month, regardless of whether an agent is located in an urban or rural area. To convey just how important it is that an agent be able to offer customers cash when requested, Mobile Transactions sends new agents on a 'scavenger hunt' as part of their training programme. They are given enough cash to complete a circuit of the agent network using public transport but must rely on moving money from agent to agent in order to complete the journey. If they reach an agent that cannot provide adequate cash in or out, they are stuck at that that location until the situation is resolved. This experiential exercise helps agents understand the importance of liquidity management on the customer experience.

Agent Incentives – foot traffic first, commission from processed volume second

Increased foot traffic and commissions from transactions are the two elements of the value proposition which Celpay and Mobile Transactions offer to agents. Anecdotal interviews with agents confirm that the foot traffic from customers coming into their stores is the biggest benefit of being an agent since it provides an ability to cross sell – in the case of Celpay, to very high value customers. This perspective was confirmed by two agents that were among Celpay’s top performers. Both were chemists and typically processed 60,000,000 (US\$12,000) and 100,000,000 (US\$20,000) Kwacha each in bill payments per month. This implies that these agents would each process bill payments for six to ten customers per day and earn between US\$120 and US\$200 per month in commissions<sup>19</sup>, which is likely to be much less than revenue they can earn cross-selling. Since P2B models like Celpay charge businesses low transaction fees for processing bill payments, there is little margin to pass on to their agents. As a result, the need to select agents that value foot traffic and cross selling over commissions is critical.

Agents also value the opportunity to differentiate their store from competitors – in Zambia, there are often streets lined with chemists and hardware stores. Having the distinction of being a Celpay agent sets them apart from their competitors.

Agents are set to earn registration incentives over the lifetime of the customer – not just upon registration

When Celpay launches their P2P offering, they plan to give agents an opportunity to share in the lifetime value of customers they register. Each time a customer that an agent has registered purchases airtime using Celpay, the agent will receive a commission. Celpay agents will now receive a commission both on registration and on an element of the ongoing transaction activity.

Mobile Transactions has designed their agent incentive system to be commensurate with risk. Agents that originate Town Transfers receive 25% of the fee, while those who pay out cash to a recipient receive 15%. This imbalance has been designed to compensate for the increased cash-risk that agents incur for taking in more cash. In addition, 5% is allocated to incentivise sales generators who register new customers.

Mobile money providers bear the cost of equipping agents; agent costs are cash risk and liquidity

Celpay and Mobile Transactions make training, branding and technology investments in their agents. Both companies provide their agents with mobile devices, though Celpay agents typically use a POS device (US\$700) whereas Mobile Transactions agents are equipped with WAP enabled handsets (US\$250). Both deployments pay for point-of-sale signage. Training costs have the potential to increase rapidly if there is a high degree of agent churn.

Costs Associated with Each Agent

	Paid By	
	Company	Agent
Training	■	
Device	■	
Point of sale pricing sheet	■	
Point of sale branding	■	
Working capital		■

Thus, assuming an applicant can meet basic qualification criteria, it is possible to become an agent for Celpay or Mobile Transactions with virtually no cost of entry. However, agents must consider the impact that mobile money will have on their cash risk and working capital requirements once they are operational. Celpay’s P2B model would increase cash levels since it adds a new stream of customers handing over large sums of cash. This creates a security risk for prospective agents. It also increases the working capital requirements since the agent is responsible for making large or regular deposits to maintain e-cash levels. The impact on cash levels in P2P systems like Mobile Transactions is likely to vary by day and by time of month (i.e. busy end of month salary payments for cash-in and cash-out during the rest of the month). As serious as the cash risk and liquidity requirements are, it is worth noting that after seven years Celpay has never had an agent drop out of their system.

<sup>19</sup> Approximate value. Exact commission value not disclosed.

## Technology

### Technology Models of Market Players

USSD2 emerges as technology of choice for third party led money transfer offerings in Zambia

Both Celpay and Mobile Transactions will ultimately use USSD2 to deliver money transfer offerings to customers, though each deployment will take a unique path on their way to deploying this technology. Since 2001, Celpay's model has been based on SIM-tool kit (STK), a client side technology, but they have decided to introduce USSD2 to support their efforts to penetrate the P2P market. Mobile Transactions ultimately plans to enable customers to send money on their own mobile phones using USSD2, but will initially launch by providing WAP enabled handsets to agents and tasking them with performing money transfers on behalf of customers. The technology choices made by each deployment have had implications on their security, customer experience, and time to market.

#### Server vs. Client Side Technologies

Server-side technologies are built on a server, away from the consumer's SIM or mobile handset. Client-side technologies are embedded on a SIM or mobile handset.	Examples of Technologies	
	Client Side	Server Side
	SIM-tool kit	SMS
	J2ME	IVR
		USSD2
		WAP

### Implications of Technology Model

#### Security

Both STK and USSD2 offer a high level of security. STK is the most secure method of mobile banking, though both USSD2 and STK deliver extremely high levels of security. STK allows banking application providers to load their own encryption keys onto the SIM card with their own developed application. Thus, the consumer's data can be stored on the SIM card and the consumer can be authenticated on the handset prior to having to carry any data across the mobile network. The data is also encrypted prior to leaving the handset and only decrypted using the banking application providers encryption keys. USSD2 is also very secure<sup>20</sup> – it opens a single session between the device and the USSD2 application at the deployment. Any transaction is completed within a session and is not stored for subsequent completion.

Given the importance of security, Celpay selected SIM-toolkit for their P2B offering. Mhonda Sibanda, Head

<sup>20</sup> Though not as secure as STK since it is not encrypted end to end.

of Technical Services for Celpay, describes the following four facets of security implicit in Celpay's model:

#### 1. Confidentiality

Information should be understood by intended users and nobody else. Celpay's model achieves this by encrypting data on the handset which can only be decrypted by the banking application provider. The model is also protected by standard GSM 03.48 encryption and a 5-digit PIN known only by users.

#### 2. Integrity

Messages must not be modified in transmission. Celpay's model achieves this via a one-way hashing algorithm used to format messages which cannot be reversed.

#### 3. Non repudiation

Users cannot ever deny sending an instruction. Celpay's model achieves this through access to an audit trail via the WIG, wherein instructions and messages are tied to a specific phone and a specific SIM.

#### 4. Availability

100% uptime should be the goal for the system. Celpay pursues this goal by ensuring that key components (i.e. Fundamo's banking platform) have parallel systems.

#### 5. Customer Experience

SIM toolkit is suitable for P2B offerings; USSD2 is preferred for consumer offerings

Technology selection also has a significant impact on the customer experience – at both the registration and use stages. Since Celpay's model uses SIM toolkit and they are not a mobile operator, a SIM swap is required for every customer that opens an account. Customers must mail their SIM to Celpay and wait four days for a new SIM that has the Celpay application on it. In practice, Celpay's decision to use STK has not seriously impacted their customer experience during actual use because their strategy has been to focus on P2B. With Celpay's business model, customers must physically hand over cash somehow to pay a bill – the easiest way to do this is by walking to an agent and using the agent's

### Mobile Transactions: Examples of Offerings

Model	Technology Selected	Rationale
P2P	USSD2	Eliminates need for SIM swap for third party led deployments
P2B	SIM toolkit	Safety as a selling feature to businesses
B2B	SIM toolkit	Safety as a selling feature to businesses



mobile for the transaction. Thus, not having the actual Celpay application on each customer's phone makes little difference to the customer experience of a P2B solution. Likewise, there are a limited number of users for Celpay's B2B business so the requirement to do a SIM swap has not held back adoption.

Celpay have decided to use USSD2 for their consumer money transfer offering. Miyanda Mulambo notes that "Celpay has made a decision to target the consumer space and realised that we need to have the ability to sign up customers more quickly and avoid time consuming SIM-swaps." With this decision, all existing third-party led consumer offerings in Zambia will be USSD2-based.

Mobile Transactions' perspective is that any new customer must be able to register within minutes. Technology plays a key role in achieving this. A sales generator takes a photo of the customer's identification documents on their mobile phone and uploads the image instantly via their WAP interface along with the details of the registration form. The customer will then immediately be able to transact on a feature rich WAP interface or via a basic USSD2 service depending on their phone's capabilities.

Mobile money services delivered to customers who do not have a mobile

Mobile Transactions equips agents with WAP enabled GSM handsets and enables customers to

access the system via USSD2. In practice, customers do not need to even own a mobile phone, and can instead use the agent's. This approach positions Mobile Transactions to compete in the base of the pyramid market.

#### Time to Market

An ability to interact effectively with third parties is key to bringing service to market

A mobile money provider's choice of technology can impact their time to market. In a market like Zambia where the current players are neither banks nor mobile operators, USSD based deployments must apply for a short code from a mobile operator (and often work through intermediaries), which can take time. SIM-toolkit based deployments need to negotiate with operators to gain access to back-end systems to enable SIM swaps. SIM toolkit based deployments in Zambia also face the challenge of getting the attention of SIM manufacturers when making mass purchases. For example, Celpay must compete with the likes of MTN when placing an order for SIMs (i.e. Celpay orders by the thousands, whereas MTN orders by the millions). Similarly, Mobile Transactions will purchase data for USSD2 or WAP messages, but compete with more mature offerings with greater scale. With the fast decreasing cost of mobile data and the small amounts of data that the Mobile Transactions service uses, this data cost is a very small portion of the cost of a transaction.



## Marketing

Since Celpay has primarily focused on its P2B offering, they have spent little time marketing to end consumers and spent more time working on high-value sales to businesses like Pay TV companies. Even customer traffic for Celpay's P2B offering has largely been created mostly by word of mouth as well through the customer service agents at partner businesses encouraging customers to try Celpay. However, with the recent launch of Mobile Transactions and the impending launch of Celpay's money transfer service, both players are preparing an increased focus on marketing.

**72 languages means messaging must be simple, targeted and relevant**

Given that Zambia has 72 unique languages, its messaging needs to be hyper local. Barclays Zambia accommodates the large number of languages by using local comedians to deliver messages and running marketing programmes in a variety of local dialects. Simple and relevant messaging is also important. Celpay's marketing materials clearly articulate what the service can be used to do. Further, Celpay's value proposition to consumers is 'a more

### Celpay advertising

The Solution!  
**celpay**

Did you know,  
you can now pay your bills  
using your mobile phone?

- Petrol
- School Fees
- Rent
- Pay T.V
- Water and electricity

Celpay is a mobile and internet banking  
and payment solutions Company  
offering corporate and retail solutions  
to banks, corporates and individuals.

[www.zm.celpay.com](http://www.zm.celpay.com)



convenient way to pay', which is communicated quite simply in the adjacent advertisement. The Mobile Transactions' slogan in areas that originate Town Transfers is "Save on Sending!!!". Messaging in their advertisements focus on cost savings, convenience and safety.

**Radio reaches the base of pyramid; print reaches the middle**

Radio is the channel most commonly used to target base of the pyramid customers in Zambia by Celpay and Mobile Transactions, while print is effective at reaching mid-market customers. With just 25 televisions per 1000 people in Zambia, marketing using television is not as nearly as effective as radio for the masses.

**POS signage is an area of opportunity in Zambia**

Since minimal emphasis has been placed on above the line marketing, there is little signage, even at many agent locations in Zambia. This is in stark contrast to the measures that Zain takes to 'brand everything' in Zambia. The operators have a pallet of vibrant colours from which to choose and will seemingly do anything to promote the brand, from painting merchant's stores to ensuring every airtime dealer's shack is a vibrant colour. Similarly, the green M-PESA branding is highly visible at the point of sale in Kenya and has helped drive brand awareness in the country. Mobile Transactions seeks to emulate this visibility at their champion agent locations, and will even paint their price list on the walls.

## Conclusion

Mobile money is gathering momentum in Zambia. This article has detailed how Celpay and Mobile Transactions have both deployed mobile money services to deliver a clear value proposition to their target consumers and importantly, are supported by an enabling regulator. However, these models are still evolving, and new entrants will undoubtedly enter the market. At this stage, a number of questions remain unanswered and will unravel over time as the market matures. Zambia is certainly “one to watch” in the mobile money space.

	Celpay	Mobile Transactions	Key Questions
<b>Market offering</b>	Focus on P2B and B2B, with plans to roll-out P2P services in Q2 2009.	Focus on P2P and B2P, initially using agent handsets, with plans to enable end-users to transact directly using their own handset.  Offer prices that are 100% below alternatives for money transfer.	Can entering a market with a P2B offering provide the cash flow and distribution network to enable deployments to target unbanked customers?  Are Mobile Transactions' prices for money transfer low enough to convert people who use informal (free) approaches? Conventional money transfer approaches?
<b>Target market</b>	Mid-market customers for P2B service, and mid-large sized businesses with large distribution networks.	Base of the pyramid (i.e. rural farmers) customers who are paid salaries in cash or send/receive money.	Are there elements of Celpay's business model which would prevent them from extending their model to target base of the pyramid customers?  Similarly, are there any elements of Mobile Transactions's model that would prevent them from targeting more affluent customers?
<b>Regulation</b>	The Zambian regulator has created an environment that enables some types of mobile money models. Their ideal deployment would be one that is fully interoperable and distinct from any other line of business. The Bank of Zambia is currently developing proportionate KYC to enable them to meet their financial inclusion goals.		Given the regulator's request for interoperability, what are the prospects for a mobile operator-led Zambian deployment?  Given the regulator's request for interoperability and the preference for the mobile operator to serve only as a bearer, what are the prospects for a mobile operator-led Zambian deployment?
<b>Distribution</b>	Created network of 100 agents, relying mostly on petrol stations, chemists, and post office booths. Agents mostly serve cash-in function of P2B model.  Manage cash-in liquidity by creating minimum e-cash balances based on agent location, and monitoring level from central call-centre.	Created network of 58 agents, relying mostly on bus depots and convenience stores. Agents manually perform money transfer services for clients using their own mobile phones.  Manage cash-in liquidity by creating minimum e-cash balances based on agent location, and empowering area sales managers to extent float to agents that have low e-cash values.	Will Mobile Transactions' approach of enabling area managers to manage a float for cash-in liquidity be successful? What type of risk does this introduce?  Both deployments have agents across the country. Should they focus on creating a dense amount of agent coverage in one area instead or along particular sending corridors?  What is the ratio of agent network managers to agent outlets? At what point does an agent network become large enough to merit a formal 'report card' for managers to use in evaluations?  What are the best ways of incentivising agents?
<b>Technology</b>	Agents use POS devices, plan to introduce USSD2 to target P2P market.	Uses WAP for agents, and USSD2 for customers.	Is USSD2 the best solution for third-party led deployments in any market?  What conditions have made USSD2 the technology of choice in Zambia?
<b>Marketing</b>	Reliant on partners generating demand for P2B offering (i.e. "you didn't have to line up today, you could have used Celpay").  Plan to start marketing P2P offering in June 2009.	Minimal above the line marketing, focusing instead on building and managing their agent network.	Both deployments focused first on creating a strong agent network before targeting customers. Is it possible (or even desirable) to aggressively grow the agent network and customer base in parallel at the beginning phase of a deployment?  What are the benefits and disadvantages of levying fees on the sender rather than the recipient.

## Statistics

### Country Profile

#### Population (12,000,000)

- % below the poverty line: 68%
- Proportion of population unbanked: 85%
- Population density: 16/sq-km. 38% of the population are concentrated in urban areas along the transport corridors; rural areas are sparsely populated mostly with subsistence farmers)

#### Mobile stats

- Market penetration: Q107- 16%; Q108- 23%; Q109- 33%
- Market share of operators: MTN- 21%; Zain- 74%; 5%
- Prepaid vs. postpaid split: 99.41% prepaid connections
- Percent of mobile users that are unbanked: 60% estimate

#### Domestic and international remittance volume

- Number of banks: 180
- Number of ATM branches: 84

#### Major industries

- Major industry: copper mining and processing
- Labour force by occupation:
  - Agriculture: 85%
  - Industry: 6%
  - Services: 9%

#### General information

- GDP per capita: US\$1,150
- Unemployment rate: 50%
- Currency: Zambian Kwacha
- Political history: Achieved independence in 1964 and operates as a democracy
- Neighbouring countries: DRC, Angola, Namibia, Malawi, Zimbabwe, Mozambique, Tanzania
- Official languages: An estimated 72 languages, including English, Nyanja, Bemba, Lunda, Tonga, Nkoya, Lozi, Kaonde, and 65 other indigenous languages











## Interoperability of Mobile Money Services

James Bellis and Lasse Nagel, Frontier Economics

Introduction written by Marina Solin, GSM Association

### Introduction

The goal of the MMU initiative is to reach 20 million unbanked consumers with mobile money services. Amongst the most effective tools to increase the reach of mobile money services on a large scale is interoperability. Over the course of the MMU initiative we will address various aspects of interoperability and how to promote it.

This paper addresses interoperability from a regulatory perspective. We observe that regulators are looking at interoperability and that in some cases interoperability between mobile money service providers is being mandated, i.e. in India and Ghana.

In summary, this article concludes that a regulator should take into account the competitive dynamics in a market before deciding whether interoperability should be mandated. Interoperability mandated in the wrong circumstances could reduce the incentive for mobile operators to offer mobile money services, thus stunting the opportunity to leverage mobile for achieving the governments' financial inclusion objectives. The disincentive effects of mandating interoperability are likely to be stronger whilst the mobile money services are in an early stage of development. As such, whilst authorities should ensure that a legal and regulatory framework is in place, enabling future regulatory intervention if necessary, they should consider carefully the potential impacts on investment and innovation of any intervention. There should be additional research into the relationship between interoperability and general market developments once mobile money services become more widespread.

Our recommendation based on this analysis from Frontier Economics is:

- Regulatory authorities should consider carefully the benefits and costs of mandating interoperability at an early stage of development
- Where interconnection may be mandated, regulatory authorities should consider the option of ensuring that interoperability is (technically) possible
- Once an enabling regulatory framework has been adopted or developed, authorities ought to monitor market developments on a regular basis to assess any need for future intervention
- Where legal frameworks do not currently allow for ex-post intervention, these provisions should be added, in case of anti-competitive conduct
- Once further mobile money systems have been launched, additional research should be conducted into the relationship between interoperability and general market developments of mobile money services
- Regulation should focus on ensuring that interoperability remains feasible at low cost (for example, through the promotion of common open standards), rather than being used to mandate interoperability immediately

In 2007, we prepared a paper on competition issues in the context of mobile money services and the scope for regulatory intervention.<sup>1</sup> At the time, we concluded that although ex-ante regulatory intervention was beneficial under certain circumstances, mandated interoperability could have an adverse impact on market dynamics. Focusing on the advance of mobile money services in developing countries, this paper evaluates whether these conclusions still hold.<sup>2</sup> It is structured as follows:

- First, we provide an overview of key concepts and terminologies in the context of m-transactions
- We then present the discussion and findings from our previous paper
- This is followed by consideration of whether our conclusions still hold, in the light of recent developments in the roll out of mobile money services

### Key Concepts and Terminology

When considering the merits of mandating interoperability, it is important to understand the form of interoperability under consideration. As mobile money services differ, so might solutions for providing interoperability, as well as the position in the value chain at which interoperability is required. In this section of the paper we therefore consider the main characteristics of mobile money systems and potential forms of interoperability.

#### What do we mean by mobile money services?

Mobile money services form part of the wider group of mobile transaction services<sup>3</sup>. Whereas mobile money services focus on the provision and accessibility of financial services, mobile transaction services will typically encompass ancillary service offerings (such as airtime purchase and transfers) as well.

Mobile money services might themselves differ along a number of dimensions. For example, these might include:

- The scope of services that are offered<sup>4</sup>
- Whether the system is linked to the wider financial system

- Who can send or receive transfers (all mobile/banking customers, customers abroad)
- Where cash transfers can be sent to and hence where cash can be withdrawn from the system (e.g. at mobile operator outlets, bank accounts, ATMs, utilities/shops)

So far, most mobile money services (in developing economies) have focused on the provision of payment and transfer services. In some countries this may partly be due to regulatory constraints (i.e. where the current regulatory framework prohibits certain business models), but is perhaps more significantly due to commercial business cases and practical challenges of offering a wider set of services.<sup>5</sup>

#### What do we mean by interoperability?

Interoperability can be defined in different ways. For example, interoperability occurs if different systems are technically able to work together. Alternatively, it can refer to the linking of networks that allows users of one network to access the services of another.

In the context of mobile money services, interoperability could apply at different levels. For example, interoperability at the transmission platform level would enable transactions to be channelled through all mobile networks, and allow users of one mobile network to send money to users of another mobile money system. Interoperability at the agent level would enable agents to have relationships with more than one mobile money service provider.

In both cases, however, enabling interoperability requires two hurdles to be overcome:

- A technical hurdle, i.e. interconnection between systems is only possible if they are technically compatible
- A commercial hurdle, i.e. interconnection between service providers requires commercial agreements between those service providers

## Competition Issues in Mobile Money Services

This section of the paper reviews the impact of interoperability on competition and the regulatory options available for promoting interoperability.

### Impact of Interoperability on Competition

When rival network operators offer similar services, consumers will choose the network that provides the highest value to them. In telecommunications, a key variable in this decision is the number of people to whom you can connect. This is commonly referred to as the 'network effect'. In the context of mobile money services, consumers choose the service that provides them with, for example, the widest set of people to whom they can transfer money, the largest number of agents who accept m-payments, and/or the widest network of ATMs from which they can withdraw money. Competition can therefore emerge differently depending on whether customers on one network can communicate (or transact) with customers on a rival network.

Without interoperable systems,<sup>6</sup> the largest network can become dominant, thus creating the potential for the 'market to tip'.<sup>7</sup> That is, once competition for the market has been decided, there is limited competition within the market as consumers will not be inclined to switch to networks which have a smaller customer base.

Interoperability between networks reduces the impact of network effects on competition. If customers on one network are able to transact with customers on a second network, an individual's choice of service provider will no longer be determined by the number of customers on that network. This could benefit overall customer adoption as consumers will no longer have to pick the 'winning service provider' when signing up to a service. Hence, consumers may therefore be more willing to take up services in the early stages of adoption.

Unless it is required by external intervention, mobile operators can choose whether to provide interoperability. When considering their strategy, firms can be expected to compare their long term profits with and without interoperability:

- With nascent services, such as mobile money, it is possible that the benefits from providing access to a larger customer base through interoperability can outweigh the additional potential profits from seeking to gain a market leading position by competing for market share
- Where providers are asymmetric, it is possible that voluntary interoperability may not be established at first, but this may change over time
- Even if voluntary interoperability does not occur, this may not necessarily be the result of a market failure. If operators are strongly competing for the market, this could still imply benefits for consumers

Thus, interoperability may emerge without any regulatory intervention since it avoids intense competition for the market. Furthermore, were interoperability to be mandated ex-ante, the incentives for companies to innovate and attempt to introduce new technologies more quickly may be weaker. Hence, any potential benefits from mandating interoperability ex-ante need to be balanced against the potential costs.

### Is There a Need for Regulatory Intervention to Force Interoperability?

In general, public policy and regulation should seek to maximise economic efficiency.<sup>8</sup> If there is a market failure, intervention is justified. However, any regulation involves an authority intervening in a market. As such, regulation has the capacity to create inefficient distortions within markets. Therefore before intervening in a market, a regulatory authority should carry out an impact assessment to demonstrate that if left on its own, the market would not generate an efficient outcome, and that the benefits of intervention will outweigh any costs associated with it.



Generally, regulatory interventions can fall into two main categories:

- **Ex-ante regulatory intervention** primarily aims to ensure that any dominant firm in a market is prevented from abusing their position.<sup>9</sup> Ex-ante regulation can often be found in monopolistic network industries, and industries such as telecommunications that are transitioning from a monopolistic to a more competitive market structure. However, once competition has been established, authorities tend to move progressively away from ex-ante regulation, focusing instead on ex-post regulation based on competition principles.
- **Ex-post regulatory intervention** aims to address (and redress) anti-competitive behaviour after it has occurred. Such measures are typically mandated under general competition law and may be used where a firm in a given market has been found to have abused a position of market power.

When considering the appropriate regulatory policy towards the development of a nascent service such as mobile money, the concept of dynamic efficiency is critical. In such cases a careful judgement is required as to whether early and direct intervention (such as mandating ex-ante interoperability) could be expected to deliver higher longer term consumer benefit. This will depend on the likelihood and potential of a dominant operator emerging in the absence of full ex-ante mandated interoperability, compared to the potential negative impact on innovation, speed and incentives as a result of a more interventionist approach. For example, if the regulator considers that innovation in the development of potentially market leading propositions could be dampened by imposing premature obligations regarding interoperability, it may be more appropriate for any regulation to focus on ensuring that interoperability remains feasible at low cost (for example, through the promotion of common open standards), rather than being used to mandate interoperability immediately.<sup>10</sup>

1 Houpis & Bellis (2007), 'Competition Issues in the Development of M-Transactions Systems', published in Vodafone's Policy Paper Series, Number 6, July 2007.

2 In developing countries mobile money services have the potential to reach unbanked customers. This contrasts with the situation in more developed countries, where mobile money systems commonly enable existing bank customers to access a range of financial services from their mobile phones.

3 Note that m-transaction systems form part of the wider set of branchless banking schemes which make use of existing agent networks beyond mobile networks, such as post office networks or retail outlet networks (e.g. lottery dealers), or are card based.

4 M-transactions may offer a wide range of services, including 'm-banking' services (e.g. account management and deposit taking), 'm-transaction' services (e.g. person-to-person remittance and state benefit distributions), or 'm-payment' services (e.g. payments for goods and services and settlement of bills) and/or ancillary services (e.g. airtime purchase and transfers).

5 Please refer to OCAG (2008), 'The Early Experience with Branchless Banking' for a detailed account of the current service offerings and take up of mobile money and branchless banking schemes.

6 Note that we use the terms 'interconnection' and 'interoperability' interchangeably as mobile money systems interoperability requires technical and commercial interconnection.

7 Note that for market tipping to occur there further needs to be limited product differentiation and low switching costs.

8 Economic efficiency has three dimensions: allocative efficiency (i.e. when all an economy's resources are used in such a way that it is not possible to reallocate resources and improve the overall welfare of society); productive efficiency (i.e. the situation where a given level of output is produced using the most cost-effective means); and dynamic efficiency (requires that firms have appropriate incentives to develop new products and services).

9 Dominance (or significant market power) refers to the situation whereby a firm has the power to behave to an appreciable extent independently of competitors and, customers for example, by raising price or restricting output compared to competitive levels.

10 There are a number of approaches that an authority could take to furthering this aim, ranging from relatively interventionist strategies, such as requiring operators to ensure the technical interoperability of their respective systems; to a light-touch approach, such as requiring the creation of a standards body (co-ordinating and approving standards for mobile money systems).

11 Republic of Kenya Ministry of Finance, "M-PESA money transfer services", published in the Daily Nation, January 25th 2009

12 CGAP (Department for International Development), "Regulating transformational branchless banking: Mobile phones and other technology to increase access to finance", January 2008

## Are Our Previous Conclusions Still Valid?

It is not yet possible to perform formal quantitative studies to assess the impact that mandating interoperability may have on the development and take-up of mobile money services. However, it appears that mobile money services have developed in the absence of ex-ante regulation with regards to interoperability. For example, consumers in both Kenya and the Philippines have benefited from successful deployment of several mobile money services in the absence of any regulatory intervention. According to the Kenyan Ministry of Finance, around five million people (over 10% of the population) regularly used M-PESA services in 2008, less than two years since the full launch of the service.<sup>11</sup> In the Philippines, approximately 5.5 million people were estimated to use one of the m-payment services operated by Globe and SMART.<sup>12</sup> Furthermore, interoperability between schemes has occurred in several countries without being mandated. For example, M-PESA customers can undertake transactions with both M-PESA and non M-PESA customers. The same holds for WIZZIT customers in South Africa. Furthermore, interoperability is starting

to emerge between mobile money providers and the wider banking system (i.e. banks acting as agents, thus starting to create interoperability with the wider financial system).

These case studies are not sufficient to form a definite view on the role of the regulatory environment, and the circumstances in other countries will differ. However, they do provide some evidence that absent early regulation of mobile money services can develop without raising competition concerns.

Whilst these developments do not imply that regulatory interventions will never be necessary, they suggest that regulators should be cautious in intervening in growth/nascent areas – a principle well established in other parts of the telecommunications sector. As mobile money services are still rapidly expanding in almost all markets where they have been launched, intervening now could limit competition for the market and hence potentially reduce some of the incentives for operators to innovate and compete for the market.

## Conclusion

Based on our current review, we propose that:

- Regulatory authorities should consider carefully the benefits and costs of mandating interoperability at an early stage of development
- Where interconnection may be mandated, regulatory authorities should consider the option of ensuring that interoperability is (technically) possible
- Once an enabling regulatory framework has been adopted or developed, authorities ought to monitor market developments on a regular basis to assess any need for future intervention
- Where legal frameworks do not currently allow for ex-post intervention, these provisions should be added, in case of anti competitive conduct
- Once further mobile money systems have been launched, further research should be conducted into the relationship between interoperability and general market developments of mobile money services
- Regulation should focus on ensuring that interoperability remains feasible at low cost (for example through the promotion of common open standards) rather than being used to mandate interoperability immediately







## Capabilities of Mobile Operators from the Perspective of a Financial Regulator

Neil McEvoy, Consult Hyperion

Introduction written by Marina Solin, GSM Association

### Introduction

Efforts to provide mobile money services for unbanked customers are prevalent all over the globe, especially in developing countries. Mobile technology is rapidly expanding and promises to reach people who have never been reached by traditional banks, despite their long history.

However, there is also a lot of discomfort, especially for financial regulators, attached to this new opportunity. Whilst the financial regulators' primary concern is to preserve the stability of the financial system, they also have to encourage innovation which will finally achieve financial inclusion. This creates tension between the need to preserve stability, by bearing down on risk, and the need to allow innovation with new risks and changes for the financial system. Whilst we cannot avoid change, it is essential that we manage this transition as safely as possible and in the interests of the consumer.

Therefore, financial regulators and mobile operators have to start a dialogue in order to understand each other's respective needs and capabilities. Financial regulators have to become comfortable with regulating mobile money services offered by mobile operators. This means that they need to understand the risks, business models and the potential consumer benefits of mobile money services. Mobile operators in turn need to learn about the concerns and risks from a financial regulator's perspective.

What better way to take a first step towards improved understanding than to look at the capabilities of mobile operators from the perspective of a financial regulator? The GSM Association has commissioned Consult Hyperion to analyse whether the capabilities of mobile operators can meet the requirements of financial regulators. Whilst we recognise that mobile operators cannot deliver mobile money services which meet all the requirements of appropriate regulation without some effort, we do think that there are a number of capabilities inherent in the business of mobile telephony which should reassure the financial regulator that there is a solid foundation which can be built on to deliver appealing and safe mobile money services.

The main points of this article are summarised in the table below:

Objective	Mobile operators	Banks
<b>Systemic risk</b>		
Solvency	Financially strong; resistant to shocks	Generally financially strong; subject to cycles
Credit creation	No creation of credit	Create credit in regulated environment
Protection against unauthorised creation of e-value	Capability exists in context of airtime accounting	Used to applying similar protection for general purpose bank accounts
<b>Consumer protection</b>		
Competitive market conditions	Bring fresh competition. The mobile industry is a very competitive industry	Relative lack of innovation/expansion indicates relatively weak competition
Transaction integrity	Aided by the presence of the SIM, and the use of the customer's own device for entering and securing transaction data	No access to the SIM, in the absence of an agreement with mobile operators
<b>Social objectives</b>		
Financial inclusion	Mobile operators have achieved growth and penetration unmatched by any other industry in last 25 years – reaching many of the world's lowest income people	Society's poorest members have generally not been reached by banks
KYC/AML	Relative lack of training and physical security for agents involved in registration  Advantage in use of the SIM capability after initial registration	Existing procedures and physical security, but in relatively few locations



In this article, we will set out some general imperatives of financial regulators and apply the principles to the relatively new business of providing mobile money<sup>1</sup>. For each requirement that these place on a mobile money service, we will examine the degree to which mobile operators have existing applicable experience and capabilities and identify any gaps. Where there are gaps, we will indicate how these may be filled.

As the analysis will show, mobile operators have many general and specific relevant capabilities to deliver on the objectives of financial regulators. However, in some areas mobile operators will need to apply a significantly different approach in their provision of mobile money services than to their core telephony services. Most importantly, there will need to be a degree of separation between existing systems (for example, those supporting pre-paid airtime provision) and those supporting mobile money services. Nevertheless, the necessary skills and experience to define and operate the required business processes and systems exist within mobile operators.

### The Financial Regulators' Perspectives

#### 1. Systemic risk

A principal objective of financial regulators is to safeguard the financial system against systemic risk. This can occur when an unexpected event, such as a bankruptcy or a technical breakdown, has an adverse effect on the financial system or the wider economy. For any system in which money is represented in new ways, for example as electronic value within a mobile network, it is vital that the creation of such representations is strictly controlled to avoid increase in money supply generated by the mobile operator. There has to always be a 1:1 relationship between the e-money and real money sitting in a bank account.

To prevent systemic risk means also that a financial regulator has to be convinced that there are no weaknesses in the design or operation<sup>2</sup> of the relevant systems that would allow criminals to achieve the same effect on any significant scale as a fraud.

#### 2. Consumer protection

A further objective of the financial regulator is to protect consumers, for example against excessive prices (market abuse) and opportunistic behaviour. In

this context, competition policy is often invoked to protect consumers from excessive pricing and to harness market forces to enhance efficiency of the financial system. Consumers also have to be protected against failures or weaknesses of the system itself, for example any that might allow a customer's transactions to be interfered with by having his transactions altered.

#### 3. Social objectives

##### Financial inclusion

Financial regulators also have social objectives, for example, financial inclusion of unbanked people.

##### Prevention of money laundering and terrorist financing

Other social objectives are to prevent money laundering and terrorist funding, particularly through Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) regulations.

In the following sections, we will examine mobile operator capabilities against the requirements of regulators as set out above.

### Mobile Operator Capabilities from the Perspective of a Financial Regulator

#### Solvency

The question of solvency is relevant in the context of the financial regulators' aim to minimise systemic risk due to bankruptcy. Providers of financial services have to be reliable and stable companies. The majority of mobile operators have great financial strength, sufficient to stand behind the value circulating within a mobile money service, and are able to meet their financial obligations. The mobile industry is a very young industry and so far mobile operators have been relatively immune to the recent financial shocks and ensuing global recession. Banking crises have developed many times throughout history (for example, the bank run during the Great Depression, the U.S. Savings and Loan crisis in the 1980s and early 1990s, the Japanese banking crisis during the 1990s, and the subprime mortgage crisis in 2008).

There seems to be little additional risk to the financial system that would be imposed by the participation of mobile operators providing mobile money services from an insolvency perspective.

1 For the purpose of this article, we define an MMU service as one that exploits mobile network operator infrastructure, brand and distribution to do more than access a traditional bank account as per a typical internet banking service; we therefore expect to include one or more facilities such as cash in/out at non-traditional branches, person-to-person and person-to-business payments.  
2 This can also be seen as operational risk, especially when the impact affects the business and not the wider financial system.

#### Creation of e-value

One of the biggest fears of financial regulators is that mobile operators create money. Banks are tightly regulated and on the basis of reserve requirements they can create money (credit). It is therefore normal for banks to add to the money supply by making loans of money they are not required to hold in reserve. Increases in money supply eventually feed through into inflation.<sup>3</sup> It is therefore important not to allow additional market players to increase money supply without being regulated in this regard in the same manner as a bank.

Whilst mobile operators offering e-money do not create money per se, the bank holding the float of the mobile operator does create money with the float like with any other deposit. This has the effect of increasing money supply. It is the hope and expectation of many that the use of e-money will stimulate the production of goods and services that would otherwise not occur – because existing means of payment are too inconvenient, insecure or costly to make the production worthwhile. It is therefore likely that the inflationary effect is mitigated, because the additional money is not chasing the same set of goods and services but an augmented set.

The following criteria ensure that the mobile money service provider does not create money, while also protecting the individual customer.

- There has to be a 1:1 ratio between outstanding e-money and equivalent funds (float) in a bank account.
- Customers' money is redeemable on demand, even if all customers withdraw their money at once.
- Any debit in the electronic value circulating within the system has to be matched by a corresponding debit (of real funds) in the account at a regulated bank.
- The mobile money service provider can only withdraw funds, when matched by a destruction of electronic value circulating within the system.
- A mobile operator offering mobile money services has to be regulated under the scope of the financial

regulator in the provision of mobile money services. This ensures ongoing oversight by the financial regulator which ensures compliance with appropriate regulation.

#### Protection against fraudulent creation of e-value

In the preceding section, we dealt with the planned, supervised and regulated creation of e-value in support of a mobile service. This section deals with the possibility that criminals might subvert the system to create value for their own benefit. The key control here is the standard accounting procedure of ensuring that every credit to one account (in this case, an e-money account) is matched by a debit to another.<sup>4</sup>

Whilst it is certainly true that this is core business for banks, it is also true that mobile operators operate large accounting systems, with a very high throughput of small value transactions – such as may be expected for a mature and successful mobile money service. The closest mobile operator analogy to a retail banking-style accounting system is the operation of prepaid airtime accounts. The mobile operator manages its liability for providing airtime according to the cash (and other financial instruments) that the customers have paid in. It is easy to imagine in emerging economies, where the penetration of mobile telephony is much greater than for banking, that these systems, for the average person, support more transactions and bigger balances than retail banking systems. Naturally, they are protected by a full range of controls: from personnel vetting, through physical and logical access controls, to rigorous software validation and audit.

Nevertheless, there are important differences, of which a mobile operator operating a mobile money service must be cognisant. The main difference of principle is that in a prepaid airtime system, it is primarily the mobile operator itself that is at risk. Should a fraudster be able to create an unauthorised balance, the marginal cost of meeting the apparent obligation (in airtime) is low, and the loss can probably be carried while a pattern of fraud is detected and defences built. For a mobile money (e-value) system however, the cost of meeting a fraudulently created balance cannot be discounted; an equal value of cash must be paid out on demand.

#### Market abuse

The financial regulator wants to prevent an organisation, or a de facto cartel, from establishing a dominant position whereby excessive prices or oppressive terms and conditions can be forced onto customers. The telecommunications industry has very close parallels with the financial industry. Both rely on network effects to increase the size of the market for the participants and utility for the customer. The mobile industry is an extremely competitive industry under the supervision of telecommunications regulators. In practice, this has led to a very fast pace of innovation and keen price competition. Therefore, it would seem that financial regulators can be relatively relaxed by the potential for market abuse by mobile operators operating mobile money services. Letting mobile operators enter the market for payments in itself increases competition and innovation for the benefit of the consumer.

#### Transaction integrity

In the context of consumer protection, the financial regulator is concerned with fraud, i.e. the possibility that there is fraudulent interference with the transactions of the consumer. As an example, let us say a consumer transfers US\$1 to a merchant and this can be accurately entered into a mobile device, faithfully conveyed to the accounting system, where the appropriate accounts are accurately debited and credited. Let us assume in this example that the threat is that the US\$1 is converted to US\$10.

##### Mobile device

The mobile phone can give a significant security advantage to the customer, compared to traditional payment systems such as those based on payment cards. This is because the customer has control over the entry of transaction particulars, and secret information such as a PIN, in a device which it is difficult to subvert.

##### Network

Once entered correctly into the phone, one or more messages must be constructed and sent to the accounting system for the consumer's instruction to be acted upon.

When banks carry transaction data from the field to their back office, they almost always do so with a

high degree of cryptographic security, from end-to-end. That is to say that messages which represent the transmission of a value are appended with a digital signature, or Message Authentication Code (MAC), which is dependent upon a secret key that is specific to the sender. Frequently, the messages are also encrypted with a secret key, to protect the parties' confidentiality. This is certainly the case where personal data, such as a PIN, is transmitted. For example, this level of security occurs between a customer's smart card and his bank's authorisation system (as specified by the Payment Cards Industry Security Standards Council). In this example, the keys are kept secret in the field by embedding them in the smart card chip, which is designed with physical and logical protection to prevent it ever escaping from the chip or being used by bogus software. End-to-end cryptographic security is also applied from a customer's web browser to a bank's back-end systems. Of course, the cryptographic keys on a PC are more at risk than those on a smart card: which has led MasterCard and VISA to design cheap readers (already fielded by UK banks) to work with the card to produce transaction-specific pass-codes.

What is the relevance of the above to mobile money?

It is that the banks who are the champions of end-to-end security cannot by themselves provide it to the highest standards in a mobile money context; but that a mobile operator can, by virtue of its control of the SIM, which has all the attributes of a bank-issued smart card – namely strong physical security controls to protect sensitive data (especially PINs and cryptographic keys), logical access controls and cryptographic software because they utilise exactly the same chip platforms.

Whilst playing to this strength, mobile operators should consider cryptographic security additional to that inherent within GSM. This is because GSM encryption is not end-to-end, merely covering the over-the-air portion of any communication. A mobile operator is also likely to be in need of improving the physical security of their data.

##### Accounting system

We have already dealt with the high level attributes of the accounting system and its operation when

4 Note that we are dealing here solely with the unauthorised creation of additional e-value; not with the fraudulent transfer of e-value from one user to another, which shall be covered under the section on consumer protection.

discussing protection against the unauthorised creation of e-value. In the current context, it is worth reviewing the typical banking view of a payment system, which is based on the 'four-cornered' model. In this view, the two principals (the payer and the payee) are linked via their respective banks, and logically a payment is routed from the payer via his bank and the payee's bank to the payee. (The physical realisation of this, for example in a credit card payment, may be more complicated.) This bears similarities to the placement of telephone calls, from the caller, via his phone company (leaving aside the additional complexity of roaming when calls are made abroad), the phone company of the called party, and terminated with the called party. Phone company accounting systems track these flows and ensure that the correct charges are levied and distributed to the correct parties. This shows that the complexity of the money flows and accounting in a 'four-cornered model' and a telephone call is similar.

While this shows a similar level of complexity in accounting for phone calls and texts as for making retail payments, a billing platform of a mobile operator may not be well suited to deliver on the particular demands of a payment platform. The platform of a mobile operator is geared towards the billing of calls. Generally, a caller does not know how much his call will cost before he makes it because he does not know how long it will last. The banking platform is geared towards payments where the price will be known in advance of committing to the transaction, a receipt may be given and this can be checked against a bank statement.

For these reasons, it is recommended that a mobile operator does not rely on its telecommunications billing engine to provide the back end of a mobile money service. Even if it can be configured or modified to provide the necessary predictability and exactitude, the task of proving to a diligent auditor of a financial regulator that the last penny is properly accounted for is likely to prove extremely difficult or even insuperable; a task made even more difficult by the fact that some of the transactions calls, text messages, etc are subject to taxes and duties, whilst others such as the value transfers are not. We

suggest that it is better to implement an accounting system that is completely separate logically and physically. This will have the added advantage of being easier to monitor and to modify (under appropriate, auditable controls), to analyse usage patterns and tune the system and service accordingly. For example, this is the approach that has been adopted by Safaricom, and approved by the regulator, for Kenya's highly successful M-PESA service. In practice, many mobile operators would anyway find this approach more efficient in launching a mobile money service, because the approval process for modifying business-critical accounting systems is naturally stringent.

#### Financial inclusion

The majority of the population in many or most emerging markets has been poorly served by banks. The spread of banking services, geographically and socially, has been slow. Access to financial services and payment technologies could enable growth in all kinds of commercial activities and therefore wealth across society in these markets.

The mobile operators enjoy considerable natural advantages as would-be deployers and operators of mobile money services, especially in emerging markets. Firstly, they have the greatest consumer reach of any class of business. Mobile operator agent networks usually have a substantially greater presence than the physical bank branch infrastructure and potential customers will generally be used to dealing with mobile operator agents. The well-oiled distribution mechanism of mobile operators has already delivered the payment token (the handset, including the SIM) into the field.

Mobile operators enjoy good brand recognition and are well trusted, so that consumers are confident that their money is safe. For example, a 2008 World Bank report states that only 25% of Mexico City's adult population were banked; 16% of those surveyed indicated that their main reason for being unbanked was that they lacked trust in banks (70% felt that fees and minimum balance requirements were too high). By contrast, Mexico as a whole has 62% mobile penetration. Since 95% of the market is prepay, Mexicans trust mobile operators with their prepaid money.



In summary, in the context of mobile mobile money, a mobile operator is better placed to deliver on the objectives of financial inclusion of the currently unbanked people than banks.

#### KYC / AML

Anti-Money Laundering (AML) and the related objective of the prevention of funding of terrorist organisations relies very heavily on “Knowing Your Customer” (KYC) at every stage in their interactions with the service, specifically:

- Registration
- Cash-in
- E-value payments
- Cash-out

We shall deal with these in turn.

#### Registration

In many emerging markets, requirements to prevent money laundering and terrorist financing present a series of practical issues. For example, the lack of official identifying documentation and of fixed, permanent addresses creates difficulties. A balance needs to be struck here between the aims of the financial regulator to mitigate the risks of money laundering and terrorist financing and to promote financial inclusion.

The physical security of mobile phone agent premises may not conform to bank standards (though the security may be appropriate to the risk carried, as the agents are used to protecting cash) and their familiarity with following official procedures cannot be expected to be as great as for banks and their staff. It is therefore important for mobile operators to train agents on the KYC process (including procedures for involving law-enforcement agencies where attempted identity fraud is detected). They also need to ensure adequate physical security for their premises and communications (physical and virtual) where identity-related information is stored and transported.

Where high-quality identity documents do not exist, the necessary checks cannot be performed instantaneously, which means, for the customer, that initialisation of the service is a two-stage process.

Unfortunately, this may deter many, slowing take-up of the service and possibly limiting its long-term potential. Consideration could be given to allowing a limited service (for example, placing a cap on the total value of transactions, thus limiting the risks of money laundering and terrorist financing) while the KYC checks are carried out. This could help to maximise registrations while decreasing exposure to fraud or money laundering to manageable levels.

At the end of the KYC process, a link is established between a set of externally verifiable information and data on the customer’s handset preferably in the secure environment of the SIM, such as the MSISDN or IMSI (identifiers used to place calls) or a unique identifier specific to the mobile money service. This becomes the key to knowing the customer in subsequent interactions.

#### Cash-in/cash-out

The cash-in process, in the absence of appropriate checks, is an entry point for money laundering: turning ill-gotten cash gains into e-value and then (perhaps) to bank funds. The cash-out process might be a route to terrorist funding: turning bank funds into cash that can be spent covertly.

For cash-out, it is certainly necessary to involve the relevant, registered handset (in particular, the SIM component) and to have the recipient of the cash verify himself, for example by entry of a PIN (preferably checked by the SIM). This constitutes a two-factor authentication model (‘something you have, something you know’), which is inherent in most payment systems. For the future, this could be enhanced to three-factor (‘something you are’, a biometric) by utilising the voice capability of the handset (though this may be dependent on improvements in phone microphones and voice authentication techniques and on the cost of those to be suitable for the unbanked market).

For maximum security, the same procedure could be considered for cash-in. However, many payment systems operating throughout the world do not require the same degree of control, since a known account is credited. The beneficiary is known automatically, even if the person handing over the cash is not.

#### E-value payments

As with cash-out, at least the person whose e-value is debited should be subject to two-factor authentication. As noted previously a mobile operator mobile money service is potentially stronger than bank systems and even the 'chip and PIN' systems in many European countries because there is no need for the customer's PIN to be exposed outside of his personal device.

#### Conclusion

In conclusion, mobile operators have good assets and capabilities that place them exceptionally well to launch and operate effective and well managed mobile money services. For example:

- In terms of systemic risks, mobile operators are financially stable. They do not create credit (i.e. there are simple rules preventing them from doing so).
- Mobile operators already operate complex and sophisticated accounting systems, which prevent criminals from perpetrating fraud (for example subverting the airtime system to create value for their own benefit).
- They have exceptional reach and are able to offer increased choice and competition to consumers.
- They are able to protect consumers against fraud, because the transacting device (mobile phone) is under the consumer's control and contains a secure chip (the SIM) able to protect secret data (such as a PIN) and to apply cryptographic protection to transactions.
- Mobile phones contain securely held unique identifiers which can aid the implementation of KYC, AML and CFT rules.

We have established additional ways in which mobile operators can exploit these assets and capabilities in order to provide services that meet the highest regulatory standards:

- To ensure full transaction integrity mobile operators should consider cryptographic security additional to that inherent within GSM. This is because GSM encryption is not end-to-end, merely covering the over-the-air portion of any communication.
- Mobile operators should not rely on their telecommunications billing engine to provide the back end of a mobile money service, but rather implement an accounting system dedicated to mobile money that is completely separate, both logically and physically.
- To leverage the mobile operator distribution chain for mobile money cash-in/cash-out some effort is required to train staff to comply with AML/CFT rules.







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