An Exploration on Mobile Banking and Cashless Economy Imperatives in Nigeria

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ABSTRACT

Mobile banking is fast becoming the world’s preferred form of trade transactions as a result of its compatibility to support a cashless economy and comparative ease of transaction at the fingertip, short-circuiting the time, stress and long queues of waiting at the bank. Kenya’s M-PESA is an SMS based money transfer system leading the global mobile money sector. That mobile banking is a veritable vehicle for the attainment and sustenance of cashless economy is an indispensable fact. Banking in most developing countries has transcended from a traditional brick and mortar model of customers queuing for services in the banks to modern day banking where financial transactions can be made at any point, any time via mobile devices. This can be attributed to the exponential increase in the penetration of mobile telephony in many countries across the globe including Nigeria. In this paper, we demonstrate that mobile banking can serve as a vital tool for the realization and achievement of cashless economy by reducing the circulation of cash in the society. It is an assessment of the present state of mobile banking in Nigeria and its implications for the realization and sustenance of cashless economy in the country.

Keywords: Mobile banking, Mobile banking technology and Cashless economy

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1. INTRODUCTION

In many countries, including Nigeria, mobile phones are used to provide mobile banking services, which may include the ability to transfer cash payments by secure SMS text message. Kenya’s M-PESA mobile banking services, for example, allow customers to the mobile phone operator safaricom to hold cash balances which are recorded on their SIM cards. Cash may be deposited or withdrawn from M-PESA accounts at Safaricom retail outlets located throughout the country, and may be transferred electronically from person to person as well as used to pay bills to companies [1]. In the early years of banking, customers of a bank are required to travel to a conventional bank in order to perform transactions such as balance enquiry, withdrawal, deposit and other financial and account related services. Today, with growth and development of information technology, banking is being revolutionized with the aim of bringing bank closer to the people and making access to financial services more convenient.

This revolution can be witnessed with the introduction of Automated Teller Machine (ATM), online Internet Banking and now Mobile Banking. Mobile banking has the potential of fighting against financial exclusion. According to the free encyclopedia, mobile banking also known as m-banking or mbanking is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or personal Digital Assistant (PDA) [2]. Mobile banking as used here refers to the delivery of financial services outside conventional bank branches using mobile phones and nonbank retail agents [3]. M-banking could allow the bank to serve existing customers better and reach new customers.
The cashlite programme going on by the Central Bank of Nigeria (CBN) is designed to reduce the circulation of money in the country by enabling people pay for goods and services without need for cash. The use of mobile phone for the payment of goods and services has become a major innovation and means through which the economy of most developing countries including Nigeria is being transformed.

The Chief Executive Officer (CEO) of Pagatech Company of Nigeria, Tayo Oviosu said that mobile technology devices are revolutionizing banking and other services in developing countries the way computer revolutionized industrialized countries [4]. In Nigeria, the internet has only a penetration rate of six percent in a population of 140 million but mobile technology is close to fifty percent penetration with prospect for growth [5]. The central bank’s initiative to make the country a cashless society and the high penetration of mobile phones in the country has form the motive for this paper.

This paper will explore the status of mobile banking in Nigeria, mobile banking services, mobile banking technologies and the impact of mobile banking on cashless economy.

2. THE STATUS OF MOBILE BANKING IN NIGERIA

The penetration of Nigeria society by mobile phones has created an opportunity for economic growth and transformation in the country. The provision of financial services via mobile phone offers a cost effective means of including the large number of population that do not have formal bank account into banking services, which will in turn boost domestic savings and the country’s revenue. The president of the World Bank, Robert Zoellick said that providing financial services to the 2.5 billion people who are unbanked could boost economic growth and opportunity for the world’s poor [6]. The revenue potential in Nigeria is huge, according to a 2010 poll by Gallup and NOI-polls, a Nigerian opinion research firm, only 38 percent of the country’s 160 million people use a formal bank account [7]. Meanwhile, there are more than 93 million mobile phone subscriptions in Nigeria, the most in Africa, according to a 2011 report by phone operators [7]. According to industry tracker mobile Monday, the number of mobile subscribers in Africa is more than doubled from 246 million in 2008 to 500 million in 2011, with Nigeria alone having more than 75 million mobile phone subscribers today [4]. The source also reported that about 80% of Nigeria’s residents do not have formal bank accounts. The major reason for this high population of the unbanked include high cost of traditional banking products, the distance that must be traveled to get to banks and paper work involved in opening accounts. However, reports show that these problems are increasingly being tackled with mobile phones and that mobile banking is being used more and more to solve these problems.

Mobile banking using cell phones was identified at an unbanked Africa summit held July, 2011 in Lagos Nigeria as a feasible tool to provide basic financial services to millions of the unbanked in urban and rural communities in Africa as well as Nigeria. In Nigeria, the use of mobile phones in banking started from the transaction based activities whereby debit alert message or credit alert message is delivered on bank customer’s mobile phone when withdrawal or payment is conducted in the customer’s account respectively. That was the early days of mobile banking in Nigeria. Nigerian banks are now deploying full fledged banking via mobile phones with arrays of services which were only possible in the banking halls before. Zenith Bank UBA, GTBank Diamond and Intercontinental banks are the font runners of this innovation.

[5] The Central Bank of Nigeria, in line with its cashless policy, granted licenses to 15 mobile money operators to provide financial services and assist in bridging the divide between the banked and unbanked segment of the population [8]. These licensed mobile money operators comprises of financial institutions and independent providers, among them are GTBank, United Bank for Africa (UBA), Stambic IBTC, Pagatech, E-transact PLC, M-Kudi, monetize, Paycom, Eartholeum, moneybox, Parkway projects, Chams, FETS [8]. Mobile network operators were not licensed to participate but were forced to partner with banks, even when the framework of the central bank of Nigeria empowered scheme provider partners to sign customers for mobile financial services. Hence, a scheme provider’s partner can be a mobile network operator [9]. Telecos like South Africa’s MTN, the continental giant, said they could be able to run their own services, given there proven successes in the markets, but in Nigeria they were positioned as junior partners [10]. Even though license had been issued to these mobile money operators mentioned above, more than half of them are yet to roll out financial services due to issues revolving around access to financing, technology, poor agency and distribution networks.

In January, 2012, the CBN disclosed that activities has since increased within the mobile money ecosystem and operators have recorded 35, 971 transactions [8]. Chidi Umeano, head, shared services, CBN said the value of the 35, 971 transactions recorded in January, 2012 was $327.92 million which is equivalent to $ 1.4m [8]. Sola Bickersteth, director one Network, a mobile money industry development. Platform, strongly believes that the figure is an insignificant fraction of the huge sum of money that can be generated by mobile money operators if all the teething issues in the industry are overcome [8]. It is evident from the transactions recorded just within January, 2012 that some of these licensed mobile money operators are currently doing well and have the potential of turning around the economy of our country in a short space of time. A new report from Jupiter Research has said that the continued increase of Nigeria’s mobile money license issuance and e-commerce web payments will constitute 54 percent of the total value of global mobile payments by 2017 [11]. According to a report from business Day, the study predicts that the total number of payments transacted world-wide over mobile phone would multiply as much as five times to over $1.3trillion, therefore putting its 54 percent estimated contribution from Nigeria at $702 billion [11].
2.1 Activities of Mobile Money Operators in Nigeria:

**Pagetech Money Transfer Services** - known as Paga was launched in Lagos in 2009 by a Nigerian-born Tayo Oviosu and his Co-founder Jay Alabraba [4]. Paga, Nigerian’s leading money transfer service officially opened in early 2011 after receiving approval from the central Bank of Nigeria. Paga as at January 29, 2012 employs 68 workers and has more than 42,000 Nigerian customers who can transfer money, purchase airtime credit, pay bills with their cell phones using their system [4]. On June 4, 2012, Paga achieved a major milestone and crossed 100,000 unique users. Today Paga has over 125,000 users and the company has the goal of bringing financial access to 40 million Nigerian by 2015 [12]. Paga recorded more than 50% increase in the number of agents, within 5 months from 550 agents by the end of January 2012 to over 850 agents located in 19 cities as at early July, 2012 [4, 12]. Paga enables any person with a mobile phone and internet access to send cash to anyone in Nigeria, buy and send airtime credit, pay bills, pay both online and physical stores (without cash notes or a debit card), and perform a variety of other transactions. Individuals can also perform these transactions in their various communities by visiting any agent in Pags’s growing network. Paga has average transaction size of about 3,000 Nigeria naira, which is equivalent of about $20 us. In 2011, Paga completed $3 million in transaction volume, with $1 million of that business occurring in December alone [4].

Most were bill payments for DSTV, the country’s multichannel digital satellite TV service, as well as mobile phone airtime purchase. As at July 2012, Paga has processed over 276,000 transactions worth more the N2.6 billion [12]. Investors in Paga include Adlevo capital, Omidyar Network, Acumen Fund, Capricorn Investment Group and Goodwell West Africa Microfinance Development Company. The company uses a multi-stakeholder approach. Paga is available on all mobile networks and is delivered to customers in collaboration with strong local banks (including microfinance institutions), retailers and various other private and public sector organizations [12].

To send money using Paga system, the sender dials the phone number of a subscriber in Nigeria who is now the receiver, punch in the amount to be transferred from the account, followed by the senders PIN number. Within a short time, a recorded voice will confirm the transaction and the receiver will get a text message alert of the amount sent.

**eTranzact Pocketmoni** - eTranzact officially received licence in December, 2011 to run a mobile money service in Nigeria and this had given birth to Pocketmoni, a service that allows users to send and receive money, pay their bills anywhere, anytime, via their mobile phones. etranzact Pocketmoni is a mobile money service designated to provide secure, cost effective and convenient mobile money for the banked, under-banked and unbanked. Pocketmoni is built to be network independent and bank independent i.e. you don’t need to subscribe to a specific mobile network neither do you need to have an account at a specific bank. This mobile money platform provides services such as person-to-person payments, bill payments (for cable TV, PHCN, school fees, health insurance schemes etc), buying of airtime, funding of accounts or withdrawals from accounts or mobile wallets. eTranzact Pocketmoni agents are able to open new account for customers. eTranzact already claim over 30,000 agents across Nigeria where users can go to register and transact. [13]. In spite of challenges such as low awareness and poor technological infrastructures, Omoinyi, the eTranzat CTO, said that eTranzact had managed to build a user base of 500,000 in three months, covering March to May, 2012 and targets 10 million mobile money users in 2013 [14]. eTranzact, has said that its obtaining of the payment Card Industry Data Security Standard Certification (PCI-DSS) would boost security of its payment platforms including ATM, Point of Sale (POS) terminals, Pocketmoni Services and WebAccess [14].

**Verve M-PIN** - Telecom network, Globacom in strategic partnership with six top deposit money banks has ushered into Nigeria, a robust mobile banking platform geared towards providing basic financial services to the under-banked and unbanked population [15]. The product, called Verve M-PIN which was launched in Lagos on May 31, 2012 will offer over 20 million Glo subscribers seamless financial services such as account balance enquires in the participating banks, bill payment for DSTV, PHCN prepaid, Startimes, airline ticket payments, hotel bills settlement, bank transfer and Glo airtime top-up for both prepaid and post paid customers. These transactions are not provided to the current bank customers only, but are also taken to the unbanked. The firms involved in the business included Fidelity Bank, FCMB, Mainstreet Bank, Stanbic IBTC, sterling Bank, Wema Bank and interswitch. With the formal launch of Verve M-PIN powered by GLO TxCash, Nigerians are confidently assured that they will enjoy seamless financial transactions provided by the partnering banks on GLO platform.

Verve M-PIN would also enable customers to use mobile channels to perform tasks on the web, Automated Teller Machine (ATM) or Point of Sale (POS) which would be powered by the super-fast submarine Glo 1 cable that offers robust internet broadband services. Stanbic IBTC, one of the partnering banks of Verve M-PIN solution has opened its mobile money platform to over 750,000 StarTimes subscribers in the country [16]. This is part of the efforts aimed at increasing payment options available to the subscribers spread across eight cities in Nigeria.

Some other mobile banking services currently in use in the country include First Mobile from First Bank, U-Mobile from United Bank for Africa, Accessmobile from Access Bank, GTMobile from Guaranty Trust Bank etc. With these customers can do basic banking transactions such as fund transfer, bill payment, phone airtime top-up, balance enquiry and mini statements from the convenience of the mobile phone anywhere and anytime.

3. MOBILE BANKING SERVICES

The most common services offered to customers via mobile banking today can be grouped as follows [2]:
Account information:
- Balance checking in the account
- mini-statement and checking of account history
- Access to loan statements
- ordering of cheque books
- access to card statements
- Alerts on account activity
- mutual funds/equity statement
- insurance policy management
- pension plan management
- status on cheque, stop payment on cheque
- monitoring of term deposit
- Payments and transfer
- Peer to peer payments
- Bill payment processing
- mobile recharging
- Micro-payment handling
- Commercial payment processing

Investment and support:
- Portfolio management services
- Real-time stock quotes
- Personalized alerts and notifications on security prices
- ATM Location
- Exchange of data message and email, including complaint submission and tracking
- cheque book and card request
- status of requests for credit, including mortgage approach, and insurance coverage

Content services:
- location-based services
- General information such as weather updates, news
- loyalty-related offer

4. MOBILE BANKING TECHNOLOGIES

Mobile banking is seen to be an extension of the existing payment infrastructure of a bank to mobile phone as a channel for the leveraging of the mobile network and its reach, to deliver banking services to customers [9]. The mobile banking infrastructure thus sit in a similar technical environment to the bank’s ATMs, POS, branch and internet banking service offerings. A bank’s core banking system, the system that houses the customer’s account and related transaction management and history, would require a means to translate banking instructions, received from customers, through one of the bank channels such as ATMs or the internet, into a format that the core banking system can process. Such translation can be performed by ETF channel switch which switches transactions from the channel to the appropriate area within the core banking system [9].
The mobile banking channel can be made available to the customer through client-side applications (applications that reside on the consumer’s SIM or on the actual mobile phone device) and server-side applications (applications developed on a server away from the consumer mobile phone or SIM card). Client-side technologies include J2ME and S@T while server-side technologies include USSD2, IVR, SSMS and WAP.

4.1 JAVA/J2ME
Java 2 Micro Edition (J2ME), offered by sun Microsystems, incorporation, enables Java programmers and developers to develop mobile application/solution for mobile devices. Mobile client applications have evolved to give a user access to services that require faster, richer and not necessarily connected user experience [18]. J2ME requires a phone that can support the GPRS download of the initial application, assuming the phone is not pre-provisioned with the application. The phone would also have sufficient memory to support or contain the application and graphic ability to display the application. If the J2ME is installed on the phone, the application will use GPRS, USSD or SMS to transfer the customer’s data or instructions from the device to the service provider in an encrypted format. The J2ME applications can be pushed to the mobile phone by a service provider or downloaded by a customer by accessing the service provider’s mobile internet site. During transaction, the customer’s data is encrypted prior to leaving the mobile phone and being sent to the service provider or bank. On receipt, the services provider will decrypt the message and process the customer’s instructions.

4.2 SIM Application Toolkit
The SIM Application Toolkit (SAT/S@T) allow the service provider or bank to house the consumer’s mobile banking menu within the SIM card. The SIM Application Toolkit (commonly referred to as STK) is a standard of the GSM system which enables the SIM to initiate actions which can be used for various value added services [17]. The SIM Application Toolkit consist of a set of commands programmed into the SIM card which define how the SIM interact directly with the outside world and initiates commands independently of handset and the network. The major difficulties in SIM based application is getting the application onto a SIM card and upgrading or making changes to the application on the SIM. The service provider has the option of sending the application over the Air (OTA), which entails the delivery of several encrypted SMS messages that self-configure the application on the SIM, or provisioning a new SIM card with the application already embedded within the SIM. Once the application is on the SIM, instructions from the consumer can be entered, encrypted, and delivered by SMS to the service provider.

4.3 Short Message Services
This technology provides financial institutions with a way to serve the widest possible market. A simple application or a set of Application Programming Interfaces (APIs) can be employed by banks to generate and send short messages to customer’s mobile phone or respond to a customer’s request. Each message can be up to 160 characters long and sent to and from users of different operator networks. This SMS requires a tag word identifier to instruct the SMS gateway to submit the message to the correct SMS application. E.g. “bank-balance-PIN” for a SMS based bank balance inquiry; where bank-balance is the tag word.

SMS works in either a push mode or a pull mode. In a push mode, the bank sends a one-way text message to alert a mobile subscriber of a certain account situation or to promote a new bank service. In pull mode, the mobile subscriber sends a text message with a predefined request code to specific number like the example above. The bank then responds with a reply SMS containing the specific information.

4.4 Interactive Voice Response (IVR)
The Interactive Voice Response (IVR) is a phone technology that allows a customer to select options from a voice menu and interact with the phone system. If you have ever called your credit card issuer and meandered through a maze of prompts—“for English Press 1; for account information, press 2”, then you are familiar with interactive voice response. In mobile banking, IVR works in this way:
• Banks advertise a set of numbers to their customers
• customers dial an IVR number on their mobile phones
• They are greeted by a stored electronic message followed by a menu option.
• Customers select an option by pressing the corresponding number on their keypads
• A text-to-speech program reads out the desired information.

IVR is the least sophisticated and the least “mobile”. It is user friendly but proves expensive to maintain and also expensive when relatively lengthy call is required. This allows for inquiry-based transactions, so customers cannot use it for more advanced services.
4.5 Wireless Application Protocol (WAP)
WAP technology includes the concept of browsers, servers, universal resource locator and gateways and it makes access to internet pages possible from a mobile phone. A WAP browser provides all of the basic services of a computer based web browser but is simplified to operate within the restrictions of a mobile phone [17]. The consumer would browse to a mobile internet site by accessing the WAP browser on their mobile phone and entering the website address (URL). In WAP mobile banking, the actual banking application resides at the bank and is secured and monitored in the same way as an internet banking website. The consumer mobile device which is WAP enabled and the bearer (GPRS) is used to display or transmit the data between the consumer and the bank. In WAP mobile banking, two-way communication is not possible, it is only the consumers that can initiate a dialog; banks cannot.

4.6 Unstructured Supplementary Services Data (USSD)
USSD is menu driven form of SMS where a customer would receive a text menu on their phone as opposed to a string of words [17]. USSD is a data bearer channel in the GSM network and transports small messages up to 160 characters between the mobile phone and the network. USSD is session based and can provide an interactive dialog between the user and a certain set of applications. We have USSDI which allows one way communication to the network and USSD2 which allow two way communications between the user and the network. USSD is already built into most GSM networks and it is being commercialized by the Mobile Network Operators (MNO).

There is no pre-configuration on the consumers SIM or handset, a registered consumer would only dial a number that includes *S and #S [17]. This number could be saved in the consumer’s phone book as the bank’s name to avoid confusion in dialing or having to remember the USSD string. Once a consumer makes request by dialing a USSD string, it would be passed through the network to the USSD gateway at the MNO, which in turn would recognize who the service provider/bank was and forward the request to that service provider [17]. The service provider would respond by forwarding to the consumer, through the MNO, a text based menu. The consumer would receive this menu on their screen, press the reply button on their phone and enter the number of the option that they require.

5. THE IMPACT OF MOBILE BANKING ON CASHLESS ECONOMY
The central bank of Nigeria with the responsibilities of ensuring monetary and price stability, management and promotion of sound financial system among others has in 2011 introduced the cashless policy. The cashless policy which took effect from April 1, 2012 in Lagos as a pilot project and will extend to other parts of the country the following year pegs daily cash transactions over the counter for individuals and corporate bodies at one hundred and fifty thousand naira (N150, 0000 and one million naira (N1000,000) respectively. However, these amounts were later reviewed upward to five hundred thousand naira (N500, 000) and three million (N3, 000, 000) for individuals and corporate organisations respectively [19]. Any cash transaction above the amounts mentioned above attracts a charge for the holder of the account. The essence of the policy is to shift the economy from a cash-based economy to a cashless one which is an enabler of economic growth and development.

According to the nation’s apex bank, CBN, the cashless policy is introduced into the Nigerian economy for the following reasons: [20]
(i) To drive development and modernization of Nigeria’s payment system in line with vision 2020 goal of being amongst the top 20 economies by 2020.
(ii) To reduce the cost of banking services (including cost of credit) and drive the financial inclusion by providing more efficient transaction option.
(iii) To improve the effectiveness of monetary policy in managing inflation and driving economic growth.
(iv) In addition, the policy aims to curb some of the negative consequences of high usage of cash, including high cost of handling (estimated to be about N192 billion per annum), high risk of usage and high subsidy.

For the full implementation and realization of the objectives of cashless policy in the country, modern and technology-based payment systems such as mobile payment system among others are required. Mobile money payment systems allow users to make payment with their GSM phones. Considering the number of GSM phone in use in the country, mobile payment system is a very rich ground for cashless economy to thrive. Mobile payment system is a savings and transfer system that turns GSM phones into savings account platform, allowing the owner save money in it and from which withdrawals or transfer could be made. With this payment system, consumers could do their normal basic financial transactions on daily basis by making payment for goods and services via their mobile phones. For example, the payment system allows payment to be made instantly and electronically after purchases have been made at a supermarket or shopping mall without physical cash. Through the system, consumers can also pay utility bills, school fees, flight and hotel bookings and house rents, among other transactions, via a mobile phone device. An important fact about mobile money is that, it thrives on agency network, thereby taking traditional banking to the unbanked in the rural areas where accredited mobile money agents operate.
6. CONCLUSION

The use of mobile device for transfer of money, payment for goods and services among others will not only make transactions easy for consumers but will also go a long way in reducing the amount money in circulation. With all these functionalities provided through mobile banking and payment system, its role to the realization of cashless economy cannot be over-emphasized. Therefore, mobile banking is an indispensable tool to the actualization of the objectives of cashless economy. It will also ensure proper growth and development of the country’s economy; hence mobile banking should be encouraged by all the stakeholders.

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Author’s Short Biographies

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