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Examining the Effectiveness of Electronic Payment System in Ghana: The Case of e-ZWICH in the Tamale Metropolis

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Abstract
There have been significant development of technological innovations in Ghana's banking sector and financial services in general. The introduction of e-ZWICH in Ghana in 2008 came with so much euphoria as great news meant to move the country towards a cashless economy. Many Ghanaians signed on to the first biometric payment system – the e-ZWICH. After several years, the interest and patronage seem to have waned drastically. The study examines the effectiveness of that form of electronic payment system in the Tamale metropolis in Ghana. The study adopts questionnaire administration to ascertain the common types of e-payment systems, the level of adoption of e-ZWICH, and the factors affecting its effectiveness. This study reveals that there is low patronage of the e-ZWICH smart card due to frequent link failures, long queues in banking halls and limited point-of-sale devices. This has stalled the effective adoption and use of the system. The study recommends that the innovators and regulators introduce measures to renew the interest of stakeholders through sensitization workshops, making the point-of-sale devices more available and enhancing the smooth operation of the devices.
Keywords: e-ZWICH, Point-of-Sale devices, Biometric, Innovations, Payment systems

1.0 Introduction

The rapid development in information and communication technology (ICT) is increasingly changing the way business is conducted in recent times. In Ghana, new electronic payment systems are being introduced at an increasing rate and it is anticipated that this trend will continue for foreseeable future. Electronic and communication technologies have been used extensively in banking for many years to advance the agenda for banking (Abor, 2004). As the years go by and technology keeps increasing, banks have developed new technological innovations to deliver financial services such as Automated Teller Machine (ATM), telephone banking, internet banking, branch networking, and Electronic Funds Transfer at Point of Sale (EFTPOS) such as the e-ZWICH in Ghana.

According to Humphrey, Kim and Vale (2001), electronic payment refers to cash and associated transactions implemented using electronic means. Typically, this involves the use of computer networks such as the Internet and digital stored value systems. The system allows bills to be paid directly from bank accounts, without the account holder being present at the bank, and without the need of writing and mailing cheques. In Ghana, electronic retail payments are being continuously developed, to replace or reduce paper-based payments. Many new payment services have come into existence in recent years, most of which are based on technical innovations such as card, telephone and the Internet (Abor, 2004). Among these payment services are sika card, e-ZWICH, e-tranzact, tiGO cash, MTN Mobile Money, Zap from Airtel and the Total Tom card. The e-ZWICH smart card was introduced in April 2008 and has been operational since then. The Ghana Interbank Payment and Settlement System (GHIPSS) Limited, an establishment of the Bank of Ghana, is the issuer of the e-ZWICH smart card (Haruna, 2012).

At the launching of the e-ZWICH smart card in 2008, the then Governor of the Bank of Ghana, Dr. Paul Acquah described it as having been primarily designed for promoting branchless banking and financial inclusion. This statement in its entirety defines the three – tier objectives of the e-ZWICH card which are for branchless banking, for financial inclusion and lastly for debit facilitation. However, in recent times, the question has arisen whether the system has met its objectives since its inception. It is important to assess whether the e-ZWICH has been effective in promoting the objectives in the financial industry. If the government cannot through the implementation of the e-ZWICH achieve a cashless economy, a secure way of doing business and a successful

means of bringing the unbanked into the financial industry, e-ZWICH could be considered to be a total waste of resources (IMANI, 2010). Despite all that, limited known studies have been conducted to assess how effective e-ZWICH has been. Kumaga (2010) and Haruna (2012) have assessed the challenges associated with the implementation of the e-ZWICH smart card. This research is therefore conducted to provide information to enable implementer's measure the level of success of e-ZWICH meeting its set objectives by using Tamale Metropolis in the Northern region as a case study. The study examines the effectiveness of the e-ZWICH smart card as an electronic payment system in Ghana. It finds out the awareness level of the e-ZWICH smart card in the Metropolis, determines the factors affecting the choice of e-ZWICH over other electronic payment systems, and identifies the challenges involved in the adoption of the e-ZWICH smart card.

The rest of the paper is organised as follows: the next section reviews extant literature in the subject area; it examines the evolution of electronic payment systems and the factors and challenges that influence the choice of e-payment systems. The methodology of the study and the discussion of results are considered next. The last section concludes the study.

2.0 Literature Review

In recent times, there has been a visible trend in many countries to progress towards electronic payments (e-payments). As a result, several studies have been conducted on e-payment systems. Early work by Abor (2004) was concerned with technological innovations and banking in Ghana. Additional work by Deutche Bank Research (2001), Vartanian (2000) and Birch (1998) looks at the future of electronic payments Several researchers have addressed the problem of retail payment, Ferguson (2000), Malek (2001), Bank for International Settlements (2000), Mester (2000) and OECD Information Technology Outlook (2000) studied various aspects of this subject. The work carried out by Abor (2004) analyses the perception of bank customers pertaining to the effect of technological innovations on banking services in Ghana. A number of studies have also concluded that information technology has appreciable positive effects on bank productivity; cashiers' work, banking transaction, bank patronage, bank services delivery, and customers' services (Balachandher et al, 2001; Hunter, 1991; Yasuharu, 2003). In effect, it enhances savings mobilization and financial intermediation. Efficient payment systems rely on non-cash payments, and that an efficient and reliable payment system facilitates economic development (Anon, 2003). Carow and Staten (1999) used a logistic regression model to investigate preferences of consumers in using debit cards, credit cards, and cash for gasoline purchases. Humphrey and Hancock (1997) have provided an extensive survey of the payments literature. Using the Federal Reserve's 1995 Survey of Consumer Finances (SCF), Kennickell and Kwast (1997) analyzed the influence of demographic characteristics on the likelihood of electronic payment instrument usage among households.

2.1 Evolution of Electronic Payments System

Payment systems have evolved significantly in line with technological advancement. According to Graham (2003), evolution of e-payment started in 1918, when the Federal Reserve Bank first moved currency via telegraph. However, it was not until the Automated Clearing House (ACH) was set up by the U.S Federal Reserve in 1972 that electronic currency became widespread. This provided the U.S treasury and commercial banks with an alternative to processing cheque. Following this development, there have been several studies to evaluate the system of e-payment.

According to Kalakota and Whinston (1997), "electronic payment is a financial exchange that takes place online between the seller buyer and the seller. The content of this exchange is usually the form of digital financial instrument (such as encrypted credit card numbers, electronic checks, or digital cash) that is backed by a bank or an intermediary, or by a legal tender." E-payment can be defined as 'payment by direct credit, electronic transfer of credit card details, or some other electronic means, as opposed to payment by cheque and cash'. (Agimo, 2004) It was also defined as a payer's transfer of a monetary claim on a party acceptable to the beneficially.

2.2 Factors influencing the Choice of Payment Systems

Major security, infrastructure, legal, regulatory and socio-cultural challenges have characterized the e-payment systems. In Africa, e-payment is characterized by widespread challenges. Poor telecommunications infrastructure, limited readiness by banks, behavioural constraints, inadequate legal and regulating framework, low level of credit card access are among the constraints that have hindered the progress of e-payments (Wondwosson et al., 2005). Consistent with the work of Kennickell and Kwast (1997), wealth has an important role to play in terms of consumer's decisions on payment choice. Consumers' wealth may influence payment choice and the availability of payment instruments that one can choose. Mantel, (2000) submits that while

wealthy consumers may be able to fund their obligations generally, consumers that experience brief financial shortfalls may not find electronic bill payment desirable as a payment instrument.

Again, Kennickell and Kwast (1997) have illustrated how education play important role in determining household use of e-money products. Kennickell and Kwast (1997) concluded that the US market for such products is still highly specialized, with the demand coming almost entirely from higher income, younger, and more educated households that have accumulated significant financial assets. Educational levels of customers determine whether consumers will adopt electronic payment or not. Studies have shown that highly-educated people patronize electronic payment products than less-educated people. The technicalities involved in some electronic payment transactions discourage less educated customers to patronize its use (Annon, 1999).

Those employed who receive their pay through the banks are more likely to use electronic means of payment. Employees, through their constant contacts with banks are more exposed to payment products, and are therefore, likely to patronize the products. According to Ferguson (2000), more than half of the workers in the US, in 2000 receive a direct deposit of their pay through the Automated Clearing House (ACH). Another factor influencing payment instrument choice pertains to customers' personal preferences. Increased use of electronic payment instruments are believed to have been achieved through large-scale consumer marketing campaigns funded by some financial institutions. The marketing activities employed by the financial institutions are expected to aid utilities by educating consumers as to the benefits, ease of use, convenience, and security of paying bills electronically (Mantel, 2000).

3.0 Methodology

The study collected primary data through questionnaire administered with individuals and staff of banks within the Tamale metropolis in the Northern Region of Ghana. The individuals included both e-ZWICH and non e-ZWICH card holders; staff of ten banks and six e-ZWICH merchants, were involved in the study. The banks included Zenith Bank Ghana Limited, Fidelity Bank, Prudential Bank, Barclays Bank Ghana Limited, Standard Chartered Bank Ghana Limited, National Investment Bank, Access Bank, Agricultural Development Bank, Stanbic Bank Ghana Limited and Ecobank Ghana Limited. The sample size for the study was 126 respondents of the various categories identified. A simple random sampling method was used to select individuals and merchants to respond to the questionnaires, whiles purposive sampling technique was used to select the heads of management information system unit and staff who operate the e-ZWICH POS and the e-ZWICH merchants. The purposive sampling technique is deemed the appropriate means of getting respondents who are knowledgeable and well abreast with the subject matter of interest. Data gathered from the field survey was analyzed using Statistical Package for Social Sciences (SPSS) version 16. The SPSS was used for data transformation, running of cross tabulation and pie charts.

Tamale, the study area, is the capital town of the Northern Region, one of the ten regions of Ghana. It is located within the Guinea Savannah belt. It is the fourth largest city in Ghana with a population of 293,881 comprising 146,979 males and 146,902 females and with a growth rate of 3.5%. The size of Tamale is approximately 922km sq. The city experiences severe harmattan winds in the dry season from November to January. The Metropolis is poorly endowed with water bodies. The only water systems are a few seasonal streams, which dry up during the dry season. The other water bodies include dugouts and dams. The city attracts population from all over the northern region. Economic activities revolve around farming and trading. Many International Non Governmental Organizations operate in the northern region but few of them work in Tamale. Women form a high proportion of the population in Tamale and engage in trading and other economic activities. However, poverty levels are high among women because of a number of factors. These include the discriminatory nature of land and property holding, inheritance, extensive subsistence farming, large domestic responsibility and high birth rates, low capital levels and illiteracy

4.0 Discussions of Findings

The study administered questionnaires with 126 respondents made up of individual card holders and non-card holders, e-ZWICH merchants and officials of selected banks. There was 100% response rate and the responses received are analyzed.

4.1 Demographic Characteristics of Respondents

The study ascertained the demographic characteristics of all the respondents in terms of their gender, age and occupational status. Tables 1 and 2 (*appendix 1*) respectively shows the gender and age and occupational status

of respondents. The respondents were made up of 74 (58.7%) males and 52 (41.3%) females. With respect to the relationship between the age of respondents and their occupation, the active age range with the highest frequency of respondents is 18 – 45, that is the most active users of the e-ZWICH smart card in the study area. It is also evident that students formed a larger proportion of the users of the smart card, followed by workers and student worker groups.

4.2 Awareness Level of E-ZWICH Smart Card

The level of awareness of the e-ZWICH smart card was also assessed. The study sought to find out the number of individual respondents who owned an e-ZWICH card. The results are shown in the table 3 (*appendix 1*). Out of 110 individuals, 69 (62.7%) owned e-ZWICH smart cards and 41 (37.3%) had no e-ZWICH cards. This representation implies that 62.7% of the respondents who owned the e-ZWICH smart card provided information to justify the effectiveness of the e-ZWICH smart card from the card user's point of view, whiles 37.3% provided information from the non-card holder's standpoint.

4.3 Determinants of Choice Electronic Payment systems.

The study sought to find out some of the reasons why a certain type of electronic payment system is used.

4.3.1 Wealth of Customer

Clearly, if people do not have enough money to pay for the price for a service, then they cannot buy that item. As price rises, consumers will substitute away from high priced services, choosing less costly alternatives. The figure 1 (*appendix 1*) indicates the level of agreement of respondents for the adoption of the e-zwich smart card. 43% of the respondents strongly agree that the wealth of customers affect their choice of the payment system. 36% agree that it is so, 21% are undecided and 7% and 3% disagree and strongly disagree respectively. With the majority of seventy-nine percent (79%) agreeing to the statement, it implies that the income and wealth of customers affect the reasons why they opt for the e-ZWICH electronic payment system.

4.3.2 Availability of Payment System

Availability consists of proactive methods of ensuring service up-time and resolving system outages. This functionality requires monitoring and planning for all components of the systems and creating a meaningful overview of success for future process refinement. As shown in figure (*appendix 1*), 52% of respondents strongly agree that availability of the system influence their choices, 36% agreed to the statement, 15% remained undecided, 3% disagreed and 4% strongly disagreed to the statement. The responses summarized above attest to the fact that customers choose a particular payment system based on the availability of that particular payment system. This means that when it is difficult of locate the services of a particular type of payment system, customers will hardly choose that payment system.

4.3.3 Choice of Electronic Payment System – Student, Pension Funds and Security

With the new directive from the Students Loan Trust and the GHIPPS that all student loans be paid through the e-ZWICH smart card, students are required to obtain e-ZWICH smart cards in order to receive their loans. The study found out the extent to which this directive influenced students' choice of the payment system if not for that new directive. Figure 3 (*appendix 2*) summarizes the level of agreement to the statement that Student loans affect student customer's choice of electronic payment systems in the Tamale Metropolis. 39% of respondents strongly agreed, 30% agreed, 32% were undecided, 4% disagreed and 5% strongly disagreed. Thus, whiles majority of respondents agree that student loan influenced their choice of the payment system, a few others remained undecided. This could be due to the fact that they are either unaware that student loans are disbursed via the e-ZWICH smart card or their choice of the system was influenced by something else other than student loan.

The study sought to find out as in the case of the student loans if respondents are aware of the payment of pension funds via the e-ZWICH smart card and the influence it had on the choice of the payment system. 26% of respondents strongly agreed to the statement that pension funds affect their choice of the e-ZWICH smart card; 19% agreed, 29% were undecided, 20% disagreed and 16% strongly disagreed. This implies that 45% of respondents are aware and agree that pension funds are paid via e-ZWICH and subsequently influence its choice, as a payment system, whiles 36% disagree that it is so.

The study also wanted to find out if the risk involved in a particular mode of payment system affects its level of adoption. Risk here refers to how secure transactions and funds are kept and how secure customers data is kept. Figure 5 (*appendix 2*) indicates that about 41% strongly agree that security is a key influence to adoption of a particular payment system, 30% agree and 36% are undecided. Again, only 2% disagree and 1% strongly

disagree. This implies that majority of respondents bear out to the fact that the security of a particular payment system influences its adoption.

4.3.6 Percentage of Income on e-ZWICH Smart Card

The study sought to find out what percentage of income e-ZWICH card holders have on their cards. From table 4 (*appendix 3*) indicates that 53.6% of respondents have between 0 – 30% of their income on the e-ZWICH card, 18.8% of card users have between 31 – 60% of their income on the smart card, 15.9% had between 61- 100% of their income on the card and 11.6% had nothing on their card. The results indicate that the majority of card users in the Metropolis have between 0 -30% of their income on the e-ZWICH smart card. Cumulatively it can be concluded that about 88.4% of the valid e-ZWICH card users have money on their cards whiles the remaining 11.6% have nothing at all on their cards.

4.3.7 Frequency of Usage of the e-ZWICH Smart Card

The study also examined the frequency of use of the e-ZWICH smart card system. The purpose was to help make a meaningful judgment on the level of adoption. Hence the 69 customers that used the e-ZWICH card were asked to indicate the number of times they used it for transactions per year. The results in table 5 (*appendix 3*) below show that 15.9% use their e-ZWICH on daily basis. 34.8% use their card weekly whiles 33.3% use the system monthly. 7.2% use their cards every six months and 5.8% use it on yearly basis. It was also observed that 2.9% never used their smart cards. This indicates that the majority of card holders in the Tamale Metropolis use their cards weekly and on monthly basis.

4.4 Challenges of the e-ZWICH Smart Card

The study sought to identify the challenges militating against the success of e-ZWICH. They include link failure, frequent breakdown of machine, long queues and bad attitude of tellers. As shown in table 6 (*appendix 3*) out of the 69 card holders this number, 56 respondents representing a 81.2% admitted that they have one or other form of challenge when using the card for transactions. The remaining 13 respondents representing 18.8% were satisfied with the system and did not encounter any form of challenge in using the system for transactions. The specific types of challenge that respondents faced are shown in table 7 (*appendix 3*).

4.4.1 Link Failure

Respondents ranked link failure (46.3%) as the most serious challenge that confronts them in their business transactions with e-ZWICH. This concurs with the finding of Kumaga (2010) who espoused that network failure is crippling the use of the e-ZWICH. Because the e-ZWICH network is connected to the telecommunication networks (MTN, Vodafone, TiGO etc); anytime there is a failure in the telecommunication network it automatically affects the e-ZWICH network making it difficult for e-ZWICH users to execute transactions.

4.4.2 Long queues

The next serious challenge was long queues in the banks and merchant locations where most of the POS devices for transactions are location. Due to the fast growing trend of competition among banks and the need to move from traditional marketing to preferential marketing, banks give high preference to their customers more than any other. The e-ZWICH customers may or may not be customers of a particular bank because of the fact that they can assess the service across all banks. For this reason, most banks are not willing to compromise their customers to e-ZWICH customers hence that preferential treatment of not allowing e-ZWICH customers to queue does not apply in most banks. From table 7 (*appendix 3*), 34.3% of respondents agree that long queues which waste their time in the banking halls is a serious challenge to the service.

4.4.3 Frequent Breakdown of Machines

Respondents ranked breakdown of machines as the third most pressing challenge that confronts them in their business transactions with e-ZWICH. The reason being that there is inadequate education on the use of stand-alone machines, leading to frequent breakdown of the machines. Another reason is because of the limited number of stand-alone e-ZWICH stand-alone machines or ATMs in the Metropolis. As at now this research has identified only one stand alone e-ZWICH ATM in the Tamale Metropolis. This means that so much pressure would be on the machine leading to frequent breakdown.

4.4.4 Bad attitude of Tellers/Cashiers

9% of respondent indicated that the attitude of Tellers was a challenge to them when transacting business with e-ZWICH. Sometimes the attitude of Bank staff could affect the success and adoption of the service. When customer service is poor it obviously affects the system because customers will be discouraged from coming back to engage the service again weather it was successful the first time or not.

4.5 Preference of e-ZWICH to ATM, Mobile Money and Teller by e-ZWICH Users

The study employed frequency distribution to determine the preferences of e-ZWICH users in terms of the various payment systems. Paramount to this course was to find out if the preference of customers affected the success of the e-ZWICH smart card. The findings as illustrated in table 4.8 (*appendix 3*) indicate that 64.5% preferred the e-ZWICH smart card to bank Tellers or Cashiers whiles 35.5% preferred bank Tellers or Cashiers to the e-ZWICH smart card. Tables 4.9 and 4.10 (*appendix 3*) respectively show users' preference of e-ZWICH to ATM and Mobile Money. 34.9% preferred e-ZWICH to ATM cards whiles 65.1% of respondents preferred the ATM card to the e-ZWICH smart card. 55.7% prefer e-ZWICH to Mobile Money whiles 44.3% prefer Mobile Money to e-ZWICH. Thus, e-ZWICH users prefer e-ZWICH to Teller and Mobile Money but prefer ATM to e-ZWICH.

4.6 Perspectives of Service Providers: Merchants and Banks

This section of the study focused on the responses from merchants and banks in the Tamale metropolis engaged in the e-ZWICH Point of Sale (POS) device for transactions.

4.7.1 Types of Electronic Payment Systems Adopted

The study sought to find out a few of the electronic payment systems adopted by merchants and banks in the Metropolis. Table 11 revealed that all the merchants have e-ZWICH POS's and Mobile money. More so, all the banks had e-ZWICH POS's, ATM cards and internet banking in common. 6 out of the 10 banks had Mobile Money. This implies that indeed all the banks in the Metropolis have e-ZWICH POS in place for e-ZWICH transactions aside the other electronic payment systems such as ATM cards and internet banking. This validates the assertion that all Banks and financial institutions are required to provide e-ZWICH services as directed by the GHIPPS under the Bank of Ghana. It was also noted that mobile money was a key product of all the merchants in the Metropolis aside the e-ZWICH services. During interaction with Merchants, they expressed a low turnout for e-ZWICH transactions as compared to Mobile Money. It was further revealed that most Merchants got a higher profit margin from the Mobile money Transactions compared to e-ZWICH transactions. The charge for e-ZWICH transactions at the time of this research is 0.5% of the withdrawal amount not exceeding GHS5. For transfers it ranged between a minimum of GHS1 to 0.25% of the transfer amount. For Mobile Money the withdrawal charge is 1% of the amount withdrawn. Most merchants thought there is a higher profit margin in Mobile Money than e-ZWICH and would rather focus on Mobile Money instead of e-ZWICH.

4.7.2 Level of Adoption of the e-ZWICH

From table 4.11 (*appendix 3*), it is evident that all the banks and merchants have adopted the e-ZWICH system of payment. In addition to this claim, it was observed that all the respondents especially the banks had specific tellers assigned to the POS device. Respondents agreed that they do not turn away e-ZWICH customers but allow them to do transaction with their e-ZWICH smart cards. Some of the transactions that customers do with their cards included funds transfer, loading of funds, cash withdrawals and printing of mini statements.

4.7.3 Challenges of the e-ZWICH Payment System

Notwithstanding the fact that the e-ZWICH has been recognized as an efficient medium for conducting electronic payments, its adoption is associated with some challenges. From the perspective of the service providers and as shown in table 12 (*appendix 3*), 87.5% admitted that they have challenges when operating the e-ZWICH POS. The rest of the 12.5% stated that they barely face any challenge with the system. From this it can be concluded that indeed there are challenges with e-ZWICH electronic payment system. The study probed further to find out the various types of challenges that service providers of the e-ZWICH faced. From table 13 (*appendix 3*), about 50% of the service providers have challenges with the link of the e-ZWICH payment system. This can be attributed to the communications network such as MTN, Vodafone or Tigo on which the POS runs. 37.5% of service providers faced challenges with impatient customers. Most customers have the impression that e-ZWICH customers must not queue. When the banks and merchants ignore this preference and insist on treating all customers equally, the card holders get impatient and leave. This might be due to some prior education to card holders that they must not queue in the banks to be served. In addition, 12.5% of the respondents indicated that they have frequent breakdown of the POS device which is used for transactions. Challenges that confront service providers include connectivity, impatience of customers, service pressure due to inability of other banks to recognize it as a core product, card blocking due to the usage of the emergency finger, defect of cards as a result of customers not handling it well and difficulty in operating stand-alone e-ZWICH machines.

5.0 Conclusion

Payment for goods and services is characterized by long queues, armed robbery, time wasting and high cost of business transactions which generally affect economic development. It is in view of this that e-ZWICH was introduced to address these challenges. The effectiveness of this system is deterred by a number of challenges such as link failure, long queues, and frequent breakdown of machines. These challenges with the e-ZWICH payment system have rendered electronic payment system ineffective despite the fact that it is still operational. In order to enhance the effectiveness of the e-ZWICH electronic payment system, GHIPPs should encourage all participating banks and financial institutions to either set up e-ZWICH standalone ATMs or reconfigure their ATMs to accept the e-ZWICH smart card. GHIPPS should encourage major shops, hotels, guest houses and supermarkets to acquire the POS device for payments of goods and services. This will create more avenues for the usage of the card and will encourage card holders to use their cards since it is much more convenient. To improve connectivity and reduce the incidence of link failures, GHIPPS should introduce alternative network lines rather than solely depending on the telecommunications network lines which have frequent network failures. Banks and non-bank financial institutions should be encouraged to show much more commitment in the system by taking it up as a core product. Educational institutions should help increase patronage of e-ZWICH by making it possible for students to pay fees through e-ZWICH and also collaborate with GHIPSS and financial institutions so as to erect the e-ZWICH stand-alone machines on their campuses.

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Appendix I

Tables of Demographic Characteristics

Table 1: Gender Distribution of Respondents

	No. of Respondents	Percentage (%)
Male	74	58.7
Female	52	41.3
Total	126	100

Source: Field Data (2014)

Table 2: Age and Occupational Status of Respondents

		Occupation			Total
		Student	Worker	Student and Worker	
Age	18 – 45	49	23	10	82
	46 – 50	5	22	6	33
	50 – 59		10	1	11
Total		54	55	17	126

(Source: Field Data, 2014)

Table 3: Card holding Status of Respondents

Owns an e-ZWICH Card					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	69	62.7	62.7	62.7
	No	41	37.3	37.3	100.0
	Total	110	100.0	100.0	

(Source: Field data 2013)

Appendix II

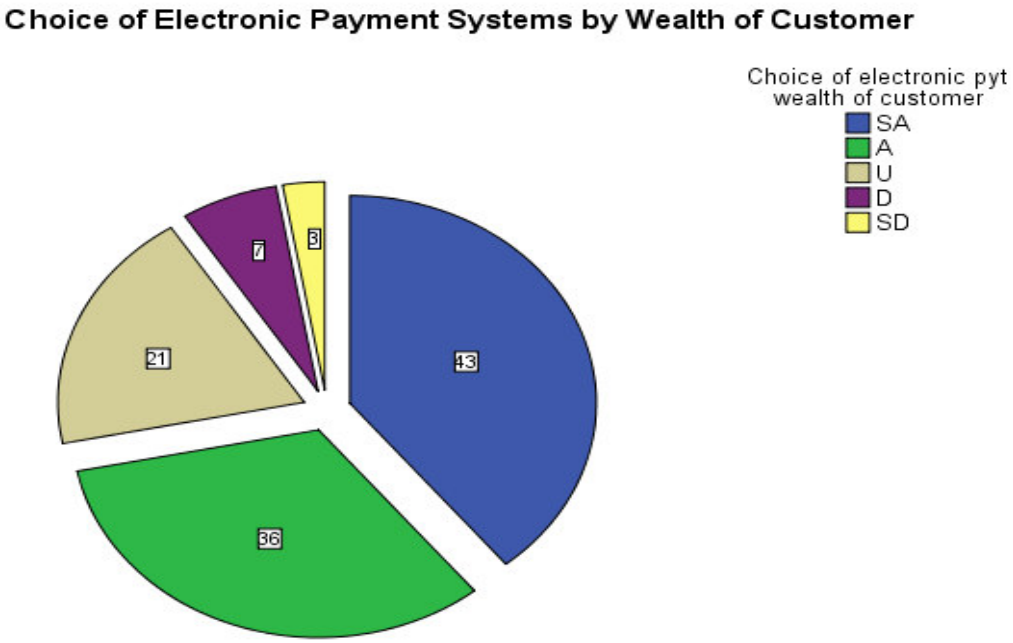

Figure 1. Choice of electronic payment system by Wealth

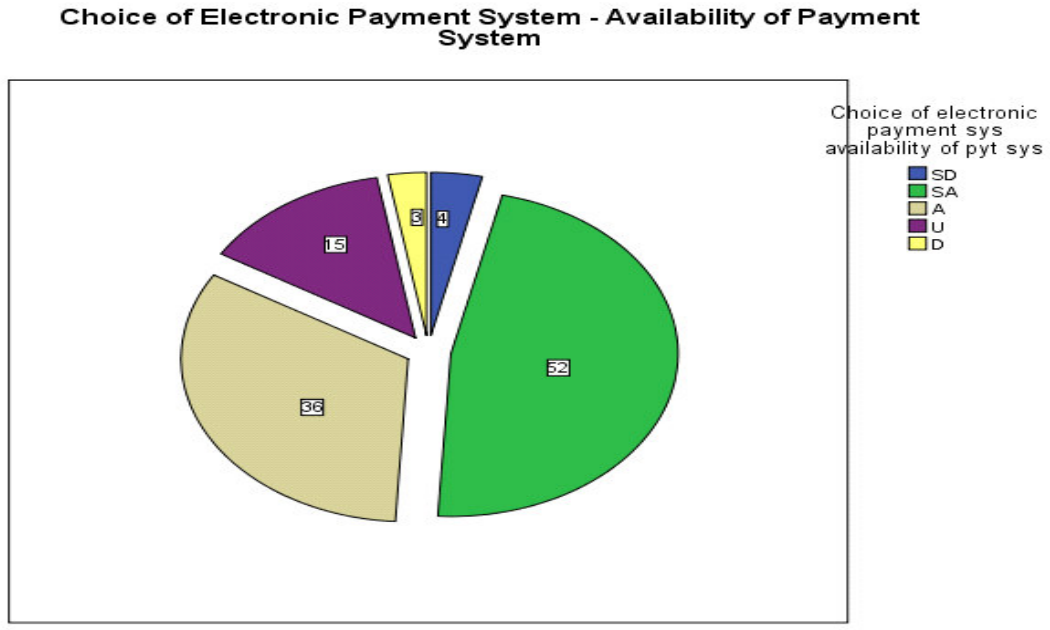

Figure 2. Availability of Payment System

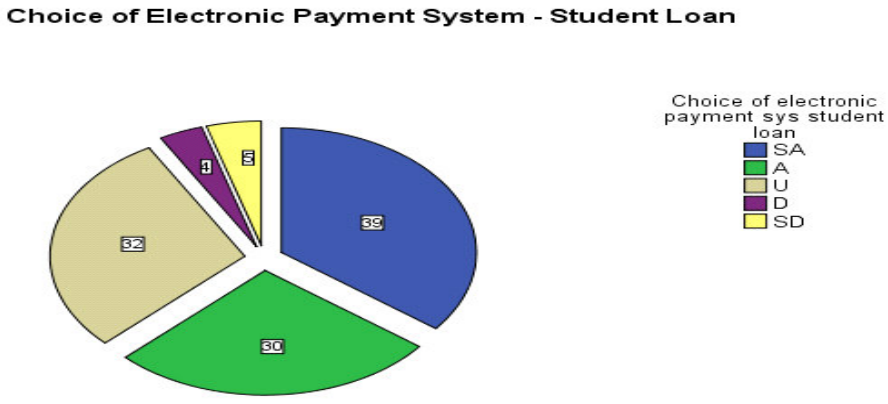

Figure 4.3. Choice of Electronic Payment System - Student Loan

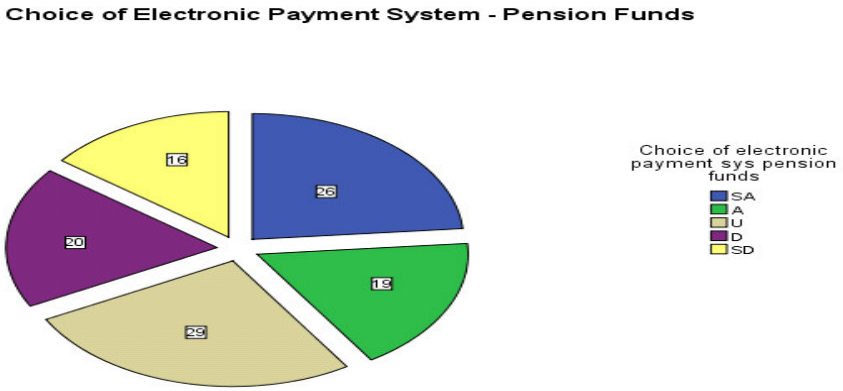

Figure 4. Choice of Electronic Payment System – Pension Funds

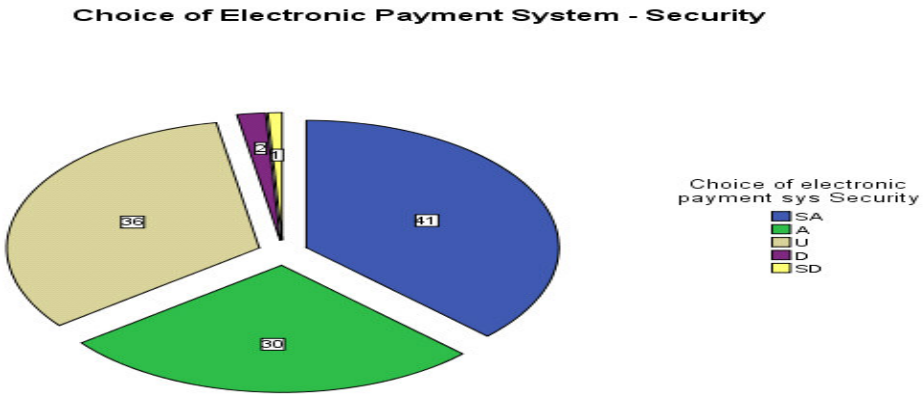

Figure 5. Choice of electronic Payment System – Security

Appendix III

Table 4. Percentage of income on e-ZWICH smart card

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 30%	37	33.6	53.6	53.6
	31 - 60%	13	11.8	18.8	72.4
	61 - 100%	11	10.0	15.9	88.4
	Nothing	8	7.3	11.6	100.0
	Total	**69**	**62.7**	**100.0**	
Not	Applicable	41	37.3		
Total		**110**	**100.0**		

Table 5. Frequency of Usage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	11	10.0	15.9	15.9
	Weekly	24	21.8	34.8	50.7
	Monthly	23	20.9	33.3	84.1
	Every 6 months	5	4.5	7.2	91.3
	Yearly	4	3.6	5.8	97.1
	Never	2	1.8	2.9	100.0
	Total	**69**	**62.7**	**100.0**	
Not	Applicable	41	37.3		
Total		**110**	**100.0**		

Table 6. Respondents who encountered challenges when transacting business with e-ZWICH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	56	50.9	81.2	81.2
	No	13	11.8	18.8	100.0
	Total	**69**	**62.7**	**100.0**	
Not	Applicable	41	37.3		
Total		**110**	**100.0**		

Table 7: Types of Challenges Faced by e-ZWICH user

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Link Failure	31	28.2	46.3	46.3
	Long Queues/Time wasting	23	20.9	34.3	80.6
	Frequent Breakdown of M/C	7	6.4	10.4	91.0
	Bad attitude of Tellers	6	5.5	9.0	100.0
	Total	**67**	**60.9**	**100.0**	
Not	Applicable	43	39.1		
Total		**110**	**100.0**		

Table 8. Preference of e-ZWICH to Teller

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	69	62.7	64.5	64.5
	NO	38	34.5	35.5	100.0
	Total	107	97.3	100.0	
Non	applicable	3	2.7		
Total		110	100.0		

Table 9. Preference of e-ZWICH to ATM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	34.5	34.9	34.9
	NO	71	64.5	65.1	100.0
	Total	**109**	**99.1**	**100.0**	
Non	Applicable	1	.9		
Total		**110**	**100.0**		

Table 10. Preference of e-ZWICH to Mobile

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	59	53.6	55.7	55.7
	NO	47	42.7	44.3	100.0
	Total	**106**	**96.4**	**100.0**	
Non	Applicable	4	3.6		
Total		**110**	**100.0**		

Table 11. Types of Electronic Payment Systems Adopted

	e-ZWICH POS		ATM Card		Mobile Money		Internet Banking	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Valid Merchants	6	37.5	Nil	N/A	6	37.5	Nil	N/A
Banks	10	62.5	10	62.5	6	37.5	10	62.5
Total	16	100	10	62.5	12	75	10	62.5

Table 12: Challenges of e-ZWICH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	14	87.5	87.5	87.5
	NO	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

Source: Field Work (2014)

Table 13. Types of Challenges with e-ZWICH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Link Failure	8	50.0	50.0	50.0
	Impatient Card Holders/Customers	6	37.5	37.5	87.5
	Frequent Breakdown of M/C	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

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