*Full Length Research Paper*

# Challenges to the efficient use of point of sale (POS) terminals in Nigeria

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The relevance of efficient payment systems is a subject of interest to all stakeholders. This study analyzed the challenges to the efficient use of point of sale (POS) terminals in Nigeria. Socio economic characteristics of users and non users were also examined. Cross sectional data were collected from 650 randomly sampled respondents from 20 local government areas of Lagos State, Nigeria. Data collected were analyzed using Friedman and Kendall ranking order test. The finding of this study showed that that the most challenging factor to the efficient use of POS is network failure, frequent power outage; limited numbers of POS per merchant store where they are available, security of communication over the network and unavailability of the POS at all merchant stores. Efforts at improving the security of transactions is recommended in order to drastically reduce excess cash flow especially in developing economies.

**Key words:** Debit cards, payment pattern, point of sale terminal, Nigeria.

## INTRODUCTION

The role and importance of efficient payment systems has been closely monitored and promoted by monetary authorities in all countries. However, the Nigerian pay-ment system that is cash-driven cannot and has not guaranteed the much needed efficient and effective transactions required for a sustainable economic development. Among the problems often associated with cash transactions are armed robberies, use of counterfeit bank notes, frauds, inconveniences of carrying large quantities of currency notes, long period of waiting in bank halls, frequent trips to banks, frequent printing of bank notes (Nnanna and Ajayi, 2005).

Most economies of sub Saharan Africa countries is cash based. This is often associated with high cost of cash management in these countries. For example in Nigeria, over 90% of funds circulate outside the banking sector (Ojo, 2004; Ovia, 2005). According to Central Bank of Nigeria (CBN, 2011), the cost of cash

management in 2009 was N114.6 billion and grew to N135 billion and N166 billion in 2010 and 2011 respectively. The apex institution projected that the cost of managing cash will hit N192 billion by 2012. These cost arises from frequent printing of currency notes, currency sorting, cash movement, keeping large amount of cash, security cost of checking high incidences of robbery and burglaries to mention a few. This has made Nigeria cash-dependent, cash loving and cash carrying society, as an average Nigerian businessman prefer cash transactions.

Reliance on cash based economy has however been found to be risky and cumbersome because money outside the banks cannot be subjected to regulatory and operational procedures, and the ability of monetary policy to achieve set objectives in the presence of sizeable currency out of Bank (COB) is therefore limited. This cash carrying character of the economy is also

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responsible for large pool of money in the hands of the unbanked citizens.

In order to reduce the volume of cash in circulation and reduce the risk of going about with cash, the CBN introduced electronic payment system such as payment cards (smart card) and paper- based instrument to the country. This has encouraged e-payment initiatives such as the establishment of switching companies that facilitate interconnectivity, introduction of payment instruments such as point of sale (POS) terminal and automated teller machine (ATM) which gave rise to significant growth in the use of electronic payment systems (Salimon, 2006). Speculation however exists on the possible challenges to the use of the payment system. This concern necessitate this study which is aimed at providing information on possible challenges to the use of POS terminals and the characteristics of its consumers that could influence such challenges.

Generally, electronic payment system (e-Payment) refers to an electronic means of making payments for goods and services procured online or in supermarkets and shopping malls. It enables websites and shopping malls to securely process transactions in real time. It operates on a smartcard that stores information on microchips. The microchip contains a purse in which monetary value is held electronically. The electronic payment system takes several forms. This payment system provides a better audit trail than transactions that involve physical cash and thus reduce the amount of currency in circulation. The CBN strategic plan on payment system is to ensure that a larger proportion of currency in circulation is captured within the banking system, thereby enhancing the efficacy of monetary policy operations and economic stabilization measures. While there is volume of studies on e-payment system such as ATM, there has been dearth of literature on POS especially factors influencing its adoption among the consumers.

In spite of the practice of modern payments system in the world with their attendant advantages for both consumers and financial institutions, it has not become mainstream activities in Nigeria (Kolodinsky, 2004). Nigerian consumers and banks apparently still regard "in-person banking" as a more important method for money transacttions. This cash-based payments system is responsible for the ₦545.8 billion currently in circulation (CBN, 2004). This represents about 90% of the total volume of cash in circulation compared to 4 and 9% in the UK and the USA respectively (Ovia, 2005). Despite the overwhelming superiority of electronic payment options, business–to–business transactions are still pre-dominantly consummated in Nigeria with the use of cash and to a limited extent bank's cheques or certified cheques.

The unintended social and economic costs (risks and inconveniences) associated with cash transactions are alarming. The most obvious has to do with insecurity (considering daily loss of lives from the activities of fraudsters, and armed robbers) as enhanced and encouraged by cash payments system. There is also the inconvenience of carrying larger volume of currency notes, the use of counterfeit banknotes, time loss as a result of long period of waiting and making frequent trips to banks. The monetary authorities also bear the high cost of printing bank notes due to the short life cycle of notes, and the cost of moving large amount of cash from banks to banks and across the country. Over-dependence on cash for transaction also implies that much cash is held outside the banking system, which naturally reduces the capacity of banks to lend to the productive sectors of the economy.

It is for some of these reasons that a forward-looking economy should seriously think of embracing the modern payments system, such as credit card, electronic money, electronic fund transfer, Automated Teller Machine (ATM) and debit card. Debit card is particularly important in a growing economy as Nigeria. For instance, debit card will promote better services to customers, because it is a very fast and speedy means of financial transaction. It is more efficient than cash, and, there will be drastic reduction in the printing of bank notes. It will remove the high cost of handling and printing notes. It will also increase profitability due to considerable reduction in overheads and most importantly, it will enhance security of life and property from armed robbery incidences that have become a common phenomenon in the country. Debit card will also make it possible for more money to be available to lend to the productive sectors of the economy. This will bring about positive impacts on economic growth and global competitiveness.

However, to ascertain the enumerated benefits of this payment instrument, there is a need to analyze possible challenges to the efficient use of POS terminals determine. In fact the global trend in the use of electronic payment system, particularly the growing popularity of e-commerce calls for studies such as this. However, the empirical studies that are related to the use of debit card, as a payment instrument are foreign researches conducted in advanced countries of the world. This is the gap that this study hopes to fill.

## Historical evolution of financial payments systems

Historically, societies, world over had used various means of exchange before the cash and cheque system. Over decades, payment systems have passed through a lot of transformation. For instance, before 700 BC when cowries were introduced in Asia Minor, barter remained the only medium of exchange. Trade was carried out by goods being exchanged for other goods before money came to be used. Trade by barter encountered some serious problems such as the problem of double coincidence of wants, absence of common standard of value, problem of storage, indivisibility of some goods,

and impossibility of standard of differed payment (Taiwah, 1978).

In view of all these problems, money was developed as a medium of exchange. However, with the introduction of coins and notes, the era of cash as payment system emerged. In A.D. 1000, first notes appeared in China. This was later followed by the use of cheque as written instructions to transfer precious metal coins from one holder to another. Thus, the period of barter was later succeeded by another system, which featured the use of multiplicity of coins and commodity money such as metal coins, cowries, brass, and copper bracelets (Nnanna and Ajayi, 2005).

According to Ovia (2005), the notes and coins issued by the Central Bank of a country constitute the currency or cash for that country. Currency is made up of a country's notes and coins. It is a means of payment that a debtor can legally compel his creditor to accept. In Nigeria and other West African countries, greater use is made of currency than cheques or other means of exchange. The opposite is the case in the advanced countries like Britain, USA, Germany, and France where the use of cheques accounts for about 90% in all business transactions (Ovia, 2005). It is usually argued that "money" is what money does. In this sense, other instruments of payment like cheques, postal orders, money orders, bills of exchange and postal stamps are money. These are, however not "true money" in Nigeria since they cannot be spent everywhere in their present forms.

The motivation behind the excessive desire to hold money, that is, to keep one's resources in liquid form instead of investing it by Nigerians is of interest to economists. This is because holding money involves loss of the interest it might otherwise have earned if it were invested. Another consequence of holding liquid money may be looked at from the security perspective. Among advanced reasons for this practice were ignorance, illiteracy, and lack of appreciation of the merits of digital payment instruments such as debit card which does not involve the use, touch, and transfer of liquid fund (Ovia, 2005). Social miscreants and fraudsters over the years have studied Nigerian financial system that is mainly cash-based and thus identified banks, financial institutions, companies, churches, mosques and rich individuals as targets. In view of the above, this study seeks to evaluate the challenges to the efficient use of point of sale terminals in Nigeria.

## METHODOLOGY

The study was carried out in Lagos State. The state represents one of the most urbanized zones in Nigeria where electronic payment system is mostly being used. Lagos is Nigeria's financial, commercial and industrial nerve center with over 2,000 manufacturing firms and over 200 financial institutions including the nation's premier stock exchange, the Nigeria Stock Exchange. Primary data was used for this study through the use of structured questionnaire on electronic payment system. The questionnaire covered aspects of socio-economics of consumers, adoption of POS technologies, challenges facing the use of POS, and reasons for non use by other debit card users. The sampling frame consists of bank customers in Lagos state that operated either savings or current accounts and who usually buy goods and services from business organizations who operate POS facilities. The POS terminal outlets in Lagos state include-super markets, hotels, petrol stations, eateries, airlines, schools, companies and pharmaceutical stores. These establishments accept the use of POS.

Multistage sampling technique was used. Five local governments' area of Lagos state where the use of POS is concentrated was purposively selected. These included Lagos Island, Lagos Mainland, Ikeja, Victoria Island and Ibeju Lekki. This constituted first stage of sampling. Then the consumers were stratified into two: the first group was bank customers with savings or current account patronizing merchants with POS terminals, while the second group was other electronic payments users. This constitutes second stage of sampling. The last stage of sampling procedure involved random sampling of consumers from the merchants' customers having savings or current account using POS in the selected local governments' area and the second group who constitute other electronic payments users.

A total of 650 respondents were sampled for this study. 400 consumers were sampled from the merchants' customers having savings or current account using POS in the selected local governments' area while 250 was sampled among the second group who constitute other electronic payments users. Data collected were analyzed using descriptive statistics and Friedman and Kendal's mean rank.

## RESULTS AND DISCUSSION

### Socio economic characteristics of consumers

#### Age of the respondents

For any technology adoption, age of the consumers is very crucial in that age has an important bearing on the decision making process. The age distribution (Table 1) of consumers ranged between 18 and 51 years and above with a mean value of about 40.4 years for the pooled data, 41.2 years for the users while that of the non-users was about 39.8 years, this suggests that there were younger people involved in the adoption of point of sale terminals than older ones. Further, the result indicates that majority of the consumers are within the active working age. Majority (57%) of the consumers interviewed fell between 18 and 30 years. About 53.1 and 57.4% of the users and non-users belong to this age category. This suggests that the consumers sampled were in their economic useful year. This is consistent with the result of Tan (2000) that the majority of people participating in the adoption of point of sale terminals are within 18 and 30 years age bracket. The t-test conducted shows that there is significant difference between the ages of users and non-non-users in the study area. The age groupings according to the average value and the distribution correspond to the category of people who could be willing to make many transactions and would also be willing to try new practices and inventions.

**Table 1.** Age distribution of respondents.

| Distribution | Users | | Non-users | | Pooled | | Test of significance |
|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | |
| 18 - 30 years | 192 | 54.7 | 105 | 58.3 | 297 | 55.9 | |
| 31 - 40 years | 120 | 34.2 | 55 | 30.6 | 174 | 33.0 | |
| 41 - 50 years | 32 | 9.1 | 13 | 7.2 | 45 | 8.5 | |
| 51+ years | 7 | 2.0 | 7 | 3.9 | 14 | 2.6 | 3.801* |
| Total | 351 | 100 | 180 | 100 | 531 | 100 | |
| Mean | 41.2 | | 39.8 | | 40.4 | | |

Source: Field Survey, 2011.

**Table 2.** Gender distribution of respondents.

| Gender | User | | Non-user | | Pooled | | Test of significance |
|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | |
| Male | 196 | 55.4 | 89 | 49.7 | 285 | 53.4 | |
| Female | 156 | 44.6 | 90 | 50.3 | 246 | 46.4 | -0.345 |
| Total | 352 | 100 | 179 | 100 | 531 | 100 | |

Source: Field survey, 2011

### Gender distribution of respondents

Table 2 presents the distribution of consumers according to gender. The result shows that there were more male consumers (53.4%) than female in the study area. Gender distribution by users and non-users follows the same trend. There is no significant difference between the gender of users and non-users, indicating that the proportion of gender of users and that of non-users of point of sale terminal is similar. Research on gender differences indicates that men tend to be highly task-oriented and therefore performance expectancies, which focus on task accomplishment, are likely to be especially salient to men. The result of the t-test shows that there is no statistical difference between gender distribution of users and non-users.

### Family size of respondents

In any economy, family size is an indication of consumption pressure faced by each individual. This explains the interest in family size as a socio-economic variable. The distribution of consumers based on the family size in Table 3 reveals that the mean household size for the pooled data was 3.74, 3.75 for users and 3.70 for non-users. The majority of the consumers (21.3%) had a family size of 4 members and the distribution for both the users and non-users were 4 and 2 members respectively. About 23.4% of the users are found in this category while about 18.9% of the non-users belong to the category. The t- test conducted shows a significant difference between the users and non users in terms of family size.

### Level of education

The importance of education in the determination of adoption decisions cannot be overemphasized. This is because education enables an individual to be decisive, more efficient; and more responsive to positive innova-tion. The distribution of consumers according to level of education is presented in Table 4. The level of education varies from West African Examination Council, National diploma/National College of Education, Higher national Diploma/ Bachelor degree and Post Graduate Degree. The number of years spent in school varies from 6 to 16 years.

Over half (52.95%) of the users possess first degree and above. The implication of this is that there is the tendency for adoption of electronic payments system especially point of sale terminals with people of higher education. This result is consistent with the findings of Carrow and Staten (1999) where high education was found to be associated with greater use of electronic payment.

In a similar study conducted by Borzekowski et al. (2006), it was found that ATM use increases with level of education. The result of the t-test however show there is no statistical difference between the level of education of users and non-users.

**Table 3**. Family size of respondents.

| Family size | User | | Non-user | | Pooled | |
|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % |
| 1 | 27 | 8.9 | 19 | 12.8 | 46 | 10.2 |
| 2 | 40 | 13.2 | 28 | 18.9 | 68 | 15.1 |
| 3 | 66 | 21.8 | 20 | 13.5 | 86 | 19.1 |
| 4 | 71 | 23.4 | 25 | 16.9 | 96 | 21.3 |
| 5 | 45 | 14.9 | 22 | 14.9 | 67 | 14.9 |
| 5 and above | 54 | 17.8 | 34 | 23.0 | 88 | 19.5 |
| Total | 303 | 100 | 145 | 100 | 451 | 83.4 |
| Mean | 3.75 | | 3.70 | | 3.74 | |
| Median | 4 | | | | | |
| t-test | | | | | | 3.1725 |

Source: Data analysis, 2011.

**Table 4.** Level of education of respondents.

| Marital status | User | | Non-user | | Pooled | |
|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % |
| WAEC/SSCE | 68 | 19.0 | 37 | 27.59 | 105 | 19.4 |
| ND/SSCE | 96 | 26.8 | 34 | 31.03 | 130 | 24.0 |
| HND/BA/B.Sc | 153 | 44.0 | 93 | 1.37 | 246 | 45.8 |
| M.Sc | 34 | 9.7 | 16 | 28.28 | 50 | 9.2 |
| Total | 350 | 100 | 179 | 100 | 531 | 100 |
| Mean | | 4.16 | | 4.01 | | 4.11 |
| T-test | | | | | | -0.3382 |

Source: Data analysis, 2011.

**Table 5.** Marital status.

| Marital status | User | | Non-user | | Pooled | |
|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % |
| Single | 203 | 59.4 | 109 | 61.6 | 312 | 60.1 |
| Married | 128 | 37.4 | 60 | 33.9 | 188 | 36.2 |
| Divorce | 6 | 1.8 | 6 | 3.4 | 12 | 2.3 |
| Widow | 5 | 1.4 | 2 | 1.1 | 7 | 1.3 |
| Total | 342 | 100 | 177 | 100 | 519 | 100 |
| Mean | 1.45 | | 1.44 | | 1.44 | |
| t test | | | | | | -3.453 |

Source: Data analysis, 2011.

### *Marital status*

Result presented in Table 5 show that majority (60%) of the consumers are single. 59.4 and 61.6% of the users and non-users of point of sale terminals are single respectively. This result indicates that new innovation spreads more among the single individual than their married counterpart. The t-test shows that there is statistically significant difference between the consumers of different adoption status.

### Challenges to the efficient use of POS

The results of the challenges to the use of POS as expressed by the consumers are presented in Table 6.

**Table 6.** Challenges to the efficient use of POS.

| | Ranking test diagnostics | |
| --- | --- | --- |
| | **Friedman and Kendal's mean rank** | **Chi-square statistics** |
| Unavailability | 4.44 | |
| Network failure | 4.85 | |
| Frequent power outage | 4.49 | 37.032[*] |
| Security | 4.24 | |
| Limited number of POS | 4.15 | |

Source: Data analysis, 2011, *, significant at 5%.

The challenges to the efficient use of POS were evaluated using both Friedman and Kendal's raking order test. The ranking diagnostics test as measured by chi-square statistics was significant at 0.05 levels. The ranking test value for both Friedman and Kendal were the same. This is consistent with a priori if the specification is significant. The result indicates that the most challenging factor to the efficient use of POS is network failure. This is closely followed by frequent power outage; limited numbers of POS per merchant store where they are available, security of communication over the network and unavailability of the POS at all merchant stores. Security is being defined as a threat which creates circum-stance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, and modification of data, denial of service and/or fraud, waste, and abuse (Kalakota and Whinston, 1997). Under this definition, in the context of online banking threats can be made either through network and data transaction attacks or through unauthorized access to the account by means of false or defective authentication. According to Milind (1999), security risk is a significant impediment to the adoption of online banking. Further, it has been stated in numerous studies that the greatest challenge to the electronic banking sector was winning the trust of customers over the issues of privacy and security (Bestavros, 2000).

## Conclusion

The relevance of efficient payment systems is a subject of interest to all stakeholders. However, the Nigerian payment system that is cash-driven cannot and has not guaranteed the much needed efficient and effective transactions required for a sustainable economic deve-lopment. This study analyzed the challenges to the efficient use of Point of sale terminals in Nigeria. The finding of this study showed that that the most challenging factor to the efficient use of POS is network failure, frequent power outage; limited numbers of POS per merchant store where they are available, security of communication over the network and unavailability of the POS at all merchant stores.

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