

Mobile Payment Technology and Poverty Alleviation in Nigeria

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<p>Abstract: The main purpose of the study was to examine the effect of mobile payment technology on poverty alleviation in Nigeria. The study was carried out in Rivers State of Nigeria. The population of the study consisted of people living in Rivers State of Nigeria. Both multistage and purposive sampling techniques were employed to obtain a sample size of 223 respondents for the study. A structured questionnaire served as the major instrument of data collection in the study. The issue of validity and reliability of the research instrument was also addressed in the study. Data obtained from the field survey were first presented with simple descriptive statistics such as tables, frequencies, graph and percentages. The data were tested with simple regression model using the SPSS software version 25.0. Findings show that mobile payments technology was positively and significantly related to consumption expenditure of the studied respondents in Rivers State of Nigeria. Based on the findings, the study concluded that embracing digital technology is a major tool in the alleviation of poverty particularly in developing country like Nigeria. It was recommended that the Central Bank of Nigeria needs to intensify effort in building an economy that is cashless by come up with effective monetary policies that can influence the use of digital infrastructure.</p>	<p>Research Paper</p>
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1. INTRODUCTION

The issue of poverty alleviation with average majority of the population of the country been poor and miserable cannot be over emphasized. Globally, poverty rates have declined by more than 50 percent with 36 percent of the world population living below the poverty line in 1990 but in 2015 the population of the world who lived on less than the poverty line of \$1.90 per day decline further to 10 percent which is a remarkable improvement in poverty alleviation (Noha & Mahmoud, 2020). Although Nigeria has made frantic and remarkable efforts in terms of poverty alleviation since 1980, still the country is characterized by sheer inability to translate the economic progress into meaningful development which is an indication that all poverty alleviation programs remain completely nonresponsive to bringing 82.9 million (40.1 percent) Nigerians from poverty. A country with characteristics of small, fragile and conflict affected tend to associates with higher poverty rates.

However, the growing popularity of financial transaction and payment through cell phones and mobile money shop has revealed the overwhelming

potential of reducing poverty through mobile banking technology. This banking model has already advanced the lives of millions of Nigerians by reducing barriers to finalizing customer's purchases, ensuring the security of customers' finances and providing an easy platform for customers to track their spending (Iwedi, Kocha and Wike, 2022; Iwedi *et al.*, 2018). Knowing full well that population density in many rural areas is too low to support rural bank branch and the time/ cost of travel to reach conventional mortar and bricks banks are too prohibitive for the poor and the unbanked. As many and many economic agents continue to entrust more of their savings and resources to the conventional/ traditional banks, they require more frequent access beyond weekly or monthly visit to the bank. In order to increase financial access beyond the banking walls and local branches hence the introduction and use of smart phone technology. This financial innovation has help to improve the efficiency of payment system and reduced operational costs, providing more frequent opportunities to open and access customers' accounts in real time.

Some empirical evidence has revealed that access to basic financial services such as savings,

payments and credit make a positive difference in people's lives and that it has the potential of improving the well-being of the poor and the growth of micro, small and medium enterprises (Iwedi, 2020). As an emerging financial development model, mobile payment technology not only meets people's needs but also expands the depth of poor citizen financial use and effectively alleviates the poor citizens. There is no gain saying the fact that the issue of extreme poverty remains prevalent in Nigeria and one could attribute it to factors like non inclusive or sluggish growth, low human capital, labour market weakness and exposure to shocks among others. According to Nigeria Bureau of Statistics NBS (2020) the incidence of poverty in Nigeria between 1980 and 2020 rose from 27.2 percent to 69.0 percent and stood at 40.1 percent (82.9 million) in 2020. However, mobile money wallets have emerged as a cheap and fast alternative to financially including millions of poor Nigerians into the financial ecosystem. Nigeria has only 4.3 commercial bank branches per 100,000 adults and 16.93 ATMs per 100,000 adults (World Bank, 2018), excluding a large rural population from formal financial services and the benefits of cross border e-commerce. Poverty alleviation problem in Nigeria has attracted numerous attentions in the academia with scholars from the field of Finance and Banking (Zameer *et al.*, 2020), Economics (Lia *et al.*, 2020) and Sociology (Fu *et al.*, 2021) supporting increased digital banking technology as one of the main methods of effectively alleviating poverty in Nigeria. Thus, this growing level of poverty and hardship in Nigeria can be attributed to ignorance and inability of the poor citizens to embrace the new payment platforms. It is in view of the foregoing that we tend to carry out the study on the effect of mobile payment technology on poverty alleviation in Rivers State of Nigeria.

2. LITERATURE REVIEW

2.1. Theoretical Framework

2.1.1. Technology Acceptance Model

The technology acceptance model is also known as TAM. It was developed by Fred Davis in 1989 as an information systems theory. The theory tries to explain why people would choose to use a particular technology to better their life. Thus, the technology acceptance model states that there are two factors that explain whether a new technology will be accepted by its users: (i) perceived usefulness and (ii) perceived ease of use. The first factor of perceived usefulness is all about the prospective user's probability that using a specific technology or application will enhance the individual life performance. Basically, perceived usefulness is a factor that measure how useful a technology/application is to it users.

The second factor of perceived ease of use centers on the degree to which the users expect the target technology to be free of effort. Conversely, it is a factor to show how easy for the user to use the

technology. The technology acceptance model says very little about the technology itself rather the focus is what we believe or what we perceive this technology to be. Whether the technology is actually useful or actually easy to use is not a matter of the technology but a matter of our perceptions and this may change obviously so depending on how much experience you have, how old you are, what gender you are, the perceptions of a particular piece of technology say mobile device or a tablet computer changes not because the technology is different but because you and I are different. Therefore, this model was adopted in this paper because mobile technology satisfies the two factors of usefulness and ease of use, which implies that every financially excluded Nigerians could be onboard on the financial ecosystem through the use of mobile banking technology.

2.1.2 Financial Literacy Theory of Financial Inclusion

This theory states that financial literacy will expand the financial excluded individuals' willingness to onboard on to the formal financial sector. This means that financial inclusion can be achieved through education that increases the financial literacy of citizens (Ozili, 2020). When the financial excluded becomes literate financially they will seek financial products and services where ever they can find it.

2.1.3 Power Theory of Poverty

The power theory of poverty could be likened to the Marxist's theory of poverty. This theory sees power in terms of who controls what and how in the political and economic structures of the system. In this context, the structure of political and economic power in the society is the determinant of the extent of poverty among the populace. This is basically the Marxian theory of historical materialism. According to this theory, the system of poverty determines the basic division of the society into two classes: the have and the have-nots (i. e. the property owners and the non-property owners). This view constitutes the fundamental nature of government, religion and culture in any given society (Mayoux, 2001). This theory further stated that the society has been dominated by the ruling class owners of properties who exploit the non-property owners, made possible by their ownership of the means of production. According to the proponents of this theory, the individual's position in the society depends on whether he owns the means of production or work for someone else. They held religion responsible for sustaining this power structure between the rich and the poor by denying the poor of any initiative to fight to improve their condition which prevails and subject them to poverty. Montgomery, Bhattacharya & Hulme, (1996). Thus, an effective poverty reduction programme should have exploitative property that could be addressed and dislodged.

2.3 Empirical Review

There are bulks of studies that have explored link between financial inclusion and likelihood of individuals entering and exiting poverty. A good number of recent works have analyzed the nexus between access to financial services and poverty alleviation for the most vulnerable part of the population. Research by Beuermann, McKelvey, and Vakis (2012) in rural Peru reveals that mobile phone coverage expansion has reduced extreme poverty, while increasing household consumption. Asongu (2015) reports a negative relationship between mobile penetration and income inequality in a sample of 52 African countries. Suri and Jack (2016) used household panel data to show the long-run impacts of mobile money on the economic livelihoods of Kenyans. They found that usage of Kenya's mobile money system M-PESA increased per capita consumption levels, improving the efficiency of the allocation of consumption over time and pulling an estimated 2.0% of Kenyans out of extreme poverty (those living on less than \$1.25 per day). Very few studies, though, have access to panel data like Suri and Jack (2016). In another study, Aker *et al.* (2016) used data from a randomized experiment of a mobile money cash transfer program in Niger and found that providing social assistance via mobile phones led to significant time and cost savings for recipients, as well as better nutritional outcomes. Diet diversity increased by 9%–16% among households who received mobile transfers. In addition, children ate an additional one-third of a meal per day. Munyegera and Matsumoto (2016) found that mobile money services had a positive impact on the welfare of rural households in Uganda - again, through the facilitation of remittances.

In similar study by Asongu and Le Roux (2017) found that mobile, internet and broadband penetration have a positive impact on inclusive growth, as measured by the inequality adjusted human development index. Arvidsson (2014) studied consumer attitudes towards mobile phone payments and found that the adoption of a new payment system is related to perceived security risks. Seng (2017) study in Cambodia found that mobile phones have a positive impact of formal and informal borrowing. Lenka and Barik (2017) works provided evidence of a positive association between the growth of mobile and internet and financial inclusion.

Wieser *et al.* (2019) studied the effect of rolling out mobile money agents in rural Northern Uganda and found that the rollout reduced the percentage of poor rural households with low food security. The results showed that mobile money can improve the livelihoods of the poor, especially in remote areas far away from traditional bank branches. They found no effect, though, on savings or poverty outcomes. Chinoda and Kwenda (2019) used a sample of 49 countries for the periods 2004–2016 and found a

unidirectional causality from financial inclusion to mobile phones. Using a panel dataset of 61 lower and middle-income countries Mushtaq and Bruneau (2019), found that mobile phone penetration can promote financial inclusion.

Kelikume (2021) used the systematic generalized moment method to study and found that with the increase of Internet usage, inclusive finance has a significant impact on improving poverty reduction efficiency. Bayar, Gavriletea & Păun (2021) investigated the linkage in a sample of 11 post-communist countries of the European Union from 1996–2017 using panel cointegration and causality analyses. The study found both positive and negative relationships between Internet usage rates and financial institutions and financial markets access. By increasing Internet usage, we can improve access to financial institutions in Bulgaria, Croatia, Czech Republic, Hungary, and Poland and we can increase financial markets access in Latvia and Slovenia.

3. METHODOLOGY

This study adopted a survey methodology to examine digital financial inclusion and poverty alleviation in Rivers State of Nigeria. Kothari (2004) noted that survey research design examines the cause and effect relationships between variables. The objective to be achieved in a study forms the basis for determining the research approach to be used.

3.1 Population of Study and Sample Size

The population of the study consisted of people living in Rivers State of Nigeria as of the time the study was conducted. The study employed multistage sampling technique in the selection of location and respondents. This technique entails selection in stages. The first stage of the multistage sampling comprised a random sampling of ten (10) local government areas from the 23 local government areas in Rivers State of Nigeria. The selected local government areas were; Ahoada, Andoni, Eleme, Port Harcourt, Okrika, Obio/Akpor, Ikwerre, Etche, Emohua, and Oyigbo. From the selected communities, a total of 223 respondents who understood the concept of digital financial inclusion were purposively picked and subsequently used for the study. Purposive sampling was inclusive. Additionally, preliminary study was conducted to determine the respondents and where they were located in the selected areas.

3.2 Instrumentation

A structured questionnaire served as the major instrument of data collection in the study. The questionnaire contained both open-ended questions and 5-point Likert scale ratings. Care was taken in constructing the questionnaire and the researcher ensured that the questionnaire captured all relevant aspects of the study variables. The questionnaire contained questions that elicited information on the

socio-economic characteristics of the respondents like age, sex, marital status, and education background. This was necessary to ascertain the competences of the respondents. It further contained questions on the dimensions of digital financial inclusion used in the study and consumption expenditure which was developed to answer the study's research questions on a five-point Likert scale and for the test the hypotheses. All the questionnaire statement items were operationalized from existing body of literature.

3.2.1. Questionnaire Design and Measurement

Researchers such as Wrenn *et al.* (2002), have made it clear that measuring and designing the questionnaire is a significant process. Thus, the researcher must be careful when creating, writing and reviewing the questionnaire items, content and layout; and for standardization purposes pilot testing must be done to confirm that the developed questionnaire will discover precisely what is meant to be measured, the format is suitable and the participants would easily understand the topic and questions (Wrenn *et al.*, 2002). Saunders *et al.* (2012) stated that a well-designed questionnaire leads to an increase in the response rate and the legitimacy and unwavering quality of the gathered data. Since the examination utilizes effectively approved scales, endeavours in this area have concentrated on making significant changes in accordance with the setting and dialect in which the specialists were working. Every one of the factors was designed in Likert 1–5 estimation scales format, in which the scope of response was 1 (strongly) to 5 (strongly agree).

The scoring therefore was as follows; Strongly agree (SA) 5 points, Agree (A) 4 points, Undecided (U) 3 points, Strongly disagree (SD) 2 points, and Disagree (D) 1 point. The scoring or rating scale was important because the attached figures made it easy for the researcher to pull together the positive and negative opinions for the statistical analysis.

Table 1: Reliability Analysis of the Variables

S/N	Variables	No of Items	Cronbach's Alpha
1	Mobile payment	4	.868
2	Consumption expenditure	6	.956

Source: SPSS Output (2022)

3.6 Method of data analysis

Data obtained from the field survey were first presented with simple descriptive statistics such as tables, frequencies, graph and percentages. The data were tested with simple regression model using the SPSS software version 25.0.

3.7 Model Specification

The relationship between digital financial inclusion and poverty alleviation in Nigeria can be modeled in the functional equation below

3.3 Sources of Data

Data for this study were obtained basically from the primary sources of data. Primary data are sourced through survey. For this study, it involved mainly the use of the questionnaire. Copies of the questionnaire were used to elicit data from the respondents in Rivers State of Nigeria.

3.4 Validity of the Instrument

The researcher made use of content validity to test research instrument's validity which is ascertained through experts' reviews (that is, experts in the field including the research supervisor and a statistician) to ensure that the set questions were enough to collect the intended responses. Secondly, the scales that were used in this study were adapted from established existing measures that were applied and validated in previous studies.

3.5 Reliability of the Instrument

The issue of reliability was also addressed in the study. Firstly, test-retest was done on the research instrument after which, the Cronbach's coefficient alpha was used to determine the internal reliability of the research instrument. This was done by subjecting items to internal consistency technique to assess the reliability. Collected pre-testing data were entered into SPSS version 25.0 data analysis software to generate instruments internal consistency data. Cronbach's alpha that was greater than 0.7 was considered adequate and reliable for a given data collection instruments according to Gliem and Gliem (2003). It can be concluded that all the study constructs were extremely reliable, given the outcomes of the pilot study. Corrected item-total correlations ranged from 0.33 to 0.91, suggesting that there was no item redundant and therefore no items were removed. Pilot studies assisted the researcher to acknowledge and solve as many issues as possible before completing the final survey. No important issues have been recognized in this study.

$$\text{Poverty} = f(\text{Mobile Payment Technology}) \quad (1)$$

$$CEX_t = f(MOP) \quad (2)$$

Equation 3 presents the estimable version of equation (2)

$$CEX_t = \alpha_0 + \beta_3 MOP_t + \mu \quad (3)$$

$$= \alpha_0 + \sum_{i=0}^n \beta_{1,i} + E_{it}; \beta_i \geq 0 \quad (4)$$

4. RESULTS AND DISCUSSION

4.1 Presentation of data

The presentation and analyses of data were based on the 223 copies of the questionnaire administered to the respondents and are as follows;

4.1.1. Age bracket of the studied respondents

Table 2: Frequency distribution showing the age bracket of the studied respondents

Age of respondents	Frequency	Percent	Valid Percent	Cumulative Percent
20-35	136	61.0	61.0	61.0
36-45	62	27.8	27.8	88.8
46-55	24	10.8	10.8	99.6
56-65	1	0.4	0.4	100.0
Total	223	100.0	100.0	

Source: Field Survey (2022)

In Table 2, 136 studied respondents in Rivers State of Nigeria (61.0%) were between 20 and 35 years of age, 62 of them (27.8%) were between 36 and 45 years of age, 24 of them (10.8%) were between 46 and

55 years of age, while only one of them (0.8%) was between 56 and 65 years of age.

4.1.2. Gender of respondents

Table 3: Frequency distribution showing the gender of respondents

Gender of respondents	Frequency	Percent	Valid Percent	Cumulative Percent
Male	121	54.3	54.3	54.3
Female	102	45.7	45.7	100.0
Total	223	100.0	100.0	

Source: Field Survey (2022)

Table 3 revealed the gender of the studied respondents in Rivers State of Nigeria. From the table, 121 studied respondents in Rivers State of Nigeria (54.3) were males, while the remaining 102 respondents

representing 45.7% were female respondents in Rivers State of Nigeria.

4.1.3. Marital status of the studied respondents

Table 4: Frequency distribution showing the marital status of the studied respondents

Marital status of respondents	Frequency	Percent	Valid Percent	Cumulative Percent
Single	136	61.0	61.0	61.0
Married	87	39.0	39.0	100.0
Total	223	100.0	100.0	

Source: Field Survey (2022)

In Table 4, 136 studied respondents in Rivers State of Nigeria (61.0) were single, while the remaining 87 respondents in Rivers State of Nigeria (39.0%) were married.

4.1.4. Educational background of the studied respondents

Table 5: Frequency distribution showing the studied respondents

Education Background	Frequency	Percent	Valid Percent	Cumulative Percent
Primary	1	.4	.4	.4
Secondary	16	7.2	7.2	7.6
OND/NCE	9	4.0	4.0	11.7
HND/B.Sc	106	47.5	47.5	59.2
M.Sc/Ph.D	91	40.8	40.8	100.0
Total	223	100.0	100.0	

Source: Field Survey (2022)

From Table 5, 1 of the studied respondents in Rivers State of Nigeria (0.4%) had primary education, 16 of them (7.2%) had secondary education, 9 of them (4.0%) had OND/NCE, 106 of them (47.5%) had HND/B.Sc, while the remaining 91 (40.8%) had

M.Sc/Ph.D. This implies that majority of the studied respondents in Rivers State of Nigeria had formal education and were qualified to participate in the study.

4.1.5 Mobile Payment

Table 6: Frequency distribution showing responses on mobile payment by the studied respondents in Rivers State of Nigeria

Descriptive Statistics					
	Item	N	Mean	Std. D	Remark
MP1	You find it more convenient using online payments platforms	223	4.37	.939	Accepted
MP2	You find it easy to make payments for services through digital payment platforms	223	4.40	.900	Accepted
MP3	You find it easy to transfer money via your mobile phone	223	4.70	.712	Accepted
MP4	There is reduced risks of loss and other financial crimes through digital-based transactions	223	3.69	1.238	Accepted

Source: Field Survey (2022)

Table 6 shows the mean scores and standard deviation of the responses on mobile payment by the studied respondents in Rivers State of Nigeria. The criterion for mean score acceptance was 3.0. The table above showed that “You find it more convenient using online payments platforms” was at the mean score of 4.37, “You find it easy to make payments for services through digital payment platforms” was at the mean score of 4.40. Also, “You find it easy to transfer money

via your mobile phone” was at the mean score of 4.70, and “There is reduced risks of loss and other financial crimes through digital-based transactions” was at the mean score of 3.69. Based on the criteria for mean score acceptance, the above statement items were positively correlated to mobile payment by the studied respondents in Rivers State of Nigeria.

4.1.8 Consumption Expenditure

Table 7: Frequency distribution showing responses on consumption expenditure by the studied respondents in Rivers State of Nigeria

Descriptive Statistics					
	Item	N	Mean	Std. D	Remark
CE1	Use of digital money platforms increases your household expenditure	223	3.51	1.368	Accepted
CE2	Digital financial platforms have reduced your household expenditure	223	2.74	1.386	Rejected
CE3	Financial access has increased profitability for your business	223	4.00	1.051	Accepted
CE4	Digital financial services have a positive effect on the standard of living of your family	223	4.11	.994	Accepted
CE5	Most of your household expenditures are made through digital financial platforms	223	3.97	1.137	Accepted
CE6	You have access to many sources of finance through numerous digital platforms	223	4.01	1.084	Accepted

Source: Field Survey (2022)

Table 7 shows the mean scores and standard deviations of the responses on consumption expenditure by the studied respondents in Rivers State of Nigeria. The criterion for mean score acceptance was 3.0. The table above showed that the statement item “Use of digital money platforms increases your household expenditure” was at the mean score of 3.51, “Financial access has increased profitability for your business” was at the mean score of 4.00, and “Digital financial services have a positive effect on the standard of living

of your family” was at the mean score of 4.11. Furthermore, the statement item that “Most of your household expenditures are made through digital financial platforms” was at the mean score of 3.97, while “You have access to many sources of finance through numerous digital platforms” was at the mean score of 4.01. Based on the criteria for mean score acceptance, majority of the above statement items were positively correlated to consumption expenditure by the studied respondents in Rivers State of Nigeria.

4.2 Regression Result

Table 8: Relationship between mobile payment technology and consumption expenditure in Nigeria

Variable	Coefficient	Std. Error	t-value	p-value
(Constant	3.320	0.224	14.840	0.000
Proactiveness	0.188	0.058	3.267	0.001
R	0.495			
R ²	0.446			
Adjusted R ²	0.374			
F-statistic	28.440			

Source: Field Survey (2022)

The regression result in Table 8 shows that number of mobile payments was positively and significantly related to consumption expenditure of the studied respondents in Rivers State of Nigeria. The number of mobile payments was significant at 5% probability level and positively affects consumption expenditure of the studied respondents in Rivers State of Nigeria. This implies that consumption expenditure of the studied respondents in Rivers State of Nigeria is greatly dependent on the number of mobile payments made by the studied respondents. As the number of mobile payments made increases, consumption expenditure of the studied respondents in Rivers State of Nigeria also increases and vice versa. The F-statistic in the regression above was 28.440 and significant at the 5% probability level indicating that the model specification was correct.

The estimated regression equation shows that consumption expenditure of the studied respondents in Rivers State of Nigeria is a linear function of number of mobile payments. The r^2 value of 0.446 indicates that 45% of the variation observed in consumption expenditure of the studied respondents in Rivers State of Nigeria was caused by number of mobile payments. This assertion is at the 95% confidence level. With this result, the null hypothesis which states that there is no significant effect of the number of mobile payments on consumption expenditure in Rivers State, Nigeria is rejected and the alternative hypothesis accepted. It can therefore be concluded that there is significant and positive effect of the number of mobile payments on consumption expenditure in Rivers State, Nigeria.

4.3 DISCUSSION OF RESULT

The regression result shows that number of mobile payments was positively and significantly related to consumption expenditure of the studied respondents in Rivers State of Nigeria. This implies that consumption expenditure of the studied respondents in Rivers State of Nigeria is greatly dependent on the number of mobile payments made by the studied respondents. The result aligns with previous literature (Demir *et al.*, 2020; Fouejieu *et al.*, 2020; Koomson *et al.*, 2020; N'Dri & Kakinaka, 2020; Omar & Inaba, 2020) as they found significant and positive effects of mobile payments on household consumption. For

instance, a person who has access to financial services that facilitate the number of mobile payments will experience poverty reduction (Fouejieu *et al.*, 2020). On the overall, financial inclusion has a positive impact on the reduction of poverty index, increases standard of living, boost economic activities and thus engender economic growth.

5. CONCLUSION AND RECOMMENDATIONS

Ensuring access to payment services, their control and the mobilization of financial resources are key to poverty alleviation in Nigeria and Rivers State in particular. This study has empirically examined the effect of mobile payment technology on poverty alleviation in Rivers State of Nigeria. The study findings clearly indicate that digital payment platforms are found to exert significant impact on poverty level and improve standard of living. Specifically, the result shows that number of mobile payments positively and significantly affects consumption expenditure of the studied respondents in Rivers State of Nigeria. The conclusion of these findings is that mobile payment technology is a major tool in the alleviation of poverty particularly in developing country like Nigeria. Based on the findings of this study, the following recommendations were made;

1. The Central Bank of Nigeria should intensify its efforts in trying to make the country cashless economy. More digital financial solutions should be made available in both urban and rural areas. This will encourage accessibility to financial services at affordable cost for poverty alleviation purposes.
2. To further reduce poverty, more optimal digital financial measures must be put in place to educate the low-income earners especially those in the rural areas on the use of financial services and products.
3. Digital infrastructure should be brought close to the rural communities with proper education and advocacy on use and functions. Non smart phones should be designed to be compatible to make use of financial products.

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