DETERMINANTS OF HOUSEHOLD-HEAD USAGE OF AUTOMATED TELLER MACHINE (ATM) IN A TRANSITION ECONOMY: EXAMPLE FROM NIGERIA

By

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Covenant Journal of Business and Social Sciences (CJBSS) Vol. 5, No. 1, June, 2013. Covenant Journal of Business and Social Sciences (CJBSS) Vol. 5, No. 1, June, 2013.

Abstract: Studies of ATM usage by household-head in developing countries are often a difficult effort considering the complexity of variants affecting household spending. This paper investigates the use of ATM in Nigeria. Sixty-six social-economic variables were selected in the study. The factor analysis method reduces the Sixty-six variables to nine orthogonal factors. The result of the stepwise regression method identified four factors: Household Acceptability Index (HAI = 65.2 %); Household Time Spent in Withdrawing Money (HTSWM =14.5%); Household Source of Income Index (HSY = 13.3%) and Household Perception on ATM Machine Performance (HPAMP= 4%). All of this together contributes 97% explanation to household ATM usage in the study area. These four factors are relevant to sustainable cashlite economy being implemented in phases by the federal government of Nigeria.

Key words: Household, ATM, Payment System, Cashlite,

I. Introduction

A number of innovative products for making payments have been developed in recent years, taking advantage of the rapid technological progress and financial market development. Payment system using cash, cheque and credit card, through Information Technology are used to communicate payment and fund transfer processes among Nigerian banks. One of the most recent payment method developed is Automated Teller Machine (ATM) which has a much smaller average value that are dispense to users at much greater daily volumes, designed for each machine. This payment method which was introduced less than two decade in Nigeria financial system has been found to be efficient and reliable (Adeoti, 2011; Emeka and Favour 2012). However, an efficient payment system will lead to higher velocity of money, which in turn promotes economic growth. There exist positive relationship between

efficiency of the National Payment System (NPS) and the Gross Domestic Product (GDP). It has been confirmed that about 10% increase efficiency in NPS will yield 1% increase in GDP ceteris paribus (CPSS, 2004; Islam et al, 2007; Toby, 1998; Akrani, 2011; Batiz-Lazo and Barrie, 2005; Bellis, 2007; Emeka and Favour, 2012; Okwe, 2011).

Initial form of payment was trade by barter with its attendance drawback of cumbersome and time-consuming requirement of double coincidence of want before exchange could take place. The introduction of "money" to the payment system solves these notable challenges. Money now become medium of exchange, while the earliest form of money was precious metal like gold, copper and cowries. Hence, the various advantages of paper money can be appreciated over earlier forms of money (Adeyemi, 2006; Uchendu, 2009; Ojo, 1992). The Central Bank of a Country is charged with the responsibility of issuing legal tender currency of their respective economy for instance Central Bank of Nigeria. They are expected to give the public, adequate quality of supplies of currency notes and coins in good quality (Adeyemi, 2006; Adedipe, 2000: Adeloye, 2008)

The Nigeria Inter-Bank Settlement System (NIBSS) PLC is a shared infrastructural company of the Bankers' committee and CBN which acts as the center piece of the Nigeria Payment System. They offer alternatives to cash payment which are: Cheque Truncation Initiative, NIBSS Electronic Fund Transfer, NIBSS instant payment, and Nigeria Central Switch. The recent cashless policy of the Central Bank of Nigeria further complement the expansion of ATM into every part of the country and introduction of various point of sales that can also accept ATM cards for payment of goods and services. This will no doubt discourage carriage of huge cash by private individuals and corporate organizations. Evidences that Nigeria's financial payment system is still deficient are glaring and they include; a heavily cash-driven economy, inefficient and costly settlement processing, extensive and expanding informal economy and huge amount of currency outside the banking system.(Soludo, 2005; Fanawopo, 2006; Olatokun and Igbinedoin 2009; Okwe, 2011; Eni, 2011; Adeoti, 2011).

In 2009, CBN spent N114.5 billion on cash management services apart from what the commercial banks spent on security on money in transit. It has been argued by the apex bank that high cash usage is associated with increase level of corruption, money laundering and leakages in financial system (Sanusi, 2011). Therefore, the bankers committee which comprises CBN, NDIC, Discount House and the 24 Deposit Money Banks in Nigeria initiate the idea of cashless (later change to cashlite) economy in Nigeria. With the introduction of

pilot take-off in Lagos in 2012 fiscal year, it is observed that it will increase financial inclusion of Nigerians and consequently improve GDP matrix significantly. Hence, the need to investigate the household-head acceptability and usage of this relatively new financial product in Nigerian metropolitan cities using Ilorin as our case study. The remaining part of this research work covers: conceptual clarification and theoretical framework, methodology, discussion of results and conclusion.

II. Conceptual Clarification and Theoretical Framework

It is a common knowledge that contemporary Nigeria's financial payment system has come a long way from 1894 when Bank of British West Africa (BBWA) introduced coins as a means of settlement of trade transactions and debts. Today however, the financial payment system boasts of many institutions, instruments and processing mechanisms. Some of the institutions include the Central Bank of Nigeria, money deposits banks, discount houses and other financial institutions. The instrument range from bank notes to cheques, drafts, dividend warrants, standing orders, credit cards and Automated Teller Machines. Besides the increased number of institution and instruments, the mechanism of settlement processing in place has increased from the Cheque Clearing System introduced by the CBN in 1961 to Magnetic Ink Character Recognition (MICR) system, the Nigeria Inter Bank Settlement system (NIBSS) and the Nigeria Automated Clearing System (NACS) introduced in 1991, 1993 and 2002 respectively.

Also, Sean (2003) in Canada reported that, the principal system for clearing and settling payments between financial institutions are operated by the Canadian Payments Association (CPA). The CPA is a private member – owned, non -profit organization incorporated under Canadian Payment (CP) Act. The member of the CPA is the financial institution that provides payment accounts, instruments, and services to individuals and businesses. They are eligible under the CP Act to participate directly or indirectly in the CPA's clearing and settlement systems. The CPA's retail system is the Automated Clearing Settlement System (ACSS). The Direct participants in the ACSS hold settlement accounts at the Bank of Canada and have access to the Bank's credit facilities. ACSS payments are cleared through several streams (or subsystem). The gross payables and receivables of each participant in each stream are combined and netted over all the participants. The clearing and settlement functions of the ACSS are highly integrated within the system.

However, ATM is such type of innovation that can mechanically accepts deposit, issue withdrawal; transfer funds between accounts, collect bills and make small loans. It should be noted that ATM services

occurred for three reasons as reported by Professor Penny: first, financial institutions hoped to "improve their competitive position by attracting customer accounts and … increase their revenues by increasing loans, creating higher balances, and enhancing their financial services packages." Second, ATMs are designed to perform many of the same tasks as a human teller at a lower cost. Finally, Professor Penny noted that some financial institutions made ATM decisions based on marketing considerations. For example, before building a new branch, one financial institution in Florida used its ATM to test whether the location would support a branch office. Financial institutions have also used ATMs to encourage the direct deposit of payroll (Pidgeon, 2000; Enyinnaya, 2011).

Furthermore, Islam et al (2007) reported that in Bangladesh a broad spectrum of electronic banking services is available with different degree of penetration. Credit card service is provided by 23.1% of banks (PCBs and FCBs). Among other electronic banking services are tele-banking (19.2%), electronic fund transfer (15.4%) and ATM (15.4%). It was argued that ATM was gradually becoming popular in major cities and that some foreign banks provide electronic fund transfer services, while a group of local banks in 90's introduced shared ATM network, which has increase availability of this type of electronic banking services. The network later extended to other part of the country (Raihan et al, 2001).

Moreover, business to business (B2B), business to customer (B2C) and person to person (P2P) payment are common types of payment transactions carried out through the use of ATM in Nigeria. Payment transaction in all these models use additional security measures involving both hardware and software encryption tools. Payment can be made over the internet using traditional credit and debit card or electronic money instrument, debit or credit transfers and also by providing dematerialized invoices to customers to enable them to make payment under Electronic Bill Presentment and Payment (EBPP) schemes. In addition, we have P2P funds transfer services, which enable card to card transfer. It was developed by Visa (Visa Direct) and Master Card (money send) and they are in use worldwide (CPSS, 2004)

Most global shared transaction systems for credit card payments are operated by organizations such as Visa, MasterCard, and American Express. These are typically on-line transaction systems which allow the card –holding customers of member institutions to access their credit lines immediately and their retail business customers to acquire authorized payments. The communication services of the transaction systems, along with the standards and protocols for the electronic payment instructions, are

designed and operated by the network service providers associated with the credit card organization (Sean, 2003; Agboola, 2006).

The principal debit and ATM –card transaction systems in Nigeria are also shared networks. Interac, for example, connects proprietary ATM networks of the individual member institutions via it Shared Cash Dispensing (SCD) system, which allows customers of a deposit-taking institution to withdraw cash from their accounts using ATM of another member institution. Indeed, some organizations only participate in the SCD system through the operation of the networks of ATM machines, without providing any deposit services to customers. They provide cash to the deposit customers of other institutions and are reimbursed through interbank transfer over ACSS. Interac also interconnects the networks of participating institutions for Point-Of-Sale Electronic Funds Transfer (EFT/POS) through its Interac Direct Payment (IDP) system. In this case, merchants obtain IDP – equipped terminals from either their deposit-taking institutions or an independent non – financial service provider to allow holders of Interac-enabled debit card issued by other institutions to make verifiable, real-time payments to the merchant (Emeka and Favour 2012). Clearly, some of the broad aims of every effective and efficient payment system are to eliminate delays in settlement, reduce transaction costs, minimize the volume of cash transactions in the economy, ensure convenience and facilitation of greater volume of economic activities and hence, productivity. A payment system that fails to achieve these basic objectives operates sub-optimally and therefore begs for improvement (Adeyemi, 2006; Adeloye, 2008; Eni, 2011; Okwe, 2011; CBN, 2010).

However, the declining cost and increasing availability of high-quality IT hardware, software and network communications have encouraged the global developments and adoption of new electronic payment instruments and transaction system. Financial institutions in Nigeria have led the trend to replace paper-based currency and cheques with lower-cost electronic payment media, including payment cards and automated electronic funds transfers. The shift toward electronic payments prompted financial institutions to invest further in the development of both proprietary and shared electronic transaction systems and network arrangement such as their own Internet and tele-banking systems and shared Interac networks. Although costly to develop and install, these system have comparatively low costs per transaction so that benefits are achieved through broad usage. Consequently, the participating institutions have promoted their use among retail and corporate clients through financial incentive service-bundling.

From theoretical perspective, the Modernization theory, a macro sociological theory forms the bases of this work. It argues that i 82 as the developing societies aspire to attain pattern of the West the goal is a 'moving target'. Thus, modernization is not a fixed condition. It is often seen as the period of transition during which a society shed its traditional characteristics such as particularistic, aspirative, self-oriented and functionally diffuses and become dominated by "modern" types of institution and action (Parsons, 1971). According to Emeka and Favour (2012) diffusion is seen as the process whereby the new nation changes to the appropriate direction, as well as learns from the mistakes of the older nations. For modernization theory, diffusion would occur through the interaction of two major groups and through this appropriate capital, technology, values and would be injected into the traditional society. The implication here is that in the developing societies, bank services fashioned along that of the West would help to play the role of modernizing agents. For modernization theory, social mobilization is an essential ingredient in the view of development. This is defined as the process in which major clusters of old social, economic and psychological commitments are eroded and broken and people become available for new patterns of socialization and behaviour. With this, people will be exposed to new structures, values and ideas which would make them ready to play new modern roles. Thus, the modernization thesis has been applied to explain changes occurring in all segments of society including agriculture, values, and education, banking, urbanization and technology (Deutsch 1961: McClelland 1961: Kolodinsky et al 2004; Levi, 1966).

III. Methodology

The objective of this research is to identify the major factors affecting ATM usage among household-head in Ilorin metropolis. Ilorin is one of the most developing cities in Nigeria and with a steady growth in human and material population. Consequently, primary data were collected from the study area using structural questionnaires; Seven hundred and twenty copies of questionnaires were administered to house hold-head. A purposive sampling method was adopted in this work. The data required in this study are mainly information on the Automated Teller Machine usage and on socio- e 203 characteristics of household-head such as size of household, age of respondents, education, household consumption pattern and spending rate. On the whole 66 socio-economic variables were generated. These variables are presented in table 1.

Descriptive and inferential statistical methods are used analyse the data collected for the study . Descriptive

methods were used in data summary. In addition, factor analysis and the stepwise regression methods were both employed in identifying the factors that determines the Usage of ATM by household-head. Variables with loading greater than 0.80 were selected for writing ATM usage model.

IV. Result and discussion

ATM Usage Characteristics of Respondents

Age of Respondent

The results presented in table 2 shows that 35% of the respondents are below the ages of 25 years, while 46% are between the ages of 25-49 years, 19% of the respondents are above the age of 50 years. The information obtained from the field shows that young-adult and woman household- head are mostly involved in ATM usage in the study area likewise in Ibadan as reported by Emeka and Favour (2012).

Education Status

From table 2, 15% of the respondents have no formal education, 14% attended primary education, 22% have secondary education and 49% have post secondary school education. Hence, most of the respondents have one form of education or the other.

Occupation Status of Respondents

About 7% of the respondents are retired, 10% are unemployed, 32% are serving civil servants, 6% are farmers, and 17% are artisan while 28% are traders (see Table 2). This implies that majority of the household- head respondents are in the working class of the study area.

Income of Respondent

Only 20% of the respondents earn above N23,000 per month, 45% earn between N17,000 to N23,000, 24% earn between N10,000 to N16,000, while minority of the respondents earn between N3,000 to N9,000 (Table 2). Hence, this low level of income will affect the pattern of household-head usage of ATM.

Number of People per Household

As reported in the Table 2, 47% of the sampled households are between 1 to 5 people, 32% are between 6 to 10 people, 13% of the household are between 11 and 15 people. While majority of the household are less than 6 people. This is expected in a civilized family setting of the study area in the study area which is mostly literate.

Frequency of Household Transaction on ATM per week

About 8% of household-head transaction on ATM is as low as less than twice per week. And 32% of the household-head transaction occurred between 2 to 4 times per week, while in 38% of the household-head transaction occurred moderately between 4 to 7 times per week. However, about 22% the household-head transaction occurred over 7 times per week. On the whole, the ATM usage in the study area generally fell short as the number of ATM machines available experience long queue at working hours of the day which systematically discourages users. Also, the machine

break down time and non dispense of cash at some critical time of the day especially in the evening time when more people will have use it cause this shortage.

Average Distance to Nearest ATM Machine

The result in table 2 show that 25% of respondent are located at an average distance of less than 2 km to available ATM point. And 23% of the household-head are 2 to 4 km to the nearest ATM point; while 52% of the respondents are located 4 to 6 km away from the nearest ATM point. Hence, majority of the household-head are close to one or more ATM machine either at home or working place. This is as a result of deployment of several machine by various bank's branches in Ilorin in preparation for the take-off of cashlite policy of the federal government of Nigeria.

Average Time Spent on ATM Transaction

The average time spent on ATM transaction vary from one household-head to the other 28% of the respondents spent about 5 minutes, 22% spend between 6 - 10 minutes, 24% of the respondents spent between 11 to 20 minute during usage of ATM machine. However, only 10% of the household spent above 20 minutes, while about 16% are not really sure of how much time they spend on transaction (Table 2). There is correlation between level of education and time spent on transaction by the respondents.

Factor of Household ATM Usage

The 66 socio-economic variables selected in this study are reduced to only 9 orthogonal factors. The pattern of loading, percent variance explained and their Eigen values are presented in Table 3.

Factor 1

Factor 1 is contributing 18.2% to the explanation of household ATM usage and strongly loaded on 4 variables namely: simple feature of ATM, easy operation, low card locking and high security. This factor is defined as quality of ATM index.

Factor II

Factor II has 14.2% contribution to the explanation of the quality of household ATM usage. It significantly loaded highly on two variables comprising age 25-49 and low branch services. This factor is tagged household perception index.

Factor III

This factor explains 12.1% of the variance. It strongly loaded on three variables which include low power supply, anytime withdrawal and source of power. This factor is defined as cost index of ATM usage.

Factor IV

This is index of availability of ATM. It explains 11.8% of the variance. It significant loaded on four variables namely: 24/7 time of operation, branch services, suitability of location, and power holding source.

Factor V

This factor contributes 11.3% to the variance. It is loaded highly on three variables namely: distance of 2-4km,

distance of 4-6km and four times a week withdrawal. This factor is suggestive of the level of accessibility to ATM. It is tagged ATM accessibility index.

Factor VI

This factor contributes 10.6% and loaded highly on four variables which are: post secondary education, income between 10,000-16,000, male respondents and household size 6-10 members. These are social wellbeing indicators. It is tagged social wellbeing index.

Factor VII

This factor contributed 8.7% to the variance in the explanation of the household-head ATM usage. It is highly loaded on banks namely: UBA, GTB and First banks. It is regarded as the index for ATM sources.

Factor VIII

This factor contributed 5.4% to the variance. It loaded significantly in average time spent on 5minutes ATM transaction, and some hour per day breakdown. It is designated as index of house hold time spent on cashing from ATM.

Factor IX

This contributes 5.0% explanation to the variance in the explanation of household ATM usage in Ilorin. It is loaded significantly on the occupational variables which are civil servant, traders and artisan. It is tagged occupational index.

Factors Affecting Household-Head ATM Usage

The result of the stepwise regression presented in table 4 suggests that four factors are relevant to the explanation of ATM usage in Ilorin metropolis. These factors contributed 97% explanation to household-head ATM usage in this area. They are accessibility to ATM (65.2%), average time spent on ATM transaction (14.5%) source of ATM (13.3%) and household perception on ATM activity (4%).

Household distance to available ATM point is an important factor of household ATM usage. The average distance covered before ATM is obtained has been found to guide ATM usage in the households. Where this distance is long, there are tendencies that household will tend to reduce frequency of ATM usage, because of the difficulty the will encounter in trekking to ATM points. Emeka and Favour (2012), while using Logit model reported that the most consistent and significant explanatory variable to ATM usage is relative distance. They reported that 50% increase in the relative distance of ATM will increase willingness use when the initial ratio to distance willingness to use ATM is equal to one (Dean, 2002).

Household average time spent in collecting cash from ATM is an important variant in household ATM usage. In almost all the public ATM point long queues are the order of the day. In addition, long distances are some time experienced. The amount of time spent on ATM usage is a subscript of the extent of the physical limitation experienced in ATM (Adeoti, 2011) have observed the

importance of time in ATM usage structure in Nigeria.

Household source of ATM is an important determinant in the explanation of household-head ATM usage. In the study area, banks are the major provider of ATM. The ATM machine installed on the bank premises are perceived to be more secured then those off-site which the apex bank has declared illegal in Nigeria. However, the quality and type of ATM provided by banks in most part of the study area are superior to other sources. For example, on the choice of holidays and festivity days, the queue and the quality of service as reflected by the percentage of time the system is broken down can have a major influence on the choice.

Finally, household-head perception on ATM activity is another important factor. The mental image of the household-head on the fact that cash withdraw are limited especially weekend and holiday periods will affect their ability and intention at minding the amount of cash they withdraw using ATM card. This perception is strictly controlled by whether sources of ATM are simply regular and reliable. Akhtar (1986) study in Pakistan also confirmed consumer perception and level of education as an important variant in cash withdrawals.

Household ATM usage model.

Modeling of household ATM usage is imperative simply because such model will assist in resolving the problems of ATM supply in the study area and it can further be used to develop a robust mathematical model which will further aid the prediction of ATM usage. Household ATM usage in Ilorin metropolis can simply be predicted with equation 1.

$$Y = 67.15 + 43.9HAI - 10.7HTSWM + 19.9HSY + 10.61HPAMP \ldots\ldots\ldots\ldots\ldots 1$$

$$(R^2 = 97.0\%; SE = 12.2)$$

This implied that explanation of ATM usage at the household level in Ilorin metropolis should be sought in the selected four variables which are accessibility to ATM, average time spent on ATM transactions to withdrawal money, household source of income and household perception on ATM usage. However these findings also confirmed some world situation across the less developed nations. Therefore as acceptability of ATM, source of income and perception of ATM improves the usage of ATM will increase. While a reduction in time spent on a transaction will equally improve usage.

Applying the above theory in discussing the findings of this study, it is evident that banks in Nigeria are attempting to modernize their operating technology in order to bring their operations to global standard and international best practices. This is a welcome development in the banking sector.

Thus, ATM is no doubt a new and emerging technology which is expected to improve the quality of services render by the banks to their customers. It is important to note that this type of technology/machine is developed from outside Nigeria. Therefore, for it to serve the purpose for which it is meant, it will continue to be modernized. Its wide acceptance and utilization is an indication that people are ready to imbibe new value, skill, knowledge and technology. The above factors affecting ATM Household-head usage are important in determining the success of the ATM policy in Nigeria.

V. Conclusion

Ilorin city combines the status of traditional and modern settlement. ATM usage in the household level is examined with 66 variables: which were eventually reduced to 9 variables. However further analysis via the stepwise model showed that only four factors were important in the explanation of household ATM usage. These factors are accessibility to ATM, average time spent on ATM withdrawal, household source of income and household perception on ATM machine. All these factors explained 97% of the variance in the equation.

Household ATM usage is highly complex issue, in view of the complexity of factors which differ from one community to the other. However the results in this study agree with some of the third world experiences. Hence, cashlite policy in Nigeria and most importantly if it must be efficient should take some of the issues raised in this study serious.

A singular resource valued by customers is time, and banks must do everything possible to reduce the waiting time in at ATM points, without compromising the security checks necessary to minimize frauds and forgeries. It is also necessary that the current efforts aimed at improving the technology and institutional arrangements for payment transmission and bank clearing be carried to its logical conclusion.

Many factors can easily be fingered for the observed deficiencies of the system inadequate infrastructure, human capacity limitations, financial illiteracy, distrust among the populace, social-cultural attitudes etc. Given the proper attention, majority of the problems that affect the system are surmountable.

More than ever before, the Nigerian payment system needs to be improved upon, especially to place the country at par with other competing economies, in this border-less world. As it were, the payment system in any economy is the fulcrum of commerce, trade and investment. With globalization, Nigeria, like other countries, has lost its borders and thus is open for all kinds of competitive forces. One way to make the economy attractive for global opportunities is improvement of the payment system which the

introduction of ATM tends to achieve.

References:

Adeyemi, K. S. (2006) "Overview of Currency Management in Nigeria" ***Union Digest,*** 10(3&4) pp 12-23

Adedipe, B. (2000) "Universal Banking: International Trends and Experiences" ***The Nigerian Banker***, Jan–June pp 30-35

Adeloye, L. A. (2008) 'E-banking as new frontiers for banks' *Sunday Punch*, September, 14 p. 25.

Adeoti, J. O. (2011) 'Automated Teller Machine (ATM) frauds in Nigeria: The Way Out' *Journal of Social Sciences* **27**(1) pp 53-58.

Agboola, A. (2006) 'Information and communication technology (ICT) in banking operations in Nigeria: An evaluation of recent experiences', http://www.iisit.org/ accessed 10/04/2013

Akhtar, S. (1986) "Saving-Income Relation in Urban Pakistan: Evidence from Household Income and Expenditure Survey (HIES) 1979. Pakistan", ***Journal of Applied Economics***, 5(1) pp 23-30

Akrani, G. (2011) 'Automated Teller Machine ATM – Advantages of ATM', http://www.kalyan-city.blogspot.com/2011/02/automated-tellermachine-atm accessed 23/06/2012

Batiz-Lazo, B. & Barrie, A. (2005) 'The business and technological history of automated teller machines in the UK, 1967-2005, a Primer', ***Conference Abstracts***, 16 -17th June. Queen University of London.

Bellis, M. (2007) 'The ATM Machine of Luther Simjian', http://www.inventors.about.com/od/astartinventions/a/atm accessed 12/03/2011

Central Bank of Nigeria (2010). 'Standard and Guidelines on Automated Teller Machine (ATM) Operations in Nigeria', Central Bank of Nigeria Publication.

Committee on Payment and Settlement Systems (2004) "Survey of developments in electronic money and internet and mobile payments". Publication of Bank for International Settlement, March.

Dean, A. M. (2002) "Service quality in call centers: implications for customer loyalty" ***Managing Services Quality,*** 12(6) pp 414-423

Deutsch, K. (1981) 'Social Mobilization and Political Development', ***American Political Science Review*** **55**(3) pp 493-515.

Emeka, E. O. and Favour, N. E. (2012) "Empirical Study of the use of Automated Teller Machine (ATM) Among Bank Customers in Ibadan Metropolis, South Western, Nigeria" ***European Journal of Business and Management,*** 4(7) pp18-28.

Eni, H. (2011) 'Cashless Lagos: Will it work', *TELL* No. **49**

Enyinnaya, C. (2011) 'Where Sanusi missed cashless banking', http://www.ngrguradiannews.com accessed 14/07/2011 89

Fanawopo, S. (2006) 'World v... cash-Nigeria's payment card grows significantly', http://www.iisit.org/Vol6/IISITv6p373-393Olatokun631 accessed 21/06/2011

Fasan, R. (2007) 'Banks, customer relation and use of ATM cards', *Business Day Newspapers*, http://www.businessdayonline.com/ accessed 23/06/2011

Islam, M. R., Sheel, S. K. and Biswas, P. K. (2007) "Customer satisfaction of ATM service: Acase study of HSBC-ATM", http://ssm.com/abstract=990242 accessed 23/08/11.

Kolodinsky, J. M., Hogarth, J. M., & Hilgert, M. A. (2004) 'The adoption of electronic banking technologies by US consumers', ***International Journal of Bank Marketing,* 22** (4&5) pp 238-259

Levesque, T. and McDougall, D. (1996) "Determinants of customer satisfaction in retail banking", ***International Journal of Bank Marketing***, 14(7) pp 12-20

Levy, M. (1966), ***Modernisation and the Structure of African Societies***. Princeton N.J.: Princeton University Press.

McClelland, D. (1961) ***The Achieving Society,*** New York: The Free Press.

December, 12 pp. 40-42.

National Population Commission (NPC) and ICF Macro (2009) 'Nigeria Demographic and Health Survey 2008', Abuja: National Population Commission and ICF Macro.

Obiano, W. (2009) 'How to fight ATM fraud on-line' ***Nigerian Daily News***, June 21, p. 18.

Ojo, J. A. T (1992) "Financial Sector Mal-Adaptation and Nigerian's Economy Transformation Problem (An inaugural lecture delivered at the University of Lagos)

Okwe, M. (2011) 'The threat of Bank-less Nigeria', http://www.ngrguradiannews.com accessed 13/06/11.

Olatokun, W. M. & Igbinedoin, L. J. (2009) 'The Adoption of Automated Teller Machines in Nigeria: An Application of the theory of Diffusion of Innovation' ***Issues in Informing Science and Information Technology* 6** pp 373-393.

Parsons, T. (1971) **The System of Modern Societies,** New Jersey: Prentice-Hall.

Pidgeon, A, C. (2000) "Show Me The Money - But Don't Make Me Pay For It: An Analysis of Why Legislation Banning ATM Surcharges Is In appropriate and Unwarranted" available at www.law.nyu.edu/journal/legislation/article/ accessed on 21/02/06

Raihan, A., Khan, S. R., Alan, M. R. and Rabbi, K. (2001)

"Computerization and IT in Banking Sector: Hindrances and Remedies" ***Bank Parikrama*** (Dhaka: BIBM) Volume XXVI, No. 1 (March): 95 to133

Sanusi, L. S. (2011) "Cashless economy key to sustainable economic growth" ***CenBank News,*** 34(11) pp 5-8.

Sean, O. Connor (2003) "Developments, Issues, and Initiatives in Retail Payments" ***Bank of Canada Review,*** AUTUMN: pp 23-31

Soludo, C. C. (2005) Keynote Address at the National Seminar on Cash Handling, Automation and Management, Lagos, 9-10 August.

Toby, A. J. (1998) "Community Banking and the Nigerian Rural Economy: A policy Re-engineering study", ***First Bank of Nigeria Plc Bi-Annual Review*** 6 (13) December pp 6-14.

Uchendu, O. A. (2009) "Internet Rate policy, Saving and Investment in Nigeria", ***Economic and Financial Review,*** 3(1&2) pp 29 – 41.

Appendix

Table 1 : List of Selected Household ATM Usage Variables in Ilorin

S/N		S/N	
	Age		**Average time spent on ATM transaction**
1	Below 25 years	34	i. 5 minutes
2	25 - 49 years	35	ii. 6-10 minutes
3	50 years and above	36	iii.11-20 minutes
	Sex	37	iv. >20 minutes
			Frequency or breakdown in service
4	Male		
5	Female	38	some hour per day
	Literacy	39	some days per week
6	Non formal education	40	Monthly
7	Primary school		**Better branch services**
8	Secondary School	41	Yes
9	Post secondary	42	No
	Occupation		**Source of ATM Used**
10	Civil Servants	43	Union
11	Trading	44	U.B.A
12	Unemployed	45	Zenith
13	Retiree	46	GTB
14	Farmers	47	First Bank
15	Artisan		**Security of Customer**
	Income	48	Yes
16	3,000 - 9,000	49	No
			Frequency of Power supply to ATM
17	10,000 - 16,000		
18	17,000 - 23,000	50	High
19	23000 and Above	51	Low
	Feature of ATM	52	Moderate
20	Simple		**Household Size**
21	Technical	53	i. 1-5
22	Difficult	54	ii. 6-10
	Time of operation	55	iii.11-15
23	Week days	56	iv. >15
24	Selective Days		**Frequency of withdrawal**
25	24/7	57	Once a week

Distance

26 Distance less than 2 kilometer
27 Distance of 2-4 kilometer
28 distance of 4-6 kilometer

Operation

29 Easy
30 Complex

Frequency of card locking

31 Once in several operation
32 Very rampart
33 Moderate occurrence
58 Twice a week
59 Thrice a week
60 Four times a week
61 Any time

Source of Power for ATM

62 Power holdings
63 Generator
64 Power holdings and Generator

Suitable location of ATM

65 Yes
66 No

Table 2: Social Economic Characteristics of Respondents

S/N	Variables	Social Economic Index	Percentage of Respondents
1	Age	i. Below 25 years	35
		ii. 25-49 years	46
		iii.50 years and above	19
2	Literacy	i. Non formal education	15
		ii. Primary school	14
		iii.Secondary school	22
		iv. Post secondary school	49
3	Sex	i. Male	41
		ii. Female	59
4	Occupation	i. Civil servants	32
		ii. Trading	28
		iii.Unemployed	10
		iv.Farmers	6
		v. Retirees	7
		vi. Artisan	17
5	Income	3,000-9,000	11
		10,000-16,000	24
		17,000-23,000	45
		Greater than 23,000	20

6	Number of people per household	i. 1-5	47
		ii. 6-10	32
		iii.11-15	13
		iv. >15	8
7	Frequency of transaction on ATM per week	i. 0-2	8
		ii. 2-4	32
		iii. 5-7	38
		iv. >7	22
8	Average distance to nearest ATM	Distance less than 2 km	25
		Distance of 2-4 km	23
		distance of 4-6 km	52
9	Average time spent on ATM transaction	i. 5 minutes	28
		ii. 6-10 minutes	22
		iii.11-20 minutes	24
		iv. >20 minutes	26

Table 3: Factors Scores, Eigen Values, percentage and Cumulative Variance Contribution in the Explanation of Household ATM Usage

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
1	-0.1	0.31	-0.11	0.02	-0.09	0.09	0.06	0.05	-0.022
2	0.25	-0.9	-0.24	-0.34	-0.21	-0.29	-0.02	0.09	0.007
3	-0.08	-0.06	0.54	0.2	0.61	0.4	0.23	0.01	0.01
4	0.05	0.18	0.42	0.09	-0.28	0.82	0.27	-0.23	0.12
5	-0.32	-0.3	-0.17	0.09	0.6	0.07	-0.35	-0.3	0.09
6	-0.13	0.63	-0.5	0.4	-0.34	0.25	-0.05	-0.02	-0.04
7	0.3	-0.2	0.17	-21	-0.05	-0.5	-0.02	0.15	0.41
8	-0.23	-0.63	-0.06	0.12	0.4	0.3	0.4	0.07	0.43
9	0.45	0.07	0.15	0.14	-0.13	-0.93	0.03	0.11	0.02
10	-0.6	0.24	-0.21	0.5	-0.4	0.22	-0.11	0.09	0.81
11	0.26	0.72	0.06	-0.41	-0.15	-0.4	0.3	-0.07	-0.89
12	0.26	-0.06	0.27	0.5	-0.04	0.02	0.15	0.01	0.41
13	0.13	0.6	-0.06	-0.3	0.54	0.33	0.01	-0.06	-0.42
14	-0.13	-0.02	-0.32	-0.04	0.4	0.32	-0.06	-0.23	0.3
15	0.041	-0.054	0.22	0.02	-0.48	-0.64	0.4	0.02	-0.84
16	-0.4	0.45	0.09	0.31	-0.49	-0.18	0.2	0.5	0.01
17	-0.45	0.6	0.39	0.11	0.01	-0.97	0.08	0.42	-0.3
18	0.74	-0.5	-0.11	-0.24	-0.13	-0.31	0.18	0.08	-0.5
19	0.37	-0.17	-0.4	0.72	0.06	0.16	0.08	0.4	-0.16
20	-0.98	0.29	0.72	-0.09	0.37	-0.06	0.47	-0.02	0.16

21	-0.34	0.62	0.29	-0.55	0.02	0.05	-0.24	-0.24	-0.08
22	-0.16	0.06	0.27	-0.9	0.01	-0.22	-0.09	0.2	-0.02
23	0.14	-0.22	-0.46	-0.02	-0.14	-0.9	-0.04	0.14	-0.
24	0.28	0.07	0.41	0.6	-0.1	0.6	0.2	0.1	0.
25	-0.21	0.35	0.33	0.97	0.44	-0.17	0.1	0.5	0.
26	-0.31	0.2	-0.09	0.75	0.7	-0.37	0.32	-0.03	-0.16
27	-0.19	-0.11	-0.16	-0.03	-0.87	0.24	0.11	-0.27	0.13
28	0.4	0.02	0.4	-0.34	0.95	0.03	0.3	-0.41	-0.29
29	-0.93	0.14	0.05	0.3	0.09	-0.2	-0.12	-0.02	-0.12
30	0.02	0.21	0.25	-0.15	0.15	0.02	-0.02	0.06	0.08
31	0.92	0.2	0.35	-0.13	0.12	0.04	0.13	-0.7	-0.08
32	0.04	-0.11	0.7	-0.6	0.14	0.14	0.16	-0.2	0.01
33	-0.14	-0.7	-0.25	0.35	0.46	-0.3	-0.32	-0.2	-0.5
34	-0.07	0.05	0.2	0.12	0.16	0.1	-0.08	-0.94	0.01
35	0.09	-0.06	-0.2	-0.08	-0.17	-0.07	0.05	0.04	0.01
36	0.09	-0.06	-0.2	-0.08	-0.2	-0.07	0.05	0.05	0.01
37	-0.32	0.4	0.17	0.2	0.1	0.45	0.3	0.29	-0.6
38	-0.02	0.26	-0.25	-0.14	0.15	-0.05	-0.01	-0.84	-0.04
39	0.23	-0.44	0.11	-0.3	-0.17	-0.4	0.63	-0.14	0.4
40	-0.08	-0.02	0.1	0.06	-0.08	0.08	-0.06	-0.11	-0.09
41	0.08	-0.2	0	-0.96	0.08	-0.33	0.06	0.11	0.09
42	0.02	0.86	0	-0.23	0.15	0.22	-0.12	0.4	-0.05
43	-0.23	0.13	0.35	-0.06	0.33	0.31	0.32	0.08	-0.04
44	0.02	-0.05	-0.03	0.51	-0.3	-0.09	-0.95	-0.5	0.01
45	-0.17	0.25	-0.68	-0.42	-0.31	-0.08	0.22	-0.5	0.02
46	0.41	-0.21	-0.36	-0.25	-0.2	-0.3	0.92	0.4	-0.24
47	0.1	-0.42	-0.62	0.19	0.15	0.56	-0.84	0.25	0.2
48	0.91	0.4	0.08	0.3	0.06	-0.13	-0.3	0.2	0.08
49	-0.17	0.18	0.01	0.21	0.03	0.19	0.2	-0.9	0.07
50	0.74	-0.06	0.2	0.2	-0.5	0.6	-0.06	-0.3	0.15
51	-0.5	0.6	0.82	-0.3	0.5	-0.09	-0.22	0.09	0.4
52	0.31	-0.24	-0.16	0.24	-0.4	-0.18	-0.05	0.2	0.45
53	-0.44	0.3	-0.25	0.53	0.2	-0.4	-0.21	0.31	0.21
54	-0.09	-0.59	0.09	-0.5	0.04	-0.94	0.27	-0.49	-0.18
55	-0.33	0.22	-0.08	0.02	0.3	0.02	-0.4	-0.14	-0.04
56	0.02	-0.1	0.05	-0.2	-0.3	-0.3	-0.11	-0.13	0.01
57	0.34	-0.51	0.24	0.14	-0.35	0.24	-0.6	0.16	0.11
58	0.34	0.47	0.54	0.25	-0.12	-0.47	-0.28	0.02	0.01
59	-0.52	0.06	-0.15	-0.24	0.37	0.37	-0.6	0.12	0.02
60	-0.53	-0.19	-0.48	-0.17	-0.93	0.25	0.54	-0.16	0.05
61	0.43	0.11	0.96	0.13	0.1	0.16	0.18	0.11	0.09
62	0.23	0.32	0.12	0.82	0.07	0.1	0.3	0.59	0.21
63	0.22	0.11	0.51	0.14	0.18	0.19	0.09	0.01	0.21
64	0.44	0.19	0.87	0.07	0.36	0.15	0.04	0.27	0.16
65	0.18	0.15	0.17	0.92	0.06	0.28	0.03	0.02	0.1
66	0.08	0.02	0.19	0.03	0.05	0.14	0.07	0.18	0.53
%var	**17.2**	**13.2**	**11.1**	**11.3**	**10.8**	**9.6**	**8.7**	**5.4**	**5**
% Cum	**17.2**	**30.4**	**41.5**	**52.8**	**63.6**	**73.2**	**81.9**	**87.3**	**92.3**

Table 4: Stepwise Regression between Per Capital Household ATM Usage and Socio-Economic Variables.

S/N	Variable (%)	Coefficient	% Contribution	% Cumulative	SE
	Constant	67.15			
1	Household ATM accessibility index (HAI)	43.9	65.2	65.2	
2	Household time spent in withdrawal of money (HTSWM)	-10.7	14.5	79.7	
3	Household source of income index (HSY)	19.9	13.3	93	
4	Household perception on ATM machine performance (HPAMP)	10.61	4	97	12.2