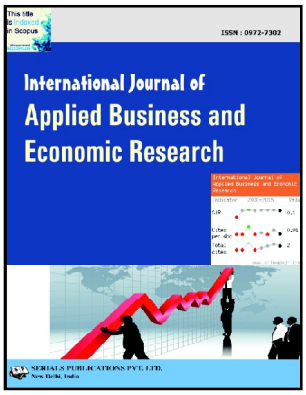

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Mobile Money: Concept, Ecosystem, Benefits and Challenges associated with Mobile Money

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Abstract: Mobile penetration in India is reaching a new high with the average selling price of smartphones falling down, resulting in mobile access even to the lower income strata of the Indian society. Mobile instruments in the hands of the rural as well as lower income population of India has opened up more opportunities for financial services in the form of mobile money and mobile wallets leading to financial inclusion.

This being a relatively upcoming field, there is a dearth of literature pertaining to mobile money transactions. This paper attempts to bridge this gap by reviewing literature on mobile money on the following aspects: understanding concept of Mobile Money and its ecosystem, mobile money success stories in developing countries, benefits of mobile money, and associated challenges.

This paper will help readers understand the trends of current telecom market in India with respect to mobile money, relative analysis of the global and Indian market feasibility for future sustenance of mobile money and upcoming development in the field of cashless economy. This paper will also help governments, donors, and industry to understand the eco-system and the challenges associated with deployment of mobile money. The use cases of mobile money in developing countries will give them insights as to how mobile money services can be implemented and give them an understanding as to how the rural and population at the bottom of the pyramid can be included in the development process through financial inclusion by deployment of mobile money.

Keywords: Mobile Money, Cashless Economy, Mobile Money Transactions, Financial Inclusion, Mobile money eco-system

INTRODUCTION

The Indian telecommunication market is currently a very dynamic and high growth market. Currently India is ranked as the second largest telecommunication market in the world. It has been registering a very

strong growth and is expected to contribute immensely to the Indian GDP (Gross Domestic product). India is now ranked as the second biggest contender in the smartphone market in the world.[1] Mobile penetration is growing very speedily in India. Even the rural areas see a surge in the demand for mobile phones and smartphones. The device that was once a status symbol is now utilised on an everyday basis by almost everybody .Mobile phones are being viewed as "the single most transformative tool for development." (Jeffrey Sachs)[2]. They will become the driving force for the country's socio-economic growth. The mobile subscriptions' input to the per capita GDP growth of India will be 2.1% (2015-2020). There will be an estimated 69 mobile phone subscriptions for every 100 Indians in 2020.[3] Mobile phones add to the economic development as a result of its intense usage, which has ascended rapidly. Increased mobile phone usage will also help the nation in achieving its dream of becoming a cashless economy where all the transactions would be completely through digital medium and would not involve flow of any physical cash.

Mobile phone usage has opened up more opportunities for financial services in the form of mobile money and mobile wallets leading to financial inclusion. Many studies have been conducted on mobile phone adoption and its positive economic impact. Adoption of telecom services shows positive impact on economy and growth (Hardy 1980; Kathuria, Uppal, and Mamta 2009)[4] [5]. Mobile phone usage leads to lower cost of transaction as it reduces information search cost (Donner 2006; Abraham 2007; Jensen 2007; de Silva and Ratnadiwakara 2008; Aker 2008;)[6] [7] [8] [9] [10]. Adoption of mobile phones leads to improvement in social relationships (Bayes, von Braun, and Akhter 1999; Goodman 2005; Kwaku Kyem and LeMaire 2006; Frost and Sullivan 2006)[11] [12] [13] [14]. On similar lines various studies have been carried out in the mobile money domain. (Dahlberg et al., 2003[15]; Kumar et al., 2011[16]) discuss about the perceived usefulness of mobile money. T. Dahlberg et al., (2007)[17] discuss about the factors affecting mobile payment. (Cynthia Merritt 2010)[18] discusses about Mobile money transfers and emerging business models. Sumedha Chauhan (2014)[19], talks about acceptance of m-money by the below-poverty-line citizens in India. Kevin Donovan (2012)[20] talks about mobile money and financial inclusion.

Since Mobile money is an upcoming area this paper attempts to add to the literature by discussing the following aspects related to the concept of mobile money. (1) Understanding the concept of mobile money (2) Mobile Money in developing countries (3) Benefits of Using Mobile Money services (4) Mobile Money eco-systems (5) Challenges of Mobile Money transactions.

REVIEW OF LITERATURE

Mobile Money: Understanding the concept

Mobile Money basically refers to an innovative application used on mobile devices to provide financial services to common man. It includes mobile payments, mobile transfers and in some cases, mobile banking. It also represents some sort of synergy between mobile telecommunications and financial services. Donovan.K (2012) defines mobile money as, "the facilitator of financial amenities through a mobile device". According to (Kikulwe EM, Fischer E, Qaim M 2014)[21], "Mobile Money is the general idea to assist financial transactions between people over their smart phones, reliably." Sujata P. Deshmukh et al, (2014)[22] refer to mobile money as, "a way to transfer funds to people using mobile phones." The EY report (2009)[23] describes it as, "Mobile Money is a term describes the services allowing electronic money transactions over a mobile phone". They have denoted it as a mobile wallet, a mobile financial service, and mobile payment.

The EY report defines mobile money in broad terms inclusive of all kinds of financial dealings accomplished through mobile phones. According to David Shrier, G. C. (2016)[24], "Mobile money refers to a broad spectrum of financial services which can be accessed through a mobile phone". Different types of services come under the umbrella of mobile money services such as Money transfer services, Mobile Banking, Mobile payment, etc.

Money transfer services have evolved from traditional providers to the upcoming mobile channel, which is the new genre of electronic payments.[25] Mobile transfer (alternatively called "money transfer" "person-to-person" - "P2P"- or "mobile remittances") "is a service that allows unbanked people to send or receive small sums of money to/from any other mobile phone user (even if they are subscribed to different telephone service providers) across the country, from urban to remote rural areas, and across international borders". [26]

Mobile Banking, in contrast, specifically refers to the financial services associated with a bank account such as deposits, withdrawals or bill payments. Mobile banking has huge prospects of satisfying the untapped demands for financial services in the remote areas especially of the lower socio-economic population who have low access to the bank facilities.[27]

Mobile payment (also known as "m-commerce") is a service which allows the unbanked population to buy or sell products or services in a shop or store or even remotely, by means of mobile wallet which can be accessed via their mobile phones, instead of paying hard cash.

Thus we can see that Mobile money refers to a broad spectrum of monetary services which can be accessed through a mobile phone. Airtime purchases, bill payments and remittances are the leading uses of most mobile money services. In order to boost financial inclusion, mobile money services are being implemented at a faster pace especially in the upcoming markets. Figures 1 below depicts the different types of mobile money services as identified by the EY report (2009) and Figure 2 below depicts how the mobile money transaction takes place.

Figure1: Types of Mobile Money Services

(*Source:* EY Report 2009 Reference no 23)

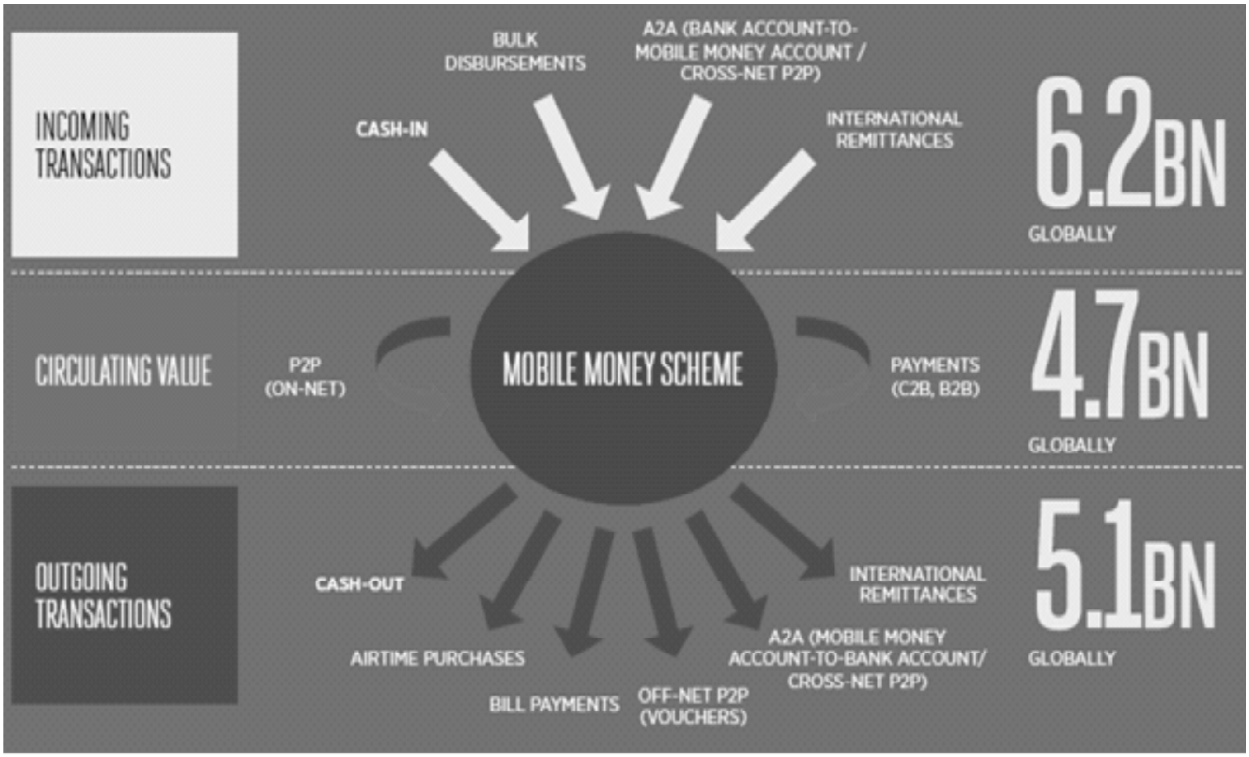


Figure 2: Mobile Money Transaction Flow

(*Source:*GSMA Report: 2014, State of the Industry – Mobile Financial Services for the Unbanked)[33]

2. Mobile Money presence in India

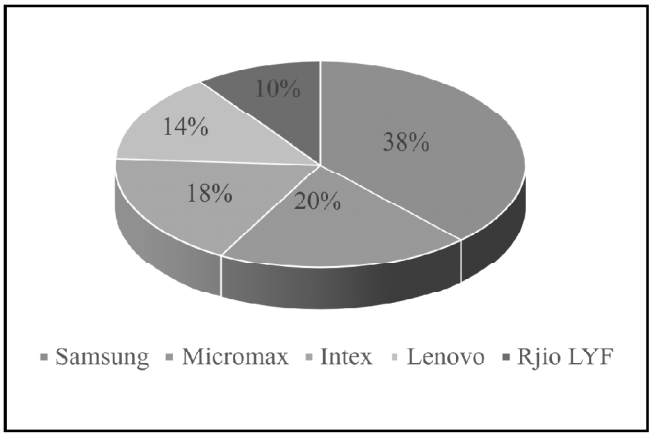
There are certain influencing factors that affect the growth of smartphones in India and also at a global level. [29] such as the introduction of new generation smartphones with detachable parts, the price cuts encourage existing consumers to frequently change their smartphones and new customer to move from feature phone to smartphone, value for money being delivered to the customers has now become the focus of companies and this has intensified by the arrival of international vendors and the 4G LTE roll out which is expected to increase the demand for smart phones.

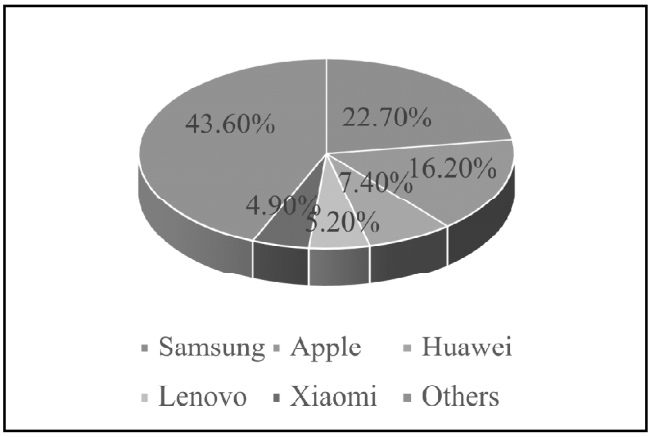
The global smartphone market has increased in terms of unit shipments at a rate of 22.7% in 2015-2016, accounting for 1,432.9mn units.(see Table 1). Fig 3 shows the market share of the various smartphone manufacturers in Indian Market whereas the Fig 4 showcases the market share of smartphone vendors in the global market.

Table 1
Current and Forecast Statistics of Smartphone Shipments

Current Statistics (2015-2016)	*Prevision Forecast (2016-2017)*
Global shipments: 1432.9 mn units.	Expected: 1654.66 mn units
Shipments in India: 103.6 mn units.	Expected: 148.1 mn units.

Source: Prevision'17: *http://www.sitm.ac.in/assets/3030_Prevision_Low%20Res.pdf*





Source: Prevision'17: *http://www.sitm.ac.in/assets/3030_Prevision_Low%20Res.pdf*

Figure 3: Indian Smartphone Market Share 2015-2016

Figure 4: Global Smartphone Market Share 2015-2016

Vodafone Institute for Society and Communications with the help of Cologne Institute for Economic Research (IER Cologne) conducted Vodafone Institute Survey which revealed that mobile phones will be driving the social and economic growth of the country. According to the study due to rising mobile phone subscriptions, India's per capita GDP will increase by $51 per year in the period of 2010 to 2020. Another study, 'Mobile Technologies — The Digital Fabric of our Lives' [30], explains how these little and compact devices are economic heavyweights that positively stimulate collective public growth. Over time, the report mentions that mobile subscriptions' input to India's GDP per capita growth will be 2.1% (2015-2020). Mobile devices add to economic development owing to their intense use, which has ascended sharply. Increased mobile phone usage will also help the nation in achieving its dream of becoming a cashless economy where all the transaction would be completely through digital medium and would not involve flow of any physical cash. There will be an estimated 69 mobile phone subscriptions for every 100 Indians in 2020.

India, till date, continues to be driven by the use of cash. Less than 5% of payments taking place in India are through electronic medium. However, the government has been encouraging the vision of making India a cashless society as that will help in reduction of back money transactions. This vision of making India cashless society and encouraging electronic payments and has also seen the support of the Reserve Bank of India (RBI) as can be seen in their document titled, "Payments and Settlement Systems in India: Vision 2018".

The scope for cashless transactions looks bright in India. As per the reports of Boston Consulting Group and Google India, by year 2020, there will be nearly $500 billion worth of digital transactions in India, using mobile wallets and other e-payment systems, 10 times the current level.[31]As per the same report, in year 2015, 78% of all Indian customer transactions were made in cash, whereas in several developed countries, only 20% to 25% of such payments were made in cash. The report also stated that in India, the dependency on currency notes and coins was expected to reduce, by changes in spending and reach of financial services to more people, and thus the cash-based customer payments are expected to fall to 40% to 45% by 2025. Thus we can expect greater scope for acceptance of cashless payments in near future,

provided the basic internet and communication facilities are in place. The latest uptake by government in India is the introduction of Unified Payment Interface (UPI) under the guidance of the Reserve Bank of India (RBI). For such e- payments system to work, two key essential elements are: capability to spot a beneficiary, and a system which makes sure that the money reaches the intended recipient.[32] And hence Aadhaar card becomes an important tool as it acts as bridge between the common man and the government as it making it easy for both parties to make the payment transfer appropriate individual's bank account, and it also ensures identification authenticity. India ranks fourth in the world as far as largest user of cash is concerned. The basic reason for cash transactions being that it is immediate and has no additional transaction costs, which many times makes it financially unviable for smaller merchants to switch to electronic payments. Financial inclusion is also another valid reasons for the shift from a cash-based system to electronic based system of payment as it can reduce friction in the economy, as the transactions are simpler, faster and easier to trace.

3. Mobile Money in Developing Countries

Mobile money deployments have grown significantly faster across the globe with higher significance in developing nations where the frequency and recency of mobile money transactions are much more. As of 2011, there have been approximately 110 mobile money system deployments covering a span of 40 million users across the world. It is observed that branchless banking, which includes mobile money, is 19 percent less costly as compared to other substitute services to cash. However at lower amounts of transaction or P2P transactions, the cost fell by nearly 50 percent. (Kevin Donovan, 2012, Reference 20). In developing economies (Nigeria, Kenya etc.) the level of mobile penetration is more rapid and hence as these countries progress, their financial infrastructure develops which thus results in the drop of low amount infrequent transactions. However in the transition phase, the relative demand of mobile money transactions evolves to high speed and high volume. In any developed economy where both the mobile network and financial infrastructure are in place, a sense of confidence and trust exists among the users which enable them to make such high volume transactions. Thus it can be seen that mobile money exists as an alternative infrastructure in developing economies, as a complementary infrastructure in transition phase and a fully integrated ecosystem in developed countries. [Donovan, K. 2012; Ref 20] Among the numerous mobile money systems developed globally, only few of them have achieved success in terms of the early adoption and transaction volumes. Out of these few of the noteworthy mobile money systems have been listed below.

On a holistic view, mobile money demand can be plotted based on the economic condition of the geography in accordance with the population, political stability etc. The below curve (Fig. 5) shows a trend of mobile money demand of the volume and amount of transactions from developing economies to developed economies based on the level of infrastructure development of different players in the ecosystem.

3.1. M-Pesa in Kenya (Offered by Vodafone and Safaricom)

The globally successful mobile money system was first launched in Kenya under the collaboration of Vodafone and Safaricom called as Vodacom. As of 2013, M-Pesa has live markets in 8 other countries apart from Kenya which are shown below in the Figure 6. Specifically in the African continent, the mobile payment system was rapidly adopted mainly due to absence of due access to monetary services and ample

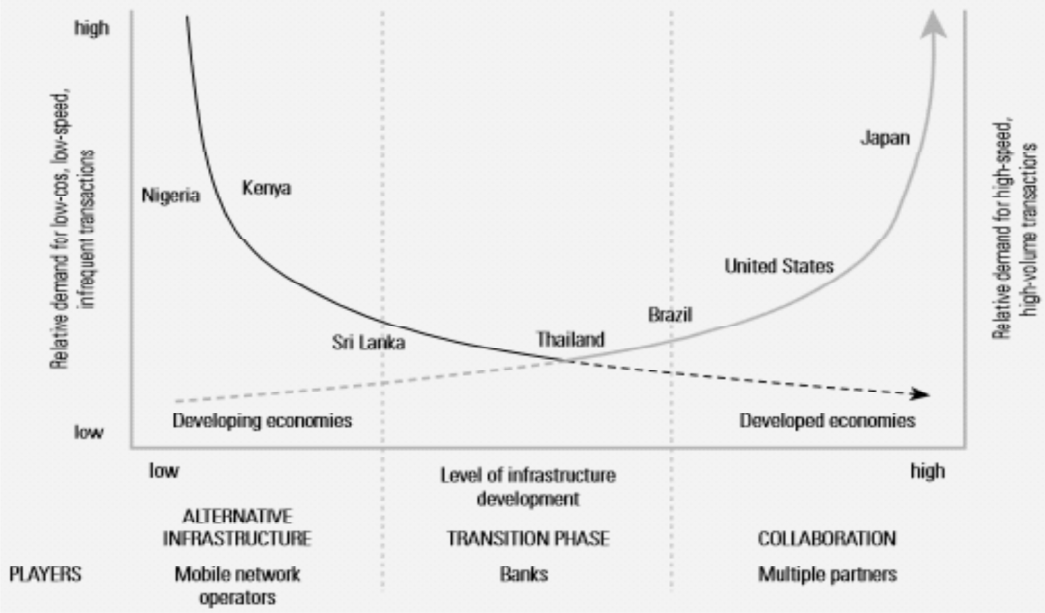


Figure 5: Mobile Money Demand Curve (Donovan K.2016) [16]

mobile penetration even though used more often for low volume transactions such as purchase of airtime, payment of utility bills for electricity and water bills. Other major transactions include P2P (Person to Person) transfer and cash out facility (Michael Joseph 2013).[33] Figure 7 below depicts the revenue model for M-Pesa.

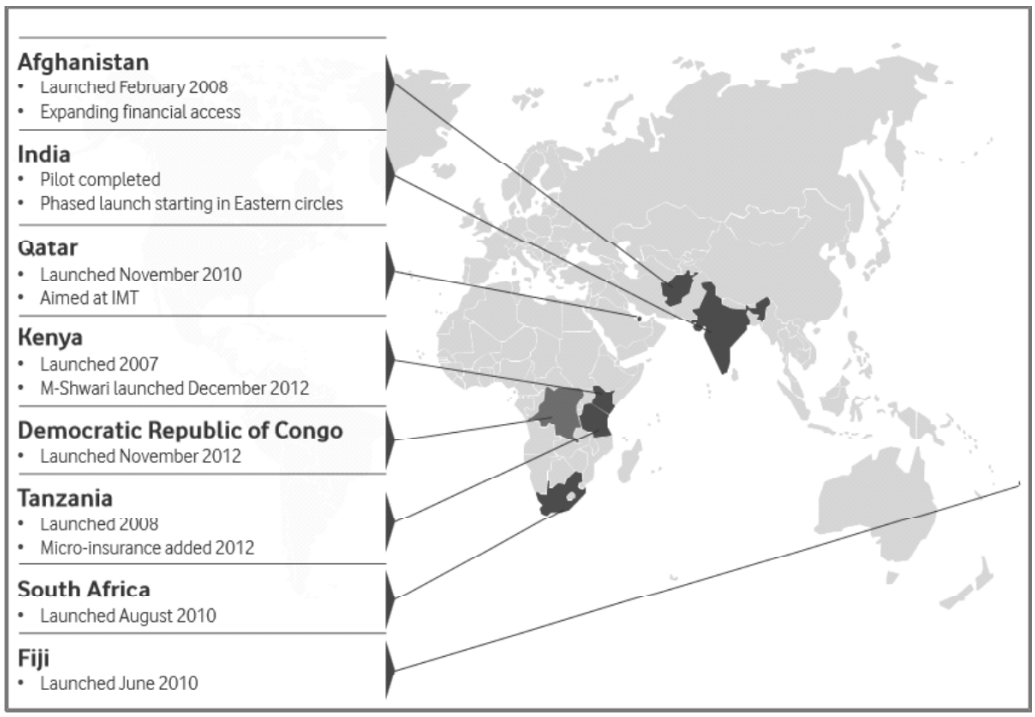


Figure 6: M-Pesa Global Presence as of 2013 (Ref 25)

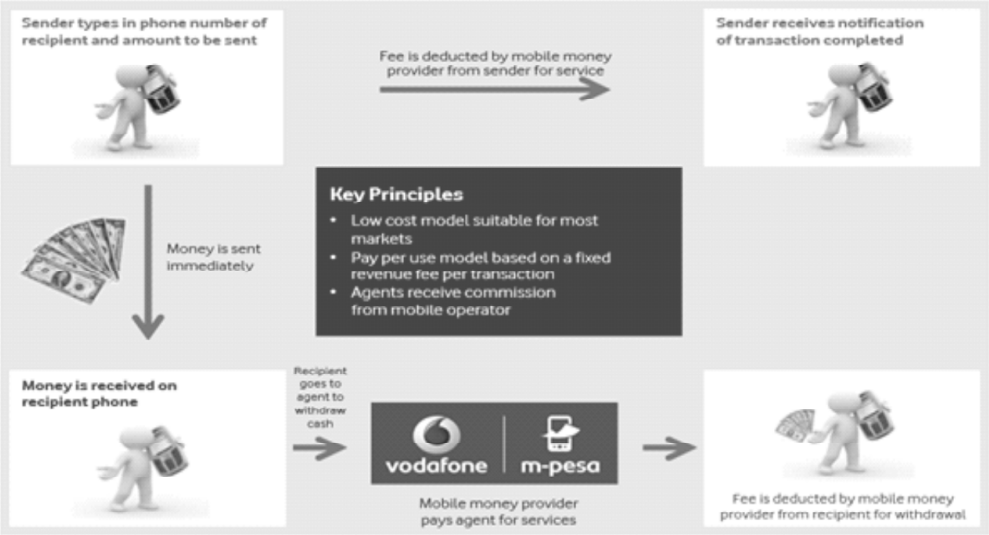


Figure 7: M-Pesa Revenue Model (Ref 25)

3.2. Wizzit in South Africa (Offered by the South African Bank of Athens Ltd.)

Wizzit is a division of The South African Bank of Athens Ltd. which operates as a "Proudly South African bank". The conceptualization of Wizzit was to benefit the unbanked that mainly belong to the lower socio-economic group, which constitutes a total of 13-16 million people in South Africa, as of 2011. Wizzit has a first mover advantage in providing banking services to the lower segment of the market mainly in the rural areas or urban township. The uniqueness offered by Wizzit was providing banking facilities over mobile phone which was one of the most effective and cheapest ways for such services. Wizzit totally relies on the cellular coverage of the network in the country which is almost 95% and hence does not have any branches. A Wizzit Bank account can have debit and stop orders along with payment transactions for bills, transfers and airtime also includes provisions for loans and micro insurance with the issue of debit cards for ATM withdrawals. The revenue stream for the bank comes from charges levied on transactions, interest on deposits and third party service provider commissions. The World Bank has an ownership stake in Wizzit through the International Finance Corporation as OikoCredit and Africa. (Michael Joseph 2013).The exclusivity of Wizzit Bank has been the micro-lending pilot project which had successfully disbursed 350 plus loans which are valued between $250 and $1500.[34]

3.3. MTN Mobile Money in Ghana (Offered by MTN and ten banks in Ghana):

The MNO (Mobile Network Operator) marketplace in Ghana is dominated by MTN with a market share of 45% and more than 11.7 mn subscribers. Out of the six MNOs in Ghana, the three leading operators have their dedicated m-banking platforms. MTN had launched MTN Mobile Money with a collaborative effort of MTN Ghana, authorized merchants and ten banks Eco bank, Zenith Bank, GT Bank, etc. Few offers under MTN Mobile Money can also be availed by non-mobile users with facilities at partner bank branches or MTN Ghana service centres for money transfer, deposit and withdrawal services along with adhoc services like payment of bills, airtime purchases, salary advances (Kwikiadvance) and insurance. MTN Mobile Money composed of two broad stakeholders: Facilitators (Vendors: Partner Bank branches, MTN Service centres etc.) and Consumers (Mobile and non-mobile users) who are connected by the

medium of MTN Mobile Money Authorized Merchants with the help of PIN code authorized electronic wallets (e-wallets). With the help of this wide distributed channel of touch points, MTN was able to cover most of the unbanked population in Ghana. The below figure shows the visual representation of all the participants in the ecosystem of MTN Mobile Money. [35]

3.4. GCash in Philippines

Mobile money is a huge success in Philippines only because of the rapid adoption of mobile phone since 2000, which has caused the penetration to rise from mere 3% to staggering 68%. In 2004, GCash- SMS based offering was launched by Globe Telecom. Due to the prevalence of cashless transactions with the plastic cards, the Filipino market was perfectly fertile for the adoption of such mobile money services for all transactions like any other mobile money service. Thus GCash made its entry as an alternative to card transactions by discounting the merchant fee of 0-3% with the wide channel access to 3000 cash-in and cash-out locations in Philippines which include pawnshop agents, rural bank partners, global business centre etc.[36]

3.5. Easy Paisa in Pakistan

Easy Paisa, launched in 2009, is a mobile money service offered by Telenor Pakistan which provides services to more than 5 mn customers per month with a broad channel of 25000 points of service. The key unique highlights of this service were Telenor's acquisition of 51% stake in Tameer Bank for micro-financing, avoiding e-wallet registration by over-the-counter (OTC) services and rapid nation-wide expansion by reliance on GSM distribution network across Pakistan.[37]

4. Benefits of Using Mobile Money Services

One of the major significant features contributing to the benefit of mobile money services is – an inexpensive medium of transferring funds, but there are certain other benefits as well such as it can improve accessibility to saving mechanism, ease of use, help micro-finance institutions to reduce their transaction costs and encourage the purchase of insurance. The following subsections will discuss the benefits of mobile money.

4.1. A Simple and Affordable Method to Send Remittances

Mobile money is being used concurrently by people who stay away from their homes to remit money to their family.[38] Traditional channel for remittances are considered more expensive as compared to mobile money remittances. If we look at international scenario, more than 250 million people staying out that accounts to 3.4% of global population stays outside their home countries[39]. They are major financial support to their families in home countries, as well as contribute to the economy of the country by making payments for education, health and other transactions.[40] Remittances via mobile money are both cost and time saving in case of either sending or collecting money.

4.2. Reaching Unbanked Sector

Mobile Money services will be beneficial to the needs of the under banked or unbanked sector. This will enable them to make payments, transfer funds to retailers or merchants, to their relatives using mobile devices and decreasing the need of standing in the long queue of banks.

4.3. Reducing the Cost of Saving

Mobile money enables you to perform most of the transactions that are similar to the transactions done with traditional banks using saving account.[41] Individuals can use their mobile money account to store money, save money for future use, to transfer & withdraw money via agent or ATM. Mobile money account acts an inexpensive, risk free method of saving wealth, which is a substitute to saving money using traditional methods. People already having saving accounts with traditional banks, can integrate with mobile money so as to allow customers to deposit or withdraw from their accounts as simple as they do it using mobile money services.

4.4. Financial Inclusion

One of the important objectives of mobile money is to provide monetary services access to huge section of the population specially people residing in rural or semi-rural areas. Once people have access to these services, it helps them to manage their cash flow, enhanced financial planning and increase their savings.[42]

4.5. Insurance through Mobile Money

Mobile money can be used by needy farmers as a medium to buy insurance for their trade. For example, in Kenya, UAP insurance of Kenya, Syngenta foundation for agriculture and Safaricom started a micro-insurance scheme that uses solar-enabled weather stations and mobile phones to give crop insurance to poor farmers. Farmers were supposed to pay an insurance premium of 5% of the price of a bag of seeds they bought to secure against bad weather conditions or drought. Local agents scan the bar code present on the crop bag and send it to UAP for registering the product with the farmer's policy.[43]

4.6. Expansion and Affordability of Micro-loans

One of the major hindrance of micro-finance as per Consultative Group to Assist the Poor (CGAP) is interest rate being charged high on micro-finance loans. As micro-finance institutions provides small sum of money to the rural people, they incur high labour as well as transactions costs which is the main reason of high interest rate being charged mainly in rural areas and un-organized markets. Mobile money provides solutions to above problems by reducing labour and transaction costs by replacing it with cost effective, advanced technology and also reduces the transportation costs involved in providing loans and collecting payments. Apart from reducing cost for micro-finance institutions, mobile money also reduces credit risk and default rates as people save time which was earlier spent on traveling to banks.

5. Mobile Money Ecosystem

Mobile money ecosystem is an interconnected network of individuals and organizations that must be in place for mobile money services to be ubiquitous and proliferate. (Jenkins, B. 2008; Ref 39) Mobile money ecosystem involves various players such as mobile network operators (MNO's), banks and financial institutions, air time sales agents, regulators and consumers as summarized in below in Figure 8.

5.1. Mobile Network Operators

Mobile Network Operators provides the necessary infrastructure for payment systems and agent's network. They usually lack understanding of financial services, regulatory compliances, legal issues related to payment systems. (Merritt, C. 2010; Ref 25). MNO's are not only providing the necessary infrastructure but also

Players	Roles	Limitations and Constraints
Mobile network operators	• Provide infrastructure and communications service • Provide agent oversight and quality control • Issue e-money (where permitted by law) • Exercise leadership in drawing mobile money ecosystem together • Advise other businesses (banks, utilities, etc.) on their mobile money strategies	• Regulatory limitations on providing financial services • Shareholder pressure for faster, higher returns • Strategic focus that may not include mobile money
Financial institutions	• Offer banking services via mobile • Hold float or accounts in customers' names • Handle cross-border transactions, manage foreign exchange risk • Ensure compliance with financial sector regulation	• Narrow customer base • Lack of experience with or interest in low-income customers • Stringent regulatory requirements with significant compliance burdens
Agents	• Perform cash-in and cash-out functions • Handle account opening procedures, including customer due diligence • Report suspicious transactions in accordance with AML/CFT requirements • Identify potential new mobile money applications	• Liquidity shortfalls • Basic business skill gaps • Lack of customer trust (in some cases) • Limited ability to partner with large corporations
Regulators	• Provide enabling environment for mobile money • Protect stability of financial system • Demonstrate leadership to encourage and protect behavior change	• Lack of experience with convergence of financial and telecommunications regulatory schemes • Lack of financial and technical capacity
Consumers	• Use mobile money to improve their lives	• Lack of awareness • Limited financial literacy • Cultural and psychological resistance

Source: Jenkins 2008

Figure 8: Key Players in Mobile Money Ecosystem

provide advisory services to banks, financial institutions that are looking to develop their own mobile money business models. (Jenkins, B. 2008). (Ref 39)

5.2. Financial Institutions

They have the opportunity to provide financial services such as deposit, transfer funds using mobile technology and increase their reach in the un-organized markets where conventional banks haven't penetrated much. Financial Institutions use risk management processes to ensure regulatory compliance in case of fraud and money laundering risks. (Merritt, C. 2010). (Ref 25)

5.3. Role of Agent Networks

Agents are usually contracted by mobile network operators to aid transactions for users. (David Shrier, G. C. 2016) (Ref 24] One of the most important roles of agents are cashing in and cashing out for customers. Liquidity is one of the major challenges for both agents and customers because of which large intermediary agents are needed in case of undeveloped areas.

5.4. Regulators

Main concerns for regulators are soundness and safety of financial sector. In coming days, regulators will be facing new issues related to e-money and would need to deal with financial products created by non-

banks. They have to play major role not just across industry but also for cross borders transactions. Cross border payments and products would need co-ordinated regulations both for policies and technology standards.

6. Challenges of Mobile Money Transactions

There are many challenges associated with mobile money transactions which are explained below.

6.1. Poor Network Connectivity and Unreliable Services

One of the most challenging problems is to provide reliable services to large population of customers. Looking at various aspects, both customers & agents are exposed to the risk of losing their cash, wastage of time, loss of customer goodwill because of network or service failures. In many developing countries, network reach is minimal, internet speeds are slow, weak infrastructure. (Jenkins, B. 2008)(Ref 39) All these factors are driving the ever-increasing demand for the development of mobile payment technology and digital solutions. Lack of proper infrastructure creates logistics challenge for users, agent and cash management. Flexible agent financing, smart transactional analysis, leveraging local partnership will help services providers to overcome above challenges.

6.2. Fraud and Money Laundering

The advent of mobile money dealings has led to major concerns such as Fraud and money laundering since they do not fall under the regulations governing the traditional financial institutions. Many customers claimed that they were often the victims of fraud in case they have not adequately protected their PIN. With emergence of mobile commerce, malware, spam and stealing of personal information which is financial in nature, has become an alarming threat which should be prevented. Management of these issues will make this process more complex and costly. This will make it problematic for new entrants to acquire success in the market. Two other issues are faced in the mobile money transfers. One being lack of collective technology standards defined and the other being variety and un-identical mobile devices. That is the reason why particular set of server-based technologies & client-based solutions are used which results in a challenge for the banks in providing mobile banking solutions on various types of mobile devices.[44]

6.3. Security Concern

Security, privacy and social influence are some of the other challenges for mobile money transactions.[45] Even though mobile networks have encryption for the messages transferred over the network, mobile tracking & logging involves supplementary regulatory demand. Users are facing issues such as authentication, need for documentation, platform integrity and account safety. As services are moving towards NFC-based, the additional level of security issues might occur with stored value applications on the NFC chip. Platform integrity is important to ensure that transactions between users and agents happen safely without any fear of failure and fraud.[46]

Although encouraging cashless transactions and reducing cost for payment methods are the main agenda of mobile money, but the business case is still not very clear for banks and operators. Revenue sharing issues and large scale deployment of mobile money services in market is yet to take place. Flexible

business models are vital if service providers are able to meet changing customer needs & demands, local market adaptability and get in line with shifting regulatory compliance.

6.4. Financial Regulation and Legislation Barriers

Regulation and legislation issues can bring down both market growth as well as consumer adoption. Necessity for regulatory compliance acted as a hindrance for many non-financial service providers to provide mobile money services. For example, In Philippines, telecom companies are not permitted to assume the role of monetary services. (EY report 2009) (Ref 23). In case of mobile money disputes arising either on an industry or at consumer level, which sector & corresponding regulatory agency will have authority over the claim or tiff, & how will resolution for dispute will be determined is still a question? Also, as mobile money services extend across countries, international jurisdictional issues may also come.

6.5. Lack of Industry Collaboration and Interoperability

Another area of concern, as mobile money services are currently deployed on individual platforms of the service providers. Adoption of new technologies like NFC will solve the problem of interoperability between various parties which are providing technology and service standards, and the transactions can happen smoothly between countries or between operators. (EY report 2009) (Ref.23). For example, enabling interoperability means a customer who holds an account of one service provider can transact money to or from the account of another customer who holds account with a different service provider. Another important concern is informal cross border transfer systems facilitated by those agents who are not authorised either by regulators or mobile network operators. This can be considered illegal as bypassing national foreign exchange regime. With increasing mobile money services usage, regulators need to either permit or restrict such cross border transactions.

6.6. User Experience and Perception

Reliability and ease of use plays a major role in enhancing customer experience which is missing in present scenario. The main challenge is to enhance visibility of the mobile money services and its benefits to people, and then only customer acceptance will increase. Provide user friendly interface for accessing services especially for rural populations as they have lower technical literacy and financials levels. Technologies like IVR can be used for reaching illiterate users and increased touch points for the customers. (GSMA report 2014) (Ref 28)

7. Conclusion

Mobile money will evolve from a mere facility to a basic necessity only when the clutter among different third party vendors reduces. As a result of mobile money adoption, each customer must be uniquely identified in the digital space so as to avoid the balloon of multiple digital identities of one customer. This same applies to the financial services opted by the customer. With a single unified payment system, customers can transact and transfer funds more easily and securely, thereby avoiding the hassles of remembering multiple user IDs, account numbers, card numbers, passwords etc. The effective virtualization of currency can only be achieved when infrastructure services of both the MNO (mobile network operator) and FI (Financial Institution) networks are in place, which allows customers to rely on the security of such

transactions. With the fast paced penetration of mobile devices, banking services can now be availed to the unbanked which could help create a more accountable and cashless economy in the near future.

8. Implications of the study

The paper has attempted to cover various aspects of mobile money such as the concept explanation, mobile money use cases in developing countries, benefits of mobile money, understanding the mobile money eco-system, and challenges associated with mobile money adoption. This being a relatively upcoming field, there is a dearth of literature pertaining to mobile money transactions. This paper attempts to bridge this gap by reviewing literature on mobile money.

This paper will help readers understand the trends of current telecom market in India with respect to mobile money, relative analysis of the global and Indian market feasibility for future sustenance of mobile money and upcoming development in the field of cashless economy. This paper will also help governments, donors, and industry to understand the eco-system and the challenges associated with deployment of mobile money. The use cases of mobile money in developing countries will give them insights as to how mobile money services can be implemented and give them an understanding as to how the rural and population at the bottom of the pyramid can be included in the development process through financial inclusion by deployment of mobile money

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