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Challenges Inhibiting E-Zwich Electronic Payment System

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Abstract
The objective of the study is to establish the challenges of e-zwich electronic payment system in Ghana. To achieve this, studies examined the ownership and usage of e-zwich smart cards, established challenges of e-zwich payment system in Ghana and determine factors that are responsible for the challenges of the e-zwich payment system in Ghana.The research study employed the qualitative research design. The population for the research comprised of 368,217 Representatives and Senior Officers 25 selected Banking and Financial Institutions from the Tarkwa Nsuaem Municipality. The sample size of 100 for the study was determined using the International Fund for Agricultural Development (IFAD) formula. Respondents for the study were then chosen using the purposive sampling technique. Data collection instruments employed for the study is questionnaires and interview.The study found that there is a high preference for Electronic Payment Systems (EPS) by the youthful population. Most people that use electronic payment models were educated and have basic knowledge of the benefits and use of Electronic payment instruments. ATM dominated as the most used medium for electronic transactions by customers. It was followed by the e-zwich payment system and the least patronized electronic payment system was cheques. Though some people had one or more electronic payment instruments, they were reluctant to use it for electronic transactions as a result of challenges of electronic payment systems. With specific references to e-zwich payment system, the study established the following challenges; ccustomers' lack of Information Technology knowledge/skills and e-zwich complex operating procedures. Factors that cause these challenges include customers' preference for cash payments, inadequate education on the e-zwich payment system, preference for human tellers, inadequate e-zwich Point Of Service devices and negative attitudes towards new products.
Keywords: E-zwich, electronic payment system(EPS), Ghana Interbank Payment and Settlement System (GHIPSS), Point of Sale terminal (POS), host server

INTRODUCTION

1.0 Background of the Study

The information technology revolution in the banking industry began in the early 1970s, with the introduction of the credit card, Automated Teller Machine (ATM) and ATM networks. This was followed by telephone banking in the late 1980s and in the early 1990s (Giannakoudi, 1999). Information technology has enabled electronic channels to perform many banking functions that would traditionally be carried out over the counter to improve customer satisfaction (Giannakoudi, 1999).

The electronic banking evolution such as internet banking has revamped the nature of personal banking relationships and has numerous benefits as compared to the conventional banking delivery channels. In this light, electronic transactions were facilitated by the widespread use of various electronic payment systems. Banks in their concerted effort to provide enhanced and convenient services to their customers have transformed into the use of electronic innovations including the Automated Teller Machine (ATM), telephone banking, personal computer banking, internet banking, branch networking and electronic funds transfer at point of sale such as the E-zwich in Ghana.

The South African company Net 1 UEPS sold e-zwich to Ghana and the primary goal for purchasing it was for Ghana to become the world's first cash-lite economy. E-zwich offers a common platform that links the payment systems of all banks including rural and community banks and savings and loans companies in Ghana. E-zwich enables the uploading and spending of cash electronically. It also allows for the settlement of payments. In Ghana electronic payment platforms constitute card payment system (in the case of this study - e-zwich card), mobile payment system (MPS) and Cheque payment system (CPS).

However, in recent times, the question that has emanated is whether the e-zwich payment system has been able to achieve its set objectives since its outset. It is therefore crucial to establish the challenges that have led to the inability of the e-zwich from achieving some of its objectives.

The principal task of the research is therefore to assess the challenges of the e-zwich payment system.

1.1 Statement of the Problem

The outset of e-zwich in 2008 was the first of its kind in Ghana notwithstanding the fact that cash payment system continues to dominate the mode of payments in the country. Additionally, the education needed to attain and realize its full potential is not fairly distributed coupled with its associated challenges as mentioned by Kumaga (2010) and for that matter its impact on the economy

According to Kumaga (2010, p.22) "Electronic payments in most African countries is very limited in use or virtually non-existent". In most African countries the required infrastructure, legal and regulatory framework for electronic payments are lacking (Taddesse & Kidan, 2005). In particular, electronic payments infrastructure such as e-zwich and mobile payment systems are not widely available in Africa. Banks and other financial institutions are not adequately automated to enable e-banking and e-payment (Kumaga, 2010). The objective for the outset of e-zwich was to minimize cash handling, ensure personal security in the payment system and to eliminate inflationary price rounding-up practices.

There is a fear that some of the objectives of the e-zwich payment system might not be achieved due to some challenges that it might be encountering. For instances, some smart card users assert that the e-zwich Point of Sale (POS) device is unable to read their fingerprints successfully. As a result of this, some shop keepers reported angry encounters with card holders who they turn away because the machine said that they were not the rightful owners of the card (Abdul-Rahman et al., 2009). These challenges could be just a few of the many more challenges that the e-zwich payment system is facing. Also there is the question of whether those reporting these challenges are just isolated cases or are representative enough for e-zwich payment system users. This research therefore intends to assess challenges of the e-zwich payment system and the factors that lead to these challenges.

1.2 Research Objectives

The objective of the study is to establish the challenges of e-zwich electronic payment system in Ghana. In order to achieve this, the following specific objectives were pursued:

- examine the ownership and usage of e-zwich smart cards
- establish challenges of e-zwich payment system in Ghana.
- determine factors that cause challenges of the e-zwich payment system in Ghana

1.3 Research Questions

The research seeks to answer the following:

- Do customers have ezwich cards and do they use it?
- What challenges confront the e-zwich payment system in Ghana?
- What factors contribute to these challenges?

1.4 Significance of the Study

The research findings will be significant to stakeholders such as GhIPSS, Government of Ghana, Banks, other Financial Institutions and Individuals. The findings of the study would be useful to policy makers to be able to prioritize issues undermining the challenges of the e-zwich payment system and subsequently roll out effective intervention measures to stimulate patronage in the use of e-zwich payment system. Furthermore, it will serve as a reference point for further studies or research by the academia and industry into the challenges confronting e-zwich payment system in Ghana.

1.5 Scope and Limitations of the Study

The study will use 25 selected financial institutions which encompass 14 commercial banks, 4 rural banks, 5 investment firms and 2 savings and loans institutions, and information obtained from e-zwich cardholders and non-cardholders. Ideally, commercial banks provide services such as accepting money on various deposit accounts, giving business and auto loans, mortgage lending and basic investment products. Rural banks represent the traditional brick and mortar institutions that undertake a mix of microfinance and commercial banking activities structured to satisfy the need of the rural population. Investment firms on the other hand offer investment advice and brokerage services including origination, underwriting and placement of securities in money and capital markets.

The sample size of 100 respondents study small in terms of taking Ghana as a whole and hence the results cannot be generalised. Also considering the fact that the research was limited to the Tarkwa Nsuaem Municipality, generalising the study results may not be appropriate.

LITERATURE REVIEW

2.0 Introduction

The issues reviewed include challenges of electronic payments(general), electronic payment systems in Africa, challenges of electronic payments (to Africa), barriers to retail payment systems in Ghana and services offered

by the e-zwich payment services

2.1 Challenges of Electronic Payments

There are a lot of challenges that confronts the adoption and patronage of electronic payments worldwide despite its numerous benefits. The study looks at the overall challenges and later focus on the challenges that are peculiar to the developing countries notably Africa. Previous research conducted identified these challenges to include Security, Infrastructure, Regulatory and Legal Issues, and Socio-Cultural challenges.

2.1.1 Security

The security of information and data is relevant in all information systems. According to Kumaga (2010, pg. 18) "information security is the practice, procedures and technology put in place which ensures that information is safeguarded from:

- Integrity (modification or accidental change)
- Confidentiality (unauthorized access to information)
- Availability (readily available to authorized users on demand)

Trust is very crucial to ensure user acceptance and as such electronic payment systems are no exception. This is partly because an unsecured electronic payment system may not be trusted by users.

In the work of Worku (2010), the author specified that e-payment and e-banking applications reflects a security challenge as they depend greatly on critical ICT systems that create vulnerabilities in financial institutions, businesses and potentially endanger users. "It is imperative for banks to understand the potential of ICTs in delivering e-banking applications" Worku (2010).

Electronic financial transactions in order to be secured must satisfy the following requirements;

a) Integrity and Authorization

According to the CISM Review Manual (2006), integrity is defined as the accuracy, completeness and validity of information in agreement with expectations and business values. This means that money can be taken from a user only when he or she authorizes a payment transaction. Furthermore, users might require not receiving any payment without their explicit consent; this is desirable when users want to avoid unsolicited bribery (Asokan et al., 2000).

b) Confidentiality

The CISM Review Manual (2000) defined confidentiality as the protection of delicate or exclusive information from unauthorized disclosure. Confidentiality is mostly required by parties involved in a particular transaction. In this context, confidentiality signifies the restriction of knowledge about various pieces of information related to a specific transaction; payer or payee identity, purchase content, amount et cetera. Asokan et al. (2000) mentioned that participants involved in a transaction require communications to be kept private. In the authors' point of view, where anonymity or untraceability are desired, the requirement maybe to limit this knowledge to certain subsets of the participants only.

c) Availability and Reliability

This is concerned with ensuring all information systems and data are set for use when they are required. It is often expressed as the percentage of time that a system can be used for protective work. All parties desire the ability to make or receive payments whenever appropriate (Asokan et al., 2000).

2.1.2 Infrastructure

The successful implementation of e-payments, demand for the availability of infrastructure. Proper infrastructure for electronic payments is a challenge (Taddesse & Kidan, 2005). A larger proportion of the population must be able to access reliable and cost effective infrastructure to make e-payments successful. Computer networks such as the internet and mobile network, forms part of electronic payment infrastructure. It is important that banking activities and operations area automated (Kumaga, 2010, pg. 20). A network that connects banks and other financial institutions for clearing and payment confirmation is a crucial requirement for electronic payment systems (Taddesse & Kidan, 2005).

Generally, users in the developed world do not face complications with communication infrastructure since mobile networks and internet are readily available. Contrariwise such communication infrastructures are not either available or easily accessible in Africa. "Poor communication infrastructure is one of the reasons that hinder the e-payment system in Africa" (Taddesse & Kidan, 2005).

Worku (2010) narrated that the low level of interest penetration and poorly developed telecommunication infrastructure obstructed continuous development and enhancements in e-commerce in Ethiopia. Many of the rural dwellers in Africa are unbanked and lack access to crucial infrastructure that facilitates electronic payments.

Debit card technologies such as Automated Teller Machines (ATMs) are still regarded as unstable for

financial transactions as stories told by many suggests that money can be lost through fraudulent deductions, debits and other errors associated with such technology as prevalent over the last few years. In a related work by Mishra (2008) the development of e-payments in Nepal are impeded by lack of telecommunication and electricity. The author further argues that a major challenge for the development of e-payments in Nepal is ICT development which is in its infant stage.

2.1.3 Regulatory and Legal Issues

The successful implementation of e-payment schemes requires for national, regional or international set of rules, regulations and laws. Among these elements include regulations on money laundering, banking supervisions and e-money institutions by supervising authorities, payment system oversight by central banks, consumer and data protection, cooperation and competition issues (Taddesse & Kidan, 2005).

As indicated by Worku (2010) lack of applicable legal and regulatory framework for e-payment in Ethiopia is a challenge. From the author's point of view, current laws in Ethiopia did not accommodate electronic contracts and signatures. Legislations to deal with e-payments and e-commerce concerns such as electronic contract validity enforcement, digital signatures and intellectual copyright and restriction of encryption technology usage were not to be enacted in Ethiopia.

Mishra (2008) argued that there had been no promotion of laws and regulations to cover the legal status and issues of e-payments, and the issue had been highly prioritised in expectation of a legal framework. National regulatory and legal framework that aligns with regional and international agreements is critical in advancing a certain and conducive environment (Taddesse & Kidan, 2005).

2.1.4 Socio-Cultural Challenges

The use of different forms of money such as credit cards in North America and debit cards in Europe in addition to cultural and historical differences in attitudes impede the task of developing an electronic payment system that is applicable at international level (Taddesse & Kidan, 2005). According to the authors', the difference in the required level of security and efficiency among individuals of different cultures and level of development escalates the problem. Consumer's decision to adopt new technologies has been influenced negatively by high level of confidence and trust in the traditional payments systems. Consumers must be confident about the protection of their privacy and guarantee of adequate security (Taddesse & Kidan, 2005). Nonetheless, it require the test of time for people to be confident in new technologies even if it is less expensive and easier to use than older methods.

2.2 Electronic Payment Systems in Africa

A larger number of the African population virtually have no or limited access to electronic payments. This is as a result of the non-existence of adequate infrastructure and appropriate laws and regulations to enhance and promote e-payments. Furthermore, excessive comfortability and absence of technicalities in the traditional method of using real cash for daily transaction payment dampens the confidence of people in emerging and existing payment mechanisms in Africa.

Electronic payments communication infrastructure such as the internet and mobile networks are not widely available in Africa (Kumaga, 2010, pg. 22). Moreover, banks and other financial institutions are not adequately automated to facilitate e-banking and e-payment. The absence of appropriate legal and regulatory framework also poses a great challenge to the successful implementation and adoption of e-payments.

2.3 Challenges of Electronic Payments in Africa

The following have been identified by Taddesse & Kidan (2005) as impediments to the introduction, adoption and growth of e-payments in African countries.

- Majority of African banks do not issue credit cards. Typically, individuals have to open foreign bank accounts to access credit cards.
- Behavioural constraints: Africans are used to the traditional methods of using cash in most of their transactions. It affirms the fact that the African society is cash-based.
- The prevailing security issues in relation to the development of e-payments in Africa minimize the level of confidence in the e-payments.

A related work conducted by Worku (2010) identified the challenges confronting the adoption of e-payments and e-banking in Ethiopia to include the following:

- Poor telecommunication infrastructure and low level of internet penetration obstruct smooth development and advancement in e-payments and e-commerce in Africa.
- Lack of appropriate legal and regulatory framework to develop electronic payment
- Inadequate or Weak banking system.
- Unstable economic and political environment in neighbouring African countries impede smooth business operation and free flow of goods and services.

- High level of illiteracy prevalent in most African countries pose a great challenge to the adoption of electronic payment systems. The result is inaccessibility to banking services. Basic ICT knowledge is essential to the realization of the full benefits of electronic payments.
- The high cost of internet access proportionate to per capita income is a critical factor. The cost of entry into e-commerce and e-payments is extremely high in African countries compared to the developed countries. This encompasses high initial investments costs, high cost of computer equipment, telecommunications and licensing requirements.
- Frequent power outages resulting from unstable power supply impede the smooth operation of e-payments and e-banking.
- Customers and staff resistance to technological changes due to

2.4 Barriers to Retail Payment Systems in Ghana

In a research conducted on 'Electronic Retail Payment Systems', Appiah & Agyemang (2004, pg. 50) identified certain barriers to retail payment systems in Ghana to include the following:

a) High Cost of Internet Access

The high internet cost, lack of local loop infrastructure and high cost of international interconnection pose as a great barrier to the development of payment systems in Ghana. This discourages merchants from investing in terminals thereby denying many potential customers access to the use of electronic payment instruments in the country.

b) Confidence and Security

The use of certain electronic payment models like card payments lack the provision of adequate security to customers particularly when a customer processes a transaction over the internet which makes him or her vulnerable to greater threats. Fundamental features such as security, confidence, reliability and efficiency are imperative for electronic payment solution. Most importantly, consumers are more inclined to trust and use a newly developed electronic payment device when there is evidence of adequate security.

c) Telecommunication Infrastructure

Ghana has an underdeveloped telecommunication infrastructure. This is characterized by poor quality that impedes against the development of retail payment systems in the country. The case is even worse in the remote part of the country.

d) Lack of Knowledge and Skill

Majority of Ghanaians consumers and business enterprises have limited skills and knowledge pertaining to what services exist, how to operate and what benefits to gain from them. Because of the high illiteracy level in the country, most of the people do not recognize the economic relevance of electronic retail payment systems in the country.

e) Acceptance and Network Externalities

Electronic payment systems as a medium of exchange generally can be a success only if there is user acceptability. However, this is hindered by consumers' strong preference for cash payments particularly because of the high degree of familiarity.

Financial intermediaries and other existing companies in the country are unwilling to invest in the development of innovative products which affects the advancement of electronic payments in Ghana. Also, low network externalities prevents consumers from using electronic payment instruments since most businesses do not accept cards for payment of goods and services.

f) Challenge of the Unbanked population

About eighty (80) percent of the Ghanaian population neither has nor operate a bank account despite the economically activeness of the majority of the 'unbanked' in either the formal or informal sectors of the economy (supported by Ackorlie's, 2009 findings).

Thus, encouraging millions of people in Ghana to join the mainstream financial system is a great challenge. Most of them who earn insufficient income virtually do not recognize any benefit with the electronic payment system not alone open an account with the bank.

g) Uncoordinated Banking System

In the Ghanaian banking system, each and every bank does its own thing which is not good for the country. The lack of cooperation amongst existing banks makes it difficult for them to switch to electronic than in developed nations like France, UK, Finland and Canada.

h) Attitude to New Products

Most Ghanaians are reluctant to use new schemes until a sufficient number of their counterparts use them. Otherwise, it is difficult to influence them to do so particularly when they are already dissatisfied with the current system they are using.

2.5 Services offered by the E-zwich Payment Services

The two main types of services provided by the e-zwich POS device are namely Transactional and Merchant types.

2.5.1 Transactional Types

This type of service is mainly concerned with banking and money transfers.

a) Banking

Cash deposit, savings and withdrawals constitute the banking transactions under transactional services.

- **Savings**

  Currently the e-zwich has two activated wallets. These are primary and savings. Funds kept in the savings wallet may attract interest depending on the issuing bank's applicable rate. Interest is computed on a daily basis and credited to the savings wallet of the client's card at the end of every month. Savings could be from salaries, wages, pension payments and money transfers to a client card of which part are maintained. Thereafter, a 10-digit signature code is created to enable the card to load funds either online or offline. This encrypted code can only be loaded to the client card's unique sequence number (USN) once.

- **Cash deposit**

  The e-zwich permits clients to deposit cash to their personal smart cards. In this case, the deposits can be paid into the savings or primary wallet. The deposited cash remains until it is used at an e-zwich ATM or POS device. Money kept on the e-zwich smart card is the same as money kept at the bank. The key advantage is that funds on the e-zwich card can be accessed from multiple institutions. There is no specific limitation to the amount of money that can be deposited or kept on the smart card and no charge fee on cash deposits. The biometric data or fingerprints taken at the enrolment stage protect money deposited on the e-zwich smart card.

- **Withdrawals**

  Drawing cash from your e-zwich card reduces the electronic value stored on it. It involves the verification of the cardholder and update of available funds on the card by the POS device. This can be done by the teller at the bank or retail merchant. An Offline transaction on the POS device also enables cash withdrawals at any part of the country and does not require connection to the host server. Similar to cash deposit there is no specific limitation to the amount of money that can be withdrawn from the card unless a limit has been placed on the card during registration. The total amount withdrawn is credited to the paying bank's account the day after settlement has been performed on the POS device.

b) Money Transfer

It is possible for cardholders to transfer money to or from other e-zwich cards or to and from their accounts held with banks. The types of transfers that can be made on the e-zwich smart card include wallet to wallet, card to card, card to phone, card to person, card to bank and bank to card. E-zwich offers cost effective and speedy money transfer options to its users and money transferred can be loaded at any available point of sale (POS) device. The recipient of the remittance can receive the money immediately or the next day depending on the type of transfer made.

The card to card transfer can be done both online and offline. The amount transferred is available to the recipient after the day's settlement has been conducted under the offline transfer. Information on the recipients unique sequence number and the transfer amount must be given to the bank teller to be able to perform the transaction.

The card to bank or bank to card transfer enable direct funds transfer from the e-zwich card to user's personal bank accounts or from the user's personal bank accounts unto their e-zwich smart card in real time. It is an online transaction made possible as the users' traditional accounts are linked to the e-zwich smart cards during enrolment.

However, this service is only available to cardholders whose banks have successfully completed the e-zwich integration. Notwithstanding, in the absence of a cardholder, cash can be transferred to the unique sequence number of the cardholder's e-zwich smart card by a non-cardholder. This is also an online transaction.

The cardholder has to perform an online autoload and the funds less the fees charged are transferred to the smart card. After this is completed both teller and client receipt is generated showing details of the transaction.

Third party bill payment is made possible on the e-zwich POS device. It requires linking bank accounts to the e-zwich smart card. It is an offline transaction that allows cardholders to link up to not more than eight (8) bank accounts to their smart cards. Instance where an account has not been linked, the details are entered manually to make transfers possible.

2.5.2 Merchant Types

The merchant agent and retail merchant are the available types under the merchant types.

The **merchant agent** is one that is able to deposit e-money unto the cardholder's e-zwich smart card in exchange for real cash. Merchant agents' keep deposit in their accounts held with banks to be converted to electronic money which is downloaded to the POS device to enable cash transactions. Conversely, the **retail merchant** accepts payment for goods and services from cardholders. The retailer's bank account is credited with the daily sales the next day after settlement is completed. Retail merchants are equally registered on the platform and allocated unique merchant reference number (MRN).

Funds are then transferred automatically from the e-zwich smart card to the retail merchant. The linked bank account belonging to the retail merchant receives the funds transferred the day after settlement has been performed. Retail merchants offer all types of transactions with the exception of cash deposit typically offered by banks. A retail merchant would have to become a merchant agent in order to be able to offer cash deposit.

3.0 RESEARCH METHODOLOGY

The research study employed the qualitative research design. The population for the research comprised of 368,217 Representatives and Senior Officers 25 selected Banking and Financial Institutions from the Tarkwa Nsuaem Municipality. The sample size of 100 for the study was determined using the International Fund for Agricultural Development (IFAD) formula which is given as:

$$n = \frac{t^2 * p\,(1-p)}{m^2}$$

Description of the variables in the formula used:

- n= required sample size
- t= confidence level at 95% (standard value of 1.96)
- p= estimated percentage of the target population with comparable characteristics
- m= margin error at 5% (standard value of 0.05)

Based on the target population that engage in one form of electronic payment system or the other (p) set at ninety three (93) percent which is equivalent to 0.93 of the sample size for the research is computed as follows:

$$n = \frac{t^2 * p\,(1-p)}{m^2} = \frac{(1.96)^2 * 0.93\,(1-0.93)}{(0.05)^2} = \frac{3.8416 * 0.93\,(0.07)}{0.0025} = \frac{3.8416 * 0.0651}{0.0025}$$

$$n = \frac{0.25008816}{0.0025}$$

$$n = 100.04$$

$$n = \underline{\mathbf{100}}$$

Respondents for the study were then chosen using the purposive sampling technique (above 18 years of age) who use electronic cards for transactions. The financial institutions used for the study included banks such as GCB Bank, Ecobank, Zenith Bank, Stanbic Bank, Barclays Bank, CalBank, GN Bank, Access Bank, Societe-General Ghana, National Investment Bank, Unique Trust Bank, Fidelity Bank, Universal Merchant Bank, Guaranty Trust Bank, Fiaseman Rural Bank, Lower Pra Rural Bank, Ahantaman Rural Bank and Amenfiman Rural Bank. Non-financial institutions like McCottley Capital, GoldCoast Securities, Golden Pride Savings and Loans, IGS Financial Services, Legacy Financial Services, Goldman Capital and Multi Credit Savings and Loans.

Telecommunication firms like Glo, Vodafone, MTN, Airtel and Tigo were excluded in the frame primarily because they have designed and implemented their own electronic payment systems for their customers. The method used was to ensure a fair representation and response devoid of sentiments and emotions from the sampled respondents. The rate of response from the sampled population was 100%. The researcher encouraged participation in the study through emails and follow up calls.

The data collection instruments employed for the study include questionnaires and interview. It was used in collecting primary data in the research. The questionnaire had both close and open ended questions. Secondary data used in this research include published and unpublished data such as journals and company report. In terms of reliability and validity, questionnaires were pre-tested at two banks, Barclays Bank (Ghana) Limited and Guaranty Trust Bank using three customers each and two bank officers each. Inconsistencies raised on questionnaire were corrected as such.

RESEARCH ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter discusses and presents the obtained results from the research with respect to data gathered from respondents of the questionnaires and produces Tables and Charts to enable comparison of variable characteristics evident in answers provided by respondents. It presents a combined section of results obtained from both individual respondents and banks.

4.1 Age Distribution

Age is key variable which influence people's ability and capacity to accept innovations, conditions and events. An individual's age determines his or her interest in embracing a new technology.

The study revealed that individuals within age group 18-25 formed the majority of respondents (47 percent) that espoused the e-zwich payment system. This was followed by 26 percent which fell under less than 18 age group with the least group (9 percent) coming under 26-35, 36-45 and above 45 age group as shown in Fig 4.1.1 below.

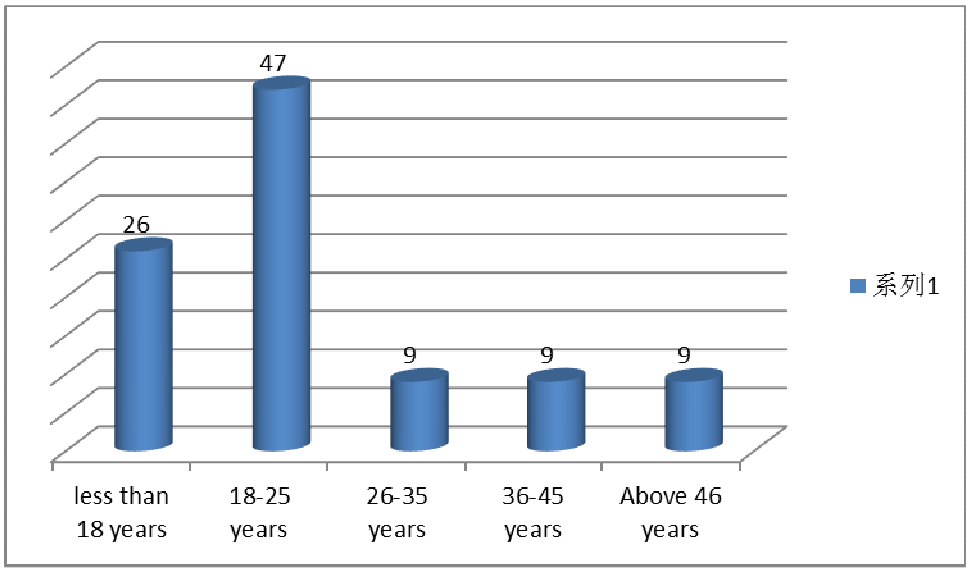

Fig 4.1.1: Age distribution of respondents
(Source: Fieldwork, September 2016)

4.2 Educational Level

Education is a variable of crucial importance in the comprehension and application of basic concepts, principles and regulations. Since this research seeks to assess the challenges of electronic payment systems and its causative factors, it is imperative to ascertain the educational level of respondents to help assess the level to which they can appreciate issues that are indispensable in the payment system technology.

It was revealed that all the respondents had attained some level of formal education. Table 4.2.1 indicates the highest educational level of respondents. As illustrated, most of the respondents (34 percent) suggested they had up to SHS/ Technical and Vocational education whiles 32 percent had achieved Diploma/ Certificate/ Higher National Diploma (HND) and Degree level of education. This is followed by 18 percent for JHS education and 16 percent for Post Graduate (masters) education.

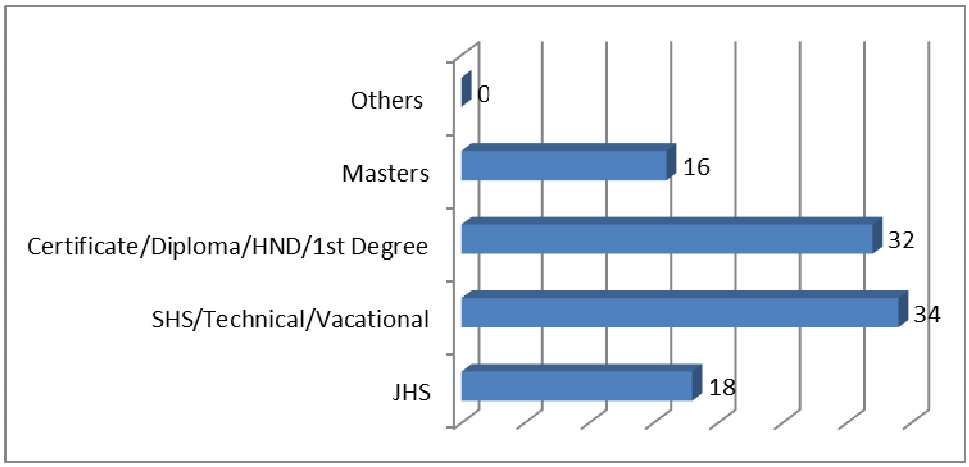

Fig 4.2.1: Educational level of respondents
(Source: Fieldwork, September 2016)

Relatively, the respondents' educational level was high as shown in Fig 4.2.1. Hence, it can be deduced that they are capable of using the e-zwich smart card effortlessly for their personal transactions and with comfort.

4.3 Electronic Payment Systems Provided by Banks

In line with the objective of the study, the research also sought to find out the various types of electronic payment products that banks offer to its customers for their transactions. This was conducted to ascertain the availability of the various electronic payment instruments or otherwise the level of enthusiasm customers exhibit with regards to doing business with the banks.

The electronic payment instruments made available by banks to their customers include ATM, E-zwich, Telephone Banking, Online Banking, Mobile Money Transfer and Cheque facilities as shown in Fig 4.3.1 below.

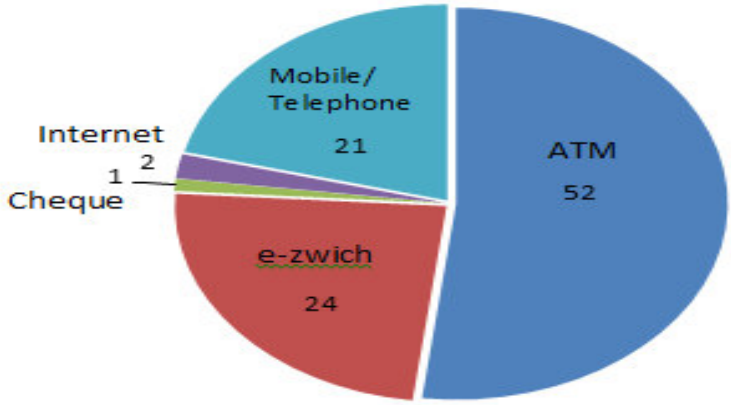

Fig 4.3: Types of EPS provided by Banks
(Source: Fieldwork, September 2016)

The result shown in Fig 4.3.1 indicate that ATM, followed by E-zwich and Telephone banking were the main electronic payment options offered Banks to customers. The implication is that customer's choice and use of a payment instrument will be tilted towards ATMs, E-zwich and Telephone/Mobile Banking.

4.4 EPS Owned by Respondents

As shown in Table 4.4.1, all the respondents were asked if they owned any form of electronic instrument such as ATM, Visa, Master Card and E-zwich for personal transactions. Out of the 100, 64 percent answered positive and 36 percent negatively. This means there is high acceptability level and patronage of EPS in the Tarkwa Nsuaem municipality.

Table 4.4.1: EPS owned by respondents

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	64	64.0	64.0	64.0
No	36	36.0	36.0	100.0
Total	100	100.0	100.0	

(Source: Fieldwork, September 2016)

4.5 Customers willingness to use Electronic Payment Instruments

The 64 respondents that confirmed positively were asked about their willingness to use their electronic payment instrument. Out of the 64 respondents, 35 representing 55 percent admitted strongly their willingness to use their electronic instruments. 18 representing 28 percent answered averagely and 11 representing 17 percent did not show much eagerness in using their electronic instruments for any personal transaction. The result is shown in the Table 4.2.3.

Table 4.2.3: Willingness to use EPS

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
High	35	54.69	55.0	55.0
Average	18	28.13	28.0	83.0
Low	11	17.19	17.0	100.0
Total	64	100.0	100.0	

(Source: Fieldwork, September 2016)

4.6 Usage of EPS by Respondents

Table 4.2.5: What EPS are used for

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Online Payment	6	9.4	9.0	9.0
Payment of goods and services by POS	10	15.6	16.0	25.0
Withdraw cash from the atm	31	48.4	48.0	73.0
Receive money (E-zwich/ MPS)	16	25.0	25.0	98.0
Send money (E-zwich/ MPS)	1	1.6	2.0	100.0
Total	64	100.0	100.0	

(Source: Fieldwork, September 2016)

Out of the 64 respondents who answered having one form of EPS or the other, 31 representing 48 percent admitted using EPS such as ATM for cash withdrawal. 16 representing 25 percent indicated receiving money via EPS such as E-zwich and Mobile Money whiles 10 representing 16 percent used their EPS for the payment of goods and services. The remaining 6 and 1 representing 9 and 2 percent were used for online transactions and remittance of money via E-zwich or Mobile Money respectively. The result is shown in Table 4.6.1.

4.7 Respondents with a Valid E-zwich Smart Card

Out of the 64 respondents who admitted having one form of an EPS, 55 representing 86 percent of the respondents admitted they had e-zwich smart cards against 9 representing 14 percent who confirmed they do not have valid e-zwich smart card. The study reveals that the proportion of respondents with valid e-zwich cards far exceeds those that do not have indicating high acceptability level for the e-zwich card in Tarkwa Nsuaem as shown in Table 4.7.1 below.

Table 4.7.1: Respondents with e-zwich cards

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	55	85.94	86.0	86.0
no	9	14.06	14.0	100.0
Total	64	100.0	100.0	

(Source: Fieldwork, September 2016)

4.8 Usage of E-zwich smart cards

Table 4.4.8: Use of e-zwich cards

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	30	54.4	54.0	54.0
No	25	45.6	46.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

Among the 55 respondents who had valid e-zwich smart cards, 30 representing 54 percent confirmed using their e-zwich card to perform electronic payment transactions while 25 representing 46 percent admitted they never used their e-zwich card for any transaction.

This reveals that the level of adoption of e-zwich payment system is high considering the fact that the

proportion of respondents that use their smart cards for electronic transactions exceeds 50 percent. The result is shown in Table 4.4.8.

4.9 Challenges of E-zwich

The adoption of e-zwich is characterized with some challenges though the payment system has been envisaged to be efficient for conducting electronic transactions (Abor, 2004). The five point Likert Scale Statements was used to ascertain the views of respondents on the various challenges confronting e-zwich smart card payment system

4.9.1 Lack of Knowledge and Skills in Information Technology

The obtained results from the findings show that 89 percent of the respondents agree that inadequate or lack of requisite knowledge and skills in basic computing is a challenge confronting the adoption of e-zwich payment system. 7 percent were undecided whiles 4 percent disagreed with the statement. This is shown in Table 4.5.1.

Table 4.9.1: Lack of knowledge and Skills

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	33	60.0	60.0	60.0
Agree	16	29.1	29.0	89.0
Undecided	4	7.3	7.0	96.0
Strongly Disagree	2	3.6	4.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

4.9.2 Complex Procedures

Table 4.9.2: Complex procedures

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	28	50.9	51.0	51.0
Agree	15	27.3	27.0	78.0
Undecided	6	10.9	11.0	89.0
Strongly Disagree	6	10.9	11.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

The results in Table 4.9.1 show that 78 percent agreed that complex procedures involved in conducting e-zwich transactions constitute a challenge. Contrariwise, 11 percent were undecided and 11 percent strongly disagreed with the statement.

The implication is that majority of the respondents are concerned that the e-zwich operations are cumbersome and tends to deter them from using it for electronic transactions.

4.9.3 Preference for Human Tellers to Machine

The response obtained from respondents on preference for human tellers to machine showed that 73 percent agreed. 16 percent disagreed and 11 percent were undecided. The findings from the study reveals that most of the respondents are comfortable with the traditional method of dealing directly with tellers rather than having to go through cumbersome and complex process of e-zwich operation. The high preference for human tellers discourage them from using e-zwich smart cards for electronic payments. The result is shown in Table 4.9.3.

Table 4.9.3: Preference for Human Tellers

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	23	41.8	42.0	42.0
Agree	17	30.9	31.0	73.0
Undecided	6	10.9	11.0	84.0
Disagree	9	16.4	16.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

4.9.4 Preference for Cash Payments

Table 4.9.4: Preference for cash payment

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	19	34.5	35.0	35.0
Agree	23	41.8	42.0	77.0
Undecided	9	16.4	16.0	93.0
Strongly Disagree	4	7.3	7.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

With regards to preference for cash payments, 77 percent of the respondents agreed, 16 percent were not certain whiles 7 percent disagreed with the statement. Thus, the percentage of the respondents that agreed far exceeds those that disagreed which give the impression that majority of the respondents do not have confidence in the non-cash payment for that matter e-zwich. The low confidence level with respect to electronic payment models particularly e-zwich can be attributed to lack of trust for non-cash payments, poor network connection and transaction errors.

This is in agreement with the observation made by Abor (2004) that individuals prefer cash payments which can be directly observed and verified. The result is evident in Table 4.9.4.

4.9.5 Inadequate POS Device at Banks

As illustrated in Table 4.9.5, all the respondents expressed their view regarding inadequate e-zwich POS devices. 69 percent of the respondents agreed that inadequate POS devices obstruct the use of e-zwich smart cards for electronic transactions. 6 percent of the respondents were uncertain whiles 25 percent of them disagreed. The findings supports Bank of Ghana's conclusion in 2010 that most of the service providers in Ghana do not have the e-zwich POS devices where electronic transactions can be done.

Table 4.9.5: Inadequate POS Devices

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	21	38.2	38.0	38.0
Agree	17	30.9	31.0	69.0
Undecided	3	5.5	6.0	75.0
Disagree	9.	16.4	16.0	91.0
Strongly Disagree	5	9.1	9.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

4.9.6 Inadequate Marketing/Advertisement/Education

On inadequate marketing campaign or advertisement on e-zwich, 60 percent respondents agreed, 20 percent respondents were uncertain and 20 percent respondents disagreed. The finding shows that most of the respondents do not have sufficient information on e-zwich payment system, operations and its functionalities. The implication is that the respondents are discouraged from using the e-zwich smart cards because they are not adequately informed about it. The extent to which a new technology is adopted lies heavily on the marketing and promotional tools employed to educate people on the benefits of that technology. The result is shown in Table 4.9.6.

Table 4.5.6: Inadequate Marketing/ Advertisement

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	12	21.8	22.0	22.0
Agree	21	38.2	38.0	60.0
Undecided	11	20.0	20.0	80.0
Disagree	4	7.30	7.00	87.00
Strongly Disagree	7	12.7	13.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

4.9.7 Negative Attitude to New Products and Services

Table 4.9.7: Negative attitude towards innovation

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	17	30.9	31.0	31.0
Agree	15	27.3	27.0	58.0
Undecided	14	25.5	26.0	84.0
Strongly Disagree	9	16.4	16.0	100.0
Total	55	100.0	100.0	

(Source: Fieldwork, September 2016)

Out of the 55 respondents who had e-zwich cards, 58 percent agreed with the statement that negative attitude towards new products and services are a challenge of e-zwich payment system. 26 percent were not certain whiles 16 percent disagreed. The impression is that majority of the customers have negative attitude towards innovation or the introduction of new products or services. This may be due to the fact that they are accustomed to the traditional methods of transacting businesses. The result is shown in Table 4.9.7 above.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions of Findings

Based on the results obtained and discussed above, the ensuing relevant findings were made. From the research findings it was revealed that there is a high preference for Electronic Payment Systems (EPS) by the youthful population. The research found that people from the ages 25 years and below have high preference for electronic payment systems. This constitutes part of the working population and students at the tertiary, polytechnics, vocational, technical and high schools.

The research also found out that most people that use electronic payment models were educated and have basic knowledge of the benefits and use of Electronic payment instruments. This makes it easier and comfortable for them to perform their electronic transactions without facing any challenges. With respect to electronic payment systems identified in the municipality, ATM dominated as the most used medium for electronic transactions by customers. It was followed by the e-zwich payment system. The least patronized electronic payment system was cheques.

The study also found that though some people had one or more electronic payment instruments, they were reluctant to use them for electronic transactions. This was a result of challenges of electronic payment systems. For the case of e-zwich payment system, the study established the following challenges:

- Customers lacking Information Technology knowledge and skills
- e-zwich complex operating procedures discouraging customers from using it

The study found the following factors as contributing to the challenges identified above:

- preference for cash payments
- inadequate marketing, advertisement or education on the payment system
- preference for human tellers and
- inadequate e-zwich Point Of Service devices
- negative attitudes towards new products

5.2 Recommendations

It is imperative that all commercial banks, rural and community banks as well as savings and loans institutions deploy e-zwich point of sale (POS) terminals to all merchants, agencies and branches nationwide. Banks must endeavor to do more advertisement and education on electronic payment systems, especially the e-zwich payments system so people will appreciate and embrace the use of electronic instruments available.

Increased education on the functionalities and easy accessibility of the e-zwich smart cards should be undertaken by various Government, Banks, stakeholders, GhIPSS mentioned I earlier in this project. It's therefore recommended that future research use a bigger sample and also the scope should be widened across the ten regions of Ghana.

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