“Techno-driven financial inclusion in Rural Nigeria: challenges and opportunities for pro-poor service delivery”

AUTHORS	Isaac B. Oluwatayo

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Isaac B. Oluwatayo (South Africa)

Techno-driven financial inclusion in Rural Nigeria: challenges and opportunities for pro-poor service delivery

Abstract

Banking services (mobile money services and platforms) in most countries today is no doubt technology driven. In Nigeria, for instance, the introduction of electronic banking has brought some advancements and complications to the ways and manners in which banking services are performed. In fact, the resultant effect of techno-driven (technology-driven) banking services on savings and borrowing patterns of the rural poor cannot be undermined. This paper relied on data collected through questionnaire from a random sample of 250 respondents from rural Southwest Nigeria. A descriptive analysis of the data revealed average age of those surveyed to be 52 years with a mean household size of 6 members. Respondents' distribution by gender showed there were more males (53.6%) than females with 38.8% and 61.2% of the former and the latter having no formal education. Data analysis on available and accessible techno-driven banking services revealed use of mobile phones and occasional transactions from the Automated Teller Machines (ATMs) as the most patronised. However, the result of probit model employed to ascertain drivers/enablers of techno-driven banking services showed age, gender, household size, educational status, poverty level, power infrastructure and cooperative society membership as very important. While the coefficients of age, gender, educational status and cooperative society membership were significant and positive, those of household size, distance to banking facility, power infrastructure and poverty status were negative and significant. It is therefore, recommended that effort should be intensified at capacity building of respondents in order to catch up with the growing trend in technology advancement in the banking sector. Also, improvement in the dilapidated state of road and power and infrastructures in the study area is very crucial to effectively harness the benefit of mobile money services.

Keywords: banking services, financial inclusion, technology, pro-poor service delivery, Rural Nigeria.
JEL Classification: G21, I31, O33, P46.

Introduction

Making financial services accessible to the poor and especially those residing in the rural areas has been a major problem facing governments in many of the countries in sub-Saharan Africa. This is because, without inclusive financial systems, poor people have to rely on their own limited savings to invest in their future or become entrepreneurs and small enterprises must rely on their limited earnings to pursue promising growth opportunities. This can further worsen the rising income inequality and hinder economic growth (Allen et al., 2012). In fact, people who do not have access to banking services are limited in undertaking a wide range of everyday financial transactions, and those limitations are arguably increasing as such transactions become more sophisticated. For example, without a bank account a person may not be able to obtain competitive loans or insurance policies or enter into a mobile phone contract. Those without bank accounts often lack security in storing money, leaving them vulnerable to theft or loss (CRC, 2009).

Financial inclusion therefore is the delivery of financial services, including banking services and credit, at an affordable cost to the vast sections of disadvantaged and low-income groups who tend to be excluded (Jain, Bohra and Mathur, 2012). The various financial services include access to savings, loans, insurance, payments and remittance facilities offered by the formal financial institutions. According to Dev (2006), financial inclusion is significant from the point of view of the living conditions of poor people, farmers and other vulnerable groups. Financial inclusion is critical to achieving inclusive growth and it is a prerequisite for sustainable economic growth and development. Thus, harnessing the power of technology is one of the most effective ways of integrating the unbanked population into the mainstream of effective and efficient financial services. Thus banking technology such as "electronic money" models have helped in improving the lives of millions by reducing the need to carry cash or spend time travelling over long distances to reach the nearest point of service (WOCCU, 2012).

In Nigeria, for instance, out of the 158 million people, only about 23 percent of those between the ages of 15 years and above living in rural areas have accounts in formal financial institutions and less than 10 percent of them receive or send money via mobile phones (World Bank, 2012). Also, as CGAP (2010) puts it, 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 (especially those living in the rural areas) lack access to credit facilities (CBN, 2008). However, rural households 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).

According to the World Development Report of 2000-2001 (World Bank, 2000), *"Access to financial markets is important for poor people. Like all economic agents, low income households and micro-enterprises can benefit from credit, savings, and insurance services. Such services help to manage risk and to smooth consumption… And allow people to take advantage of profitable business opportunities and increase their earnings potential. But financial markets, because of their special features, often serve poor people badly… Since poor people often have insufficient traditional forms of collateral (such as physical assets) to offer, they are often excluded from traditional financial markets… transactions costs are often high relative to the small loans typically demanded by poor people. And in areas where population density is low, physical access to banking services can be very difficult… ".*

It is very clear from the foregoing that, the significant role of financial inclusion especially of the poor and vulnerable people will in no small measure help in ameliorating the living conditions of the rural poor hence the need to examine the effect of technology driven financial services in Rural Nigeria.

1. Literature review

There is no gainsaying the fact that bringing financial services to the poor and especially those residing in rural areas is a major challenge for broad-based financial inclusion. Poor infrastructure and inadequate or lack of telecommunication facilities in some cases and heavy branch regulations restrict geographic expansion of formal bank branches. The Consultative Group to Assist the Poor (CGAP) has made similar observations indicating that a major limitation to financial inclusion is the transaction cost. Notable costs in this category include not only those incurred by banks in servicing low-value accounts and extending banking infrastructure to underserved and low income communities/villages, but also those incurred by poor customers in reaching bank branches (Michael and Breloff, 2011).

Meanwhile, the problems faced by the poor are many. The poor experience multifaceted financial transactions everyday and use sophisticated methods to organize their finances, irrespective of whether they use the formal financial system or not (Collins et al., 2009). However, national and international banks have struggled to find a business case for reaching the world's poorest people given the expectations of their shareholders and the desire for sufficient profit margins. As a result, poor people have largely discounted formal financial institutions and vice versa. Instead, they have traditionally relied on potentially exploitative yet reliable moneylenders in their domains. Although, we cannot assume that all those who do not use formal financial services are somehow constrained from participating in the formal financial sector, but the recent success of mobile money in sub-Saharan Africa shows that innovations can bring about dramatic changes in how people engage in financial transactions (Collins et al., 2009).

Despite the advancement in banking technology and the fact that "branchless banking" has received growing attention as a way to increase financial access in developing economies, particularly among the underserved groups (Mas and Kumar, 2008), there are yet over 2.5 billion people financially excluded (Robert et al., 2013). While most of the population in developed countries (99 percent in Denmark, 96 percent in Germany, 91 percent in the USA and 96 percent in France) has bank accounts (Peachy and Roe, 2004), formal financial sectors in most developing countries serve relatively a small proportion, often no more than 20-30 percent of the population. In fact, the vast majority of these groups are low income households in rural areas (ADB, 2007).

Rural financial intermediation is expensive because participants are geographically scattered, financial transactions are small and rural incomes tend to be unstable (Lariviere and Martin, 1999; Schrieder, 2000). Also, more than two-thirds of the adult population in these countries has no access to formal financial services, and in sub-Saharan Africa, financial exclusion is as high as 76 percent (Klapper and Demirguc-Kunt, 2012). Exclusion is typically highest amongst women, youth and the very poorest segments of society. The low and unpredictable income coupled with the risky business environment of poor people makes it more difficult for them to bank with formal financial institutions.

2. Research methodology

2.1. Study area. The study was carried out in rural southwest Nigeria. Southwest Nigeria is one of the six geopolitical regions of Nigeria where one of the major ethnic groups (the Yorubas) in the country resides. The region is particularly known for its large agrarian communities and some fairly urbanized areas. Agriculture and the informal sector provide employment for more than 60% of residents of the region with a sizeable number employed in the formal sector. Rainfall pattern in the region favors agricultural production especially tree crops even though some residents specialize in the production of arable crops. Although the states in Southwest Nigeria share the same ecologies in terms of rainfall and temperature pattern but the two states randomly selected support cultivation of both arable and cash crops. The main activity of residents is farming and the larger share of the two states is predominantly rural.

2.2. Method of data collection and types of data. Primary data were collected through administration of structured questionnaire on 250 respondents in the study area. A random sampling method was used in selecting two states (Ondo and Oyo States) from the six states in Southwest Nigeria and this was followed by a random selection of three rural communities each from the selected states. From the selected communities, respondents were chosen based on probability proportionate to size in order to make the sample representative. Information gathered include those on socioeconomic characteristics such as age, gender, marital status, primary occupation, level of education, household size, poverty status, income, membership of cooperative societies etc, type of activities engaged in by residents, available and accessible techno-driven financial services, expenditures on food and non-food items, state of infrastructural facilities, accessibility and challenges faced in harnessing banking services in the study area.

2.3. Methods of data analysis. Data for the study were analyzed using both descriptive and inferential statistics. While descriptive statistics such as mean, frequencies and percentages were used to analyze, describe and summarize respondents' socioeconomic variables as well as accessible techno-driven financial services, probit model was employed to examine drivers/enablers of techno-driven financial services in the study area. The explicit form of the probit model used in this study is expressed as:

$$Y = \Phi(X\beta + \varepsilon), \quad (1)$$

$$\Phi^{-1}(Y) = X\beta + \varepsilon, \quad (2)$$

$$Y^{*} = X\beta + \varepsilon. \quad (3)$$

Then our link function is $F(Y) = \Phi^{-1}(Y)$. This link function is known as the Probit link, where Y is the dependent variable and takes the value of 1 or zero. $Y = 1$ for respondents using techno-driven banking services and 0 otherwise.

The explanatory variables included in the model are:

X_1 is age (years), X_2 is gender (male = 1, female = 0), X_3 is marital status (married = 1, otherwise = 0), X_4 is household size, X_5 is years of formal education, X_6 is membership of ruling party (yes = 1, no = 0), X_7 is Poverty status (poor = 1, non-poor = 0), X_8 is primary occupation (farming = 1, non-farm = 0), X_9 is access to power (yes = 1, no = 0), X_{10} is distance to available banking facility (yes = 1, no = 0), X_{11} is membership of cooperative society (yes = 1, no = 0), β is estimated coefficient, Φ is standard cumulative normal distribution, ε is error term.

3. Results and discussion

3.1. Socioeconomics characteristics of respondents. Data on a number of socioeconomic characteristics such as age, gender, marital status, household size, educational status, poverty status and occupation were considered, analyzed and the result were as presented below.

3.2. Age of respondents. Distribution of respondents by age showed average age of respondents to be 52 years with more than three-quarter falling below the age of less than 50 years. This distribution indicated that respondents were young and still in their active working age. This is further depicted in Table 1. However, it should be noted that aging discourages people from adopting technology and this is corroborated by the study of Ziefle (2008).

Table 1. Respondents' distribution by socioeconomic characteristics

Age (%)	Frequency	Percentage
≥ 30	66	26.4
31-40	89	35.6
41-50	38	15.2
51-60	32	12.8
61 & >	25	10.0
Total	250	100.0

3.3. Gender of respondents. Respondents' distribution by gender (Table 2) revealed that there were more males (53.6 percent) in the study area than females (46.4 percent). This show that men play more active role in the study area than women and that they are better users of technologies because of their ease of adopting innovations.

Table 2. Distribution of respondents by gender

Gender (%)	Frequency	Percentage
Male	134	53.6
Female	116	46.4
Total	250	100.0

3.4. Household size of respondents. Distribution of respondents by household size (Table 3) showed that average household size of respondents was 6, an indication that household size is fairly large and this can lead to increased poverty because of low per capita income often associated with families with large size.

Table 3. Respondents' distribution by household size

Household size (%)	Frequency	Percentage
1-3	53	21.2
4-6	101	40.4
7-9	44	17.6
10-12	37	14.8
13 &	15	6.0
Total	250	100.0

3.5. Educational status of respondents by gender. As depicted in Table 4, educational distribution of respondents by gender revealed that there were more

females with no formal education than males and only a very small percentage of the females had tertiary education. Thus there is a wide gap in educational level of both gender.

Table 4. Respondents' educational status by gender

Educational status (%)	Male	Percentage (%)	Female	Percentage
No formal education	52	38.8	71	61.2
Primary	29	21.6	13	11.2
Secondary	17	12.7	15	12.9
Tertiary	36	26.9	17	14.7
Total	134	100.0	116	100.0

3.6. Occupational status of respondents. Distribution of respondents by occupation as shown in Table 5 indicated the relative importance of farming/agriculture as the highest employer of labor and the main source of livelihood to inhabitants of rural southwest Nigeria. From the distribution, it is very clear that more than two-third of respondents rely on farming as primary occupation and next to this is trading.

Table 5. Occupational distribution of respondents

Occupation	Frequency	Percentage
Farming	170	68.0
Trading	25	10.0
Civil service	20	8.0
Private salaried job	19	7.6
Artisans	11	4.4
Others	05	2.0
Total	250	100.0

3.7. Poverty status of respondents. Respondents' poverty status was estimated using the two-third of mean total consumption expenditure on food and non-food items. Those with expenditure below two-third of mean per capita expenditure were classifies as poor and those with their expenditure equal to or above two-third of mean total per capital expenditure of all the respondents were categorized as non-poor. Thus, there were poorer than non-poor respondents in the study area as shown in Table 6.

Table 6. Respondents' distribution by poverty status

Poverty status (%)	Frequency	Percentage
Poor	154	61.6
Non-poor	96	38.4
Total	250	100.0

3.8. Enablers/drivers of techno-driven banking services in Rural Nigeria. The result of the probit model employed to examine some drivers/enablers of techno-driven banking services in the study area revealed age, gender, household size, educational status, membership of the ruling political party, poverty level, primary occupation, power infrastructure and membership of cooperative society as very important. While the coefficients of age ($p < 0.10$), gender (0.05), educational status ($p < 0.00$) membership of political party ($p < 0.05$) and cooperative society (0.10) were significant and positive, those of household size ($p < 0.05$), distance to banking facility ($p < 0.01$), power infrastructure ($p < 0.05$) and poverty status (0.00) were negative and also significant. Thus, as educational status of respondents improve and the more their membership of cooperative society, the better their patronage of techno-driven banking services. In their study on drivers of demand for financial services, Cole, Sampson and Zia (2011) indicated that poor financial literacy represents a significant barrier to accessing and properly using formal financial services. On the other hand, the farther away the banking facilities are to the respondents and the higher their poverty levels, patronage of technology driven banking services decline.

Table 7. Probit result on enablers/drivers of techno-driven banking services in Rural Nigeria

Variable	Coefficient
Age	0.2071*
	(0.1123)
Gender	0.0692**
	(0.0284)
Marital status	0.8005
	(0.7542)
Household size	-0.0550**
	(0.0227)
Years of formal education	0.1549***
	(0.0351)
Membership of ruling party	0.0099**
	(0.0042)
Poverty status	-0.1803***
	(0.0522)
Primary occupation	0.6807
	(0.5733)
Access to power	-0.7125**
	(0.3103)
Distance to available banking facility	-0.0111***
	(0.0038)
Membership of cooperative society	0.0678*
	(0.0310)
Constant	0.6001***
	(0.1077)

Note: No of observations = 250, ***coefficient significant at 1%, **coefficient significant at 5%, * coefficient significant at 10%*. Log-likelihood = - 0.74.0089, Prob > chi2 = 0.00012, Standard errors are in parentheses.

Conclusion and recommendations

There is no gainsaying the fact that techno-driven financial inclusion enhances the living conditions of rural people and the penetration of information and communication technology (ICTs) into the rural communities in Nigeria is no doubt changing the face of banking services in the study area. Analysis of information gathered revealed that gender of respondents, educational status, household size, membership of cooperative society, poverty status, access to power and distance to banking facilities are important correlates of harnessing tehno-driven banking facilities in the study area. The study therefore recommends the following based on the findings:

1. There is the need to intensify effort at building capacity of residents (especially of the girl-child) in rural southwest Nigeria through education. This will enable them to embrace and catch up with the growing trend in technology advancement in the banking sector.
2. Improvement in the dilapidated state of power and infrastructures in the study area is very crucial to effectively harness the benefit of technology advancement in banking services especially the mobile money services.
3. Inhabitants of the study area should be encouraged to form/join cooperative societies as this will help in better information sharing, networking and poverty reduction through accessibility to credit facility.

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