Mobile Phones as Mobile Banks and Credit Outlets: The Experience of Farming Households in Rural Southwest Nigeria

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Abstract

There is no gainsaying the fact that the increasing awareness and penetration of information and communication technologies (ICTs) into the developing world has transformed the economy of these countries. In fact, the banking sector in many of these countries is not spared. In Nigeria for instance, there has been a lot of awareness and transformation brought about by the ICTs' revolution. Notable among these is the introduction of mobile and e-banking especially into the banking industry. This paper was based on the study conducted to examine the extent to which mobile phones have aided financial services among farming households in rural southwest Nigeria. Data for this study were collected from a random sample of 360 farming households in Ekiti and Osun States. Descriptive analysis of socioeconomic characteristics of respondents showed their average age to be 45 years with only about one third (34.7percent) of them having tertiary education. While about 38.3 percent had no formal education, the rest had primary (15.8 percent) and secondary (11.2 percent) education. Distribution of respondents by the kind of services conducted through their mobile phones indicated credit acquisition in the form of transfer of recharge cards which are later converted into money as the most priotized. Next to this is getting information about personal account information (debiting and crediting) while making business transaction through mobile phones was the least patronised of all the services provided. A tobit analysis performed to ascertain the correlates of usage of mobile phones as mobile banks and credit outlets revealed age, years of formal education, membership of cooperative society/social groups, gender, poverty status, household size, location and access to power (electricity) as important determinants. While the coefficients of age ($p<0.10$), years of formal education ($p<0.01$), membership of cooperatives/social groups ($p<0.01$) and were positive, those of gender ($p<0.05$), poverty status ($p<0.01$), household size ($p<0.00$), location and access to power were negative. Thus, as the years of formal education increases, the more the usage of mobile phones as mobile banks/credit outlets and membership of cooperative society enhances the likelihood of farming households' usage of mobile phones for these services. However, as household size increases, income per-capita declines (poverty level soars) and this to a large extent reduces the likelihood of using mobile phones as outlet for financial transactions. It is therefore suggested that effort should be geared at building capacity of farming households through education. This is because education enhances earning potentials of farmers through adoption of modern farming practices and technologies. Also, cooperative activities should also be encouraged among farming households to increase awareness since cooperative societies and social groups provide avenues for training on new inventions and other technologies that can better enhance the living conditions of members.

Key words: Credit outlets, Farming households, Mobile banks, Mobile phones, Poverty, Southwest Nigeria

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1. INTRODUCTION

The demand for mobile phones across the African continent is huge and rapidly expanding everyday. Evidence abounds that less than 3 percent of the population had access to a telephone in 2001, but the number of mobile subscribers today has grown tremendously (ITU, 2004; *The Economist*, 2009b). In 2006 mobile phones became the first communications technology to have more users in the developing world than the developed world (CGAP/GSMA 2009), with more than 60 percent of all subscribers located in developing countries (ITU 2007). In fact, the story of the growth of mobile telephones in Africa is one of a tectonic and unexpected change in communications technology. From virtually no connectivity in the 1990's, over 60 percent of Africans now have mobile phone coverage, and there are now over ten times as many mobile phones as landline phones in use (Aker and Mbiti, 2010).

Mobile phones affect the lives of billions of people around the globe, including the poor. Changing mobile technology has revealed opportunities and allowed nearly three billion people without bank accounts (Christen, Rosenberg, and Jayadeva, 2004) to access financial services. This is not unconnected to the fact that mobile phones work easily, requires minimum investment and minimum training and they can perform a variety of functions. They are particularly valuable in rural areas where no bank branches exist and the prepaid system of low denomination scratch cards is perfectly matched to the economic situation of many Africans (poor households), and it is recognised that mobile phones offer potentially cheap means of communicating and transacting business. Another key feature driving growth in mobiles is that they are mobile, and inherently suited to remote areas with poor transportation and communication infrastructures.

Today, the advancement of mobile technologies has provided opportunities for financial service providers to introduce new financial innovations. This rapid development of information and communication technology (ICT) has affected the banking industry globally. In fact, a number of studies have shown the usefulness and otherwise of mobile banking in facilitating financial transaction between banks and their customers. For instance, while Kleineen *et al* (2004) found perceived usefulness to be less significant in explaining the adoption of mobile financial services, Luarn and Lin (2005) however concluded perceived usefulness to be a significant factor in the adoption of mobile banking services. Also Matila, (2003) found risk to be a very significant factor in adopting mobile banking services. In general, mobile banking is a powerful way to deliver savings services to the billion people worldwide who have a cell phone but no bank account. It has a number of advantages over traditional banking methods as it breaks down geographical constraints; it also offers other advantages such as immediacy, security and efficiency (Mas and Kumar, 2008).

However, in spite of the rapid infiltration of mobile phones into the economy of many developing countries, a sizable number of inhabitants of these countries still do not have access to banking services. In Africa, the majority of the population has no access to banking services, with only 20 percent of African families having bank Accounts (Davi, 2008). According to CGAP (2010), around 50 percent of households in the world do not have access to banking services and a report by the Central Bank of Nigeria for instance, states that 65 percent of Nigerians lack access to credit facilities (CBN 2008). The limited access to financial services in Africa stems particularly from deficient infrastructure, physical-geographical isolation or inaccessibility, financial illiteracy, all of which culminate into exceedingly high cost of providing banking services. Also, sub-Saharan Africa has the lowest deposit institution penetration in the world standing at an average of 16.6 percent compared to 63.5 percent in developing countries (Financial Access, 2010). This level of penetration gives 166 banks per 1,000 adults for the region.

Meanwhile, rural households (especially farmers) need effective and efficient financial services because of emergencies, unexpected opportunities, and major life events like marriage or death and to smooth their consumption needs (Bass and Henderson, 2000). As accessibility to good financial services (banking services in particular) provide an important safety net for poorer households and plays a critical role in financing productive activities that can foster farm and non-farm rural enterprises, this paper therefore examines the extent to which farming households employ/patronise mobile phones as mobile banks and credit outlets with a view to unraveling benefits inherent in bringing financial services to the doorstep of these farmers so that the much clamoured financial inclusion of the rural dwellers becomes a reality in the study area

2. LITERATURE REVIEW

The spread of mobile phones across the developing world is one of the most remarkable technology stories of the past decade. Indeed, across the developing world, there are probably more people with mobile handsets than with bank accounts (Porteous, 2006). Scholarly research on the adoption and socioeconomic impacts of m-banking/m-payments systems in the developing world is scarce (Maurer, 2008). Even less attention has been paid to the social, economic, and cultural contexts surrounding the use of these systems. A final crosscutting issue involves the introduction of "trust" as a factor in the analysis of m-banking/m-payments use. Early evidence and intuition alike suggests that "trust" plays a role in use (Ivatury, 2004; Porteous, 2007). For example. users feel more comfortable with at least some face-to-face contact and assistance while using an m-banking/m-payments system like Wizzit (Ivatury & Pickens, 2006). Luarna and Lin (2005) proposed a modified technology acceptance model that included a trust variable—perceived credibility—to predict m-banking adoption in Taiwan. Yet their modification also included another variable, self-efficacy, and a form of trusting one's self. Many researchers have investigated and agreed that perceived usefulness and perceived ease of use are valid constructs in understanding an individual's intention to adopt information system (Guriting and Ndubuisi, 2006; Luarn and Lin, 2005; and Wanget *et al*, 2003). Hence, there is a possibility that mobile banking remains unknown to and underutilised by bank customers. Moreover, perceived self-efficacy is also important in understanding behavioural intention to use information system as expressed or given attention to by Venkatesh (2000) and Compeau and Higgins (1995). Normative pressure is also found to be an essential variable in information system research (Amin *et al.* 2006 and Nysveen *et al.* 2005).

Earlier studies have also shown the usefulness of mobile banking in facilitating the financial transaction between banks and their customers (Kleijeen *et al*., 2004) found perceived usefulness to be less important in explaining the adopting of mobile financial service. Leishman (2009) showed that mobile money brings unbanked customers operating in a cash economy into the formal sector. Once they have developed trust in mobile money services, they start demanding traditional financial services, such as savings accounts (i.e. customers who are previously unbanked start to ask for savings after they have become sophisticated users of mobile money and can be handed over to banks and traditional banking services). Mobile money therefore has the important function of bringing unbanked customers into the formal financial system. From the foregoing, it is very clear that mobile money services in developing countries promote access to financial services and enhances the financial inclusion of the poor.

3. METHODOLOGY

3.1 Study Area, Data Sources and Sampling Method

The study was carried out in Southwest Nigeria. Southwest Nigeria is one of the six geopolitical zones of the country. It is the region where one of the three major ethnic groups (The Yorubas) reside. Southwest Nigeria is made up of six states comprising Ekiti, Lagos, Ogun, Ondo, Osun and Oyo. The region is fairly urbanized but the larger part of the states are rural. Ekiti and Osun States were randomly selected for this study. Primary data were collected from a random sample of 360 households through administration of structured questionnaire. Respondents were however selected from 6 rural communities based on probability proportionate to size. Two local government areas were selected out of the sixteen local government areas in Ekiti State (Ekiti South West and Ifelodun/Irepodun) and four local government areas (Ayedaade, Atakumosa, Irewole and Ife North) were selected out of thirty local government areas in Osun State. Information collected include:

a. Socioeconomic characteristics - age, gender, marital status, household size, years of formal education, primary occupation, income, participation in non-farm work, access to credit e.t.c.
b. Mobile phones related data – mobile phones in use, network subscription, activities performed on phones and other communication facilities e.t.c.
c. Infrastructure data – Data on available and accessible infrastructural facilities e.g. roads, water, schools, electricity, health care, post office, recreation e.t.c.

3.2 Analytical Techniques

In addressing the objectives of the paper, both descriptive statistics and tobit regression model were employed in analyzing the data collected

i. Descriptive statistics: This entails the use of statistical tools like frequencies, tables, mean e.t.c to analyse, describe and summarise respondents' socioeconomic and cultural characteristics**.**
ii. Tobit regression model: The tobit regression model as in Greene (2003) was employed to ascertain the determinants of using mobile phones as mobile banks and credit outlets. The Tobit model employed takes the form;

$$Y_i^* = X_i\beta + \varepsilon_i$$

Where ε_i is normally distributed with zero mean and constant variance.

Where, Y^* is the index of respondent's use of his/her mobile phone and this is defined as;

$$Y^* = \frac{\text{Number of uses into which each respondent puts his/her mobile phone}}{\text{All available means of banking money and accessing credit in the study area}}$$

Explicitly, the explanatory variables are as described below:

X_1 = Age of respondents (years)

X_2 = Gender (male = 1, female = 0)

X_3 = Marital status (married =1, others = 0)

X_4 = Years of formal education

X_5 = Household size

X_6 = Primary occupation (farm = 1, non-farm = 0)

X_7 = Extension contact (yes = 1, no = 0)

X_8 = Poverty status (poor =1, non-poor = 0)

X_9 = Membership of cooperatives (yes = 1, no = 0)

X_{10} = Access to power (Naira)

ε_i = Error term

4. RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Respondents

A number of socioeconomic characteristics of respondents were considered and the results were presented in Table 1. Respondents' distribution by age showed their average to be 45 years with more males (64.7 percent) than females (35.3 percent). This implies that a sizeable number of respondents are still very young and in their active working age. A closer look at the marital status of respondents showed that most of them are married with few that are single, divorced and widowed. Distribution of respondents by household size revealed mean household size to be 7 and this is a fairly large household size. The implication of this large household size is that income per capita will be low and this will invariably lead to increase in respondents' poverty level. Educational distribution of respondents showed that only about one-third of the respondents are educated up to tertiary level while about 38.3 percent had no formal education. On the poverty status of respondents, about 70.3 percent are poor living on less than one dollar daily with only about one-quarter belonging to the non-poor category. Meanwhile, occupational distribution of respondents revealed the relative importance of farming to other occupation in the study area. This is because about 86.4 percent are engaged in farming with only about 13.6 percent engaged in non-farm work. Also, distribution of respondents based on their membership of cooperative society showed that about 56.7 percent are members with about 43.3 percent non-members.

Table 1: Socioeconomic characteristics of respondents

Variable Categories	Frequency	Percentage
1. Age		
≤ 30	41	11.4
31-40	105	29.1
41-50	92	25.6
51-60	77	21.4
≥ 60	45	12.5
2. Gender		
Male	203	64.7
Female	197	35.3
3. Marital status		
Single	69	19.2
Married	214	59.4

Divorced	45	12.5
Widowed	32	8.9
4. Household size		
1-3	54	15.0
4-6	206	57.2
7-9	43	11.9
10-12	37	10.3
≥ 12	20	5.6
5. Educational Status		
No formal education	138	38.3
Primary	57	15.8
Secondary	40	11.2
Tertiary	125	34.7
6. Membership of cooperatives		
Yes	204	56.7
No	156	43.3
7. Extension contact		
Yes	288	80.0
No	72	20.0
8. Poverty status		
Poor	253	70.3
Non-poor	107	43.5
9. Access to power (electricity)		
Yes	191	53.1
No	169	46.9
10. Primary occupation		
Farm	311	86.4
Non-farm	49	13.6

Source: Author's computation from survey data

4.2 Usage of Mobile Phones in Rural Southwest Nigeria

As depicted in Table 2, respondents were asked about the different kinds of services performed on their mobile phones and the responses obtained are as shown in the table. It is very clear that most of the respondents transfer credit through texting of recharge cards of different denominations to either friends or relations which are later converted into cash to perform some other transactions be it for the owner of the mobile phone or for the receiver. Closest to this is getting personal account information especially for those operating accounts in some of the banks either in their neighbourhood or in city centres. The reasons for this being that the banks are the ones sending these messages and this is more or less at little or no cost to the mobile phone users. However, those using mobile phones to send general messages are the next to those receiving information on their personal account and the least among them are those using handsets to transact business of buying and selling and this might be unconnected with the poor state of infrastructural facilities and the lack of enabling environment for this kind of activity to thrive. However, it must be noted here that the result presented in Table 2 do not include those using their mobile phones for multiple purposes. In other words, most of the mobile phone owners use their handsets for two or more of these services and what is depicted in Table 2 is the most priotized in terms of mobile money services.

Table 2: Distribution of respondents by services performed on mobile phones

Variable	Frequency	Percentage
Credit acquisition/transfer	146	40.5
Getting personal account information	77	21.4
Transacting businesses	11	3.1
Checking e-mails	19	5.3

Networking	24	6.7
Photography	18	5.0
Sending general messages	49	13.6
Others	16	4.4
Total	**360**	**100.0**

Source: Author's computation from survey data

Determinants of Usage of Mobile Phones as Mobile Banks and Credit Outlets

The result of the tobit regression model performed to ascertain some correlates of using mobile phones as mobile banks and credit outlets are shown in table 3. From the table, it was revealed that age, years of formal education, membership of cooperative society/social groups, gender, poverty status, household size and access to power (electricity) are very important determinants. While the coefficients of age ($p<0.10$), years of formal education ($p<0.01$), membership of cooperatives/social groups ($p<0.01$) and were positive, those of gender ($p<0.05$), poverty status ($p<0.01$), household size ($p<0.00$) and access to power were negative. Thus, as the age of respondents increase and their years of formal education increases, the more the usage of mobile phones as mobile banks/credit outlets. This is because, as one grows in age, the more the experience and the exposure that one get and since education enlightens and broadens ones horizon, the higher the likelihood of respondents with tertiary education employ the use of mobile phones for these services as against those with no formal education. In the same vein, membership of cooperative society provides avenue for training and education which will invariably have a positive effect on respondents' usage of mobile phones for these services too. However, as household size increases, income per-capita declines (poverty level soars) and this to a large extent reduces the likelihood of using mobile phones as outlet for financial transactions. Also, lack of access to power (electricity) reduces the likelihood of respondents using mobile phones for these services. This is due to the fact that whenever, the battery of mobile phone is low or empty, it becomes very difficult to communicate or perform any function with it.

Table32: Tobit result showing determinants of usage of mobile phones as mobile banks and credit outlets

Variable	Coefficient	Standard error
Age	0.1725*	0.1131
Gender	0.5448**	0.2507
Marital status	0.1685	0.2905
Years of formal education	0.1864***	0.0706
Household size	-0.4088***	0.1560
Primary occupation	0.6102	0.5399
Extension Contact	0.2636	0.2501
Poverty status	-0.3182***	0.0725
Membership of cooperatives	0.0575*	0.0313
Access to power	-0.1625	0.2496
Constant	0.6120	0.6716

Log likelihood = -97.244593, Number of Observations = 360, Prob > chi^2 = 0.0007

***Coefficients significant at 10%, **Coefficient significant at 5%, ***Coefficients significant at 1%**

Source: Author's computation from survey data

5. CONCLUSION AND RECOMMENDATIONS

The paper focused on the extent to which mobile phones were being used as mobile banks and credit outlets among farming households in rural southwest Nigeria. Analysis of data collected from a random sample of 360 respondents showed that the average age of respondents is 45 years with more males than females. Educational distribution of respondents revealed that only about one-third were educated up to tertiary level with more than half of those surveyed having an average household size of seven, an indication depicting that most of the respondents are poor with low per capita income. Occupational analysis of respondents showed that farming is still the highest employer of labour providing livelihood for over 75 percent of those survey and this further depict the relative importance of farming in the study area. Result of the probit regression model however indicate age, educational status, household size, gender, membership of cooperative society as important correlates of respondents using mobile phones as mobile banks and credit outlets.

Also, on the services performed with mobile phones by respondents, transfer of credit in the form of sending recharge cards which are later converted into money (cash) is the most patronised and the least among these services is transacting business on phone and this might not be unconnected with the low level of education of

respondents the poor state of infrastructural facilities in the study area. It is therefore concluded that the use of mobile phone for these services are still very low is the study area and in order to enjoy the benefit inherent in the use of mobile phones for these services, the following recommendations are made:

- Effort should be geared at building capacity of farming households through education. This is because education enhances earning potentials of farmers through adoption of modern farming practices and technologies.
- Cooperative activities should also be encouraged among farming households to increase awareness since cooperative societies and social groups provide avenues for training on new inventions and other technologies that can better enhance the living conditions of members.
- Government at the local level should intensify its effort at improving on the existing state of infrastructural facilities in the study area. This will help create an enabling environment for good service delivery and reduce transaction cost of performing these tasks.

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