THE ENABLING ENVIRONMENT

FOR MOBILE BANKING IN AFRICA

REPORT
Commissioned by Department for International Development (DFID)

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FOREWORD

The project required collaboration among a number of entities on three continents: the Financial Sector Team within the Policy Division of DFID UK financed and supported the main project (Justin Highstead); and two country financial sector programmes, FSD in Kenya (David Ferrand) and FinMark Trust in South Africa (Jeremy Leach), financed and facilitated the country-level information gathering processes. Country correspondents Keith Smith (South Africa) and Stefan Staschen (Kenya) played a vital information gathering and facilitation role in each of the pilot countries.

We collaborated throughout with a parallel and related CGAP project on branchless distribution in financial services, of which mobile banking is an emerging part. The CGAP team led by Tim Lyman and Gautam Ivatury provided valuable insights and context from their reference countries.

In addition, the Central Bank of Kenya convened a project team to complete the country template, and then hosted a country workshop in Nairobi, Kenya in March 2006. Various providers completed questionnaires during the projects, and participated with regulators and support agencies at the final overall project workshop in Johannesburg in late March 2006. Tim Manion and Chris Lee assisted me with the background research in Boston.

My thanks are due to all these for their help and support throughout.

David Porteous
May 2006

EXECUTIVE SUMMARY

1. Introduction and objectives

The rapid spread of mobile phones means that the number of mobile users may already exceed the number of banked people in many low income countries. Mobile phones can also offer a communications channel for initiating and executing on-line financial transactions. This channel may not only reduce the cost of financial transactions for provider and customer, but also allow new entrants to the financial sector, and new relationships to be formed for distributing services. These changes hold the prospect of accelerating access to financial services on the back of the mobile infrastructure.

This report investigates the extent to which the expansion of mobile telephony is likely to lead to the expansion of access to appropriate financial services in developing countries, especially Africa. In particular, it seeks to answer two main questions:

- Which models of mobile banking are emerging globally, and especially in Africa, and are they likely to be accelerate access?
- Will it happen spontaneously or is enablement required for this to happen? If so, what forms of enablement?

To answer these questions, the report investigates emerging models and trajectories of development in m-payments and m-banking through interviews with emerging African providers and the use of secondary material. It assesses the policy and regulatory elements of an enabling environment for this sector based in part on the analysis of circumstances in two pilot African countries (Kenya and South Africa).

2. Background & definitions

2.1 Mobile payments (m-payments) are financial transactions undertaken using mobile device such as a mobile phone. Mobile banking (m-banking) includes m-payments but involves access by mobile device to the broader range of banking services, such as account-based savings or transactions products offered by banks. M-payments and m-banking are themselves subsets of the broader domains of e-payments and e-banking respectively.

2.2 The report distinguishes between additive and transformative models of mobile banking.

- *Additive models* are those in which the mobile phone is merely another channel to an existing bank account;
- *Transformational models* are those in which the financial product linked to the use of the phone is targeted at the unbanked, who are largely low income people.

2.3 Mobile banking has the potential to be transformational because:

- It uses existing mobile communications infrastructure which already reaches unbanked people
- It may be driven by new players, such as telcos, with different target markets from traditional banks
- It may harness the power of new distribution networks for cash transactions, such as airtime merchants, beyond the conventional merchant POS or ATM networks of banks.
- It may be cheaper than conventional banking, if the offering is competitive

The extent to which will mobile banking will in fact be transformational in a country will depend in large measure on whether the environment is enabling.

2.4 An *enabling environment* is defined here as the set of conditions which promote a sustainable trajectory of market development. Of particular interest here, are the environments in which widespread access is likely, or in other words, in which transformational models are more likely to succeed.

In any new market, enablement requires a blend of legal & regulatory *openness*, which creates the opportunity to startup and experiment, with sufficient legal & regulatory *certainty* that there will not be arbitrary or negative changes to the regulatory framework, so that providers have the confidence to invest the resources necessary. Countries with low levels of effective regulation may be very open but highly uncertain, since regulatory discretion may lead to arbitrary action. Conversely, countries with greater certainty may be less open, in that the types of entity and approach allowed to start up are restricted. Especially in a new market sector like mobile banking, where business models are not yet stabilized, enablement in the policy and regulatory sector means a move towards greater certainty and greater openness.

3. Experiences and emerging models

3.1 Outside of East Asia, most m-payments models have operated at limited scale in most of the developed world to date. However, micro-payments connected to the purchase of premium rated services on a mobile phone and to transport solutions have grown fast. Among developing countries, the Philippines already has around four million users of the mobile financial services offered by its two major network operators, Smart and Globe. Various m-payment and m-banking products are on offer in different parts of Africa today, but none has yet reached substantial scale nor sustainability. Because they are new, the direct impact of the transformational models on poor customers is not yet known.

3.2 The emerging models of m-banking can be placed in four categories, based on the different roles played by the parties involved: the bank, the telco and in some cases, a third party product provider. The models vary from one in which a bank adds on a mobile channel to its existing product range, through hybrid models where a telco may bring different branding, product set and/or distribution system to a bank-based product, to a telco-dominated model in which the telco itself is responsible for the deposits taken.

3.3 This latter model constitutes the issuance of e-money by the telco. Approaches to the regulation of e-money vary widely, from waiver or neglect as long as the maximum payment or balance size is low (e.g. Philippines), to restricting the issuance of e-money to banks only (South Africa) to the creation of an enabling framework whereby specialist e-money issuing entities can register under an appropriate supervisory framework (EU). The recent official review of the EU framework concluded that it has not fully achieved its desired objectives.

3.4 Most African providers of m-payments and m-banking services reported that the major barriers to their growth related to (i) uncertainties over customer adoption, which is common at an early phase of market development; and, in South Africa at least, (ii) specific regulatory issues such as remote customer due diligence requirements and access to the payments system.

3.5 In both pilot countries, South Africa and Kenya, m-banking is at an early stage. The South African policy environment is relatively more certain, but less open to non-bank entrants; the

Kenyan environment is less certain, in that a number of major pieces of relevant legislation are at various stages but have not yet been implemented, but this has not stopped certain models from starting up.

4. Regulatory and policy issues

The field of m-payments and m-banking is not only new and fast evolving but also sits at the overlap of several regulatory domains—those of banking, telco and payment system supervisors, and anti-money laundering agencies. The overlap substantially raises the risk of coordination failure, where legislation or regulatory approaches are inconsistent or contradictory. In such environments, it is likely that m-banking may simply be an added channel for already banked customers. A comprehensive vision for market development between policy makers, regulators and industry players can help to define obstacles and calibrate proportionate responses to risk at appropriate times.

5. Framework of enabling principles

5.1 This report proposes a framework of principles which are necessary, although they may not be sufficient, for m-payments and m-banking to be enabled in a country. The application of the principles will vary at different stages of market development. There are two tiers of principles.

5.2 First tier principles: these are necessary for m-banking to happen on scale at all.

1. There should be sufficient certainty around electronic contracting.
2. Customers should be adequately protected against fraud and abuse in the m-banking environment.
3. Inter-operability should be encouraged, through ensuring that providers can access payment platforms and that consumers are able to switch financial providers.

5.3 Second tier principles: for transformational models to emerge and succeed, the following additional principles are also necessary.

4. Customer due diligence procedures for account opening should be risk-based, and not unduly prejudice remote account openings by small customers.
5. Customers should be able at least to make deposits and withdraw cash through agents and remote points outside of bank branches.
6. Adequate provision must be made for the issuance of e-money by appropriately capitalized and supervised entities which are not necessarily banks.

5.4 The complexity involved in this sector creates a *prima facie* case at least for technical assistance to policy makers and regulators who desire to enable transformational models of m-banking, through the application of principles such as these.

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1. INTRODUCTION

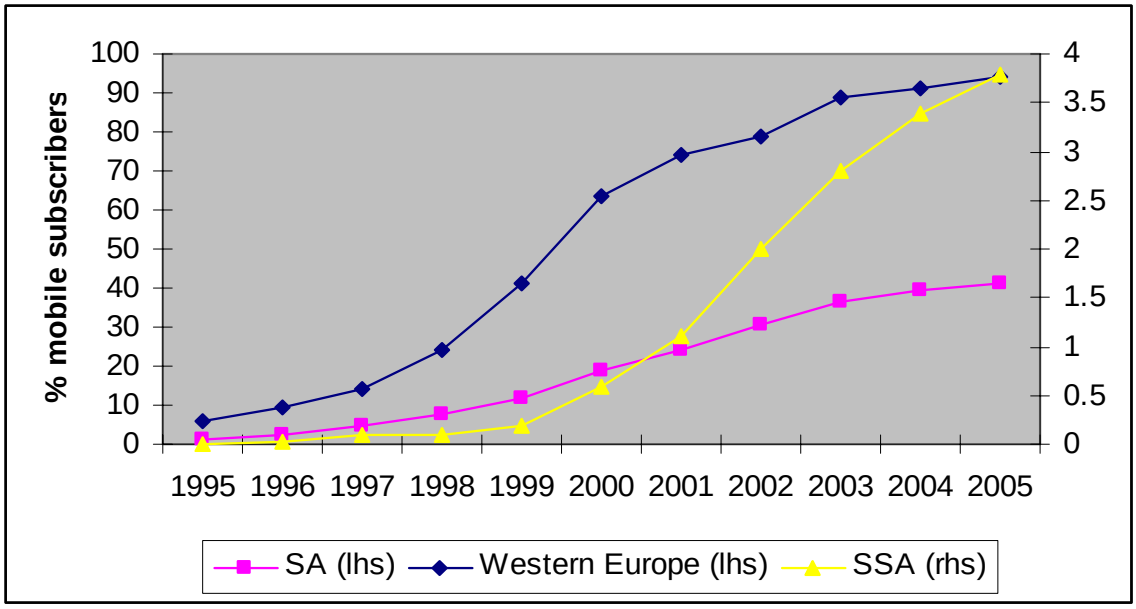
1.1 The prospect and the proposition

Many commentators have highlighted the rapid growth of mobile phone usage in Africa. Using ITU data, Gray (2005:1) points out, "In 2004 alone, the African continent added almost 15 million new mobile cellular subscribers to its subscriber base, equivalent to the total number of (fixed and mobile) telephone subscribers on the continent in 1996, just eight years earlier."

Figure 1 below compares the trajectories of growth in usage of mobile phone in three places:

- South Africa (SA), where there is some evidence of slow down as the number reaches the mid-forties, compared with:
- the rest of Sub-Saharan Africa (SSA) (i.e. excluding SA), where explosive growth continues, albeit from a lower base; and
- Western Europe, where the market has matured and penetration has exceeded 90% overall.

Figure 1: Mobile phone take-up in different regions



Source: ITU (2005); numbers for 2004, 2005 are forecasts

Wireless coverage continues to rise: although only 8% of people in Africa use a mobile phone, 52% of the population in low income countries as a whole live in areas with wireless reception. This difference fuels the expectation that growth will continue at rapid rates, with some analysts predicting that there will be close to 200 million mobile subscribers in Africa by 2010.[1]

By comparison, the penetration of retail banking systems in most African countries is very low. While no reliable figures for the proportion of people banked yet exist at continental level, national household surveys are providing more reliable information for certain countries. Table 1 highlights the cases of Kenya and South Africa, which are the focus of further research in this report: within a decade or less of rollout, as many or more people have mobile phones as have

[1] IT Web Market Monitor 5 May 2006

bank accounts in many low income countries, even though the latter have been available for much longer. Subscriber numbers in Kenya apparently doubled in 2005 so that mobile penetration now substantially exceeds the percentage banked there.

Table 1: Mobile phone and bank account penetration

	No of mobile subscribers (2004)	Mobile penetration	Adults with bank accounts	Mobile population coverage	Internet access
Kenya	2 546 000	7.9%	10%	70%	1.3%
South Africa	19 500 000	43.3%	45%	96%	9%

Source: mobile phones: ITU 2005; banking data: Kenya: Beck et al 2005, SA: Finscope 2005; Internet: World Bank World Development Indicators

In many developed countries, the internet has become the lowest cost most accessible retail banking channel. Relative to mobile phones, internet usage is low: outside of South Africa, barely 1% of Africans access the internet.[2]

The sheer momentum behind the takeup of mobile phones raises the prospect that financial services provided via mobile phones, in other words, mobile payments and banking, will similarly takeoff. This could have positive developmental consequences, including:

- Increasing the efficiency of payment systems and reducing reliance on cash as a transactional medium;[3]
- Broadening access to financial services by increasing the accessibility and lowering the cost of offering formal financial services.

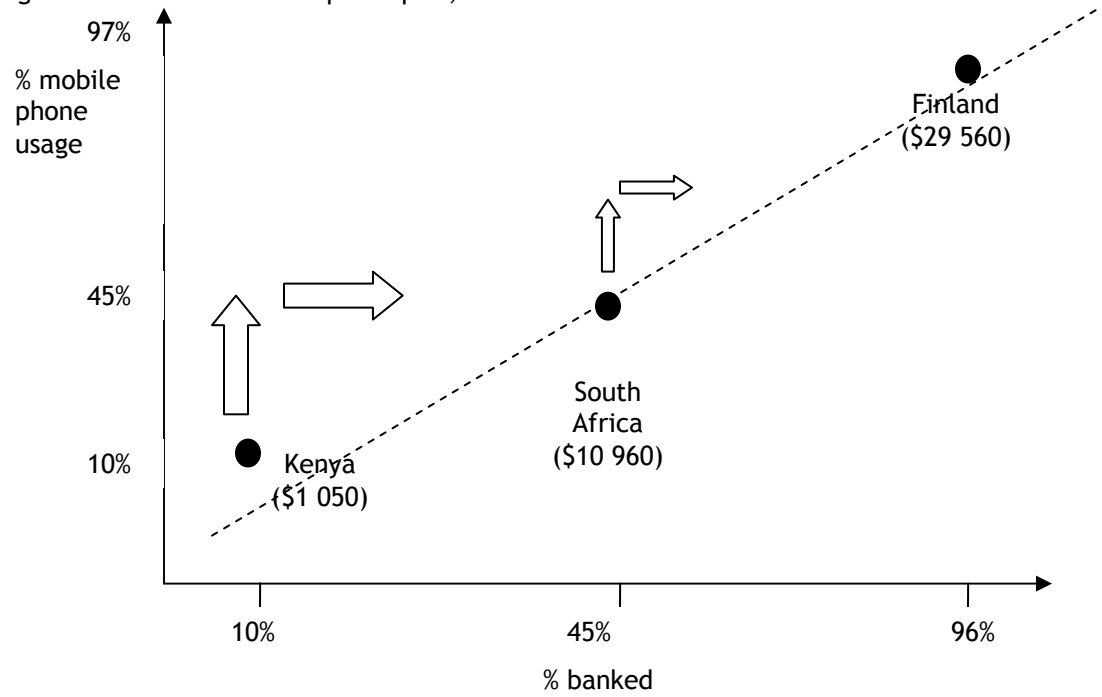
The prospect of change as a result of m-banking goes further, however: low income countries may leapfrog the deployment of widespread earlier generation infrastructure such as ATMs or even dedicated Electronic Point of Sale (EFT POS) devices. Some proponents of m-payments go further still: airtime may become a widely accepted form of e-money in developing countries. For example, in a recent article entitled "Money talks", Simon Batchelor states that "the innovative use of airtime as 'virtual currency' promises to provide the poor with a more secure way of transferring money".[4]

The proposition on which this prospect of acceleration in financial access is based is the following: as unbanked people start to use mobile phones, so they become reachable at lower cost, and therefore more bankable—at least, in the sense that a basic transactional service becomes viable to offer via the phone. More than a quarter of unbanked adults in South Africa already use or have access to a cell phone.[5] The expansion of mobile phone usage will therefore pull in its wake, access to basic banking. Figure 2 depicts this: arrows showing continued growth on the vertical axis (mobile usage) in turn pull more to becoming banked (horizontal arrows). As a result, the proportion of people with access both to formal communications and to formal financial services will rise in excess of the level previously predicted by income levels alone.

[2] ITU (2004) Africa Telecom projections 1995-2005. Available via http://www.itu.int/ITU-D/ict/statistics/
[3] VISA (2003) shows that a growth in the use of electronic payments is associated with faster economic growth
[4] http://www.developments.org.uk/data/issue31/money-talks.htm.
[5] FinScope 2004, 2005

Figure 2: The proposition: Mobile use drives financial service usage

Figures in brackets are GNI per capita, PPP



Source: Mobile & banking data: Kenya & SA: Table 1; Finland: ITU; Claessens 2005 Table 1.
GNI per capita: World Bank WDI 2004.

Attracted by the market potential, several m-payment and m-banking services have started up in various African countries in the past five years—including Zambia, DRC, South Africa, Nigeria and Kenya. Most of these are low income countries, a fact which seems to underline the leapfrogging potential of this technology.

Notwithstanding the prospect, the reality today is that m-banking is at an early stage. While accurate numbers are not available, it is likely that fewer than a million people in Africa currently make use of their mobile phones for financial transactions (other than the purchase of value added services such as ringtones, which turns out to be an important part of the story here—see Section 3.3). What is required for the number of m-banking users to increase exponentially, following the precedent of mobile phone adoption? In particular, will m-banking inevitably follow the explosive trajectory of mobile phone usage?

1.2 Report objectives and approach

This report is primarily about addressing these general questions, arising from exploration in two African countries in particular—Kenya and South Africa. Both have active m-payment and m-banking initiatives currently underway; but, as low and middle income country respectively, they come from different starting points and face different issues. As such, they help to frame the particular questions which are the focus of this report:

- What is happening in mobile banking in these developing countries, and is it likely to lead to greater access?

- Will it happen spontaneously or is enablement required for this to happen? If so, what forms of enablement?

In particular, this project set out to investigate and identify the elements of an environment which would maximize the likelihood that access to financial services would be expanded greatly in Africa. Because of its restricted time and focus, the project was designed to be exploratory, rather than definitive: seeking to understand what was happening in the pilot countries at least, and in the process, develop an approach towards market development which could be of wider value across the continent or in developing countries in general.

The project comprised the following elements:

- Research on existing models of m-payments and m-banking and into the different regulatory approaches adopted in different places;
- Administering questionnaires to selected major providers of m-payments and m-banking models in Africa, in order to categorize their approaches and understand the obstacles they face (see names in Annex A);
- Completing templates in the two pilot countries of relevant information on the state of law and regulation in areas affecting mobile banking, and engaging regulators.

The Kenya template was discussed in detail at a workshop for policy makers and regulators hosted by the Central Bank of Kenya in March 2006. The overall findings were presented and discussed in March 2006 at a workshop in Johannesburg at which the providers, regulators and funding agencies with an interest in the area were present.

1.3 Report Structure

The report is structured as follows.

Section 2 defines the concepts which are at the heart of the report: what is an enabling environment; and how does it change as markets grow and develop? The section also introduces the concepts of additive versus transformational mobile banking, as a way of distinguishing those offerings which are likely to change the banking market fundamentally, rather than simply adding on a channel for existing bank customers.

Section 3 discusses m-payment and m-banking approaches in Africa and elsewhere in order to map the emerging landscape and to categorize the new models.

Section 4 overviews the range of policy issues involved and considers the regulatory stances emerging especially in developed countries.

Section 5 reports the results of a legislative and regulatory scan in the two pilot countries, and of the current obstacles encountered by the providers of m-banking.

Section 6 proposes a high level framework of Enabling Principles for Mobile Banking as a type of road map which would help to enable deeper and faster market development in this sector.

The Conclusion returns to the core questions.

In any new and rapidly evolving field like this, there is a proliferation of new articles and of technical reports on specific sub-topics, rather than accessible overviews which can guide the

newcomer. This report aims to consolidate some of the specialist reports in a manner which is useful for regulators and providers. Detailed references to the wealth of underlying material are provided at the end in a topic-related fashion, hyperlinked for easy access. Annex A lists names and websites of providers participating in the project. Annexure B contains a glossary to help those who may otherwise drown in the inevitable sea of new acronyms and jargon spawned by a new and evolving sector.

2. CONTEXT

2.1 The Enabling Eanvironment

An enabling environment is defined in this report as a set of conditions which promote a sustainable trajectory of market development in such a way as to promote socially desirable outcomes. These conditions are forged by larger macro-political and economic forces, as well as sector specific policy and laws. However, this report focuses on the latter category as being within the power of policy makers and regulators to control and influence.

What are the socially desirable outcomes? In *Creating an Enabling Environment: towards the MDGs*, the UN ICT Task Force defines them as "Investment, innovation and entrepreneurship" which build the private sector.[6] More specifically, policy makers and regulators in the financial sector usually seek the following key outcomes:

- *Financial stability:* That the safety and soundness of the banking and payments system is not compromised;
- *Economic efficiency:* That the efficiency of the financial system as payments mechanism and intermediation system is maximized and in turn, contribute towards overall economic growth;
- *Access to financial services*: That broader access to appropriate, affordable financial services is promoted;
- *Financial integrity*: That the financial system is not compromised by its abuse for criminal or terrorist financing purposes;
- *Consumer protection*: That consumers, especially vulnerable consumers, are adequately protected against abuse and loss.

Mobile banking offers the prospect of increasing efficiency of the payments system; and potentially, expanding access to financial services. However, these objectives may be in tension with existing approaches which target other objectives, such as financial integrity or consumer protection. While market enablement is often understood as the process of simply identifying and removing regulatory and legal barriers to growth, in fact, it requires the managing these complex trade-offs over time.

2.2 Phasing Enablement: Industry Growth Trajectories

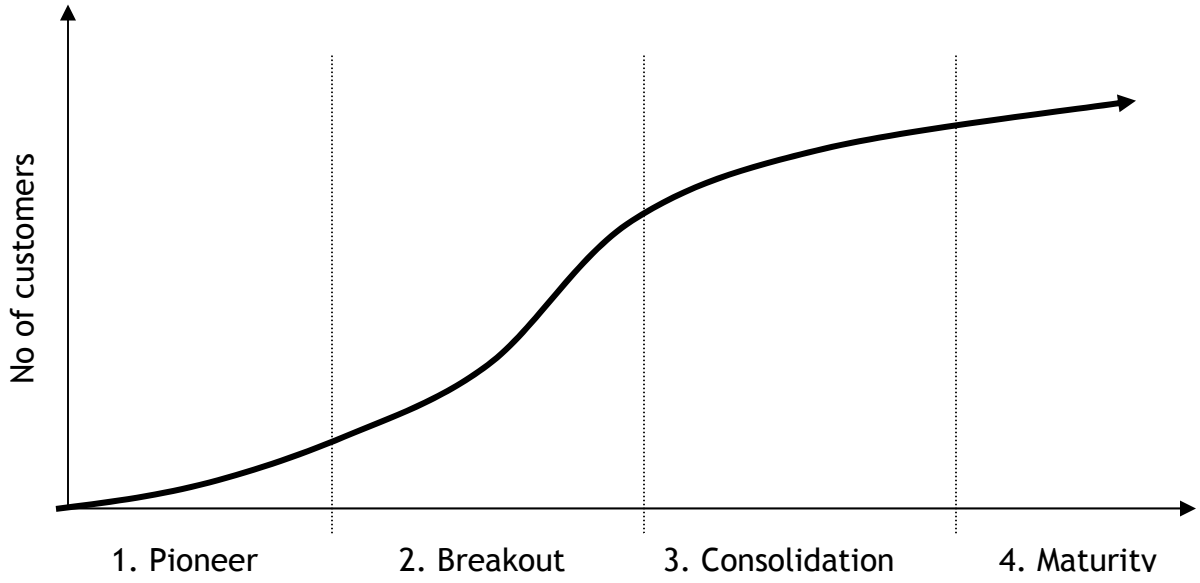
Understanding the dynamic nature of market development is crucial to appropriate enablement. This is because the need for regulation, and the risk of not having appropriate regulation, changes as a market develops: regulation which was unnecessary at an early stage may become necessary in order to stabilize and protect against much larger scale risks to society arising from market failure.

Figure 3 below traces a conventional s-shaped market development trajectory, similar to that observed in Figure 1 for mobile phone take-up in various regions. This has been discussed in more detail in other places.[7] The objective of maximizing access can be understood as ensuring, at least by maturity phase, that the usage line is at the highest level possible.

[6] UN ICT Task Force is now defunct but due to be replaced by a Global Alliance for ICT Policy and Development. See http://www.unicttaskforce.org/

[7] Attributed originally to Rogers but described in Freeman (1988), Chapter 3 in *Innovation, Technology and Finance*, Ed. A Heertje, Oxford: Basil Blackwell.

Figure 3: Stages of Market Development: moving up the S-curve



In Figure 3 above, four distinct phases of market growth are delineated:

(i) *The pioneer phase* when a few early entrants launch and test out their products and start to find success;
(ii) *The breakout phase* when the success of the pioneers is noticed, leading to rapid entry of new firms and expansion of the market;
(iii) *A consolidation phase* when a shakeout of firms occurs due to increased competition or external factors such as regulation, although the number of customers continues to grow but at a diminishing rate;
(iv) A final *maturity phase* when the number of firms in the industry and its norms and rules have been settled, and the market grows at a steady, natural rate.

In each phase, providers encounter different barriers to growth; and policy makers and regulators encountered different risks. Table 2 below highlights some of the latter.

Table 2: Barriers and Regulatory issues in each Market Development Phase

	1. Pioneer	2. Breakout	3. Consolidation	4. Maturity
Barriers	• Technology stability • Customer understanding & trust • Business model scaleable	• Interoperability to get to scale & usefulness • Customer trust • Customer education & adoption	• Failures/ shakeout	• Barriers to entry for ongoing innovation and competition?
Public policy	• Gaps in	• Fly by night	• Depositor/	• Promoting

issues	current laws? • Contraventions of existing rules vs space for innovation	entrants/ fraud • Interfaces to existing systems • Interoperability	payer losses as a result of failure? • Systemic stability • Emerging market structure	access
Regulatory strategies	• Monitor/ engage • Roadmap	• Facilitate/ Coordinate	• Supervise	• Ensure ongoing competition

A phased approach to market enablement requires an understanding of which stage a market is currently; and of the barriers and uncertainties which will shape its possible development trajectories. This understanding itself requires dialogue between regulators and providers, especially in a new market where uncertainties abound.

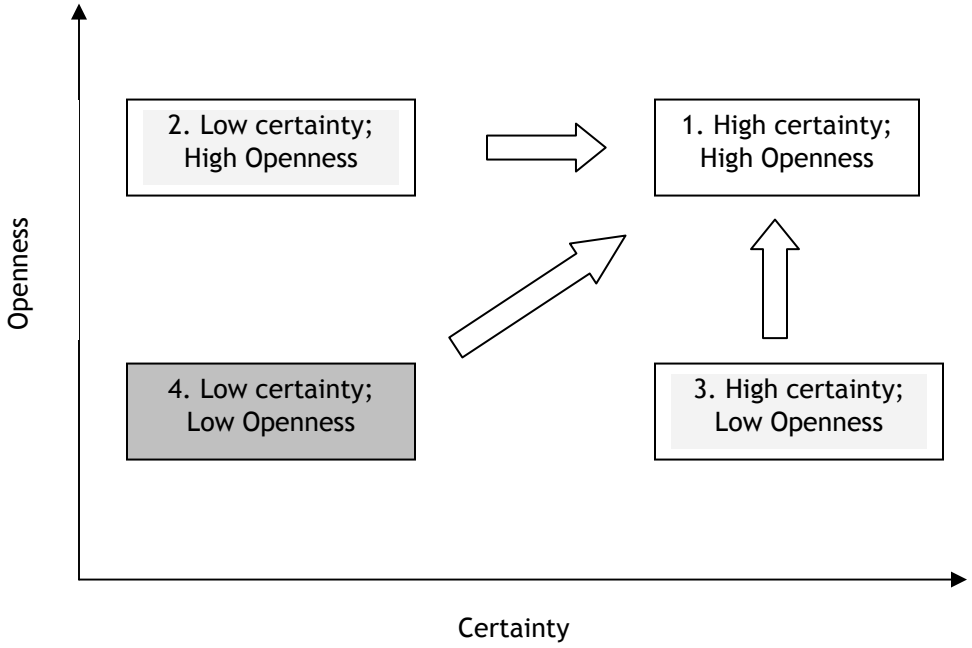
2.3 Openness and certainty at the early stage

In the early stages of a new market, two dimensions in particular affect the market development trajectory:

1. *Openness*: does the policy, legal and regulatory environment allow for (or better encourage) the entry of new providers and approaches? If not, there is little room for innovation to come to market.
2. *Certainty:* does the policy, legal and regulatory environment provide sufficient certainty that there will not be arbitrary changes in future which may prejudice the prospects of entrants? If not, entrants (at least those with a longer term horizon) will be discouraged from incurring the cost and risk of entry.

Ideally, therefore, an enabling environment is one which is sufficiently open and sufficiently certain; but in reality, there may well be trade-offs between these two dimensions. It is often the case for new markets that one or other dimension is neglected: for example, countries with few laws or regulations and with limited regulatory capacity may be very open to new developments, but, if there is a high level of uncertainty, for example, as result of the possibility of arbitrary action in vague areas of the law, there still may be little market development. This position is represented in Box 2 in Figure 4 on the next page. Equally, regimes with more certainty are likely to have better defined laws, but the wider coverage may well restrict new entry (as in Box 3 in Figure 4).

Figure 4: Enabling the Environment: increasing openness & certainty



Enabling a new market may be therefore understood as moving in the direction of the arrows from the starting point, towards greater openness and certainty. To be sure, openness and certainty remain important in later phases of market development too, but are crucial if a market is to develop at all.

Later in this report, we will attempt to apply these concepts to mobile banking by asking what constitutes sufficient openness and sufficient certainty for it to develop from the early stage.

2.4 Additive and transformational approaches to banking

Mobile banking holds out the prospect of increasing access to appropriate formal financial services by those who presently lack it. It could also make banking more convenient, possibly even cheaper, for those who already have financial services. The two approaches are not necessarily exclusive—greater convenience for existing clients could also lead more accessible products for current non-clients—but neither are they necessarily linked.

This report distinguishes between:

- A*dditive approaches*, which primarily target existing banked customers, and which offer the mobile channel as an additional channel, alongside or as part of others (such as internet); and
- *Transformational approaches*, which intentionally reach out to markets beyond the existing banked groups, through a product offering which meets the known needs of the unbanked groups.

Unbanked people, by far the majority in most developing countries, are in fact a heterogeneous group, including people who may have adequate incomes but from an informal source, as well as poor, rural dwellers. As the result of ongoing research in the field of microfinance, we now have a better sense of the elements required for a basic financial service to meet the needs of unbanked

people, and in that sense, to be transformational. A recent *MicroSave* briefing note (Wright et al 2006) lists the elements of transaction banking which constitute a suitable value proposition for poor customers:

- A safe place to keep money
- The ability to cash in and cash out at convenient locations (since cash is still pervasive) at a reasonable fee; and
- The ability to transfer money, both to make payments and to remit money to friends and relatives.

Research by CGAP and others in different contexts confirms the basic elements of this list, which therefore will be regarded as the essential elements of a transformational proposition.

2.5 Summary

The introduction of this report described the prospect that mobile banking will enable widespread access to financial services. For this to happen, mobile banking offerings must be in some measure transformational. This section has defined this concept, against the background of the main elements of a dynamic enabling environment. The next section describes the emerging models of mobile banking; and subsequent sections go on to identify the basic elements of openness and certainty in the environment which may be required for these models to take root and grow in developing countries today.

3. EMERGING MODELS AND DEVELOPMENTS IN M-PAYMENTS & BANKING

3.1 Definitions

Mobile payments (m-payments) are a small but growing subset of the broader world of electronic payments (e-payments). While consumer may initiate and authorize e-payments through a number of other electronic channels such as the internet or card-based acquiring devices like ATMs, mobile payments are made using a mobile device such as a cell phone or PDA. M-payment is simply the transference of value from payer to payee, as in a remittance or bill payment.

Mobile banking (m-banking) in turn is a subset of e-banking in which customers access a range of banking products, such variety of savings and credit instruments, via electronic channels. M-banking requires the customer to hold a deposit account to and from which payments or transfers may be made.

This report considers both m-payments and m-banking. The focus, however, is on m-banking, since the transaction costs of payments are greatly reduced when there is an electronically accessible store of value. In most regulatory regimes, creating account-based stores of value is regarded as banking-related business. The question of who may hold the deposit balance turns out to be a crucial issue affecting the development of these models. Even if the focus is on the wider aspects involved in m-banking, the spread of m-banking depends to a large extent on developments in the technology and regulation of m-payment.

3.2 The context of e-payments

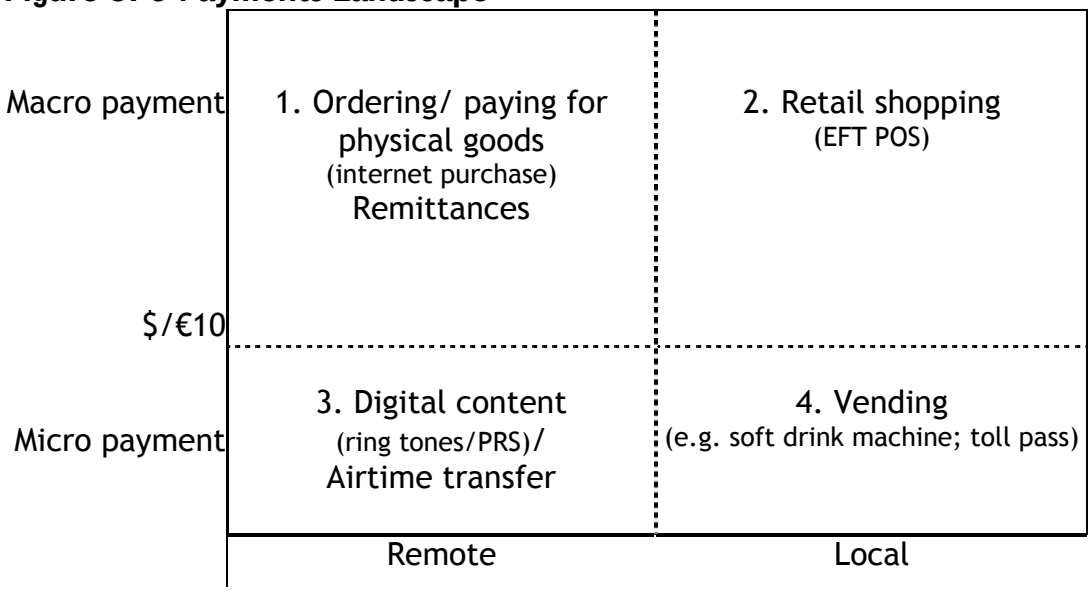
The BIS Committee on Payment and Settlement Systems (CPSS) produces a regular *Survey of e-money and internet and mobile banking*, which scans developments in this sector. The most recent (2004) CPSS survey reported that payments using the internet and mobile phones have advanced rapidly in recent years, compared to the usage of e-money which has lagged, at least in e-purse form.[8]

Figure 5 below, drawn from the Mobey Forum White Paper (2003), distinguishes four distinct zones in the e-payments landscape, based on:

- *Size of the payment*, using $/€10 as the conventional threshold size between micro and macro payments on the vertical axis[9]; and
- The *location of the payer relative to payee*: either in separate locations (remote) or in close proximity (local).

[8] CPSS (2004) available via http://www.bis.org/publ/cpss62.htm
[9] The new micro payments threshold is €50 today in the EU proposed payments directive.

Figure 5: e-Payments Landscape



Above the conventional micro-size threshold, the 'macro' payment space (Zones 1 & 2 above) has been the traditional preserve of banks. Over the past decade, in developed countries at least, banks have provided easy internet access as a convenient means of paying for goods and services from remote vendors (Zone I above). Innovation has also enabled non-banks to enter this space: new payment providers such as US-based PayPal have developed effective internet payment models to support remote purchases over the internet and even enable person-to-person payments. However, they generally work to provide convenient means of making payments from (bank) account to account. For purchase in-store, banks which are members of international card associations such as VISA and Mastercard have developed an extensive electronic acquiring infrastructure at point of sale (Zone 2).

To date, mobile phones have been used for payment mainly in the micro, remote space (i.e. Zone 3 above). A recent Mercator study found that annual micro payments by mobile in the US have increased from $2 billion to $5 billion between 2003 and 2004. [10] The biggest single size category is payments of between $5-49 each, suggesting that the accepted micro threshold is already shifting upwards. In this space, telcos have been dominant. They have combined with other content providers to offer Premium Rated Services (PRS)[11] such as airtime top-up, ringtone purchase or access to information services such as weather or stock quotations. By sharing in the revenue from such services, telcos are able to increase their revenue per customer and buttress their proposition vis a vis competitors. However, the purchase of PRS requires the buyer to make a micro-payment. Since the telco infrastructure has been designed to support billing for small value, high volume transactions (such as voice calls or SMS's), mobile operators are able to collect small payments cost effectively from mobile subscribers, usually by directing debiting their airtime accounts.

[10] Available via http://www.mercatoradvisorygroup.com/index.php?doc=Emerging_Technologies&action=view_item&id=116&catid=5
[11] Also known as Value Added Services (VAS)

In Zone 4 (micro but local), mobile vending and transport applications have been developed in several countries: for example, a mobile phone may be used to transmit payment to a vending machine which then releases a soft drink; or a mobile device in a car may be used to transmit a signal to a toll gate, deducting payment without having to stop. While some of these individual applications, such as the much cited Octopus system for HongKong mass transit, are reaching scale, the number of large-scale deployments, especially outside of developed countries, remains few. To date, the transport applications have required a separate card or token; however, the growth and systematization of near field communication (NFC) standards is likely to accelerate the convergence between mobile phones and contactless card solutions: as *The Economist* recently reported, "Near-field communication technology could fuse tickets, key cards and cash with mobile phones."[12]

The growing use of airtime to make payments for other services raises an important question for policy boundaries: do such payments amount to the issuance of electronic money (e-money), and therefore deposit taking by telcos without their being regulated as banks? If the account which is debited is a post-paid (i.e. contract) airtime account, or indeed, a bank debit or credit card account , the question does not arise. However, if the debited account is a pre-paid airtime account, then the telco may be acting as an issuer of e-money.

3.3 E-Money

E-money was defined in Europe through the passage of an enabling directive in 2000.[13] This Directive was intended to enable innovation by recognizing a new class of entity as an e-money issuer, which would be subject to lighter regulation than banks because of the lower risks involved. Specifically, e-money issuers could not grant credit, as banks can, and therefore cannot 'create' money; but are restricted in the assets in which they may invest. An e-money issuer is therefore a type of narrow bank, restricted to payment functions as a result of e-money balances held.

E-money is defined by the EU Directive as "monetary value as represented by a claim on the issuer which is:

1. stored on an electronic device (in this case, computer system of the telco);
2. issued on receipt of funds of an amount not less in value than the monetary value offered (when the airtime was bought); and
3. accepted as a means of payment by undertakings other than the issuer."

This definition is vague and ambiguous however. In addition to covering the purchase of PRS using pre-paid airtime, it could include other unintended categories of transaction, such as the airtime itself when used in mobile electronic communications.

Consequently, the European Community (EC) and country regulators have sought to provide boundary guidance on when the usage of pre-paid airtime balances to purchase goods constitutes the use of e-money. The UK's Financial Services Authority found that, provided the services are delivered on the mobile device as part of a single service (e.g. a stock quote or weather report received by text on the phone), this would not constitute the issuance e-money.[14] However, where the service is paid for using the pre-paid balance but delivered to another device (e.g. the stock

[12] *Economist Technology Quarterly* 8 December 2005
[13] Directive 2000/46/EC
[14] http://www.fsa.gov.uk/pubs/cp/cp172_newsletter.pdf

quote routed to a computer via e-mail), this would constitute e-money issuance, requiring the telco to register and be licensed as an issuer.

The 2004 EC Guidance note proposes that a key test is whether there is in fact a direct debtor-creditor relationship between the buyer and third party provider of PRS services.[15] The proposed EU Payments Directive seeks to clarify that it does not apply to those transactions made using a mobile phone where the telco is closely involved in the goods provided and where the goods cannot be delivered without the telco.[16]

To date, there are only 6 active e-money institutes (EMIs) registered in Europe, although a number operate under country-level waivers. Other than Vodafone in the UK, no mobile operator has yet registered. The EU therefore offers an example where enablement has taken the form of the passage of new legislation.

A recent review of the E-money directive concluded that the legislation had succeeded only partly in its objectives of encouraging new entrants and promoting the development of e-commerce. [17] National EU regulators differed in their views and approaches to implementation. The greatest enablement seemed to have occurred when a national regulator (FSA in the UK) maintained an ongoing dialogue with the providers in the sector. Several non-bank groupings made representations to the review that, even though capital requirements and supervision requirements were typically lower than for credit institutes (i.e. banks), they were still too high to make e-money issuance viable. It now remains to be seen how the EC will respond to the findings of the review. In the terms developed in Section 2, the EU E-money legislation may have brought certainty, but it lacked openness in several crucial ways.

By contrast, e-money issuance in the USA is largely unregulated at a federal level, although state-level regulations apply. Paypal is regulated as a money service business primarily at the state level, although it also has a UK e-money license for its activities in Europe. US legislators and regulators have consciously avoided overarching laws to date to allow the space to be open for innovation. The basic approach to e-money espoused by Alan Greenspan in 1997 remains largely in place today: “I am especially concerned that we not attempt to impede unduly our newest innovation, electronic money, or more generally, our electronic payments system.”[18] The US approach is therefore still characterized by openness to innovation. Issuance of e-money in the form of pre-paid cards has expanded greatly, although the issuance of e-money by banks has gradually been brought under the same regime as insured and regulated normal deposits.

During the course of this project, the South African Reserve Bank issued a revised guidance note on e-money in that country, updating the first one issued in 1999. The new note uses the EU definitions of e-money and maintains the position that only banks are allowed to issue e-money.[19] This note, and its predecessor, have brought clarity in SA, but have closed the process to non-bank issuers.

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[15] http://europa.eu.int/comm/internal_market/bank/docs/e-money/guidance_en.pdf
[16] Article 3(j)
17 http://europa.eu.int/comm/internal_market/bank/docs/e-money/evaluation_en.pdf
[18] P.48 in Dorn (1997); Greenspan also predicted that e-money was likely to spread gradually in the US, in part because of widely available alternatives: so far he has been right.
[19] Available via http://www.reservebank.co.za/internet/Publication.nsf/LADV/A760BB248F6804C142257145002A8FCF/$File/ecashpos_Apr06.pdf

While few developing countries have e-money legislation or guidance, the question of e-money issuance is even more relevant in developing countries than developed countries for the following reasons:

- 79% of mobile subscribers in low income countries and 55% in middle income countries are pre-paid[20], hence the issue of e-money is more likely to arise; and
- In many low income countries, telcos have much stronger retail brands and distribution networks than often weak banks, therefore may face less competition in the payment space.

It is therefore more likely that telcos in developing countries will find it attractive to issue e-money. Indeed, many do already.

3.3.1 Can airtime serve as e-money?

Mobile operators in Kenya and SA offer popular airtime transfer services, such as Me2U (from MTN in South Africa) or Sambaza (Safaricom in Kenya). For a small fee, one pre-paid customer may transfer a portion of her airtime to another user on the same network. The characteristics of this service have led some to suggest that airtime is a *de facto* form of e-money or alternative currency. A BBC commentator comments on the launch of the Sambaza service in Kenya: *"What* (Safaricom CEO) *Michael Joseph has actually done is to create a new currency --a cyber currency that can be sent anywhere in the country at the press of a button, without needing a bank account or incurring high bank charges."*[21] *The Economist* magazine in 2005 reported the story of a woman in Democratic Republic of Congo (DRC) who settled a bribe to officials across the country by sending them airtime.[22]

Beyond the increasing anecdotes, there is as yet no systematic evidence that airtime transfers are being used as money on large scale. Survey work is underway in various places which will test usage patterns.[23] However, in the absence of other quick, safe and cheap ways of transferring money, it is at least plausible that airtime transfer could assume some of the characteristics of money transfer or remittances.

This is because airtime shares to some degree the basic characteristics of money:

- It uses a commonly accepted unit of account: it is typically denominated in currency units (not, for example, time units).
- It can be an efficient medium of exchange in societies where the financial system does not allow easy remote transfers, as in the DRC example, provided that the other party can and does accepts it; however, transfers are usually limited to users of the same network, limiting the value for other mobile users.
- It can be a store of value, provided (i) that the telco continues in business, and (ii) the airtime does not expire (the validity window is often short, for example a month, on pre-paid airtime).

Within the constraints of airtime validity and same network usage, airtime is very likely already an alternative currency of sorts. The more interesting question is perhaps how widespread it may become in developing countries.

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[20] ITU 2004
[21] Jeremy Faludi, *A New Kenyan Currency,* 5 July 2005, http://www.worldchanging.com/archives/003039.html
[22] *Economist* 29 June 2005
[23] For example, a research study on airtime transfers in Egypt through the Vodafone SIM Panel

The biggest constraint here is its real cost: airtime is not redeemable at par into cash. The issuing telco would not be able to offer face value on redemption because of paying away a sizable commission (typically 15%) on the face value of the airtime at first sale. In addition, sales or value added taxes are often levied on the face value of the airtime. However, these cost factors alone do not prohibit the redemption of airtime into cash by vendors or indeed, the network operator itself; they simply translate into a deep discount to face value.

If the relevant comparative price is the cost of a remittance by other formal channels, airtime transfer may still be appealing. For example, an airtime vendor may accept 'second hand' airtime transfers at a discount of 15% to its face value, knowing that he could re-sell it to other users at par and effectively match his usual commission. This could compensate for the loss of network commission on subsequent on-sell. Discounts of this magnitude are quite similar to the add on fees charged in developing countries: to send $100 net through a money transfer service may cost the remitter $120; similarly, a remittance of airtime worth $120 (sent for a network fee of around 30c US) may be cashed out at an airtime vendor at a discount of say 17%, to be worth $100 net.

To narrow or reduce this discount will require different models for cashing out airtime. Larger volumes of acceptance may in themselves reduce the discount that vendors need to earn. It is therefore much more likely that airtime could function as a de facto e-money in developing countries. Furthermore, mobile operators may even be in a stronger financial position and have a stronger retail brand than banks in many.

3.4 Emerging experiences of m-payments

3.4.1 Developed countries

In Europe and the US, other than for the purchase of PRS, there has been limited use of mobile payments to date, despite earlier expectations to the contrary. Expressing widely held frustration, *The Banker* magazine recently carried an article entitled: "When will mobile get moving?"[24] The slower pace of adoption in these countries is perhaps no surprise, however: banked customers have had little reason to move from accessible, trusted electronic channels such as internet or use of card at point of sale, to a new approach which is not yet stable or pervasive.

In Western Europe, in particular, there have been a number of attempts to create m-payment platforms and products. In October 2002, the Joint Vienna Institute identified no fewer than 30 operators offering m-payment solutions of different kinds.[25] There has been limited success to date: several major collaborative m-payment platform ventures such Simpay, a consortium of four major European mobile operators, have failed to get sufficient critical mass to succeed. Fragmentation of the European market into unviable proprietary platforms has been described as one of the biggest risks to the development of the sector here.

In the US, outside of the transport sector, there have few major m-payments products offered, at least until recently. PayPal's launch of a m-payment offering in March 2006 in the USA and Canada is a significant development which could accelerate take-up due to its critical mass of 100 million clients.[26] Although these clients are mainly in the US, PayPal has clients in 54 other

[24] 4 November 2004, available via http://www.thebanker.com/news/fullstory.php/aid/2346/Will_mobile_get_moving_.html

[25] See "E=Payment Trends", Joint Vienna Institute, Oct 2002, http://www.oenb.at/de/img/epayments_021010_tcm14-17932.pdf

[26] Paypal mobile: https://www.paypal.com/us/cgi-bin/webscr?cmd=xpt/mobile/MobileOverview

countries, suggesting that diffusion of the service even for international remittances may be rapid once proven and as regulations allow.[27]

M-payments are far more pervasive in parts of Asia than in Europe and the US, reaching early 'break out' stage in Japan and Korea.

In Japan, major mobile operator DoCoMo added the functionality of a credit card embedded on the chip of its mobile phones in 2005. Using contactless FeliCa technology, the account represented by the chip in the phone can be charged by waving the phone in close proximity to a FeliCa point of sale device. FeliCa technology is already in use in mass transit systems in Japan. *The Economist* comments that DoCoMo's ability to integrate the hardware (cell phone) and service offering has enabled it to package its m-banking service in a way which operators elsewhere struggle to emulate, since they control only one of the key pieces but not both.[28]

For m-banking to take off, this level of control by one large player may be helpful, but not necessary. Despite a more conventional configuration of operators and banks, Korea has also experienced seen rapid growth in mobile banking adoption in recent years. Since a cooperative offering across Korean banks was launched in 2003, more than 10m customers (out of 38m mobile subscribers) have taken up mobile banking. In a recent article, *The Korea Times* has an upbeat assessment, although sounding a warning: "Although banking-on the-road services clearly have a bright future with exponential growth potential, there remain some barriers such as security concerns and disputes over standards."[29]

Japan and Korea are both high income countries with already extensive penetration of both internet and mobile phone. They demonstrate that m-payments and m-banking can flourish even where there are already established payment channels. However, especially since both countries have very high levels of banked population, there is no evidence that the m-banking offerings are transformational, nor do they need to be.

3.4.2 Developing countries: Philippines

More relevant to Africa, is the example of Philippines, a middle income developing country. Both of the major mobile network providers in the Philippines, SMART and Globe, have developed large scale m-banking offerings. Starting in 2000, Smart has offered a range of SmartMoney-branded banking products via the mobile phone, in close association with a large bank, Banco D'Oro. A Maestro debit card is also issued to enable Smart clients to use conventional ATMs and POS devices. Remittances may also be sent from Philippinos overseas, using the Smart Padala product. According to a recent Infodev study (2006), 2.5m people (of a subscriber base of 20 million) now use these Smart money services.

Competitor Globe entered the m-payments market only in 2004 with its G-Cash offering. Described as a mobile wallet, G-Cash is essentially an e-money product. G Cash can be used to make remittances, transfers and payments, and may be encashed or uploaded at a network of some 3500 agents countrywide. In 2006, less than two years after launch, Globe reports 1.2m banking clients, and this number is expected to double by 2007. Globe is now extending the use of its payment platform, for example, to enable loan disbursements and repayments to rural banks.

[27] http://www.epublishingdaily.com/paypal-reaches-100-million-accounts/
[28] *Economist* "Pay with a wave of your phone", July 21st 2005
[29] See article at http ://times .hankooki.com/service e/print/Print.php?po=times.hankooki.com/lpage/biz/20060..

Not enough is yet known about the customer base of these two major providers to assess how genuinely transformational the products have been in reaching customers without bank accounts. However, the descriptions of both service offerings generally meet the criteria suggested earlier in Section 2.4; and both have the potential to be highly transformational. The numbers alone mean that the example of the two Philippino providers is likely to be transformational in demonstrating the market potential for such products within lower middle income countries.

Apart from the Philippines, there are also reports of recent growth in other middle income regions such as Eastern Europe and Middle East, where VISA Mobile has been active in Jordan since 2004.[30] However, the Philippines is one of the few developing countries markets where m-payments and m-banking has moved out of the pioneer phase, identified earlier, to the start of the breakout stage where scale is achieved through rapid growth.

3.4.3 Developing countries: Africa

In sub-Saharan Africa, a number of banks have introduced m-banking products; and a variety of models is now offered. Most are at an early stage, however.

Most of the offerings to date have been additive. In countries with sufficiently large retail banking customer base, such as Kenya (inter alia, by Coop Bank), Nigeria (via GloMobile), South Africa (all four major banks) and Zimbabwe (Kingdom Bank and Econet), banks have added on mobile offerings as additional channels for their existing products. Although accurate numbers do not yet exist at continental level, it is unlikely that there are more than a million m–banking users in early 2006.

There are also emerging models in certain African countries which, though at an early stage, at least have or had the potential to be transformational. Because of the focus of this report, there was further engagement and interaction with each of these providers to understand their models and the barriers which they face to scale roll out:

- *Celpay Holdings*, originally a subsidiary of network operator Celtel, started offering mobile payment solutions in Zambia in 2002. The *Wall Street Journal* at the time dubbed this "Africa's world first in cell phone banking"[31] Although Celpay has retail functionality, enabling funds to be deposited via banks into virtual Celpay accounts from which they can be transferred by mobile phone, the focus of its business model has become business to business payments around the logistics chains of large corporates with far flung distribution, such as breweries and oil companies. It has also extended its coverage to adjacent DRC, where it offers a means of payment for airtime vendors. South Africa's First Rand Banking Group bought Celpay from Celtel in 2005. It operates using software developed by Fundamo.
- *MTN Mobile Money* was launched in South Africa in 2005 as a joint venture between the country's second largest network operator MTN and large commercial bank, Standard Bank. Mobile Money starter packs are available via MTN agents and bank branches; and account opening takes place remotely through an interactive process during which voice recordings are taken as biometric identifiers and the Mobile Money menu is downloaded over the air to a 32 k SIM card. Like Celpay, Mobile Money uses Fundamo software. As of April 2005, Mobile Money reported 15 000 clients.

[30] Total Telecom 9 Jan 2006
[31] *Wall Street Journal* 12 December 2002

- *M-Pesa* is a m-payment platform developed by Vodafone Group, with initial support from DFID's Financial Deepening Challenge Fund. M-Pesa was launched on a pilot basis by country operator Safaricom in Kenya in 2005. In the pilot, M-Pesa is used to disburse loans from a microfinance institution (FAULU) to its clients, and then to collect repayments via designated Safaricom airtime agents. Pooled M-Pesa balances are held at a Kenyan bank. In pilot phase, M-Pesa is primarily a payment provider for the MFI, but the functionality exists, and is being explored, for person-to-person transfers of balances which will move the model into e-money issuance.
- *Wizzit* started in 2005 in South Africa, using software jointly developed with Cointel on a USSD platform. Wizzit is formally a division of the Bank of Athens of SA, which is legally liable for the deposits taken. However, the brand is owned and the operations are run by a separate entity started by independent entrepreneurs who believed in the market potential for this type of service. The linkage to a clearing bank provides Wizzit account holders with access to the conventional e-payments system of South Africa, including obtaining cash via ATMs using a Maestro branded debit card which is issued as part of the offering. Wizzit bank accounts are opened remotely by commission paid agents called Wizzkids.

Table 3 below assesses the potential for each of these approaches to be transformational.

Table 3: Transformational Potential of African m-banking models

Criteria:	Celpay	M-Pesa	MTN Mobile Money	Wizzit
1. Targets unbanked customers	No	Yes	Not specifically, but as part of offering	Yes
2. Product features:				
(i) Safety	Funds in float at bank	Funds of MFI in float at bank	Accounts held at bank	Accounts held at a bank
(ii) Easy access to cash back/in	N/A	Yes—airtime agents	Card access to existing ATMs/ bank branch	Card access to ATMs/ bank branch
(iii) Ability to transfer	Yes	Yes	Yes—to any bank account	Yes—to any bank account
(iv) Specific Hardware requirements	Yes	No	32k SIM	No
(v) Linked to one network operator	No	Yes	Yes	No

These African m-payment providers are all at a relatively early stage; a variety of different models, platforms and approaches is being tested. Most of the technology platforms in use are considered stable, but the sustainability of each of the business models has yet to be proven since none has yet achieved substantial scale or market traction. Unlike the Philippines, the African m-payment market is therefore still in pioneer phase. The constraints faced by present African providers will be discussed in Section 4.

3.5 Categorization of m-banking models

The emerging m-payments and m-banking models discussed in the previous section differ according to the roles played by the main providers in an m-banking solution: the bank, the telco and/or a possible third party entity.

Mobey Forum has recently (2006) produced an elegant analysis[32] of the different 'mobile financial services business ecosystems.' This analysis distinguishes the two critical roles as (i) the issuer of the security element (such as the SIM) used to authenticate and authorize; and (ii) the platform manager. Different scenarios exist where banks and telcos fill these basic roles in different configurations. Mobey Forum believes that the biggest potential for international growth of m-banking exists when personalization bureaux (such as chip/SIM card issuers) take on the role of platform manager, which owns the cryptographic keys that enable service providers to download an application to the security element. This analysis adds a useful perspective of what may be necessary for a high level of international operability, but the simpler categorization provided here is operationally more functional for policy makers in developing countries.

Based on the answers to four key questions, four models may be identified:

(a) *Who is legally responsible for the deposit?* Usually, deposit taking is the regulated preserve of banks only, but where this is not prohibited, telcos and other issuers of pre-paid balances can also become issuers of e-money. The legal situation can seemed blurred when telcos pool individual deposits into one aggregated account at a bank, which has no sight of or role in administering the underlying individual accounts; however, when the bank itself does not recognize the individual accounts, deposit pooling is effectively the issuance of e-money.

(b) *Whose brand is most exposed to the public?* This consideration is related to the issue of responsibility for the deposits, through the reputation risk involved. Note that in many developed countries, where there may be small banks with limited penetration, the brands of the few telcos with much larger clients bases may be far more valuable.

(c) *Where can cash be accessed?* The key question here is whether, in addition to conventional banking outlets such as branches or ATMs, additional agent networks brought into the offering for cash back or taking deposits, such as airtime merchants.

(d) *Who carries the payment instruction?* The key issue here is whether the m-banking service is tied to one network operator or is network-independent.

Table 4 shows how the typical clusters of answers to these questions produce four main models, for which examples are given at the bottom.

Moving from column one (the 'pure' bank-driven model), telcos or non-banks introduce key elements to the m-banking offering such as new brands (model 2) and/or the new cash networks (model 3). Hence, as one moves across the spectrum of models to the right, the bank becomes less important to the model even though bank accounts are involved. Model 4 crosses a decisive regulatory line since the telco effectively becomes a depository entity through the issuance of e-money.

[32] http://www.mobeyforum.org/public/pressreleases/Mobey%20Forum%20MFS%20Business%20Ecosystem%20Summary.pdf.

Table 4: Classification of emerging m-banking models

Model →	1	2	3	4
Model name	'Pure' bank driven	Joint venture	Non-bank led	Non-bank driven
(a) Who holds the account/ deposit?	Bank	Bank	Bank	Telco/ Non Bank
(b) Whose brand is dominant?	Bank	Joint—non-bank or telco	Usually non-bank or telco dominant	Telco/Non Bank
(c) Where can cash be accessed ?	Bank	Bank	Bank + alternative agent network	Telco network + other
(d) Who carries the payment instruction?	Any telco (sometimes with 3rd party payment gateway)	Usually specific to one telco	May be one or any	Specific to offering telco
Current Examples	Many additive models e.g. FNB	MTN Mobile Money, Smart	M-PESA, Wizzit	Globe; Celpay

Table 4 shows that a range of approaches is being tried in Africa today, including models similar to the Philippino models which are showing signs of success. Given that all models in Africa are at a relatively early stage and that some may well fail to reach sufficient scale to be sustainable, it is important that there is such a range.

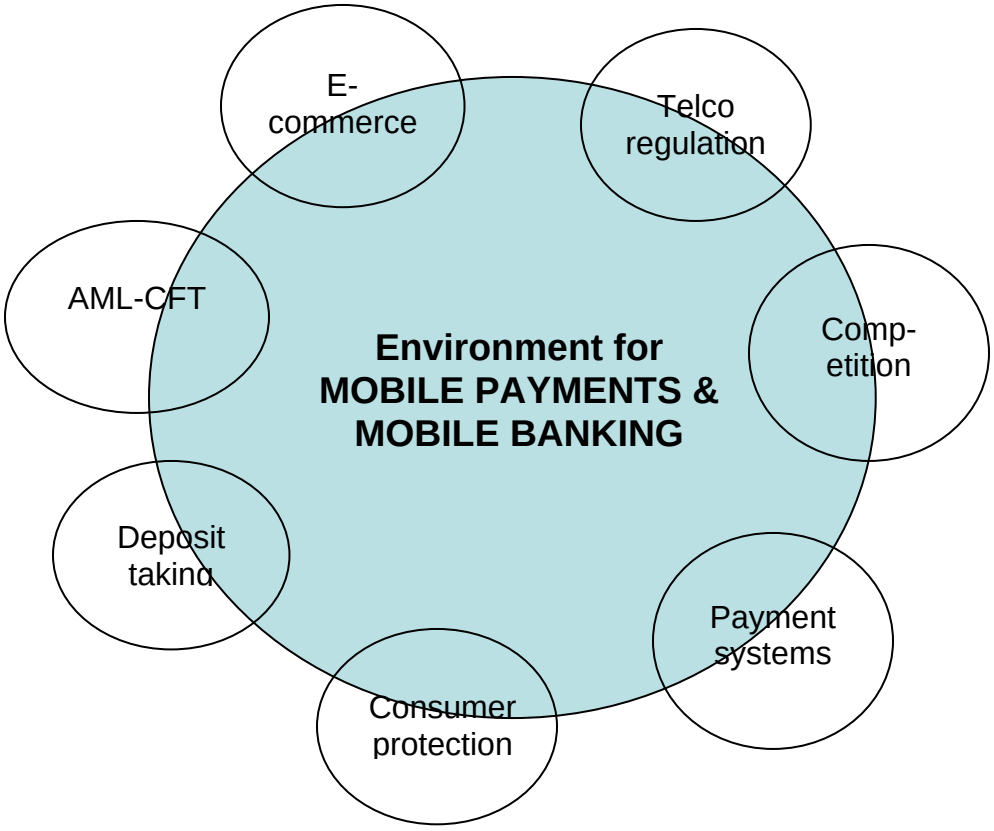
4. REGULATORY & POLICY ISSUES

4.1 Overlapping issues

As Figure 6 graphically depicts, m-banking sits at the intersection of a number of important policy issues. Each issue is complex in its own right, and is often associated with a different regulatory domain: as many as five regulators (bank supervisor, payment regulator, telco regulator, competition regulator, anti-money laundering authority) may be involved in crafting policy and regulations which affect this sector.

The complex overlap of issues creates the very real risk of coordination failure across regulators. This failure may be one of the biggest impediments to the growth of m-banking, at least of the transformational sort. However, even without the additional complexity introduced by m-banking, many of these issues require coordinated attention anyway in order to expand access. It is possible, however, that m-banking may be useful because the prospect of leapfrogging may help to galvanize the energy required among policy makers for the necessary coordination to happen.

Figure 6: Overlapping domains



The issues will be grouped by their usual regulatory domain and discussed in turn.

4.1.1 Issues for ICT Policy makers: are e-signatures recognized legally?

M-payments require the accepted use of electronic signatures, such as a PIN number but also including biometric identifiers, to authorize transactions. If the e-signature is not legally valid, the transaction could be subject to challenge, exposing payment agents and payees to the risk of repudiation. There is therefore a need at least to provide status to electronic transactions equivalent to that achieved by physical signature.

PIN numbers are already in widespread use in developing countries—for example, as a security feature on mobile phones—but not yet as e-signatures. Many developing countries have yet to adopt legislation enabling e-commerce. It is unlikely that individuals will accept the risk of accepting or making larger e-payments, or build new business cases on the receipt of e-payments, if their validity may be challenged. Establishing the legal validity of e-signatures is therefore a need for the m-payment/ m-banking market to grow to scale.

4.1.2 Issues for Financial Regulators

- **Are consumers adequately protected?**
  Consumer protection is a traditional concern of policy makers and of most financial regulators. In developing countries, the enforcement of consumer protection measures is often ineffective or lacking. However, in societies with low financial literacy or large numbers of first time customers, the vulnerability to abuse is higher.

  The issue for m-banking goes beyond traditional concerns about abuse of consumers. however: in new markets especially, customer adoption depends on growing trust. The experience of consumers at the hands of a few reckless providers may cause them to distrust all similar offerings in the market. Providers may therefore enjoy positive externalities from creating appropriate levels of consumer protection which help create trust, leading to more rapid adoption.

  However, there may also be negative externalities from inappropriate protection. By imposing higher costs on providers, certain protective measures may result in small balance accounts becoming unviable and therefore not offered. Those already holding accounts may be better protected by these measures; but those who cannot qualify as a result are without access to the product, and may be forced to use unregulated alternatives.

  A balance must be struck on this issue, therefore.

  The starting point is to identify the risks to which consumers are exposed. In m-payments, these typically include fraud (loss as the result of unauthorized transactions), loss of privacy (through inadequate data protection) and even loss of service. The level of risks involved vary with the nature of the product offering, and have been analysed in detail by the Mobile Payment Forum.[33] The security issues involved in customer

[33] See for example, the publication on the best practice in managing security risks available via http://www.mobilepaymentforum.org/pdfs/MPF_Security_Best_Practices.pdf

authentication and authorization through all the stages of wireless transmission have been considered in some depth by the main industry fora. These are complex and fast changing.

- **How do m-payments affect the stability of the banking system and national payment system?**
  The soundness of the banking system and of the national payments system are central to the mandate of most financial regulators. Fears that stability could be undermined often lead to conservative responses to product or service innovations, especially if they come from outside the banking system. Such conservatism is to be expected, indeed welcomed, when systemic stability is indeed at risk; but not when it leads to innovations being suppressed without regard to real risks: the CPSS includes among the main objectives of payment system regulation that regulators "address legal and regulatory impediments to market development and innovation."[34] Proportionality is therefore a key principle of good regulation, although it is often hard to apply in practice, especially in new and fast evolving markets.

  The conventional approach to the regulation of payment systems distinguishes between systemically important and non-systemically important systems. Systemically important is defined as "where, if the system were insufficiently protected against risk, disruption within it could trigger or transmit further disruptions amongst participants or systemic disruptions in the financial area more widely."[35] This determination is made based mainly on the size or nature of individual payments or their aggregate value. At least one of the following should be true for a payment system to be systemically important:
  - It is the only national payment system
  - It handles mainly payments of high value
  - It is used for settlement of financial market transactions.[36]

  The more precise definition of systemically important is left to each country regulator. According to the general definition, retail payment systems would usually not qualify, although the CPSS also notes that it may be desirable for non-systemically important systems to comply with some or all principles.

  In the 'pioneer' phase of a new retail payment instrument or system, the case to apply full, or even partial, regulation is likely to be weak. However, as the system grows in coverage, it is likely to reach a system-wide usage threshold (in the sense that many people rely on it), even if it is still not considered systemic. It would now warrant much closer oversight by regulators, who may require assurances such as that there is adequate backup procedures in place.

- **Does the law distinguish adequately between payments and deposits?**
  Confusion in jurisdiction between payment regulators and bank regulators may be caused by the lack of clarity over the difference between a payment and a deposit. The legal boundaries between the two categories are often vague. Vagueness may result either in legitimate payment developments being stifled through being incorrectly regarded as deposit-taking; or unregulated deposit taking under the guise of being a payment service. Neither is desirable.

[34] CPSS 2003: 2
[35] Available from http://www.bis.org/publ/cpss43.htm
[36] CPSS 2003 Section 6.6

Evolving EU law provides an example of growing clarity over the distinction. The proposed EU Payments directive defines a payment transaction broadly as "the act, initiated by payer or payee of depositing, withdrawing or transferring funds from payer to payee, irrespective of underlying obligations between payment system users".[37] A deposit is also a form of payment (from depositor to bank or credit institution) but it significantly different in that it is repayable to the depositor at a future time.

These transaction level definitions then inform the corresponding definitions of payment providers (which enable payments to be made or received) and banks (which take deposits in order to on-lend). Clearly, the prudential risks of each type differ, although more in degree than form: payment providers are usually limited in the maximum time to effect the payment [38], reducing the amounts at risk in event of failure, although 'funds in transit' may still be substantial for large payment providers.[39] Because of this risk, payment legislation typically requires licensing and supervision of payment providers; and imposes minimum capital requirements[40], though these are much lower than for banks.

- **Does the law provide for e-money issuance? By which entities?**
  Section 3.3 discussed the issues arising from the apparent issuance of e-money by telcos when pre-paid deposits are used to buy services other than airtime. This question has forced clearer definition of e-money in Europe at least. However, given the growing role of telcos in most countries, there is a need everywhere at least to define e-money; and to determine which institutions may issue it—banks only, or others as well?—since prudential (and possibly systemic) risks arise if a large scale issuer fails.

- **Is there provision for agencies for cash withdrawal and deposits?**
  For the foreseeable future, cash will remain the most widely used transaction medium in developing countries. It is therefore necessary that there be sufficient points at which bank money (i.e. in a bank account) or e-money (e.g. at a telco) can be deposited or cashed out.

  Traditionally, these transactions happened via a bank teller, but branches are expensive to set up and run; extending branch networks into lower income or less dense areas is unlikely to be a viable means of increasing access to cash. Deployment of ATMs can help, since they may be cheaper than branches to set up and run. However, for developing countries, ATMs are still relatively expensive, and typically require secure premises and ongoing servicing.

  Therefore, there is a need to use existing businesses which carry cash anyway, as bank agents or correspondents. They may be linked electronically to the bank or e-money issuer, so that customers can withdraw or deposit cash there. In effect, these arrangements amount to outsourcing the front end of the deposit-taking business. In some regimes, banks may not outsource any material function without regulator permission; in others,

[37] Article 2
[38] The proposed EU Directive provides for transfer by the end of the working day following receipt of funds (Article 60).
[39] For example, Jacobs (2005:9)describes the consequences of the failure of US money transfer operator CashPoint Network Services, with hundreds of retail locations in New York: "Ultimately, the company owed millions of dollars in unpaid bills to utility companies…Some consumers were forced to repay bills they had already paid."
[40] In the US, bonding requirements for payment operators vary greatly by state but may be as high as $2m.

the front-end deposit taking function is viewed as being so core to banking business that deposit taking outside secure bank premises is prohibited. Even in regimes where there are no explicit prohibitions, regulators (and banks themselves) may be very cautious about outsourcing the collection of deposits to agents because of the risk of fraud and loss of reputation of the banking sector. However, new technology has greatly improved their ability to manage the risk inherent in agency relationships.

- **How do AML/CFT regulations affect account opening and cash transactions?** International Anti Money Laundering/ Combating the Financing of Terrorism (AML-CFT) standards set by the Financial Action Task Force require that adequate customer due diligence (CDD) be undertaken on all new accounts and on single payment cash transactions. [41] This process is part of Know Your Customer (KYC) procedures so that suspicious transactions can be identified. National laws and regulations are required to give effect to these standards, and they typically require:
  - Verification of identity of the client, using a government issued identity document; and
  - Verification of physical address (for example, by production of a bank statement or utility bill in name of the customer).[42]

  If this procedure is not followed, the bank or payment agent may be penalized by the relevant authority; or frozen out of international payment systems by other banks concerned about the risk of being associated with illicit activities.

  In many developing countries, clients have no formal address: the UPU reports that in Africa, only 22% of households receive mail at home; and some 10% have no mail service at all.[43] Even if they did, there is often no means of verification, other than a bank officer physically visiting the client's home. Isern et al (2005) have warned of the possible perverse consequences for access to financial services if an inappropriate rules-based approach is followed in developing countries. Therefore, transformational models, which target people less likely to have formal addresses, require flexibility in the application of CDD requirements.

  This issue applies across all types of bank accounts. In addition, transformational mobile banking models often involve the opening of accounts by agents outside of bank premises, known as remote account opening. This approach reduces the cost of origination considerably. Although there may be higher risks involved, international AML-CFT frameworks do not rule this out, proposing that a risk-based approach be followed.[44]

  Clearly, a risk-based approach to CDD has the potential to be sufficiently flexible. However, if national regulators give no guidance on what constitutes acceptable risk-based approaches, banks may be left vulnerable to subsequent reprisal; and this may encourage undue conservatism. In countries which strongly favour a risk-based approach

[41] FATF Recommendation No.11, usually linked to CDD standards in the BIS publication *CDD for Banks* (2001), and Special Recommendation VII for remittances.
[42] Note that a proposed anti-crime law in South Africa would similarly require the identity and address of all mobile users to be identified.
[43] UPU 2005, available from http://www.upu.int/statistics/en/development_of_postal_services_in_2004_en.ppt#276,2,Access to postal services
[44] See for example, BIS (2001) 2.2.6

such as the UK, there are fora such as the Joint Money Laundering Steering Group (JMLSG) which establishes guidance for its members on such issues.[45]

4.1.3 Issues for Competition regulators:

- **What are the acceptable boundaries of co-operation around payments infrastructure?**
- **What are the risks of anti-competitive 'lock in' of a particular service?**

Payments systems have long been recognized as complex 'eco-systems' where competition among providers co-exists alongside co-operation which allows the benefits of inter-operability. The right balance between competition and co-operation will vary as a market develops; and will require careful oversight by relevant authorities. Nonetheless, CPSS suggests that one of the objectives for payment regulators is to foster competitive market conditions and behaviours. The CPSS *General principles for payment system development* go further to encourage regulators to "give more choice to people; extend the coverage and choice of non-cash instruments and services available to end users by expanding and improving infrastructures."[46]

The main concerns are (i) that dominant systems may 'lock out' new players, limiting innovation and allowing anti-competitive pricing; and (ii) that new products may effectively 'lock in' a customer in an anti-competitive manner by reducing the ability to switch at will. The Mobey Forum White Paper Customer Proposition is quite explicit that customer lock in should be avoided: "The consumer should have the freedom to choose banks, operator and Handset, and change them independently of each other".

The boundaries between acceptable competitive behaviour and anti-competitive lock in are often narrow. For example, the effort required to change a long standing mobile phone number may cause a customer to be reluctant to switch providers; and providers may exploit this stickiness through higher pricing. Nonetheless, telcom regulators do typically not require number portability at the early stages of market development; indeed, the concept only becomes relevant once a customer has come to be closely associated with her number. As mobile network markets mature, number portability is often a requirement: for example, it is required in SA in mid-2006.

Bank accounts are arguably subject to the same stickiness as mobile phone numbers, yet bank number portability has not yet been required. M-banking models have different propensity for lock in depending, for example, on the role of SIM as unique security element. Models involving special downloads to the SIM card may limit the customer to the SIM issuing network. Indeed, reducing the churn of customers in the face of increased competition in maturing markets is one of the drivers for telcos who have entered m-banking.

In early stage markets with an existing payments infrastructure, the bigger competitive issue is more likely to be 'lock out' of other players. New entrants to m-payments may be at a considerable disadvantage if they cannot access existing payment systems controlled by incumbents anxious to protect their position.

[45] See Website of the JMLSG at http://www.jmlsg.org.uk/bba/jsp/polopoly.jsp;jsessionid=aok_2PiclCH6?d=362&a=3424
[46] Guideline 11

There is also a balance to be struck here; and regulators play a vital role in achieving this balance. CPSS again provides general guidance on this point: "The system should have objective and publicly disclosed criteria for participation which permit fair and open access." [47] Enforcement may require special legal provision, however.

4.1.4 Issues for Telco regulators:

- **How does the role of telcos in m-banking affect licensing requirements and their solvency?**

  Telco license may preclude or limit telcos from becoming directly involved in m-banking services or e-money issuance. Even if they do not, the risk profile of telco business may change as they become increasingly involved in m-banking, depending on the roles that they play. On the one hand, through generating more traffic on the network, m-banking may make telcos more profitable; on the other, it may bring new risks which may not be properly managed. For example, if pre-paid airtime balances become widely used as e-money, then the carrying time on these balances, before they are used to make calls, will lengthen. This lengthened float period will affect the accounting treatment of income, and the risks and rewards of managing the float. Finally, as telcos enter m-payment or m-banking space, telco regulators will inevitably have to coordinate and share information with bank regulators. Together, they will have to delineate supervisory boundaries so that unnecessary burdens are not placed on providers and the capacity of each regulator is not strained through duplication.

4.2 Developed country financial regulator approaches

The policy and regulatory issues listed above are many and complex. In developed countries, financial regulators have generally acknowledged that m-payments and m-banking are at an early stage, and that the answers to all these are not yet fully known. However, they have generally been reluctant to stifle innovation because the potential benefits, in greater efficiency at least, exceed the new risks. Helen Allen of the Bank of England best expresses this stance in several statements from a 2003 article in the Bank's Journal: "Current limited take up of most of these services highlights the importance of maintaining a sense of proportion in considering policy responses, while acknowledging the possibility that the payments market could change significantly…Were e-payments to grow significantly, any resulting changes in the distribution of risks might make it appropriate to adjust the form and extent of payment system oversight in this area." [48]

Particular recurring regulator concerns have included:

- The money laundering risks arising from having new channels for depositing and transferring funds, especially in a post 9/11 world when banks are increasingly vulnerable to civil lawsuits from the families of victims of terror if it can be established that any funds connected to an incident or even organization flowed through a bank in violation of the law.
- The possibility that central bank will lose control of the money supply as a result of widespread e-money issuance. However, as long as e-money is issued in exchange for

[47] CPSS Core principles for systemically important payment systems: IX
[48] Allen 2003: 435/6

central bank money and until e-money is used at large scale so that the demand for central bank money is displaced, this concern is usually exaggerated. After all, issuers like telcos do not create e-money but rather exchange it for bank money; they still ultimately need to settle with each other via accounts held at central bank, over which the central bank retains control.

- The interaction of the new payment systems with existing bank payment systems, with a view to avoiding the transmission of systemic risk. In addition, new payment systems may cause changes in patterns of usage which may affect the viability of existing payment platforms.

In general, financial regulators in developed countries have adopted the approach of monitoring developments in the field closely to assess the risks over time. Many have gone beyond this to facilitate and even coordinate around standards; and some have introduced new legislation as a means of enabling. Each will be discussed in turn.

4.2.1 Monitoring

Monitoring involves the collection of relevant data on the size of the market, and on the product types involved. The regular CPSS survey of internet and mobile payments across a large group of countries is an example of the use of such data, collected from national regulators.

In addition, many financial regulators in developed countries have formed specialist internal groups to monitor developments, such as the Payment Studies Resource Centre [49]at the Chicago Federal Reserve Bank or the Emerging Payments Research Group at the Boston Federal Reserve Bank.[50] These groups host regular conferences which gather industry players with regulators and analysts to discuss latest trends. [51]

Regulators have also played a role in disseminating information to the market. The e-Payments Systems Observatory (www.e-pso.info), supported by the European Central Bank, offers an electronic portal through which information on providers and models in European countries can be easily. Because of its European focus, however, there is little information presently available on developing countries.

4.2.2 Beyond monitoring: facilitation & co-ordination?

Allen has questioned whether financial regulators should widen their role beyond monitoring only, asking: "Should policy makers promote inter-operability (to get to efficiency and critical mass)? The gains from doing so could be offset by diminished product differentiation and stifled innovation."[52]

Allen leaves this as an open question, wary that regulators could make the wrong choices, and leave the market worse off for early intervention on these counts. Certainly, there have been a variety of efforts by official bodies, such as the European Commission, as well as industry groupings, such as Mobey Forum and Mobile Payments Forum, to coordinate and promote common standards and interoperability. Financial regulators and policy makers in developed countries have to date encouraged such co-operation on standards but done little more. In

[49] http://www.chicagofed.org/emerging_payments_and_policy/emerging_payments_and_policy_index.cfm
[50] http://www.bos.frb.org/economic/eprg/index.htm
[51] The ECB has also hosted specialist events on this theme, such as "E-payments without Frontiers" conference in 2004; see http://www.ecb.int/events/conferences/html/epayments2004.en.html
[52] Allen 2003: 433

developing countries, with fragmented banking sectors, regulators may need to play a much more active role.

4.2.3 Beyond monitoring: new legislation?

Allen has also raised the question: "Should public authorities be involved in the security of the means of payment? There are commercial incentives for payment providers themselves to ensure appropriate security…. (but) Inadequate security also has market-wide externalities since problems in just one area could reduce public confidence across the wider payments market."[53]

Providing greater security would usually require the passage of new legislation, or the application of existing legislation, to bring the new instruments explicitly under official protection and supervision.

As discussed earlier, approaches here have differed: in the case of e-money, for example, the EU has adopted the approach that introducing legislation early can and should enable markets to develop, whereas the US has avoided passing federal legislation in favor of an incremental state-based approach which has evolved over time. However, the uncertainty over possible future regulation may have been an impediment to innovation.[54]

While the passage of e-money legislation in Europe did bring certainty, the recent review of the directive found that it did not fully enable innovation, and has not led to take-off of issuance or usage. In part, this was because legislation passed six years ago could not fully anticipate some of the developments which have enabled new e-money forms today. The case of European e-money issuance is not an argument against introducing or delaying legislation *per se*, however: rather, it is an argument in favour of carefully assessing the need for certainty with the need for openness; and judging carefully both the scope of any legislation and the timing of its introduction.

4.2.4 Philippines

Since m-banking has progressed furthest among developing countries in the Philippines, how has the regulatory regime there evolved? Much is not yet known about the overall approach there, but Lyman et al (2006) provide useful insights.

Clearly, there was sufficient openness to enable the two major mobile operators to start their m-banking and m-payment models, in 2000 and 2004 respectively. Specifically, there was no e-money regulation which prohibited Globe from issuing G-Cash. However, there has apparently been close cooperation between the two major providers and the financial regulators to address their key concerns, such as anti-money laundering. The bilateral agreement between each telco and the Central Bank to limit the maximum size of wallet and transaction has clearly helped: not only to limit the risk of money laundering to acceptable levels, but also to reduce possible systemic risks. It is likely that the large size of the mobile operators, with the associated high brand visibility and high solvency, also allayed fears that customers would not be adequately protected or that account balances were at more risk in Globe than in a much smaller bank.

[53] Allen 2003: 433

[54] For example, see sentiments of 'many participants' from the summary of a Federal Reserve Bank of Philadelphia Conference in July 2005 on "Payment Cards and the Unbanked"; p.20; available via: www.philadelphiafed.org/pcc

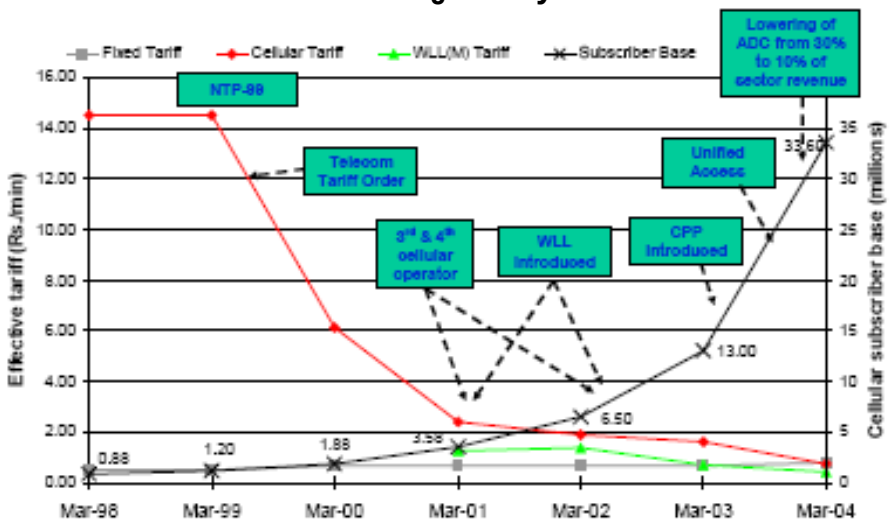
However, because of the significance of the Philippino models, closer examination of how the regulatory approach has evolved, and its options for future evolution would be well worthwhile to guide other developing countries.

4.3 Enablement at work

In new market areas such as m-banking, regulators have a delicate task: neither over-reacting and stifling market development, nor under-reacting to potential large scale risks until it is too late. While delicate, the task is not impossible. Managing possible trade-off between innovation and stability is at the heart of good policy and regulation. If policy makers develop a clear market development strategy, this will not only brings greater certainty but also enable regulators to take a sequenced, proportionate response to the risks involved.

In the domain of telco regulation, there are precedents for achieving transformational enablement. For example, in the OECD paper on "Regulatory reform as a tool for bridging the digital divide" shows how the timing of various enabling actions by the Indian telcom regulator has led to a sharp fall in the effective mobile tariff since 1999, and a related large increase in Indian cellular subscribers since 2001. This image is reproduced in Figure 7 below since it presents a picture of what may be achieved through a suitable enabling environment.

Figure 7: The effect of India's regulatory reforms on mobile usage and price



Source: OECD (2004:19)

5. PILOT COUNTRY & PROVIDER ASSESSMENTS

This section moves to consider the specific issues arising in the legal and policy environment in the two pilot countries—Kenya and South Africa; and the obstacles reported by providers there.

5.1 Legal & policy environment

In order to understand the environment for m-payment and m-banking, one aspect of this project involved the collection of information on existing and intended legislation and regulations which impinge on this area. Table 5 below summarizes key aspects from these templates for Kenya and South Africa. Both countries are at an early, pioneering stage of market development, with several models although none yet with critical mass.

Table 5: Summary of country templates

	Kenya	South Africa
1. Are E-signatures recognized by law?	Not yet—bill pending	Yes
2. Are there consumer protection laws/regulations/codes with enforcement?	No—not explicit	Yes for deposit taking (FAIS); not e-banking. Banking industry Codes of Conduct and Ombuds process cover e-banking
3. Is there a competent competition authority?	Yes—however with limited jurisdiction & powers under old Act	Yes
Is there payments system legislation giving authority to a regulator?	Not yet—bill pending	Yes
4.Are AML/CFT CDD/KYC requirements prescriptive or risk based? Are they onerous for small accounts	Apply to banks only; allow for risk basis but with no guidance and will likely be onerous for small accounts	Yes—exemption from address verification on small accounts; risk-based approach to ; but still considered unclear by some providers
5. Can agents can provide cash back/ take deposits?	Not prohibited; no specific rules	Not prohibited; no specific rules
6. Are there specific E-money regulations or guidance?	No	Yes—guidance only

In general, South Africa has a well developed legislative and regulatory environment, which creates relatively high certainty. Areas such as e-commerce, AML/CFT and even consumer protection are fully covered. E-money issuance is covered by a recently updated guidance note. While several of the new models considered here have started up in this environment, it is not necessarily conducive for the rapid growth of transformational approaches, as provider's comments in the next section show.

In Kenya, by contrast, much important legislation in areas like e-commerce, AML/CFT and payment systems is still at the draft or bill stage. The state of legislative and regulatory uncertainty is therefore relatively higher than South Africa, although uncertainty is reduced somewhat by the fact that there is at least draft legislation and accepted policies in areas such as

the national payment system. Consequently, it has not precluded the launch of m-banking products such as M-Pesa discussed here. The lack of specific legislation in various areas has left the Kenyan environment relatively more open. Kenya now has the opportunity to coordinate and integrate its approach to the m-banking sector within and across all the planned new laws before they are passed, thereby avoiding the confusion of any conflict or ambiguity.

In both countries, high level strategy and policy documents have been developed and released for the development of the National Payment Systems. In 2006, the SA Reserve Bank released *Vision 2010,* an updated framework and strategy for the national payment system there.[55] One of the seven main strategic objectives identified is "Facilitate wider usage by the public and broaden the provision of payment services in the NPS", which is further clarified in a footnote to include 'addressing the payment needs of the unbanked community'. The document envisages an active role for the Payment System Division of the Central Bank in monitoring developments nationally, regionally and internationally, as well as facilitating the establishment of an authority which would certify payment system standards. In Kenya, the NPS Framework and Strategy document was issued in 2004. The elements of the vision for the NPS include access-related elements: "Easily accessible to both urban and rural consumers…"; and "Basic NPS features understood by all including the rural populace."[56] These objectives provide openings for regulators to consider transformational offerings more favourably than they might otherwise.

In terms of the openness-certainty diagram introduced in Figure 3, SA therefore sits closer to Box 3 (lower right hand side) and Kenya to the upper left hand side (Box 2).

While these relative positions are perhaps to be expected of a middle income and a lower income country, neither Kenya nor South Africa is especially representative of Africa in general: the retail banking systems in each are well developed, and the Central Banks well capacitated, relative to many neighbouring countries. They were chosen for this project because of the new m-banking models emerging in each. However, the checklist represented in Table 5 could also be applied to other developing countries. It could also be developed further into a rating system which could enable better comparison across more countries and across time of the environment for m-banking.

5.2 Provider obstacles reported

The four direct providers who participated in this project completed a questionnaire which asked them to identify barriers to the development of their business models. Three IT providers who provide m-banking systems to providers in Africa were also polled.

The biggest barriers reported by these providers today are not primarily regulatory or legislative. Rather they were customer adoption issues typical for a new product or service, such as:

- How to educate customers in the use of the mobile phone for transactions;
- How to build trust in and awareness of a new financial brand.

These are little different from the general obstacles to m-commerce becoming pervasive ('u-commerce' or ubiquitous commerce) identified by Schapp and Cornelius[57]:

[55] Available from: http://www.reservebank.co.za/internet/Publication.nsf/LADV/DAA203A3059201E4422571570025D8F3/$File/Vision2010.pdf
[56] CBK (2004) p.14
[57] See Schapp and Cornelius, "U-Commerce: A White Paper", available from http://www.foreshore.net/_support/uploadedFiles/Ucommerce%20whitepaper.pdf

- Security (which generates user trust, essential in financial mechanisms)
- Simplicity (or user friendliness).

They also include the need for common standards, which allow interoperability, and therefore greater utility to clients and greater scale.

These barriers are also similar to those reported by respondents (mainly in developed countries) to the 2006 Mobile Payments study undertaken by consultancy Edgar Dunn: merchant adoption, customer adoption, agreement on common mobile platforms and security and fraud issues tied as the most commonly reported barriers.

However, while the environment in the relevant countries was by definition open enough to enable them to start up, the providers in SA in particular also reported significant specific regulatory obstacles to the growth of transformational approaches. These included in particular:

- a lack of clarity and consistency over the application of CDD standards to remote account opening procedures, even though the CDD required on low value accounts is already reduced by exemption; for example, it is unclear whether or not a copy of an identity document must be secured from the client in all cases, and if so, in what time period; or whether a biometric identifier (such as a voice imprint) is adequate.[58]
- customer protection laws, designed primarily to cover the inappropriate offering of investment-type products, also extended to the opening of basic transactional bank accounts; as a consequence, a higher level of training, and therefore cost, was required in front line staff.
- access to the national payments system: non-bank providers remarked on the difficulty and cost of obtaining access to the South African payments system infrastructure, for example for ATMs or POS acquiring. Access is in theory open to all banks, but in practice, the major banks which own most of the infrastructure dominate and are wary of models which will 'piggy back' on their existing infrastructure. A 2004 National Treasury task group report on competition in SA banking identified that this may constitute a barrier to competitive pricing and innovation; and competition in the payment system is now being further researched.[59]

In addressing these and other regulatory issues, providers generally reported that they had had at least some engagement with financial policy makers and regulators. Engagement was usually related to particular issues rather than market development in general.

In South Africa, there have been some attempts at coordination among providers: a working platform group comprising banks, mobile networks and vendors had convened in the past to consider the most feasible m-commerce model for the country. This group had concluded that the market required a central, trusted infrastructure that housed consumer data away from the actual mobile device and facilitated the authentication, instruction, financial transaction processing and fulfillment of transaction to merchant or retailer.[60]

Discussions in both countries supported the conclusion that a high level roadmap of market development would be useful in promoting certainty and allowing graduated openness. The next section sets out initial principles arising from this project which could be the starting point for discussions about a roadmap.

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[58] This issue was highlighted as a major obstacle in a recent press article on why takeup has been slow at MTN Banking: see http://www.moneyweb.co.za/shares/financial_services/208080.htm

[59] National Treasury Task Force report (2004), recently released but not on Treasury website www.treasury.gov.za as at May 06.

[60] Krugel (2005).

6. ENABLING PRINCIPLES FOR M-BANKING

6.1 General enabling environment

This report has focused on the policy and regulatory environment for m-banking. Before developing the requirements in this area further, it is worth acknowledging that there are other aspects of the broader environment which may have a significant impact on whether m-banking can or will take off in a particular country.

First, m-banking requires that clients have access to mobile phones; countries where network coverage and usage is growing strongly are more likely to develop widespread m-banking applications. The relationship is not linear however: in countries with low levels but rapid rates of growth, as in much of Africa, network capacity may be overstretched; network operators are often pre-occupied with voice rollout, and therefore less interested in the addition of complex and unproven products. The potential for rapid growth may be highest in countries where levels of usage have already reached critical mass, and where increasing inter-network competition (and lack of effective retail banking competition in e-payments) creates both the push and the pull to consider additional product offerings.

Second, m-banking clearly benefits from having a wider pool of informed, literate potential customers. Greater literacy may speed adoption, and may reduce the risks of abuse. However, greater literacy is also correlated with other factors which may inhibit take-up: there are more financially literate, informed customers in developed countries, but these customers also have more existing options, and less reason to change, than customers in poorer countries with few or no alternatives.

Third, because of the ongoing need for access to cash, m-banking benefits from the existence of an accessible existing e-payment infrastructure which allows cash withdrawal. Until e-money transfers are widely accepted at first, cash out functionality enhances the initial value of an m-banking offering. If new cash-back networks must be built from scratch, this may take too long. However, in many countries, even where there are very limited ATM or POS networks, airtime vendors are widespread: with an existing business relationship to the mobile operator, they may quickly become agents for encashment if this is allowed. Again, the relationship is non-linear: the more pervasive the existing infrastructure, the higher its functionality to users, hence the harder it may be to persuade them to switch to a new payment instrument. Equally, the greater the existing investment in other acquiring infrastructure, the harder it may be for entrants with new modes of payment to gain access to this infrastructure, unless it is required by law.

These three factors all suggest that the potential for take-off of m-banking may be highest in middle or low income markets which have limited safe, accessible e-payment alternatives. However, predicting take-off in a particular market is inherently uncertain, since it will depend on particular conditions there. More important for now, is to ask whether the policy and regulatory soil is fertile enough to enable the startup and development of m-banking models with transformational potential.

6.2 Proposed enabling principles

This section lays out six core principles which together may help to create an enabling policy and regulatory environment for m-banking. These principles define further the basic components which provide sufficient openness and certainty for the long term development of m-banking. As such, while they are likely to be necessary, they are not sufficient conditions for take-off. In addition, the impact of some extends well beyond m-banking alone, to banking more generally.

Several major industry fora, set up by their members to promote mobile payments, have produced their own blueprints for the development of the sector in the form of White Papers for the Mobile Payments sector:

- the Mobey Forum, based in Europe and consisting largely of major European banking groups and hardware providers like Nokia[61]; and
- the Mobile Payment Forum, based in the US and consisting of card associations, First Data (owner of MTO Western Union) and major telcos like Vodafone.[62]

Similarly, in line with the eEurope 2005 policy agenda, the European Commission produced for discussion a *Blue Print on Mobile Payments*, which required progress towards interoperability by end 2003.[63] Some of the principles set out in this section—for example, around consumer protection and competition—are drawn in part from these sources. However, the focus of the White Papers is more on developing the technical standards necessary for interoperability among providers. By contrast, the principles enunciated here pertain particularly to developing economies; are more focused on regulatory issues; and seek to achieve maximum enablement of transformational m-banking.

There are two tiers to the principles:

- First, those principles necessary for there to be m-banking at all;
- Second, those necessary if m-banking is to be transformational, rather than merely additive.

The Table below summarizes the principles; and indicates whether each is intended primarily to address certainty or openness (denoted by a shaded square for primary intent, unshaded as secondary effect). In the following section, the options and recommended approach to the implementation of each are explained.

6.2.1 First tier: basic principles

Principle	This means:	Open-ness	Certainty
1. There should be sufficient certainty around electronic contracting	Electronic signatures must have at least the same standing as physical signatures		■
2. Customers should be	In general, this requires:		

[61] Mobey Forum White Paper: http://www.mobeyforum.org/public/material/Mobey%20Forum%20White%20Paper%20on%20Mobile%20Financial%20Services%20v1_14.pdf
[62] Mobile Payment Forum White Paper: http://www.mobilepaymentforum.org/pdfs/mpf_whitepaper.pdf
[63] http://mellonrd.com/blueprint/Docs/A-Blueprint%20Mobile%20Payments%20(Version%201.1).pdf

adequately protected against fraud and abuse	-- clear disclosure at account opening and at time of transaction --placing liability on providers for unauthorized transactions on certain conditions -- providers to have a clear, simple and fast complaint/ dispute resolution process		■
3. Interoperability should be encouraged, through ensuring that providers have access payment platforms and that consumers are able to switch financial providers	M-payment platform established by a mobile provider should be open to other account holders within agreed time; fair basis is established for new entrants to use existing payments infrastructure Cell number portability should be required in a reasonable timeframe	■	

6.2.2 Second tier: Transformational principles

4. Account opening CDD procedures should be risk-based, and not unduly prejudice remote account openings by small customers	CDD/KYC procedures should make provision either for: (i) Exemptions on small volume/ value accounts (ii) Adequate guidance provided on risk based approaches	■	□
5. Customers should be able at least to make deposits and withdraw cash through agents and remote points outside of bank branches	Not prohibiting agent deposit taking or withdrawals; and usually, enabling through appropriate regulations	■	□
6. Adequate provision should be made for the issuance of e-money by appropriately capitalized and supervised entities which are not necessarily banks	Introduce appropriate E-money regulations which provide clear definition and allow and supervise non-bank issuance according to risk level	■	

6.3 Approaches to implementing the principles

This section sets out options for implementing each principle and, where appropriate and possible at this level of generality, makes recommendations.

6.3.1 Principle 1. There should be sufficient legal certainty around the status of electronic contracting

This principle can be fully effected only through the passage of suitable legislation which provides the necessary clarity.

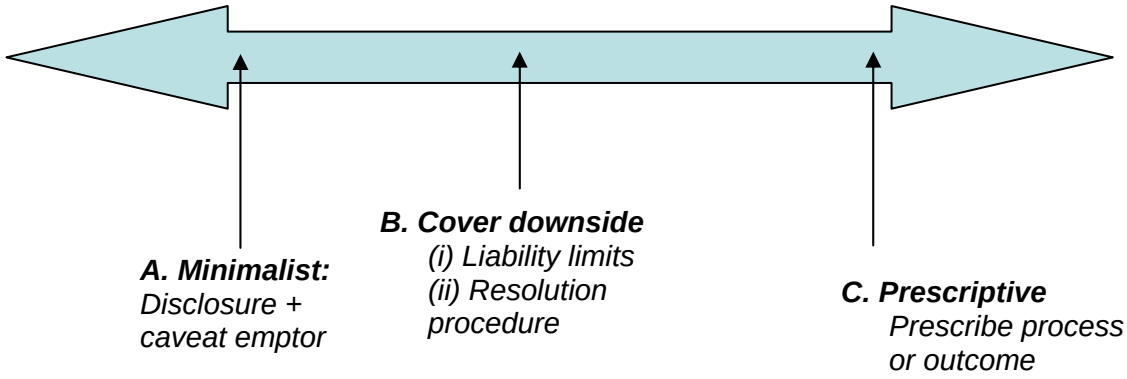
Fortunately, there are clear examples of laws which adequately address this principle. The United Nations General Assembly Resolution 56/80 adopted the United Nations Commission on Internal Trade Law (UNCITRAL) Model Law on Electronic Signatures in 2002. However, only three countries have adopted the Model Law: Thailand, Mexico, and China. Electronic signature legislation has also been drafted or adopted in several Latin American countries, including Argentina, Colombia, Chile, Ecuador, and Peru. In Africa, Egypt is the only country other than South Africa to have drafted electronic signature legislation.[64]

6.3.2 Principle 2. Customers should be adequately protected against fraud and abuse

Figure 8 below represents the typical spectrum of approaches to consumer protection. As one moves from left to right, the extent of regulatory involvement increases. Hence, on the left, a minimalist position would require adequate disclosure of terms and fees, and leave the buyer to beware. On the opposite extreme, regulators may closely regulate the way in which a product is marketed, sold and supported. This may include prescribing (or limiting) the words of advertisement; and requiring that provider staff have minimum training or experience.

Neither extreme approach seems suitable in most developing countries: disclosure alone is not adequate to protect large numbers of first time Consumers of a product who do not understand it; and the prescriptive regulations will likely discourage innovation in product offerings, while probably proving unenforceable.

Figure 8: Consumer protection spectrum



Certain regimes arguably take a middle ground approach: in the US, the Electronic Funds Transfer Act and accompanying Regulation E[65]; and in the EU, the proposed Payments

[64] See website of law firm McBride, Baker & Coles http://www.mbc.com/ecommerce/ecommerce.asp
[65] Regulation E, http://www.federalreserve.gov/regulations/default.htm#e

Directive.[66] In addition to requiring appropriate disclosure, there are two key features in these approaches which provide a basis for better consumer protection:

- A legal limit is set for the maximum liability of the customer in the case of unauthorized transactions: in the US, this is $50 or $500, depending on when the consumer notifies the bank of the unauthorized transaction; and €150 in the proposed EU law. This approach caps the loss to a consumer, and places greater responsibility on the provider to have in place adequate safeguards to manage its own liability. Since most are large entities like banks, this is a reasonable balance of responsibility.
- A procedure is created for the rapid resolution of complaints or disputes between client and provider, so that recourse to a court system is avoided. Timelines are established in terms of which the provider must respond: for example, within ten working days of receipt of a complaint in the US.

As with other principles, the full protective framework is not necessary in the early stages of a market, but it is helpful for providers to have a sense of which type of regime policy makers are likely to adopt as market scale increases.

Even though legislated and regulated consumer protection may be unnecessary and even unhelpful early on, providers may agree appropriate principles of consumer practice. Regulators could encourage such moves; and endorse an appropriate list. In most cases, at least the two issues highlighted above should be addressed, namely the limited liability of the customer; and a timely, fair dispute resolution mechanism.

Early self-regulation may help to promote customer trust in m-banking. The principles may over time be amended to allow for market evolution and eventually, become codified. While voluntary codes of practice may be sufficient in the early stages of market development, they will not be sufficient to discipline or stop reckless operators who do not subscribe. Less reputable providers may enter an industry which has benefited from establishing an early trusted reputation and undermine it.[67] Therefore, at some stage, probably during or after the breakout phase when new providers are attracted to the market, legislation or regulations will be necessary which compels adherence to a common standard.

6.3.3 Principle 3. Regulators should encourage inter-operability, through ensuring (i) providers have access to payment systems and (ii) consumers are able to switch financial providers

There is limited precedent to date of competition authorities applying general principles like these to the mobile payment environment, although there are increasing cases of regulatory attention to potential anti-competitive practices in the payment sector, especially the card payment associations.

One notable case is that of Movilpago, now Mobipay. Mobipay was originally a joint venture between Spain's largest telco, Telefonica, and large bank BBVA, to create a mobile payments platform. Required to approve the inception of the proposed joint venture, the Spanish Competition Authority (SDC) considered "that m-payments affected not only the market for e-payments, into which there was relatively free entry, but also the market for mobile telephony,

[66] Available via http://europa.eu.int/comm/internal_market/payments/framework/index_en.htm
[67] For a general discussion of a balanced approach to consumer protection, including industry codes, see for example Porteous & Helms, "Protecting Microfinance Borrowers", CGAP Focus Note No.27

where there are important barriers to entry. The barriers to entry can come from a combination of: large subscriber bases, large capital bases, large established distribution networks, no open standards and patents on technology. The SDC considered that a unified and widely used m-payment system is in the interests of the consumer."[68]

Because of concerns that the JV could raise barriers to entry, the SDC approved the joint venture on the basis that:

- other mobile operators must be allowed to participate;
- it must be technically possible to use the system with any mobile operator and any financial institution;
- contracts with the m-payments provider may not limit customers in their freedom to choose other operators or financial service providers; and
- interchange fees must be approved by the SDC.

This finding resulted in delay in the launch of Movilpago (now Mobipay) until 2002 as the decisions were implemented. In August 2004, Mobipay was still lamenting that "it has not caught on as a popular means of payment" although it was then live in 3000 stores and 2500 taxis in Spain. Mobipay International, wholly owned by BBVA, is being taken to Mexico & North Africa in 2005.

Movilpago is therefore an example where competition authorities enforced the implementation of inter-operability early on. This may be unnecessary or even undesirable in countries with fewer existing systems or providers with which to inter-operate. However, it may be important to enshrine the principle of inter-operability upfront; and for regulators to have the power, in terms of payments legislation, to require it when necesary.

The EU proposed Payments Directive, not yet in force, moves in this direction by stating: "Payments systems may not impose…

- a ban on participation in other payments systems;
- a rule which discriminates between authorized service providers,
- any restriction based on institutional status."[69]

Where other retail payment systems exist, payment regulators and/or competition regulators need to consider carefully the basis under which they allow access to new players; and the extent to which this basis promotes or restricts the desired market development trajectory.

Where such systems do not yet exist, the role of regulators is more to monitor the emergence of models or product which may in future unfairly lock out other entrants or lock in customers.

6.3.4 Principle 4. Account opening CDD procedures should be risk-based, and not unduly prejudice account remote account openings by small customers

A risk-based approach to customer due diligence is clearly preferable to one with inflexible and inappropriate rules. However, as argued earlier in Section 4, in the absence of clear guidance, a

[68] Krueger 2001; the full SDC ruling is available in Spanish via http://www.tdcompetencia.es/frames.asp?menu=9
[69] Article 23

risk-based approach may leave too much uncertainty for providers, who will adopt a conservative approach to CDD in response. In order for this issue not to block transformational models, regulators must either create a clear exemption from the usual CDD requirements for a defined category of low risk accounts, or provide (or encourage) suitable guidance to be developed.

6.3.4.1 CDD exemptions for small value accounts

Several countries have exempted small value accounts of individuals from all or some of the usual CDD requirements. Small value is defined relative to a maximum transaction volume and account balance, as shown in the table below.

Enforcing these limits requires that the systems of the financial institutions monitor the limits and freeze accounts of individuals which exceed the limits, until they come into complete the standard CDD procedure. FATF has criticized some exemptions as creating vulnerability, since small size alone may not reduce to the risk that terrorism is being financed.

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Table 6: AML/CFT Small account exemptions

Country	What is exempt	Maximum turnover	Maximum balance	Source
India		Annual credits to account: $2500	$1250	Letter to banks 25 Jan 2006
Philippines		G-cash: $720 Smart: $950	G-Cash: $180	By special agreement with Central Bank
South Africa	Address verification	$900 daily $4167 monthly	$4167	FICA, exemption 17a revised
EU	Usual CDD waived on e-money and products or transactions deemed low risk	$2500 per annum	$150	EC Directive2005/60; Article 11(d); 40(d)

6.3.4.2 Guidance for Risk based CDD

While industry bodies may develop their own guidance, as in the UK, it may be necessary for regulators in developing countries to initiate this process; or even issue guidance themselves. For example, the former approach has been adopted in South Africa, allowing banks to develop their own risk-basis for the re-identification of existing clients. In the guidance note setting this out, an example was given of a simple risk matrix, in which account of natural persons were given low risk weighting.[70]

6.3.5 Principle 5: Customers should at least be able to make deposits and withdraw cash through agents and remote points outside of bank branches

Where banks are prohibited from appointing agent for deposit taking, this prohibition should be revoked in favor of an enabling framework which regulates the bank-agent relationship appropriately. Where there is no prohibition, banks could proceed to experiment with such

[70] Available via www.fic.gov.za under Documents, Guidance Note Concerning Identification of clients

relationships on a commercial basis. However, they may be reluctant to do so without a clarity from the regulators. In addition, if agency relationships become as pervasive as in Brazil, regulators may require powers of greater oversight of agents than existing law gives to them.

Therefore, in either case, it is recommended that specific regulations or guidance be promulgated to address the creation of bank agency relationships for withdrawals and deposit at least. BIS Outsourcing Principles (2005)[71] provide general guidance on material outsourcing arrangements, but do not address specifically the issue of agency for cash back or deposits. However, the principles do require that regulators take into account outsourcing activities as an integral part of their ongoing assessment of the regulated entity, and ensure that any outsourcing arrangements do not hamper the ability of the regulated entity to meet its regulatory requirements.

Therefore, in line with these principles, enabling regulations would enable the appointment of agents to handle specific banking functions on specific conditions. These conditions would include:

- Requiring a written contract between bank and agent which addresses explicitly identified areas or risk, for example, giving bank supervisors direct access to agent records where necessary;
- Placing strict responsibility on the bank to ensure that the agent performs all the functions required by law, such as AML/CFT adherence.

As Kumar et al show, Brazil provides a leading example of the possible effect of suitable enabling regulations.[72] India has recently followed suit with the publication in January 2006 of guidance which permits the creation of agency relationships for small deposits, as part of an explicit move to increase access to financial services.[73] Note, however, that the passage of regulations may be necessary but not sufficient for growth in this area: Kumar et al point out that other regulations, for example, setting high standards of branch security and even labor laws, helped to make expansion through non-branch agencies more attractive than otherwise to Brazilian banks.

6.3.6 Principle 6: Adequate provision must be made for the issuance of e-money by appropriately capitalized and supervised entities which are not necessarily banks

The ability to issue and transfer e-money is at the heart of emerging m-banking models. Given the weakness of the retail banking sector in many developing countries, it is important that non-bank players, in particular telcos with their strong retail brands and established networks, may also be able to issue e-money. Even if they choose not to, the threat of entry in this form may galvanize a response from banks.

Earlier sections of this report have shown the different approaches to the regulation of e-money issuance, for example between the US and Europe. 'Appropriate provision' does not necessarily mean legislation at the outset, therefore; but neither does it mean ignoring the prudential risks of widespread e-money issuance by non-banks. As already pointed out, these risks may be higher for entities other than telcos.

[71] http://www.bis.org/publ/joint12.htm
[72] Available via http://www.bcb.gov.br/?english (Resolution 3.110)
[73] http://www.rbi.org.in/scripts/NotificationUser.aspx?Id=2718&Mode=0

A more appropriate response may be to allow certain non-bank players to issue e-money, perhaps on prescribed terms which limit the volume and the risk per customer (as the Philippino Central Bank has agreed with operators there, although apparently more for AML-CFT reasons); and then monitor the transaction volumes and outstanding balances. This may be possible by a guidance note, which sets out the conditions on which this will be allowed, including reporting the necessary data. At a defined trigger levels, there may be a need to move to appropriate prudential legislation or regulations under an existing framework like the Banks Act.

There are few suitable templates for e-money legislation presently available: the EU Directive, while best known, was designed in a developed country context; and even there, it has not succeeded in enabling innovation and growth fully, as the recent review pointed out. There may therefore be value in encouraging discussions among bank regulators as to the elements of suitable e-money legislation in developing countries, so that when it is needed, it is available.

7. CONCLUSION

This report set out to answer two main questions:

- What is happening in m-banking in general and in particular, in the African countries studied, and is it likely to lead to greater access?
- Will it happen spontaneously or is enablement required for this to happen? If so, what forms of enablement?

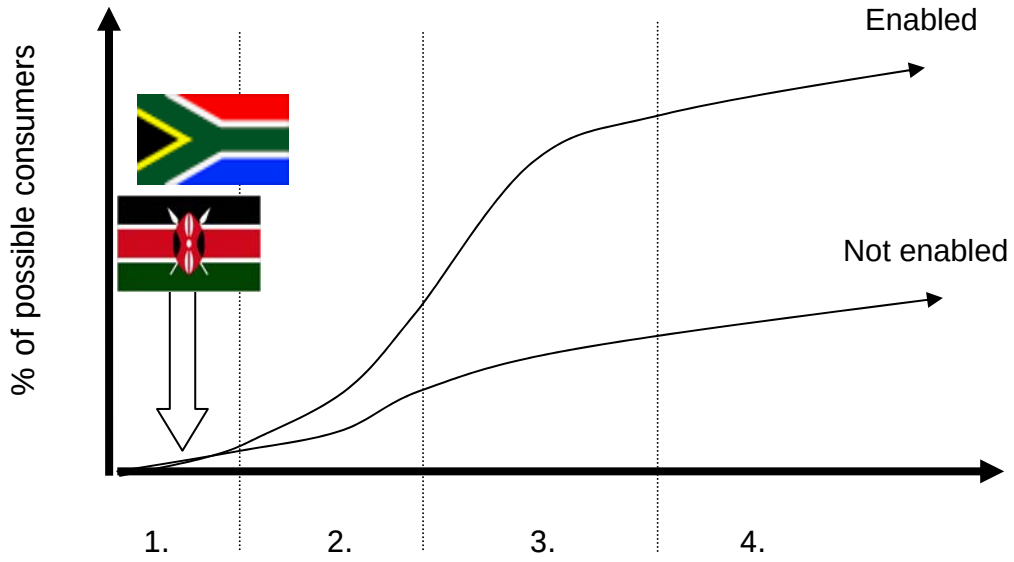
In answer to the first question, the scan of developed and developing countries in Section 3 showed that m-banking has been slower to develop than expected. However, the volume of users is now reaching critical mass in parts of Asia, like Japan and Korea. The Philippines offers the most striking demonstration of the potential take up in a developing country. In Africa, m-banking is now being added on to the services offered to existing customers by a number of retail banks and this is likely to continue. In addition, there are several innovative models with the potential to expand access to financial services to customers who are not presently banked; or in the words used in this report, to be transformational.

However, genuinely transformational models of m-banking are few today; and they face numerous obstacles. These include the standard uncertainties about the pace and scale of customer adoption, exacerbated by the fact that low end models require higher volumes of transactions to be viable. Importantly, the regulatory and policy environment for m-banking is complex and often ill-defined since it cuts across various regulatory domains. In some countries, the policy regime may not be sufficiently open to allow a range of models to startup and develop; and in others, sufficiently certain to encourage the investment necessary. Of the two countries considered in this report, in which m-banking is still in the early or pioneer stage, South Africa falls more into the former group (more certain but less open); and Kenya the latter (more open but less certain).

If m-banking is to realize the potential of massively extending access to safe, convenient and affordable financial services to those who today lack it, then enablement is likely to be required. In its absence, m-banking may simply amount to adding another convenient channel for already banked customers. The consequence will be a market trajectory with much lower ultimate levels of usage and access, as Figure 9 on the next page shows.

Enablement in the sense proposed here is not only about clearing regulatory space for the entry of new m-banking models. To be sure, low income countries with limited financial legislation and regulatory capacity may not need much space to be cleared—entry may be easy there and a successful model, likely telco driven, may well emerge; but uncertainty will affect the development of the market, not least by limiting competition over time. This will affect the pattern of future development. Rather, enablement is about managing the delicate balance between sufficient openness and sufficient certainty, not least in the mind of customers who must entrust money to the entity involved, whether bank, telco or other. Applied at the early stages of market development, enablement means creating conditions favourable to the emergence of sufficient appropriate models to be tried and to the successful ones being scaled up. Applied at later stages, enablement means continuing to ensure openness, while increasing certainty for stable growth.

Figure 9: Enabled and un-enabled market trajectories for m-banking



This approach to enablement may seem to demand more of regulators than they can offer, stretched as they are by many other issues. As the report has shown, developed countries continue to grapple with defining their appropriate role in this area too. This is why the report has recommended the set of high level principles as a starting point. They are designed as an indicative road map through some of the complexity in order even to start the process of enabling transformational m-banking. Translated into a national setting, and issued or endorsed by policy makers in consultation with regulators and providers, principles like these could help to pinpoint the key aspects of openness while creating greater certainty over the possible trajectories of market development.

The call in this report for the enablement of m-banking markets does create an initial case for donor support—for example, capacitating regulators to adopt an enabling approach. However, any such case needs careful exploration and exposition. This will be undertaken in a separate subsequent document as part of considering strategies to promote transformational m-banking.

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Principle 1: E-signature

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EU Community Framework for Electronic Signatures Directive 1999/ http://europa.eu.int/scadplus/leg/en/lvb/l24118.htm

RSA Electronic Communications and Transactions Act No. 25, (2002) available via http://www.acts.co.za/ect_act/electron.htm

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Principle 5: Agency deposit taking

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ANNEX A: PROVIDERS

A1. M-payment/ banking providers participating:

In Africa:
Celpay: www.celpay.com
Vodafone: www.vodafone.com
Safaricom: www.safaricom.co.ke
M-Pesa: see summary report via http://www.financialdeepening.org/default.asp?id=40&ver=1
MTN Mobile Banking: http://www.mtnbanking.co.za/
Wizzit: http://www.wizzit.co.za/

Technology enablers
Paym8: http://www.paym8.co.za/
Fundamo: http://www.fundamo.com/index.asp?pgid=1
Cointel: http://www.cointel.co.za/

A2. Other providers mentioned

In Africa :
Nigeria: Glo Mobile Banking: http://www.gloworld.com/NR/exeres/8C612910-7AA2-4B18-B031-5701C503B675,frameless.htm?nrmode=Unpublished&wbcmode=AuthoringReedit
Zimbabwe: reference to Kingdom Bank service via Econet: http://www.econet.co.zw/view_newsflash.aspx?nfid=22

Elsewhere:
Globe G-Cash: http://www.myglobe.com.ph/gcash/
Smart Money: http://www.smart.com.ph/SMART/Value+Added+Services/Smart+Money/
Mobipay: http://www.mobipay.com/en/home.htm

ANNEX B: GLOSSARY

ACRONYMN	WORD
AML/CFT	AntiMoney Laundering/ Combating Financing of Terrorism
authentication:	process of verifying the identity of a person or entity
ATM	Automated teller Machine
BIS	Bank for International Settlements
CDD	Customer Due Diligence
CPSS	Committee on Payment and Settlement Systems (at BIS)
EU	European Union
GSM	Global System for Mobile comms, most popular 2-G standard
KYC	Know your customer
MS ISDN	Mobile station ISDN
NPS	National Payment System
pre-paid	Mobile phone contract paid by purchase of airtime in advance
post-paid	Mobile phone contract paid on presentation of invoice
PDA	Personal Digital assistant
POS	Point of sale
PRS	Premium Rate Services
RFID	Radio Frequency Identification
SA	South Africa
SMS	Short Message service (sometimes referred to as texting)
STK	SIM Toolkit
UPU	Universal Postal Union, Geneva
USSD	Unstructured supplementary services data
VAS	Value added service (similar to PRS)
WAP	Wireless Applications Protocol
WIG	Wireless Internet Gateway