# 7. Financial Inclusiveness: The role of mobile money and digital financial services.

**Dayadhar Raj Srivastava**
*Asstt.General Manager*
*(Inspection and Audit)*
*State Bank of India*
*Lucknow Area, India*
*ORCID iD: http://orcid.org/0000-0003-3189-2235*
*E-Mail: drajsrivastava@rediffmail.com*

## Abstract

For successful digital payments, a robust retail payments system is a necessity. This is required to bring the financially excluded into a formal financial network. For this, a cost-effective network should be in place – and here, mobile phones can be gainfully utilized to access payments either through a Bank account or through a mobile money network. At present, mobile money network is operating in a restricted environment. The significance of the potential of mobile payment in financial inclusion is highlighted by the Governor, RBI when he said, "Mobile payments can be a game changer in the financial sector." With approximately 840 million mobile phones competing against about 85,000 bank branches and about 1 million POS terminals – this prioritizes the importance of the mobile-phone to accelerate the process of financial inclusion. At present the number of mobile banking subscribers (about 93 million) is very much less than 800 million mobile subscribers, and as the number of transactions made through this mode is contributing very little to the total payments. The focus on digital payments for financial inclusion will change the way of transactions – and here, mobile phones will have a big role to play. This is more important keeping in mind that setting up and operating a bank branch is very expensive. So, the need of hour is branchless banking, the transaction cost is less than10% of that incurred at bank branches.

In the current paper, we will explore some of the important aspects of effective mobile money and digital financial services in bringing financial inclusion.

## Keywords

Mobile money; mobile money network; Financial inclusion; Digital payments; Digital financial services

# Financial Inclusiveness:
## The role of mobile money and digital financial services

Over 2.5 billion adults do not have a formal account ,41% of adults in developing economies are banked—compared to 89% of adults in high- income economies 23% of adults living below $2 per day have a formal account(Measuring Financial Inclusion-Asli Demirguc- Kunt,Leora Klopper)

**At a time where the international system is largely affected by a global economic crisis, cellular/mobile technology offers those previously disempowered by lack of access to previously computer-based communication technologies, capitalist neoliberal market forces, and limited education opportunities, a potentially enhanced means of entering and operating in the marketplace. . It is evident that mobile phones have become a vital component of everyday economic welfare amongst those operating small market enterprises .....(International Journal of Business and Social Science Vol. 4 No. 16; December 2013*-The Impact of Mobile Technology on Economic Growth amongst 'Survivalists' in the Informal Sector in the Johannesburg CBD, South Africa *Nathalie Hyde-Clarke, PhD)*

**M-Pesa is a mobile phone based money transfer system in Kenya which grew at a blistering pace following its inception in 2007. Analyzing data from two waves of individual data on financial access in Kenya, it is found that increased use of M-Pesa lowers the propensity of people to use informal savings mechanisms such as ROSCAS, but raises the probability of their being banked. It is found that M-Pesa causes decreases in the prices of competing money transfer services such as Western Union. Results suggest that M-Pesa improves individual outcomes by promoting banking and increasing transfers. (Mobile Banking: The Impact of M-Pesa in Kenya Isaac Mbiti and David N. Weil NBER Working Paper No. 17129 June 2011) Indicus Centre for Fiancial Inclusion – Digital Payments and inclusion – PartI : Building a cost-effective robust infrastructure

There are a number of innovations in the mobile money and digital payment that have practical applications for financial inclusion. The financial system in developing countries is being transformed. The cost of mobile phone technology has gone down and this technology has been adopted to support financial services. Mobile banking innovations have begun to spread across and within the under developed countries. The low cost and wide spread unrealised demand for financial services means that mobile banking has the potential to reach remote corners of the social, economic, geographic spectrum. A well established financial system offers savings credit, payment and risk management products to people with a wide range of needs. Worldwide, 50 percent of adults reports having an individual or joint account at a formal financial institution. But, while account penetration is nearly universal in high-income economies, with 89% of adults reporting that they have an account at a formal financial institution. It is only 41% in developing economies. Globally, more than 2.5 billion adults do not have a formal account, most of them in developing countries.

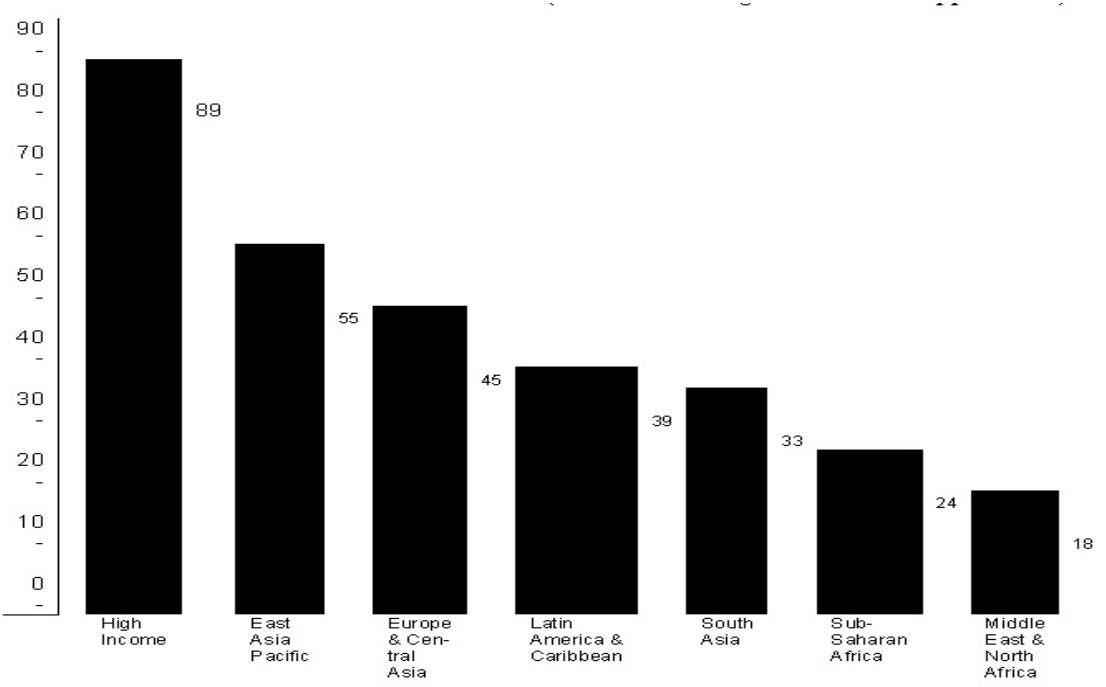
Most account holders in developing economies make deposits and withdrawals primarily through bank branches, whereas, in high income economics, people rely heavily on ATMS, Debit Cards, Cheques and Electronic payments. But, in the recent past, there is a sparkling positive change in the expansion of financial services in the developing economics – that is through "Mobile money" and " Digital Financial Services". The greatest success has been in Sub-Saharan Africa. This success of mobile-money in Sub Saharan Africa shows that innovations can bring about dramatic changes in how people engage in financial transaction. As such, let us see a snap shot of the

changes that are taking place in digital financial services industry in Africa today and to analyse the impact of these innovations in 'mobile-money' and 'Digital Financial Services' in the coming decade.

**Let us discuss the mazor trends in the distribution of digital financial services in Africa:**

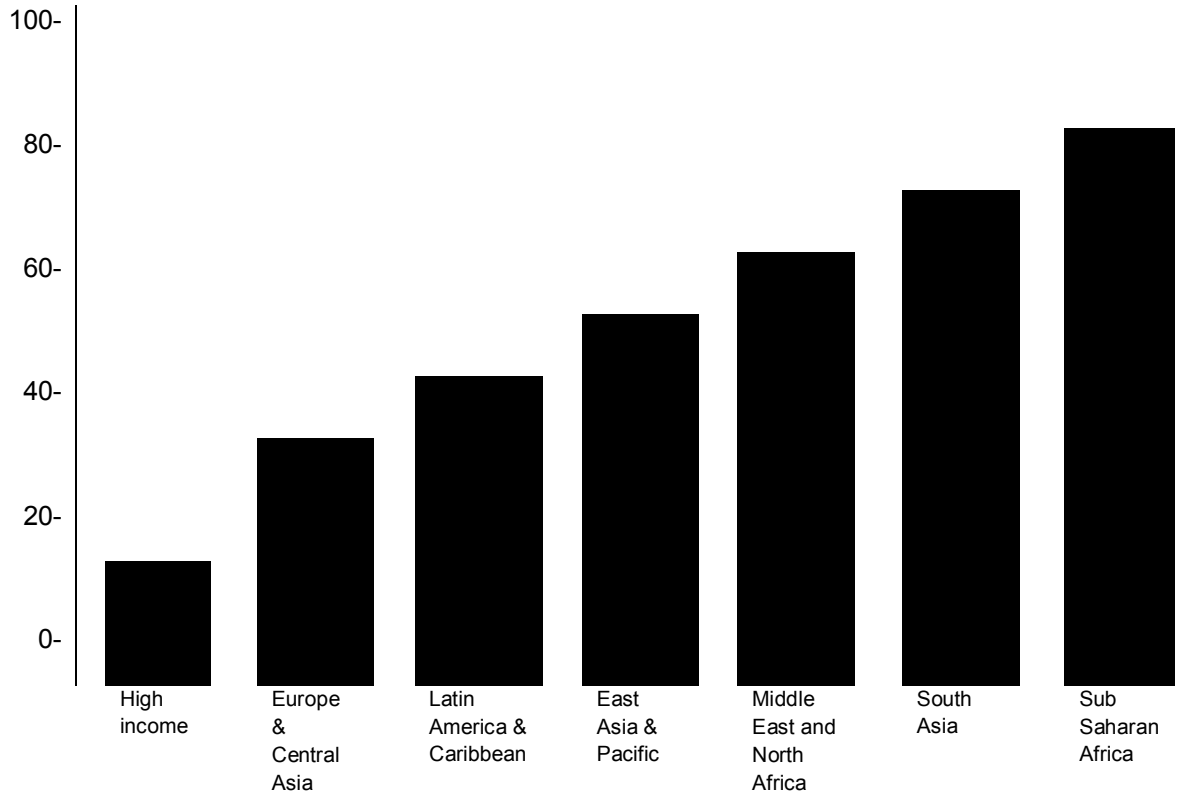
Sub Saharan Africa poses many challenges to financial inclusion, namely (a) lack of basic infrastructure, (b) illiteracy, and poverty – a large proportion of population (say 48.5%) lives below the international poverty line of $1.25 per day. As a result, the number of adults with an account at a formal financial institution is very low. (See Figure – 1)

**Fig – 1: ACCOUNT PENETRATION**
(Source: Demirguc Kunt & Klopper 2012)




In several economies around the world – including Combodia, the Democratic Republic of Congo, Guinea, and Republic of Yemen – more than 95% of adults do not have an account at a formal financial institution.

**Fig. 2 -Lack of Account penetration among the poorest**




**(Source – Demirguc-Kunt & Klopper, 2012, Gallop World Poll 2011)**

Excluded from formal finance, unbanked individuals resort to informal mechanisms such as savings groups, moneylenders or social support networks in lieu of banking and risk management products. The primary obstacle in offering formal financial products to low income customers has generally been the cost of delivery.

However, over the last few years, some parts of Africa have experienced remarkable advances in financial inclusion using digital financial services and mobile financial services. Before discussing these in detail, let us understand what is digital financial services and mobile banking. In fact, digital financial services is a broader term encompassing electronic payments, including retail payments by card or mobile phone "Mobile Financial Services" means phone-based payments, and sometimes referred to as "Mobile Money".

Digital Financial Services has four stages of market development as mentioned below:

- Having access to a basic account,
- Payment connectivity to individuals, Government and utility providers
- Payment connectivity of financial service providers to access savings, insurance and loan products, and
- The ideal, when majority of transactions are in digital mode.

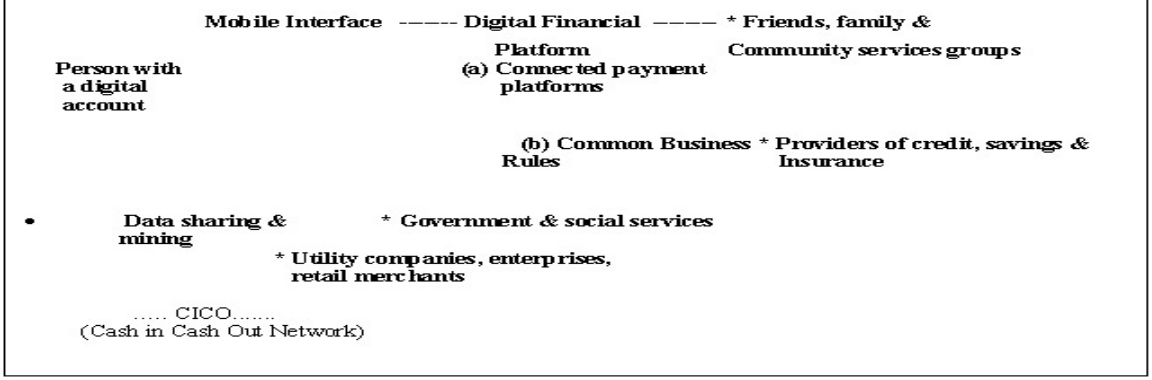
As we move on the path towards financial inclusion, let us understand the intricacies of digital financial system.

- Financial Service providers have traditionally kept away from the vast majority of the population due to high transaction cost.
- Digital payment modes have now reduced these transaction costs considerably
- Despite the advances in technology, certain barriers remain e.g. changing people's preference for cash is crucial for expanding the financial inclusion.

As the RBI vision for financial inclusion was spelt out clearly in August 2011 - "Once the financial inclusion plans are implemented in all villages, customers will be able to transact electronically with each other as well as with individuals and firms outside the village. This will reduce their dependence on cash and lower cast for transactions. As banking is a public good, this is essential in the interest of public policy"

The basic infrastructure which should be in place to achieve this vision can be described as follows:

**Fig....3**




As is evident from Fig. 3:

- Digital connectivity that enables customers communicates with the provider's transaction authorisation system through any digital interface such as mobile or the internet.

- Cash-in/Cash-out networks that enable poor customers to convert their physical cash into digital money (and vice versa)
- A standard system for capturing and verifying customer identity
- An account that enables digital payment connectivity
- A payment platform, or interconnected interoperable platforms, that allows transactions, regardless of the payment provider
- Common business rules and technical standards that enable

a. providers to settle and clear cross-platform payments and

b. data sharing and data analytics across providers

- A payment platform that is cheap enough to serve users at the bottom of the pyramid and can accommodate a range of services beyond mere money transfer.

So broadly, there are four stages in market development on the path to digital financial inclusion viz.,

- Basic connectivity (i.e. mobile coverage and penetration among rural poor)
- Digital Remote Payments (i.e. poor people adopt and use digital for person to person (P2P) transfers and Government payments.
- Full range of digital financial services (i.e. poor people adopt and use digital for savings, credit and insurance services)
- Inclusive Digital Economy (i.e. poor people conduct a majority of transactions, including small in store purchases digitally)

***At present, whereas, India, Bangladesh, Indonesia and Nigeria are at stage-1, Kenya, Tanzania and Uganda (Sub-Saharan Africa) are at stage-2.***

It us found that in Tanzania between 2009 and 2013, the proportion of Tanzanian adults, who were completely excluded from the financial system declined from 55% to 44%.

As a result, the proportion of people using formal Bank products rose from 9% to 14% over the same period In Kenya also, the percentage of adults using a Bank account increased from 13% to 29% between 2006 and 2013.

This all happens because of the mobile money transfer which is a sub set of digital financial services. In fact in 9 countries of Sub-Saharan Africa, there are more mobile money accounts than the bank accounts. The countries are Republic of Congo, Gabon, Kenya, Madagaskar, Tanzania, Uganda, Zambia and Zimbabwe. As a region, SSA has 98 million registered mobile money users, representing 48% of the global user base. Over the last 3 to 4 years, successful mobile money operations have emerged in places like Tanzania, Zimbabwe, Uganda and Ghana. There is a growing convergence of operators, Banks and Payment service providers. These entities are coming closer and thus enabling the participation of low-income people in the formal financial sector as well as providing business opportunities for the international players and African companies also. Kenya is leading the way in this regard.

**The Kenyan Experience**

M-Pesa, the mobile – phone based money transfer system in Kenya grew at a blistering pace after its inception in 2007. The story of the growth of mobile phones in Africa is one of a tectonic and unexpected change in communications technology. From virtually 'NIL' in the 1990s, over 60% of Africans now have mobile phones as landline phones in use and even with this, the growth of M-Pesa is startling. Within eight months of its inception in March 2007, over 1.1 million Kenyans had registered to use M-Pesa and over US$87 million had been transferred over the system. By September 2009, over 8.5 million Kenyans had registered to use the service and US$3.7 billion (equivalent to 10% of Kenya's GDP) had been transferred over the system since inception. Even the agents network grew to over 18,000 locations by April 2010, from approx. 450 in mid-2007.

At that time, Kenya had only 491 bank branches, 500post bank branches and 352 ATMs

Prior to the introduction of M-Pesa, individuals used a mixture of informal and formal channels to transfer money. Large bus companies such as Akamba Bus Co. or Scandinavia Bus Company offered formal money of parcel transfer services. In other cases, individuals would disguise money transfers as packagers and place them on the bus for delivery to the designated terminal. Banks and money transfer companies such as Western Union or Moneygram also offered transfer services, although their outlet or branch networks were not as extensive as the Post office's.

In 2006, the most common methods to send or receive money were through friends, bus companies or the Post Office. Over 50% of people sent money using friends, while close to 50% received money via this medium. Approx. 20% sent money using the Post Office, while close to 30% received funds this way. Other formal methods such as sending money through banks or money transfer companies like Western Union were less common (less than 10%).

The inception of M-Pesa in Kenya in 2007 changed the money transfer market dramatically in less than two years since its inception. M-Pesa became the leading money transfer method with over 50% sending money via M-Pesa and over 65% receiving money through the system in 2009.

The advent of M-Pesa caused commercial banks to work towards speeding up the cheque clearing process, which took a minimum of 3 days.

Not only in Kenya, M-Pesa has been greatly successful in the developing countries as well, for example M-Pesa was launched in Tanzania by Vodacom in 2008. As of May 2013, M-Pesa has five million subscribers in Tanzania.

In South Africa, in September 2010 Vodacom and Nedbank announced the launch of the service in South Africa, where it is estimated that there are more than 13 million 'economically active' people without a bank account. When M-Pesa first launched, Vodacom projected that it would sign upto 10 million users in the following 3 years. By May 2011, it had registered approx. 1, 00,000 customers.

But despite this entire success story, distribution remains a principal challenge in the development of mobile money in SSA.

The distribution process is hampered due to various reasons:

- Agent liquidity – The agents in rural areas, sometimes have trouble rebalancing their float, leaving many customers dissatisfied and thereby reducing their trust in the system.

- Mobile-money solutions are usually not interoperable between providers. For example, a Vodacom subscriber cannot easily send money to a Tigo subscriber.

- Rapid growth in agents' network has also resulted in the incidents of frauds. And any such failure in the system leads to diminishing trust in the system.

- Sometimes, Know Your Customer (KYC) norms delay the process of account activation, thus preventing the users from transacting immediately. Although, mobile imaging is also being used to speed up registrations, authenticate users and the transactions, thereby reducing the frauds also. Jumio Mitek systems, Card.io and Abbyy – all specialised vendors in optical character recognition, documents capture, and processing – offer mobile imaging and dynamic data capture solutions globally. Jumio enables smartphone cameras and webcams held by agents or merchants to image Identity Documents (Ids) for verification and payment. Jumio also recently launched its identity verification tools by launching 'Face Match', a feature matching ID photos, with an end – user's face. Therefore, building and managing on agents network that results in a positive and consistent experience for customers in critical to building trust in the system.

As a step in this direction, certain models to support the agents logistically have come up:

- Beyond Branches in Nigeria has recently started to offer agent services to clients of Banks and MNOs through a business model. This identifies and trains retialers to become agents equipped with an internet enabled mobile handset. Once they pass a quality control test, agents are entitled to offer Beyond Branches branded services that include cash deposits into Bank accounts and OTC bill pay transactions, including airtime. Beyond Branches also plan to offer its agents a suite of small business services, such as inventory management, store credit tracking, credit provider assessment, insurance purchase and mobile based advertising
- Maxcom has aggregated agency and payment sevices of many FSLs in Tanzania and Rwanda, including Airtel, Tigo, Vodacom and Sasatel. It also provides OTC payment services directly for Government utility and pay-tv companies
- Selcom in Tanzania is similarly providing cash-out and bill-payment solutions for mobile money providers and banks through a single device at Selcom agents.
- Kopo Kopa, Kenya's leading merchant acquirer has introduced merchant management tools.

2. Mobile banking's principal value vis-a-vis traditional mass-market models, is that it leverages customers' mobile phones as its distribution channel. As a result, MNOs in partnership with financial institutions can offer mobile banking services very conveniently. In some cases banks or MFIs remain the sole lender, while using the MNO's services of mobile money payments merely as a low-cost payment platform. As the lender and the MNOs are separate institutions, the need arises to integrate their systems, allowing customers to service their micro-loan with mobile money. But in the absence of a standard Application Programming Interfaces (APIs), integration is a tough task. However, some specialised IT companies and application developers have developed a business model for integration of these services. For example;

- Tangazoletu, a software company in Kenya developed an application called Spot Cash that allows clients of Savings and Credit Co-operative (SACCOs) and MFIs to deposit and withdraw cash to and from their savings account by sending a SMS to the financial institution. The money is then transferred from the client's M-Pesa mobile money account.
- F-Road in China offers a service that enables even basic feature phones to benefit from high security and functionality. F-Road was a SIM overlay technology – a paper thin sheet with an embedded chip – that connects with the SIM card but does not require collaboration with an MNO. Touch points built into the overlay filter information between the two layers. The hardware provides a means to store and carry programme logic independent of the SIM, allowing F-Road partner banks to provide a SIM neutral solution to their clients, while at the same time minimizing communications costs driving mobilizing communications for customers.
- For companies seeking to outsource their branchless banking operations, Tyme in South Africa offers bespoke end-to-end services across the value-chain in a hosted basis.

- Safaricom in Kenya, enabled a start-up called Kopo Kopo, alongwith two other companies to acquire merchants on the Safaricom system. Merchants, who sign up with Kopo Kopo receive a new SIM card that works on any phone, allowing it to work as a simple P-O-S (Point of Sale) device. The company then aggregates all M-Pesa payments from customers into a single account. In addition, cash flow summaries are displayed on a dashboard in the merchants' online accounts, summarizing information on customers and daily sales in a prescribed format. As a result of this, Kopo Kopo had about 10,000 merchants on its platform by November 2013 as compared to only 100 in 2010.
- Vastech inTanzania offers its merchants transaction validation, branded text message notification and flexible fund settlement in a mobile wallet or bank account.
- A number of operators have developed low-cost POS devices for smartphones (m POS), based on inexpensive dongles plus apps, including Square in the US and Clip in Mexico.
- A number of POS devices are offering additional business solutions and value additions. Zoop (in Brazil and the US) offers a pocket sized bluetooth m POS device that accepts chip and PIN, magstripe and NFC/contactless cards and phones.
- Izettle (in Brazil and Europe) offers a free app, a secure card reader and analytics that help merchants keep track of their business.
- Ezetap (India) accepts card payments through a mobile phone or tablet and an Ezetap card reader and application for transactins.
- Mastercard and Visa have also introduced new products to meet the growing demands of merchant services in Africa. Visa has launched two initiatives: mVisa, an interoperable mobile money solution in Rwanda, and Visa Mobile Payments (VMP) in Botswana, which provides Visa payment functionality for holders of Orange Money mobile wallets through a linked Visa pre-paid card. Mastercard is exploring similar mass-market products by developing a national ID with payment functionality in Nigeria and launching the phone cash mobile wallet in partnership with NBE Bank in Egypt.

3. But, the important point is – without low-cost interoperable payment solutions, the capacity of mobile money or cards to evolve into a robust payment system will remain limited. In some markets, such as Ghana and Nigeria, regulators are trying to build interoperability into mobile money systems from their inception. In Tanzania and Indonesia, efforts are on to develop scheme rules for interoperability.

4. Many product innovations in digital financial services have come from Sub Saharan Africa, mainly Kenya and Tanzania. This is despite the fact that there are a number of barriers preventing product innovations:

i. Regulation – Regulations inhibit smaller non-bank players from building credible mobile money offerings that would create a market place conducive to greater product innovation.

ii. Smaller Budgets - Mobile money divisions within MNOs operate on a small budget which hampers product innovation.

iii. Inadequate APIs - Mobile money providers operate closed loop systems without adequate APIs, preventing others from experimenting with new product offerings. Despite these constraints, there are some new product evolved.New products offerd in these countries are:

i. On-demand loans or on-demand micro-credit.

ii. Pay-as-you-go models for utility service consumption

iii.Mobile micro-insurance

iv.Micro-pension-products

v. Mobile payments from buyers to farmers for agri-products:

(I). **<u>On demand loans or on demand Micro Credit</u>** - Various on demand micro-credit products have been launched:

(a) One launched by MTN in conjunction with MFS Africa for safaied workers. Kwik Advance, a cash advance product launched in Ghana, Cameroon and Liberia, allows MTN mobile money users to access 40% of their net salary before the end of the month. Users receive the proceeds in their mobile money account within one minute.

(b) M-Shwari inKenya offers users on interest bearing account with the possibility to access 30 day loans in real time. M-Shwari's biggest innovation is that loans are approved in real time based on credit scoring models evaluating mobile transactions data of the user. No formal paperwork or interaction with a bank representative is required. After the approval of the loan, the funds are immediately available on the user's M-Pesa account. Incidentally, the user's M-Pesa account serves as collateral against non-payment.

(c) MFI Musoni in Kenya reduces loan distribution and collection costs by leveraging mobile money to operate virtually cashless, as all loan repayments and disbursements are made via M-Pesa mobile money transfer.

(II) **<u>Pay as you-go models for utility service consumption</u>**

In this model, consumers pay for essential services like (water, energy etc.) in small increments through mobile money. Using mobile money for micro payments remedies the problem of revenue collection. Here M2M (Machine to Machine) model works, which allows retailers to mitigate the risk of fraud or theft. Solar home systems or water pumps serviced by these companies have embedded micro-controllers that allow for remote operation and monitoring through GSM/GPRS connectivity. This technology also facilitates data collection of user consumption and tracks potential operational problems remotely.

Clean water service companies such as Grundfos Lifelink in Kenya supply, install and service turnkey water solutions for communities. They leverage low-cost GSM/GPRS enabled water meters whereby communities can pay as they go for water through smart cards or RFID key fobs that can be recharged with mobile money. The

embedded smart technology enables remote monitoring and control of filtration operations, while capturing operational data. Mobile enabled access to drinking water has also facilitated leak and theft detection, improved monitoring, and increased water pump resilience. Depending on the business model pay as little as $0.001 per litre of purified water in Kenya for development.

Pay-as-you-go models have also gained traction in other sectors such as in health, education and even in cable TV services. According to GSMA, there are around 250 M-health services currently in operation across SSA, some of which use mobile money for payments Similarly in educaiton, Kytabu in Kenya is offering a textbook subscription service allowing customers to buy or rent pages or chapters of books that can be downloaded onto mobile devices with micro-installments.

(C) **Micro-insurance -** Insurance is a challenging financial product for explaining and selling to the poor. It is difficult to sell as it is a protection-product, not an investment product. Despite this, insurance providers have continued to innovate insurance product; including several products in Sub Saharan Africa. These products offer life insurance, health, accident, crop, cattle and travel insurance. Presently, non-insurance entities, such as MNOs are playing a more important role in the development of insurance products, in addition to provide delivery channel, such as,

(a) Airtel Uni Mobile (Ghana), YuMobile YuCover (Kenya) and TNM Moyo Cover (Malawi) have partnered with micro-insurance B2B service providers, like insurance coverate free of charge (i.e. without premium) toconsumers.

(b) MNO (Like Tigo Family Care in Ghana and Vodacom Faraja in Tanzania) have gone one step further, i.e. offering a "freepremium" model, whereby, the user gets basic insurance free of charge but can choose to double the coverage, or extend the coverage to an additional family member, for a small monthly premium. Premiums are paid either with airtime or mobile money

However, it is important to note that regulations in some countries do not allow for insurance to be paid with airtaime, while, in some countries, lack of e-regulation presents insurance from being paid with mobile money

(c) Co-operative insurance companies, like M-Bima (Life insurance) and Linda Jamil (health insurance) in Kenya offer micro insurance products for a regular premium payable through mobile money.

(IV) **Micro pension products -** This product is in a developing stage, which helps informal workers to save for retirement. For example;

(a) Mbao Pension Scheme members in Kenya deposit a voluntary minimum of 20 Kenyan shillings ($0.30) per day using either M-Pesa or Airtel mobile money through the Pay Bill feature. With an 8.5 million informal worker addressable market in Kenya, products such as the Mbao Pension Scheme can make a big impact on financial inclusion. Like a regular pension plan, members benefit from tax advantages and investment income generated from investing the contributions. It is nevertheless important to highlight the payment costs

associated with products that are not run by mobile money providers, but rather only use the payment channel. M-Pesa for example, charges $0.03 for an $0.12 to $0.57 mobile money transfer. If an Mbao pension member deposits 20 Kenyan shillings ($0.30) daily from his M-Pesa account, he is effectively paying a 15% surcharge on each payment.

(V) **Mobile payments from buyers to farmers for agri products**

Financial service providers are leveraging mobile technology in the delivery of agriculture financial services. Farmers are replyig microloans using mobile money. Mobile money providers, large produce buyers and implementing partners are joining piloting several efforts to channel payments to farmers through mobile money.

(a) In Zimbabwe, produce buyer KAITE piloted the distribution of 448 farmer payments through Ecocash

(b) In Ghana, Agribusiness Systems International and major rice producer GADGO pilot mobile payments to rice farmers using Tigo Cash.

As such, for improving access to financial services, it is well established that the poor can be serviced profitably, service-costs can be reduced, and large numbers coverd rapidly, through a digital payments ecosystem. But it is also important to note that for a fully integrated, inclusive financial system to emerge, changes are required in regulation, technology, interoperatibiliyt, product and process. In the Sub-Saharan Africa, Kenya and Tanzania are leading the way, but other areas are not catchin up and innovations originated in other parts of the world are being adopted in Africa fast.

**Digital Financial Inclusion - Indian Experience –**

The global experience in expanding financial inclusion shows that while each country has its own socio-economic and financial ecosystem, there are some common basic principles, i.e.

(i) The way to expanding financial inclusion is through creating a digital payments ecosystem

(ii) These are four main stages of market development on the path to digital financial inclusion and India is at the first stage.

(iii)Expanding the role of the non-Banks in crucial for the move to the second stage.

Regulatory by concerns for this step needs to be addressed, keeping in view the risks posed by payments. For this, core-strengths of both banks and non-banks are required.

Achieving financial inclusion requires bridging the gap between cash and digital payments. In a white paper on Financial Inclusion and Digital Payments in 2008, Bhandari and Kale pointed out that it is possible to profitably service the poor, rapidly reducing the servicing costs and cover a large population through a digital payment

ecosystem that is characterised by open entry and inclusiveness. For this, it is important to enable and increase financial transactions in the digital mode.

Basically, there are four levels at which mobile phones can assist in delivering financial services -

(a) The mobile phone can act as an electronic transaction channel allowing a Bank to utilize its communication services, through Interactive Voice Response (IVR), the mobile internet or WAP or SMS.

(b) An operator might also handle the network of cash in / out stores on behalf of a Bank, becoming a full transaction acquisition network for the Bank e.g. EKO in India.

(c) The bank may outsource the operation of the banking platform, letting the mobile operator branded, marketed and sold by the mobile operator but legally issued by a bank under a banking license, e.g. Smart Money in the Philippines.

(d) Fourthly, the mobile operator may be the legal account issuer, operating an electronic mobile money account.

In India, the first two levels are prominent, while the third is coming up in a modified form in Mobile Banking services can be deployed using any of the following communication bodes -

- Interactive Voice Response (IVR)
- SMS
- WAP
- Stand alone Mobile Application Clients (Mobile apps)
- Unstructured Supplementary Service Data (USSD)
- Using SIM tool kit (STK)

The following table presents a comparison of the various communication modes that can be used for mobile banking:

**Comparison of various modes of Mobile Banking**

| S. No. | Mode | Handset Requirement | Cost per transaction | Ease with which the service can be provided to the subscriber |
|---|---|---|---|---|
| 1 | **IVR** | Any Phone | High | The subscriber is automatically enabled to use these modes;there is no need for any separate provisioning |
| 2 | **SMS** | Any Phone | Medium | |
| 3 | **USSD** | Any Phone | Medium | |
| 4 | **WAP** | GPRS enabled | Low | The TSP is required to enable the services for the subscriber. |

| | | | | |
|---|---|---|---|---|
| | | Phone | | |
| 5 | **Mobile Apps** | Smart Phone | Medium | The subscriber may have to download an application on his mobile phone. |
| 6 | **STK** | Pre-programmed phone | Medium | The TSP is required to change/program the SIM of the subscriber |

As can be seen in the above table, IVR, SMS and USSD score high against the yardsticks of ease of provisioning, overall affordability and availability across all mobile handsets. These features make IVR, SMS and USSD eminently suitable communication modes for providing banking services for financial inclusion. Considering these factors, the Authority, through the Mobile Banking (Quality of Service) Regulations, 2012 dated 17.04.2012 has, inter-alia mandated that eveyr access provider, acting as a bearer, shall facilitate the banks to use SMS, USSD and IVR to provide banking services to its customers. The Vodaphone ICICI Bank venture. The fourth level has restrictions.

Though the RBI acknowledges the mobile phone as a significant tool for financial phone as a significant tool for financial inclusion, under India's bank-led model, the focus, at present, is on extending mobile banking. The risks of the services can be addressed by appropriate regulation that would include the following:

- 100% of the cash backing mobile money is held in a fully prudentially regulated institution.
- The non bank mobile money provider does not intermediate the funds
- Customer funds are isolated from the issurer's funds and protected from claims by the issuer's creditors.

There is vast scope of mobile payments in accelerating financial incluison, the fact that there are approx. 840 million phones against about 1 million POS terminals. But the number of mobile banking subscribers is only about 52.9 million.

The current model, through which banking services are provided throught the mobile phone is based on the recommendations of the 2010 Inter Ministerial Group on 'Framework of Delivery of Basic Financial Services using Mobile phones."

In this framework, the various communication modes were analysed from the perpective of the target group for financial inclusion: such consumers would prefer a mode for mobile banking which is user friendly (menu driven but without the need to download software etc.) has a low cost of operation (i.e. cost per transaction) and does not require any significant investment (i.e. high-end phone instrument). Looking at the relative costs and transaction speec, the group then zeroed into the USSD (Unstructured Supplementary Service Data) channel as the most feasible and cost effective mode for financial service transactions on mobile phones. In April 2012, TRAI issued the 'Mobile Banking (Quality of Service) Regulations, 2012', which required that every provider facilitate the banks to use SMS, USSD and IVR to provide banking services to its customers and deliver the message generated by the bank or the customer within a specified time frame. The IMPS system from NPCI was

set up in 2011 offering a 24 x 7interbank electronic fund transfer service through mobile phones, enabling bank accont holders to remit funds to any other bank account instantaneously through their mobile phones. Yet, mobile banking did ot pick up. Though 78 banks have been authorised to offer mobile banking services, in tie-ups with Telcos. But, this mode of digital financial services has still a long way to go.

The major reason for slow rise of transactions through the mobile has been differences between the Banks and Telcos on various sharing of costs and liabilities and the pricing of M-Banking transactions. For banks, M-banking is an odd-on service, an innovative to initiate transactions in the accounts opened under the financial inclusion drive. For Telcos, as the banking is not their main service offering, the sharing of responsibilities towards liabilities for failed transactions and fraud compels them back track in mobile banking.

**Various policies:**

1. The Reserve Bank of India recently released Drafts guidelines for licensing Pament Banks. Payments banks are a new concept for India that will fill gaps in access o fthe unbanked to the formal payments and remittances system. Payment banks will serve the financial inclusion cause by providing small savings accounts and payments/remittance services. Here, legal issues need to be dealt with at the earliest, i.e. the Universal Electronic Bank account that can createa unique financial identifer across banks and the legal hassels over the UIDAI should be cleared.
2. In Mobile payments, the role of non-banks is also very crucial. At present, there are significant restrictions on the operations of non-banks in the payment space. While non-banks are allowed to issue prepaid instruments and mobile wallets, there are still some restrictions on it. The open mobile wallets and mobile accounts have to be operated through a bank account. Remittances through mobile phones have also been permitted with a bank account at any one end. However, non-banks are still restrained from offering a cash-out facility at any of their retail points, limiting the scope of mobile wallet. This is done with a view to avoid any possibilityof frauds. However, with Aadhaar number, this issue can be addressed by Aadhaar based authentication protocol.
3. Banks are already providing remittance and payment services, including cash-out through their licensed BCs or under tie ups with telco partners. For example, icici-Vodaphone tie up serves 1.4 million customers through 65,000 agents. Services that they provide include cash withdrawals also.

The TRAI consultation paper on 'Issues Arising out of Provisioning and Delivery of Basic Financial Srvices using mobile phones in the context of pricing of services by mobile service providers' in Jan. 2011. The consultation paper discussed the overall question of tariff fixation for financial services using mobile phones on all varieties of communicaiton channels.

Further, the TRAI consultation paper (CP) on USSD- based mobile banking services for financial inclusion (the 20th September 2013) discussed a tariff framework for telecommunication services using USSD for delivery of basic financial services through the mobile phone.

There are 3 major recommendations:

- It propose to absolve Telcos of any financial risks for transaction failures,
- It proposes a tariff calling of Rs.1.50 per session,
- It proposes a quality standard – a session response time of 2 seconds.

RBI has also set up a Technical Committee on mobile banking to "examine the options / alternatives including the feasibility of using encrypted SMS based funds transfer using an application that can run on any type of handset for expansion of mobile banking in the country."

## Conclusion

While the mobile phone has been accepted as the most cost effective and accessible device for transactions, there are several issues tobe resolved before our country may have a robust digital payment system option through mobile phone, like

(I) the business-relationship between banks and Telcoms.

(ii) Strengthening the supervision and monitoring to prevent frauds and for customer protection

(iii) While RBI has real time visibility into the banking system for check suspicious transactions, there are challenges in having similar level of control over non banks and agent network.

(iv) The protocol between non banks governed by TRAI and banks governed by RBI needs to address for effective m-payments system.

The focus on digital payments for financial inclusion will change the way of transactions, as Dr. Raghuram Rajan, in his first speech as Governor, RBI noted that "mobile payments can be a game change in the financial sector."

## REFERENCES

1. AKER, JENNY C., AND ISAAC M. MBITI. 2010. "MOBILE PHONES AND ECONOMIC DEVELOPMENT IN AFRICA." JOURNAL OF ECONOMIC PERSPECTIVES, 24(3): 207-32.
2. ASLI DEMIRGUC-KUNT AND LEORA KLAPPER, 2012, "MEASURING FINANCIAL INCLUSION: THE GLOBAL FINDEX DATABASE", WORLD BANK POLICY RESEARCH PAPER 6025.
3. BEYONDBRANCHES, http://www.beyondbranches.com
4. CGAP, http://www.cgap.org/blog/china-%EE%80%93-future-leader-branchless-banking-poor)
5. CGAP'S "THE EMERGING GLOBAL LANDSCAPE OF MOBILE MICRO-INSURANCE", 2014
6. FINSCOPE, TANZANIA, 2013 REPORT SUMMARY. FINSCOPE TRUST AND FINANCIAL SECTOR DEEPENING TRUST, TANZANIA), RETRIEVED FROM http://www.fsdt.or.tz/finscope/sites/default/files/pdfs/FinScope-Brochure-2013.pdf
7. GSMA'S "STATE OF THE INDUSTRY 2013: MOBILE MONEY FOR THE UNBANKED", 2014.
8. ISAAC MBITI, DAVID N. WEIL, JUNE 2011, MOBILE BANKING: THE IMPACT OF M-PESA IN KENYA, WORKING PAPER 17129 HTTP://WWW.NBER.ORG/PAPERS/W17129, RETRIEVED FROM http://www.econ.brown.edu/faculty/David_Weil/Mbiti%20Weil%20NBER%20working%20paper%2017129.pdf
9. MOBILE PAYMENTS GO VIRAL: MPESA IN KENYA IGNACIO MAS AND DAN RADCLIFFE, BILL & MELINDA GATES FOUNDATION MARCH 2010 RETRIEVED FROM http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/05/0

3/000334955_20100503043912/Rendered/INDEX/543380WP0M1PES1BOX0349405B01PUBLIC1.txt
10. PENICAUD.C. AND KATAKAN.A. STATE OF THE INDUSTRY 2013: MOBILE FINANCIAL SERVICES FOR THE UNBANKED,.GSMA MMU 2014
11. THE DIGITAL FINANCE PLUS INITIATIVE, http://www.cgap.org/topics/digital-finance-plus
12. WDI 2010 | DATA RETRIEVED FROM HTTP://DATA.WORLDBANK.ORG/DATA-CATALOG/WORLD-DEVELOPMENT-INDICATORS/WDI-2010

**CITE THIS ARTICLE**
**FORMAT: APA**
Dayadhar Raj, S. (2015). Financial Inclusiveness : The role of mobile money and digital financial services.. S O C R A T E S, 3(1), 95-112. Retrieved from http://www.socratesjournal.com/index.php/socrates/article/view/132
**For More Citation Formats Please visit:**
http://www.socratesjournal.com/index.php/socrates/rt/captureCite/132/0