

**THE INTRODUCTION OF E-ZWICH IN GHANA: PROSPECTS AND
CHALLENGES**

by
KNUST

BUABENG PATRICK BOAKYE YIADOM



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DECLARATION

I, hereby, declare that this submission is my own work towards the MBA and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

Buabeng Patrick Boakye Yiadom

PG1640807

Student Name & ID

5-10-2009

Date



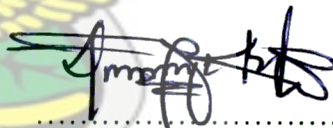
Signature

Certified by:

Mr Bylon Abeeku Bamfo

19/10/09

Date



Supervisor(s) Name

Signature

Certified by:

Mr. Sam Yaw Akomea

19/10/09

Date



Head of Dept. Name

Signature

DEDICATION

This thesis is dedicated to my late sister, Bridget Ankomaa Buabeng. May her soul rest in perfect peace.



ABSTRACT

Ghana has long recognized that modernizing the banking and financial sector and reducing the cost of doing business is a way of attracting the investment needed for rapid economic growth and has consistently designed policies to modernize the sector. The Bank of Ghana (BOG), the regulator of the banking and financial sector, rolled out the e-zwich, a national payment and settlements system that creates an electronic clearing house for all banking and financial institutions, as well as a biometric smartcard which is a very secure way of paying for goods and services both online and offline.

This study evaluated the prospects and challenges of the introduction of e-zwich in Ghana. The study focused on the adoption rate of Ghanaians and the impact of e-zwich on the Ghanaian economy.

A survey was carried out in the Accra metropolis among e-zwich card holders and merchants. Interviews were also conducted using an interview guide among selected Bank officials and the introducers of e-zwich (GhIPSS) to solicit their views.

Although the purpose for which e-zwich was introduced may not have been achieved, there are still a lot of transactions that make it very useful. Previous perceptions about the card have now changed as clients continue to patronize the product. With the exception of few technical hitches such as poor connectivity and so on, it seems it has a bright future.

It is recommended that massive education has to be embarked upon for the e-zwich to be embraced by all Ghanaians both the banked and the unbanked population. The study provided some recommendations towards improving e-zwich services in the country to make it attractive to the general public as well as the Banks and the Merchants of e-zwich.

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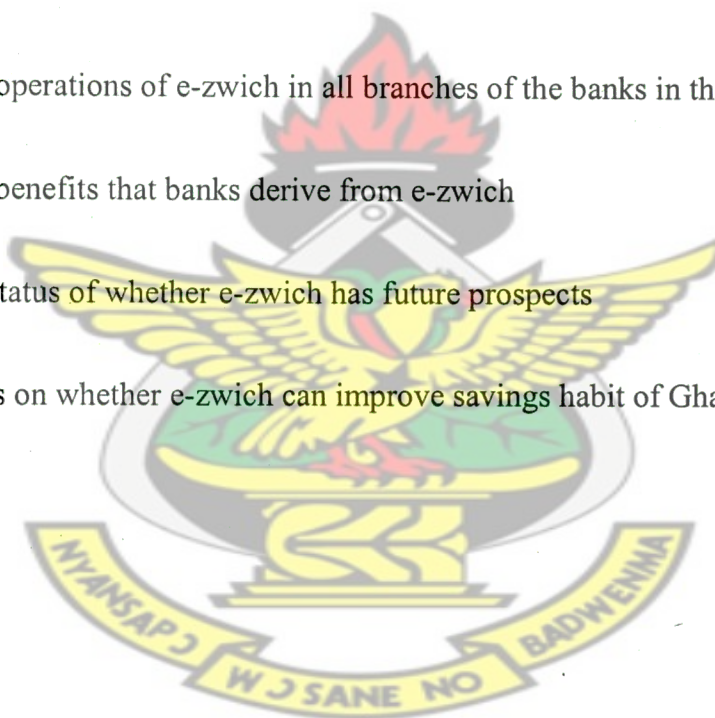
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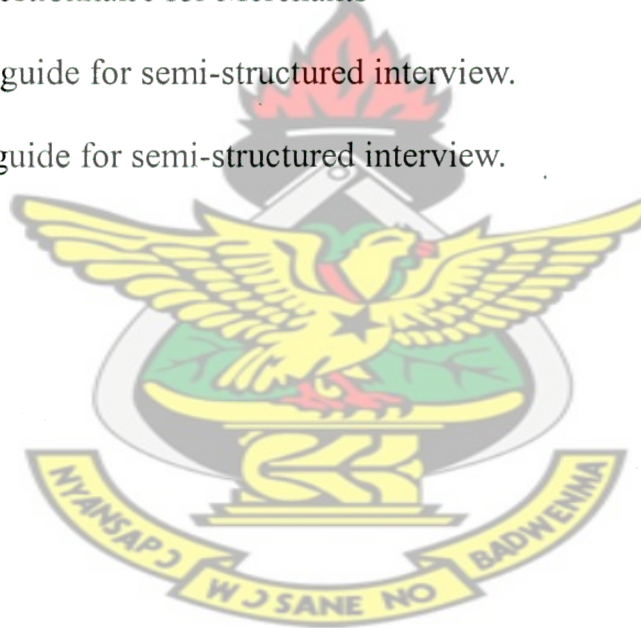
List of Abbreviations

ATM:	Automatic Teller Machine
AVR:	Automatic Voice Response
BoG:	Bank of Ghana
EFTPoS:	Electronic Funds Transfer at Point of Sale
FAMB:	First Atlantic Merchant Bank
GhIPSS:	Ghana Interbank Payment Settlement Systems
GPRS:	General Packet Radio Services
GSM:	Global System for Mobile Communications
ICT:	Information of communication and Technology
IT:	Information Technology
PC:	Personal Computer
POS:	Point of Sale
SCB:	Standard Chartered Bank
SGSSB:	Société Générale – Social Security Bank
SPSS:	Statistical Product for Services and Solutions
UEPS:	Universal Electronic Payment Systems
WWW:	World Wide Web

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May the Almighty God richly bless you all.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background of the study

The world has witnessed an upsurge in electronic payment instruments meant to facilitate trade and simplify payments (Abor, 2004). Before the introduction of electronic payment into the Ghanaian banking system, all customers had to walk into the banking halls to do transaction of all kinds. Customers had to queue up and waste more hours just to have access to and talk to a teller to make their transactions (Abor, 2004). The inconveniences caused by these long queues discouraged a lot of individuals from making payment or transacting business with the Banks.

For many years, bankers, technology specialists, entrepreneurs, and others have advocated the replacement of physical cash and the introduction of more flexible, efficient and cost effective retail payment solutions. Countless conferences and seminars have been held to discuss the concepts of cashless and “chequeless” society (Bank for International Settlement, 1998).

The first application of electronic banking took place in 1969 when Chemical Bank placed a cash dispenser at a branch in Queens, New York. Subsequently, many other banks joined in to experiment with various forms of E-Banking services (Xiao, 2007).

Electronic retail payment has been designed to help individual customers and companies as well as the banks in eliminating or reducing some of the problems inherent in the settlement and payment process (Federal Reserve Bank of New York, 1996). Customers can pay their bills without having to actually move to the bank's premises. They may also have access to their account information and even transfer money to other accounts in the comfort of their homes. (Abor, 2004).

Since the introduction of the electronic innovation in Ghana in 1995 by the Trust Bank, Ghanaian banks are making huge investments in technology to upgrade their infrastructure, in order to provide new electronic information-based services. Electronic services such as online retail banking are making it possible for individuals and small institutions to take advantage of new technologies at quite reasonable costs (Abor, 2004).

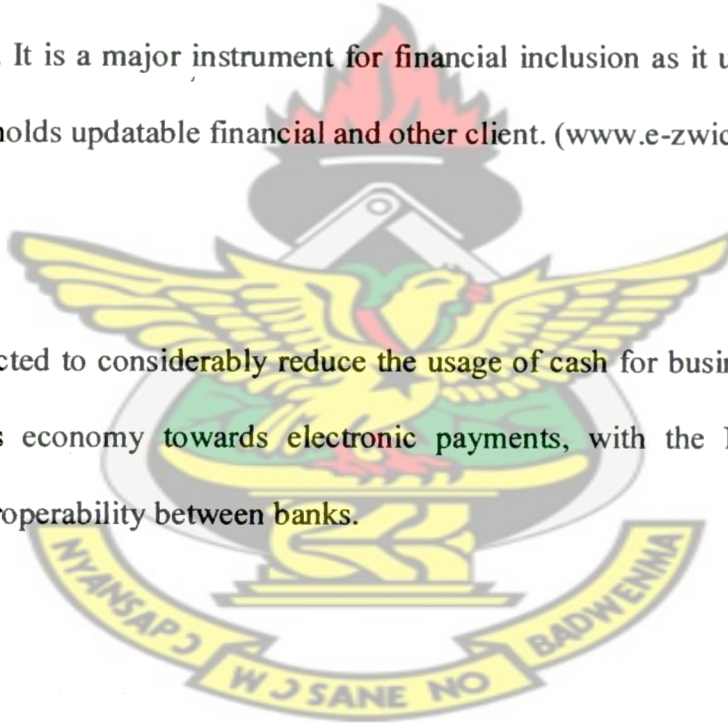
In Ghana, electronic retail payments are being continuously developed, to replace or reduce paper-based payments. Many new payment services have come into existence in recent years, most of which are based on technical innovations such as card, telephone and the Internet (Abor, 2004).

It is in this sense that the Bank of Ghana and the Ghana Association of Bankers have established the Ghana Interbank Payments and Settlement System (GhIPSS), an independent body which is responsible for the different components of Ghana's payment and settlement system infrastructure (www.e-zwich.com 2008).

The National Switch, e-zwich - the generic name for the Universal Electronic Payment System - will provide a common platform for most retail payment transactions in the country through integration of all existing bank switches thereby enabling the interoperability of all ATMs and Point of Sale (POS) systems. (www.e-zwich.com 2008).

The e-zwich will be responsible for accommodating local debit/credit magnetic stripe cards, international branded association cards, Universal Electronic Payment System (U.E.P.S.) smart cards, e-zwich Mobile Phone Bank Accounts, and in the future, cross border transactions. It is a major instrument for financial inclusion as it utilizes biometric authentication and holds updatable financial and other client. (www.e-zwich.com 2008).

The system is expected to considerably reduce the usage of cash for business transactions and move Ghana's economy towards electronic payments, with the National Switch allowing ATM interoperability between banks.



1.2 Statement of the problem

Payment for goods and services in Ghana is characterized by long queues, long-distance traveling and time wasting that generally affects business activities and ultimately economic development (Sarpong, 2003). Settling utility bills, payment for goods and

services, and money transfers have been a major headache for individuals and firms in Ghana resulting in declined business activities and huge debt to most of the utility service providers. In fact, the country has not yet realized the full benefits of the technological advances in electronic payment such as the use of cards, automated teller machines (ATM), the internet, mobile phones, etc. (Sarpong, 2003).

However, faced with such problems in the payment process, only a few payment solutions have been introduced so far in Ghana to solve them. Cash still remains the most popular retail payment instrument, despite the increase in the introduction of electronic payment schemes in the country (Sarpong, 2003).

The few payment mechanisms that are available are not being well patronized by Ghanaians. This has raised the question on whether the introduction of e-zwich can be implemented smoothly to improve the lifestyle of Ghanaians.

1.3 Objectives of the study

The general objective of the study is to identify challenges and prospects of e-zwich in Ghana. The specific objectives of the study include:

- To ascertain services that the e-zwich smart card provides/offers
- To evaluate the adoption rate of the e-zwich after months of introduction

- To determine the practical challenges of introducing e-zwich in the Ghanaian economy
- To suggest possible solutions to the present and future challenges of e-zwich in Ghana

1.4 Research questions.

With any new payment product, it is important that the key features of the product are clearly explained to the consumers and ensuring that the product actually works as described. Customers who fail to fully understand how the system work and the benefits to be derived from its use may take inadequate precautions in using the product. (Appiah *et al*, 2004). The major research questions for this study are:

- Can e-zwich replace existing payment systems and solve payment problems?
- How are customer attitudes about e-zwich changing?
- What are the impediments to market development and innovation in e-zwich?

1.5 Research Methodology

The methodology adopted involved the conduct of interviews and/or interrogation; preparation of a number of questionnaires and their administration. The questionnaires were designed to ascertain services that the e-zwich smart card provides, the adoption rate and the impact of e-zwich on the Ghanaian economy (both cardholders and merchants of e-zwich). Interviews were also conducted among each of the 13 randomly selected bank

officials, an official from Apex bank and an official of GhIPSS to solicit their views on the prospects and challenges of e-zwich

1.6 Relevance of the study

All Commercial Banks, Savings and Loan Companies and Community/Rural Banks are mandated to participate in E-ZWICH in order to create a common platform. At the same time they are to deploy the U.E.P.S. banking and payments application which offers a secure method of paying for goods and services in semi-urban, semi rural and deep rural environments. The Universal Electronic Payment System provides inter-operability between all bank branches, Point of Sale (POS) devices and ATM infrastructures. In other words a bank or community bank in the rural areas can facilitate Universal Electronic Payment System transactions arising from any Issuing Bank's smart card and mobile phone account holders.

In order to solve the logistical problem that banks are having with unreliable network infrastructures, the e-zwich caters for environments with limited or no communications and power infrastructure. The movement of electronic funds to and from these bank branches will be managed securely, efficiently by the e-zwich system. The system also has a multiple audit trail which helps to reconstruct transactions when the card gets missing. It reduces or eliminates the threat of armed robbers bolting with one's money.

Despite the recent remarkable successes in electronic payment in Ghana, there is more room for improvement to promote non-cash payment systems since a reliable and efficient payment system is crucial to the orderly operation of a nation's banking and financial system, its real economy and to the reputation of the central bank (Central Banking, 2004).

1.7 Scope of the study

The scope of the study covers the benefits and problems that the introduction of the E-Zwich will have on the people in Ghana.

It will also cover most of the transactions that the e-zwich smart card can perform and whether it will be accepted by all in Ghana.

Since the e-zwich has not taken effect in the entire country and only few people in the regional capitals have the e-zwich smartcards, the respondents of the questionnaires were selected among the e-zwich smartcard holders from 13 banks out of the 26 commercial banks in Accra.

The interviewees were: an official from the Ghana Interbank Payment and Settlement system (GhIPSS) office in Accra as well as an official each from 13 randomly selected Commercial Banks in Ghana and an official from Apex Bank.

1.8 Organization of the study

This study will be divided into six (6) chapters. Chapter one looks at introduction, statement of the problem, objectives of study, relevance of the study, scope of the study and organization of the study. Chapter two looks at the literature review. This chapter includes definitions and general terms used in this study. Chapter three looks at the methodology. Chapter four presents the findings of the study, chapter five is devoted to discussion of the results. The final chapter (six) is centered on summary, conclusion and recommendations.

1.9 Limitations of the study

Due to time and financial constraints as well as the E-zwich being new in Ghana, the interviews and questionnaires were limited only to the introducers of e-zwich and e-zwich smart card holders and Merchants (those who provide Point of Sale services) in Accra. (Thus Ghana Interbank Payments and Settlement System (GhIPSS) official, an official each from the randomly selected 13 commercial banks in Ghana as well as an official from the Apex bank and e-zwich Merchants and Customers)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The National Switch and Smartcard Payment System that would link the payment systems of all licensed banks and non-bank financial institutions in the country have been launched. The e-zwich, as it is called, operates under the new Universal Electronic Payments (UEPS) technology. The design of the e-zwich has been the joint work of the Bank of Ghana and the Ghana Association of Bankers, in cooperation with Net 1 Company of South Africa who provided the Technology and Technical support. (www.e-zwich.com 2008).

It is meant to ensure that all commercial banks, rural banks and savings and loans institutions implement a common payment platform and biometric smartcard and a secure way of paying for goods and services throughout the country based on biometric identification. (Oluniyi, 2008).

The introduction of the E-Zwich is an integral part of the government's overall vision of making Ghana the gateway to the West African sub-region, and transforming her into a major financial hub. Fundamentally, the system would allow Ghana to be a significant player in the global financial market and mark a major transformation in the financial and

payment systems of the country. The system would involve building a common platform to electronically link all banks, sales outlets, rural and commercial banks, automatic teller machines and all such payment systems so that the public could get easier access to financial transactions. (www.reconnectafrica.com 2008)

There will then be an E-Zwich smart card that will enable holders to use their thumbprint as a form of identification. The E-Zwich smartcard is unique in the sense that it requires little numeracy due to its biometric feature and has all the required security safeguards. Clients of E- Zwich can load money onto “smartcards”, which act in a similar way to bank debit cards, except they require biometric (fingerprint) identification instead of pin numbers and the cards can work in E-zwich Point Of Sale (POS) machines that are “off-line”, or do not require an active connection to the bank. (www.reconnectafrica.com 2008)

Transactions are authenticated using the finger print of the cardholder. This feature eliminates the problem of identity theft that prevails in many countries where card transactions are usually authenticated through PINs. With the new payment system Ghana has leapfrogged the existing technology in use in many advanced countries.

An e-zwich smartcard would also be much easier to obtain than opening a traditional bank account. All you basically need are your fingerprints to get the smartcard. The e-zwich smartcard contains both a current account and savings account wallet. Holders can

undertake transactions such as paying for goods and services, money transfer, cash withdrawals, third-party bill payments, and receiving salaries or pensions at any e-zwich point of sale terminal in the country. This means that people can undertake basic financial transactions at shops and petrol stations, post offices, etc. The system also has a mobile banking application to allow banking transactions to take place on the mobile phone. (www.e-zwich.com 2008).

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According to Acquah (2008), banks have developed products like ATM networks and debit cards which are largely limited to their own customers or members of their own network with limited coverage and access. The system is therefore becoming increasingly segmented and something must be done about it. However, once it is clear to the banks that the new payment platform would allow them access to a larger customer base and increase their profitability in the process, they are very cooperative.

Roland Moreno, a journalist in France, patented an idea in 1974 for a card that has become what is known today as 'smartcard' (Quisquater, 1997). With most of the innovation taking place in France, the developers of the smartcard began presenting the concept of electronic checks to the French Banks (Puverel, 2000)

In Sub-Saharan Africa, developments in information and communication technology (ICT) are radically changing the way business is done. Electronic commerce is now thought to

hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace (Balachandher *et al*, 2001).

Innovations in information processing, telecommunications, and related technologies – known collectively as “information technology” (IT) – are often credited with helping fuel strong growth in the many economies (Coombs *et al*, 1987). It seems apparent then that, technological innovation affects not just banking and financial services, but also the direction of an economy and its capacity for continued growth. IT is defined as the modern handling of information by electronic means, which involves its access, storage, processing, transportation or transfer and delivery (Ige, 1995). According to Alu (2002), IT affects financial institutions by easing enquiry, saving time, and improving service delivery. In recent decades, investment in IT by commercial banks has served to streamline operations, improve competitiveness, and increase the variety and quality of services provided.

According to Yasuharu (2003), implementation of information technology and communication networking has brought revolution in the functioning of the banks and the financial institutions. It is argued that dramatic structural changes are in store for financial services industry as a result of the Internet revolution; others see a continuation of trends already under way.

Many banks are making what seem like huge investments in technology to maintain and upgrade their infrastructure, in order not only to provide new electronic information-based services, but also to manage their risk positions and pricing. At the same time, new off-the-shelf electronic services such as online retail banking are making it possible for very small institutions to take advantage of new technologies at quite reasonable costs. These developments may ultimately change the competitive landscape in the financial services. A number of studies have concluded that IT has appreciable positive effects on bank productivity, cashiers' work, banking transaction, bank patronage, bank services delivery, customers' services and bank services. They concluded that, these have positive effects on the growth of banking (Balachandher *et al*, 2001; Idowu *et al*, 2002; Hunter, 1991; Whaling, 1995; Yasuharu, 2003).

Security is becoming one of the most vital things not only within information technology, but also in many other areas, whether it concerns terrorist actions or information thefts. Securing both logical and physical access to information is becoming more and more important for governments, companies and individuals. The development is constantly moving forward, introducing more effective and powerful tools to encounter the problems of violation of security.

2.2 Technological History of Ghanaian Banks

According to (Abor, 2004), technology has increased in Ghanaian banks. Traditionally, banks have always sought media through which they would serve their clients more cost-effectively as well as increase the utility to their clientele. Their main concern has been to serve clients more conveniently, and in the process increase profits and competitiveness. Electronic and communications technologies have been used extensively in banking for many years to advance agenda of banks

In Ghana, the earliest forms of electronic and communications technologies used were mainly office automation devices. Telephones, telex and facsimile were employed to speed up and make more efficient, the process of servicing clients. For decades, they remained the main information and communication technologies used for transacting bank business. (Abor, 2004).

Later in the 1980s, as competition intensified and the personal computer (PC) got proletarian, Ghanaian banks began to use them in back-office operations and later tellers used them to service clients. Advancements in computer technology saw the banks networking their branches and operations thereby making the one-branch philosophy a reality. Barclays Bank (Gh.) and Standard Chartered Bank (Gh.) pioneered this very important electronic novelty, which changed the banking landscape in the country. (Abor, 2004).

Arguably, the most revolutionary electronic innovation in this country and the world over has been the ATM. In Ghana, banks with ATM offerings have them networked and this has increased their utility to customers. The Trust Bank Ghana, in 1995 installed the first ATM. Not long after, most of the major banks began their ATM networks at competitive positions. Ghana Commercial Bank started its ATM offering in 2001 in collaboration with Agricultural Development Bank. The ATM has been the most successful delivery medium for consumer banking in this county. Customers consider it as important in their choice of banks, and banks that delayed the implementation of their ATM systems, have suffered irreparably. ATMs have been able to entrench the one-branch philosophy in this county, by being networked, so people do not necessarily have to go to their branch to do some banking. (Abor, 2004).

Another technological innovation in Ghanaian banking is the various electronic cards, which the banks have developed over the years. The first major cash card is a product of Social Security Bank, now Soceite Generale SSB, introduced in May 1997. Their card, 'Sika Card' is a value card, onto which a cash amount is electronically loaded. In the earlier part of year 2001 Standard Chartered Bank launched the first ever debit card in this country. Its functions have recently been integrated with the customers' ATM cards, which have increased its availability to the public since a separate application process is not needed to access it. A consortium of three (3) banks (Ecobank, Cal Merchant Bank and The Trust Bank) introduced a further development in electronic cards in November 2001, called 'E-Card'. This card is online in real time, so anytime a client uses the card, or changes occur in their account balance, their card automatically reflects the change. (Abor, 2004).

Though ATMs have enjoyed great success because of their great utility, it has been recognized that it is possible for banks to improve their competitive stance and profitability by providing their clients with even more convenience. Once again ICT was what saved the day, making it possible for home and office banking services to become a reality. In Ghana, some banks started to offer PC banking services, mainly to corporate clients. The banks provide the customers with the proprietary software, which they use to access their bank accounts, sometimes via the World Wide Web (WWW). This is on a more limited scale though, as it has been targeted largely at corporate clients. Ghana Commercial Bank, Ecobank (Gh.) Ltd, Standard Chartered Bank (Gh.) Ltd. and Barclays Bank (Gh.) Ltd and Stanbic Bank (Gh.) are the main banks known to offer PC banking services. (Abor, 2004).

Banks have recognized the internet as representing an opportunity to increase profits and their competitiveness. Currently, no bank is offering internet banking (i-banking) in Ghana, but some have well laid plans to start. Ecobank (Gh.) Ltd, Standard Chartered Bank (Gh.) Ltd. and Barclays Bank (Gh.) Ltd, also have plans for doing so in the not-too-distant future. (Abor, 2004).

Telephone banking, has also taken a big leap with its convenience and time. Barclays Bank (Gh.) launched its telephone banking services in August 28, 2002. SSB Bank also launched its “Sikatel” or “SSB Call Centre” (telephone banking) in September 19, 2002. The

services available with this system are ascertaining credible information about the bank's products, the customers' complaints, bank statements and cheque book request and any other complaints and inquiry. (Abor, 2004),

New electronic payment systems are being introduced into Ghana at an increasing rate. Forecasts indicate that this trend will continue for foreseeable future. Early work by (Abor, 2004) was concerned with technological innovations and banking in Ghana. The work carried out by Abor's 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 and 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)

2.3 Forms of IT Innovations (Electronic Delivery Channels)

Technological innovations have been identified to contribute to the distribution channels of Banks. The electronic delivery channels are collectively referred to as Electronic Banking. Electronic Banking is really not one technology, but an attempt to merge several different technologies. Each of these evolved in different ways, but in recent years different groups

and industries have recognized the importance of working together. Bankers now see a kind of evolution in their business, partly, because the world has taken a quantum leap in the use of technologies in the last several years. (Abor, 2004). The various electronic delivery channels are discussed below:

2.3.1 Automated Teller Machines (ATMs)

Rose (1999), describes ATMs as follows: “an ATM combines a computer terminal, record-keeping system and cash vault in one unit, permitting customers to enter the bank’s book keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked to the bank’s computerized records 24 hours a day”. Once access is gained, it offers several retail banking services to customers. They are mostly located outside of banks, and are also found at airports, malls, and places far away from the home bank of customers. They were introduced first to function as cash dispensing machines. However, due to advancements in technology, ATMs are able to provide a wide range of services, such as making deposits, funds transfer between two or accounts and bill payments. Banks tend to utilize this electronic banking device, as all others for competitive advantage.

The combined services of both the Automated and human tellers imply more productivity for the bank during banking hours. Also, as it saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers (Rose, 1999).

Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after banking hours.

2.3.2 Credit Card

Major international credit cards such as Visa, MasterCard, American Express and others such as Maestro are accepted as a medium of payment in major shops, hotels, restaurants, supermarkets and travel agencies in Ghana. Most of these cards may be also used at ATMs belonging to some of the banks to collect small amounts of local currency. (Ghanaweb, undated)

2.3.3 Debit Card

Standard Chartered Bank was the first bank to launch debit card in Ghana in 2001. This has been incorporated with the ATM cards, which have increased its availability to the public. The card gives customers access to their funds through SCB ATMs or any VISA branded ATM throughout the world. In 2004, the First Atlantic Merchant Bank (FAMB) introduced the widely regarded American Express into the Ghanaian market. Most of the categories of the Express card – the Basic Green Card, the Golden Card, and the Platinum Card, are on offer to its customers with appropriate credit rating. Société Générale – Social Security Bank Limited in collaboration with the Visa International has launched four Visa Debit Card Products for its domestic and international customers. The Visa Trump Card has a PIN protection unique to each customer and can be used in various points of sale terminals and ATMs both in Ghana and in 150 countries across the world. (Appiah *et al*, 2004).

2.3.4 Electronic Cards

SG-SSB introduced the first major cash card in May 1997. This card is known as 'Sika Card', onto which a cash amount is electronically loaded. (Abor, 2004) Transaction Management Services (TMS) based in Ghana introduced a domestic online debit card POS (point of sale) services in June 2002 that allows consumers to effect immediate payment for goods and services from their accounts through the online electronic transfer of funds with banks connected to TMS inter-bank switch. Three banks – Ecobank, Cal Merchant Bank and The Trust Bank with their domestic debit card "E-Card" was the first to utilize the system in 2002. The card is online in real time, and permits holders to instantly purchase goods and services without paying cash but simultaneously debiting the cardholder's account and crediting the merchant's bank account. Barclays Bank Ghana has launched another unique product called Travelex Cash Passport. It is a card that enables customers to carry funds easily and access the Visa ATM machine with a PIN. The cash is loaded with US dollars but can be withdrawn in local currency from any of Visa ATM machines worldwide. The bank has also partnered with VISA and Trevelex World Wide Money (Wildcard) to make the product accessible in all countries. (Accra Daily Mail, 2004)

2.3.5 Telephone Banking

"Telebanking (telephone banking) can be considered as a form of remote or virtual banking, which is essentially the delivery of branch financial services via telecommunication devices where the bank customers can perform retail banking transactions by dialing a touch-tone telephone or mobile communication unit, which is

connected to an automated system of the bank by utilizing Automated Voice Response (AVR) technology” (Balachandher *et al*, 2001).

According to Leow (1999), telebanking has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks’ perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services. It has almost all the impact on productivity of ATMs, except that it lacks the productivity generated from cash dispensing by the ATMs. For, as a delivery conduit that provides retail banking services even after banking hours (24 hours a day) it accrues continual productivity for the bank. It offers retail banking services to customers at their offices/homes as an alternative to going to the bank branch/ATM. This saves customers time, and gives more convenience for higher productivity.

2.3.6. Personal Computer Banking

“PC-Banking is a service which allows the bank’s customers to access information about their accounts via a proprietary network, usually with the help of proprietary software installed on their personal computer”. Once access is gained, the customer can perform a lot of retail banking functions. The increasing awareness of the importance of computer literacy has resulted in increasing the use of personal computers. This certainly supports the growth of PC banking which virtually establishes a branch in the customers’ home or office, and offers 24-hour service, seven days a week. It also has the benefits of Telephone Banking and ATMs. (Abor, 2004)

2.3.7 Internet Banking

The idea of Internet banking according to Essinger (1999) is: “to give customers access to their bank accounts via a web site and to enable them to enact certain transactions on their account, given compliance with stringent security checks”. To the Federal Reserve Board of Chicago’s Office of the Comptroller of the Currency (OCC) Internet Banking Handbook (2001), Internet Banking is described as “the provision of traditional (banking) services over the internet”.

Internet banking by its nature offers more convenience and flexibility to customers coupled with a virtually absolute control over their banking. Service delivery is informational (informing customers on bank’s products, etc) and transactional (conducting retail banking services).

As an alternative delivery conduit for retail banking, it has all the impact on productivity imputed to Telebanking and PC-Banking. Aside that it is the most cost-efficient technological means of yielding higher productivity. Furthermore, it eliminates the barriers of distance / time and provides continual productivity for the bank to unimaginable distant customers.

2.3.8 Branch Networking

Networking of branches is the computerization and inter-connecting of geographically scattered stand-alone bank branches, into one unified system in the form of a Wide Area Network (WAN) or Enterprise Network (EN); for the creating and sharing of consolidated customer information/records.

It offers quicker rate of inter-branch transactions as the consequence of distance and time are eliminated. Hence, there is more productivity per time period. Also, with the several networked branches serving the customer populace as one system, there is simulated division of labour among bank branches with its associated positive impact on productivity among the branches. Furthermore, as it curtails customer travel distance to bank branches it offers more time for customers' productive activities. (Abor, 2004).

2.3.9 Electronic Funds Transfer at Point of Sale (EFTPoS)

An Electronic Funds Transfer at the Point of Sale is an on-line system that allows customers to transfer funds instantaneously from their bank accounts to merchant accounts when making purchases (at purchase points). A POS uses a debit card to activate an Electronic Fund Transfer Process (Chorafas, 1988).

Increased banking productivity results from the use of EFTPoS to service customers shopping payment requirements instead of clerical duties in handling cheques and cash withdrawals for shopping. Furthermore, the system continues after banking hours, hence continual productivity for the bank even after banking hours. It also saves customers time and energy in getting to bank branches or ATMs for cash withdrawals which can be harnessed into other productive activities. (Abor, 2004)

2.4 The use of Biometric Technology

Biometrics is the term used to describe the use of biological, physical or behavioural characteristics used to identify a person. It includes the use of measurable, robust and

distinctive characteristics. Robust is the term used to describe the changeability of the characteristic over time.

The information technology industry is always in need for a better, faster and more secure ways to protect information and property. Therefore large amount of money is dedicated to develop new security methods. Biometrics is no exception, the use of biometrics as security is considered to be one of the most secure technologies as of today.

Authentication and identification are key concepts within security. The first is a process of verifying that you are the one you say you are, the latter is collecting information and use it to find out who you are (Wilson *et el* 2000).

People are under the impression that biometrics is something new, even though the biometrics we know of today are considered high-tech, the fundamentals of biometrics can actually be traced back as long as the old Egyptians, they used some form of biometrics to identify their workers, i.e. not only by the names of the workers, but also by the shape of faces as well as other human characteristics (Russ, 2004).

Biometrics is a technology where the human body is the tool which is used for measurement. Many parts of the body can be used to uniquely identify an individual, for example fingerprints, the eyes and the face. There are also other sorts of techniques within biometrics such as, voice-scan and signature-scan (Biometric Technology Today, 2003)

2.5 Types of Biometric technologies

According to Nanavati et.al. (2002) it is hard to define the best technology for a biometrics solution. To define the best method, some questions have to be answered, such as, most capable of rejecting false attempts? Least expensive to deploy? Most privacy protective? (Nanavati et.al, 2002). According to the same authors there are a few leading biometric technologies, finger-scan, iris-scan, hand-scan, retina-scan, facial-scan, voice-scan, signature-scan and keystroke-scan.

2.5.1 Finger-scan

This technology identifies individuals by the distinctive features of their fingerprint (Nanavati et.al, 2002). The finger-scan technology is the most common biometric technology.

On the surface of the finger there is a series of ridges and furrows which makes the fingerprint (Jain et al. & Prabhakar, 2005). Most often an optical device is used to scan the fingerprints, although more and more silicon based devices are being developed. These devices are cheaper than most and finger-scan is also often fast (Moore, 2005). On the other hand Moore says that these devices have a tendency to get dirty and the devices degrade over time. Also scars and cuts can cause obvious problems (Liu & Silverman, 2001)

2.5.2 Facial-scan

The facial scan technology identifies individuals by verifying distinctive features of a human face (Nanavati et.al, 2002). This technology is well suited for environments were

cameras and imaging systems already exists, and to verify people within a crowd. A big problem is that facial appearance change over time (Kim, 1995).

2.5.3 Eye-scan

There are two main types of Eye-scan. These are Iris-scan and Retina-scan.

2.5.3.1 Iris-scan

Iris-scan technology uses distinctive features of the human iris to identify individuals (Nanavati et.al, 2002). The iris is the coloured ring around the pupil (Liu & Silverman, 2001). One important thing is that iris-scan work even if a person wears glasses (Liu & Silverman, 2001). According to Kim (1995) there is a problem finding the iris in a digital image.

2.5.3.2 Retina-Scan

This technology uses the distinctive characteristics of the retina, the surface on the back of the eye (Nanavati et.al, 2002). This technology is foremost used in highly secure locations, such as military facilities (Nanavati et.al, 2002). Liu and Silverman (2001) say it is not a convenient eye technology if you for example wear glasses, there is also a problem with user acceptance because people are often concerned about their eyes.

2.5.4 Voice-Scan

Voice-scan technology identifies distinctive patterns in the voice to identify a person (Nanavati et.al, 2002). Kim (1995) says it is one of the most invasive and natural technologies to use. He also points out that there can be problems with the fact that the voice change depending on the physical state of a person and duplication with a tape

recorder. Most PCs already have a microphone and then there is no need for any additional devices (Liu & Silverman, 2001).

2.5.5 Hand-Scan

The hand-scan technology uses the distinctive aspects of the hand, such as height, width of the fingers and hand (Nanavati et.al, 2002). It is one of the more established biometric solutions and it is used almost exclusive for physical access (Nanavati et.al, 2002). Kim (1995) also says it is mainly used for control of access to buildings or part of buildings. According to Liu and Silverman (2001) hand-scan is popular in time and attendance recordings. This is also one of the fastest methods according to Moore, (2005).

2.5.6 Signature-Scan

Signature-scan technology uses distinctive patterns of the signature of an individual Nanavati et.al (2002). The same author believes this technology will be widely used for electronic document authentication. According to Liu and Silverman (2001) surprisingly few applications have emerged with signature-scan technology, in spite of the fact that user acceptance is usually high because users are used to signatures as a means of transaction-related identity verification (Liu and Silverman, 2001). There are two types of this technology, visual inspection of a written signature and then the study of signature dynamics (Kim, 1995). This counts as a behavioral method.

2.5.7 Keystroke-Scan

This is a behavioral biometric solution, which implies that it is something that you do. The keystroke-scan technology uses the distinctive typing pattern of an individual for verification (Nanavati et.al, 2002). Typing rhythms are analyzed with a template to verify an individual (Kim, 1995). This technology is often used in combination with passwords (Nanavati et.al, 2002).

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2.6 Why the introduction of e-zwich

Ghana has long recognized that modernizing the banking and financial sector and reducing the cost of doing business is a given for attracting the investment needed for rapid economic growth and has consistently designed policies to modernize the sector. The Bank of Ghana (BOG), the regulator of the banking and financial sector, rolled out the e-zwich, a national payment and settlements system that creates an electronic clearing house for all banking and financial institutions, as well as a biometric smartcard which is a very secure way of paying for goods and services. It is the first of its kind in the world on such a scale and is another first for Ghana, the first country south of the Sahara to attain independence and recently the first south of the Sahara, with the exception of South Africa, to issue a sovereign bond on the international market. (Hesse & Hesse undated)

2.6.1 Clearing and payment systems before the regulatory framework

The clearing and payment system in Ghana was for a long time manual. Inter-bank transfers took a long time to be cleared and electronic payment systems were largely non-existent. The economy was, and is still, cash-based and heavily segmented. The network of banks developed individual products like ATMs and debit cards for their respective customers, but there wasn't much use of them. For instance, the SG-SSB Bank (a commercial bank, then called SSB) issued and operated the Sika Card for the payment of goods and services by its customers. Further, domestic money transfers were, until recently, largely non-existent. Foreign money transfer schemes such as Western Union Money Transfer and Money Gram dominated the money transfer system of Ghana: they focused on and funneled foreign exchange into Ghana. (Hesse & Hesse undated)

2.6.2 Payment Systems Act 2003 (Act 662)

The preamble to the Payment Systems Act 2003 (Act 662) (PSA) states that it is "for the establishment, operation and supervision of electronic and other payment, clearing and settlement systems; to provide for the rights and responsibilities of transacting and intermediating parties and for other related matters". The PSA empowered the BOG to establish, operate, promote and supervise payment, fund transfers, clearing and settlement systems, subject to rules as it may publish and to designate any other payment, fund transfers, clearing and settlement systems operating in the country which the BOG

considers to be in the public interest for it to supervise under the PSA. (Hesse & Hesse undated)

Under the PSA, a few local money transfer schemes emerged, notable among them being the Instant Money Transfer operated by Ghana Post. However, the local money transfers, along with the electronic clearing system, failed to have a significant impact on the economy as the schemes in existence were peculiar to the institutions that designed and operated them to suit the needs of their customers. (Hesse & Hesse undated)

A cursory examination of the payments system landscape reveals that the payments system is dominated by cash transactions. The statistics indicate that after 50 years of independence about 80 percent of the bankable public in Ghana do not have a bank account (Bawumia, 2008).

This situation has arisen because the traditional payment systems offered by the major banking institutions do not address the key requirements of the un-banked population due to:

- The difficulty in opening bank accounts -paper work, utility bills etc.
- The need to have basic literacy, administration and record keeping abilities and English-language capacity to operate a bank account;
- Many people find banking halls intimidating
- the high costs associated with maintaining a bank account relative to customers' income levels:

- the requirement of significant infrastructure (including ATM's and communications systems) to settle transactions "on-line", which are often unavailable in rural areas and informal sector;
- Security concerns relating to protection against fraudulent transactions.

Payment systems development in Ghana as in many other developing countries has therefore largely focused on access by the tiny banked segment of the population. Banks have developed products like ATM networks and debit cards, which are largely limited to their own customers or members of their own network. This path of payment system development over the last fifty years has resulted in the exclusion of the vast majority of our population from access to financial services. (Bawumia, 2008)

Therefore, what is needed is a payment system designed to with the needs of the unbanked and underbanked at the center and not at the periphery as currently exists. That payment system should be accessible, has low transaction costs; has limited infrastructure needs; able to work in the rural and informal sector areas; secure; and simple to use. (Bawumia, 2008)

E-zwich is unique because it requires little numeracy due to its biometric features; and it can work both on-line and off-line. This unique feature of the e-zwich makes it an efficient vehicle to promote financial inclusion, particularly targeting the unbanked and underbanked segments of the population who at the moment do not benefit from the various services in the financial sector. In promoting financial inclusion, all rural banks as

well savings and loans companies as well as commercial banks will have access to the common e-zwich platform. (Bawumia, 2008)

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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents an outline of the methods and techniques used for the design of instrument and the data collection for the research. This includes the study design, Choice of Research Method, Research Strategy, Data collection procedures, the study population, sampling, Problems encountered during Data collection, the method of data analysis and Ethical consideration

3.2 Study design

To find real answers to the research questions, the concept of paradigm in social science was adopted. Hart (2003) defines paradigm as the progress of scientific practice to describe how scientists work within accepted ways of defining, assigning categories, theorizing and procedures within disciplines. According to the concept, paradigm is based on scientists' assumptions about the world. Different research paradigm implies different methodology and different research methods to collect data and finding solution to problems and of explaining events. This research adopted both interview and questionnaire for collecting and analyzing data. The reason behind this choice is:

This research consists of two methods of data collection and analysis: survey questionnaires and semi-structured interviews. Denzin (1970) reveals that the use of different approaches lead to greater validity and reliability than a single methodological approach. Hussey and Hussey (1997) state that once the paradigm was established, it is not unusual in business to take a mixture of approaches, particularly in the methods of collecting and analyzing data because they give a broader and often complementary view of the research problem. Dixon *et al.* (1988) assert that most hypotheses and research objectives can be researched using more than one technique of data gathering. Yin (1994) also supports that the different data collection methods can provide more detailed data about phenomenon under investigation. Moreover, it helps to obtain different perceptions of the phenomena which are useful for researchers to understand what is happening in a situation and looking for patterns which may be repeated in other similar situations.

The semi-structured face-to-face interview is designed to collect information from e-zwich experts on the main subject.

3.3 Choice of Research Method

Two different approaches can be used in writing a thesis of this nature – inductive or deductive.

Deductive approach generates hypotheses from a particular theoretical framework and then tests these by observing reality. It is concerned with developing propositions from existing theory and making them testable in the real world. (Dubois & Gadde, 2002)

An inductive approach identifies a real phenomenon from which patterns are identified and described, and appropriate theories selected to explain and interpret the phenomenon. It starts with empirical observations, translated into generalizations that are in turn serving as a foundation for developing theories or models. (Carneiro & Merzoug, 2001)

An inductive approach is more appropriate when performing a research of this nature. The inductive approach can be seen as a first step on the way of creating knowledge in a field where there is no prior theories. (Yin, 1994) Inductive approach was used in writing this thesis. This is because there is lack of established theoretical frameworks that deal with electronic retail payment of which e-zwich is one. Also there have been constant innovations in electronic payment mechanisms available today, with its multiplicity in different countries, little regarding a standardized electronic payment mechanism is known, which rules out a deductive approach which is based on testing an acceptable theory in a new situation.

3.4 Research Strategy

The choice of a research strategy depends on a number of factors. Yin (2002) identifies five main research strategies within the social sciences – experiments, surveys, archival analysis, histories and case studies. The most appropriate strategy for a given situation depends on such factors as the type of research question, the control an investigator has over actual behavioural events, the focus on contemporary as opposed to historical phenomena. (Yin, 2002). Since e-zwich is a new retail payment system which has not

taken off in the whole country but only in Accra, the survey strategy will be representative of the total population

3.5 Data collection procedures

This section focused on survey questionnaires and semi-structured interviews. It is started with the procedure of conducting survey questionnaires. Then semi-structured interviews are discussed.

3.5.1 Survey questionnaires

Stroh (2000) states that a questionnaire is used to explore a large number of people's views. Hence, it is used to gain general picture of the prospects and challenges of the introduction of e-zwich and whether the general public is prepared to use this service.

Statistically, it is believed that large sample size of questionnaires is designed for unbiased statistical results which can be implied for the whole population (Miller *et al.*, 2002). Harris and Schaubroeck (1990) recommend a minimum sample size of 200 to guarantee robust structural equation modeling.

3.5.2 Semi-structured interview

The semi-structured face-to-face interview is designed to qualitatively analyse respondents' free-format comments on the main subject. It can explore the actor's definition and how people act which gives meaning to their own lives (Eyles, 1989, p. 380). It can be used to verify, enhance, and fill in the data collected from the survey. In this

research, total of 15 top managers of the participated banks and the introducers of e-zwich smart cards were interviewed independently. The interviews were conducted in a semi-structure format that allows respondents to express their own viewpoints (Flick, 2002). Respondents were guided by a list of interview topics about key factors, determined the acceptance of the use of the e-zwich smart card and prospects and challenges it will face in the country. This purposed to gain the respondents' opinion about them.

A survey was carried out in the Accra Metropolis among e-zwich smart card holders, Merchants and the introducers of e-zwich smart cards (Ghipps).

A questionnaire survey was administered among a sample of 195 e-zwich smart card holders and 20 e-zwich Merchants (randomly selected) in Accra. The questionnaire enquired into the demographic background of respondents, their knowledge, perceptions and attitude towards the use of the e-zwich smart card; its acceptability, challenges and prospects.

Interviews were also conducted. Among those interviewed were an official of GhIPSS, an official from the Apex bank and 13 bank officials from the selected banks.

(The data for this research was collected through 215 survey questionnaires i.e. 15 questionnaires each from 13 selected commercial banks, completed by the randomly selected from current users of e- zwich smart cards and 20 merchants ,those who offer Point Of Sale (POS) services within the Accra metropolis)

3.6 Study population

The target population were e-zwich customers (both individual card holders and merchants) in the Accra metropolis. This is because Accra is the only part in Ghana that has taking off in the use of the e-zwich biometric smart card. Supporting opinions were obtained from experts who are knowledgeable in e-zwich smart card.

3.7 Problems Encountered During Data Collection

The researcher however encountered a number of problems during the administration of the questionnaires. Some customers showed **unpreparedness** to accept the questionnaire in spite of the introduction from the bank officials; some did not extend their maximum co-operation. The bank officials I interviewed also proved difficult. Some kept themselves busy with office work whilst others were not ready for the interview and kept on postponing the interview date. Some of the banks thought I was sent by their competitors and were not ready to release information.

3.8 Data analysis

Tabachnick and Fidell (1983), suggest that data abnormalities may lead to an inaccurate analysis and caution in scrutinizing data for these abnormalities is a prerequisite for mature analysis. Thus, problems of missing data and violations of statistical assumptions were diagnosed and corrected before applying statistical procedures.

The Semi-structured Interviews conducted were recorded and put into percentages.

Data analysis was done using SPSS. Data were presented in the form of bar charts and pie charts.

3.9 Ethical consideration

Research clearance was obtained from the School of Business, Kwame Nkrumah University of Science and Technology, Kumasi. Permission to carry out the study was sought from all relevant authorities. The main objective of the study was explained to all the participants in the study and their consent sought prior to interview.



CHAPTER FOUR

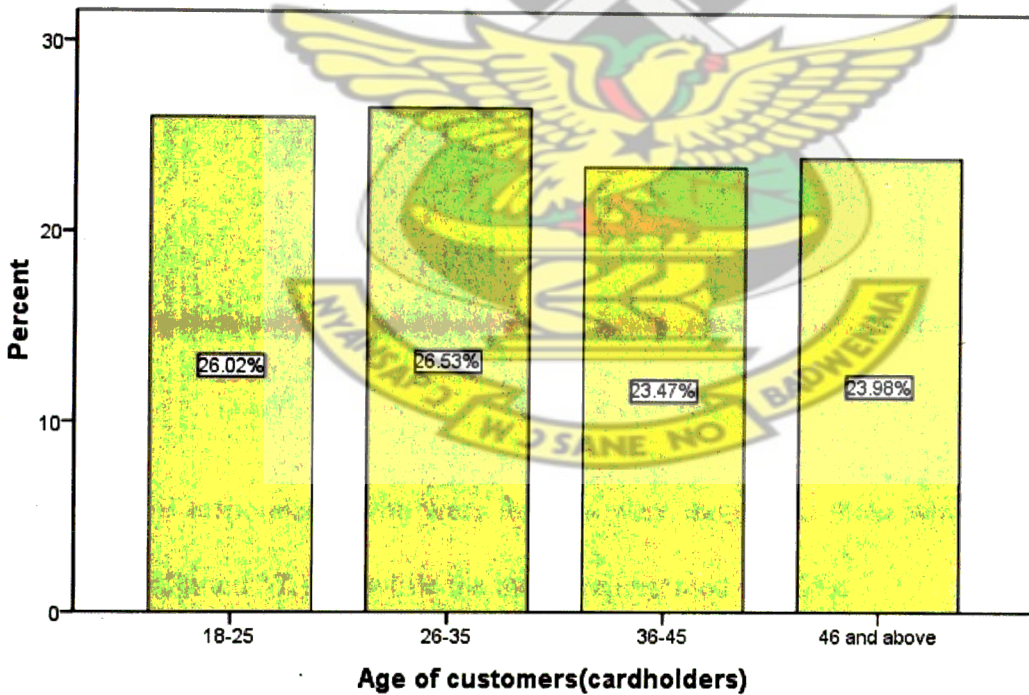
FINDINGS OF THE STUDY

4.1 Analyses of data gathered from e-zwich customers (cardholders)

The data gathered from questionnaires sent to customers (cardholders) of e-zwich from the selected banks were analyzed as follows:

4.1.1 Age of customers (cardholders)

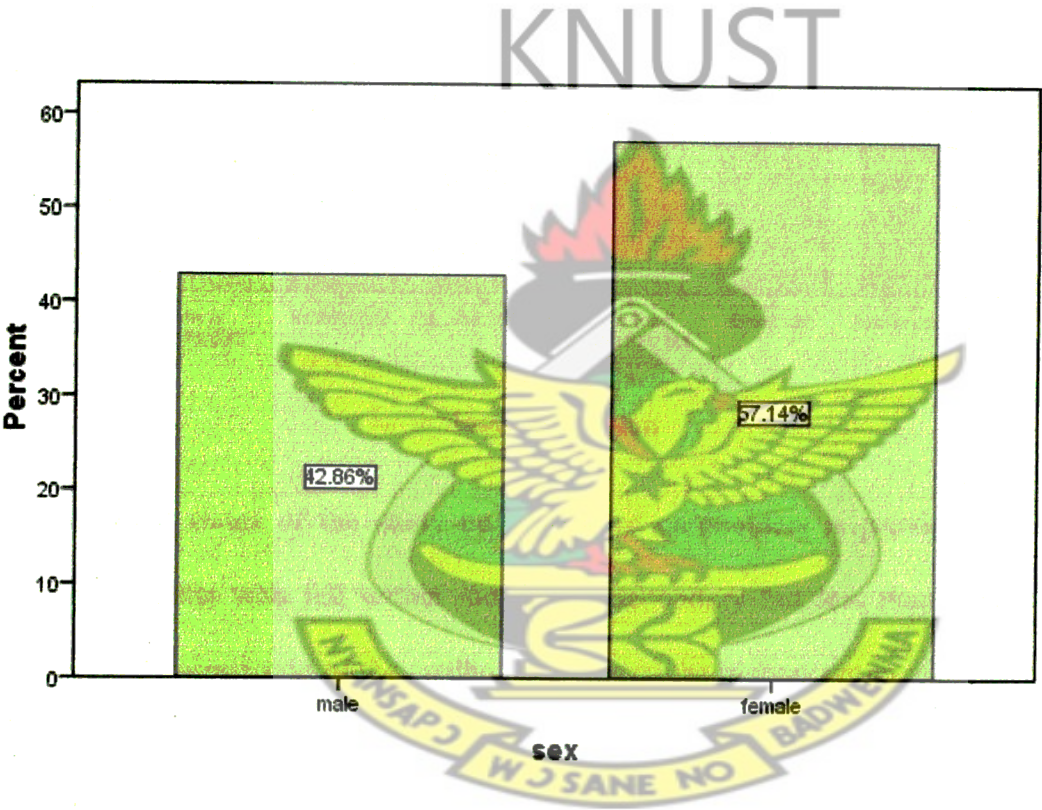
Figure 1: Age of respondents of e-zwich smartcard holders



The age distribution of the cardholders is given in Fig. 1 above. 26. 53% of the respondents were between the ages of 26 to 35 years, 26.02% were between 18 to 25 years, and 23.98% represented 46 years and above while 23.47% were between the ages of 36 to 45years.

4.1.2 Sex of customers (Cardholders)

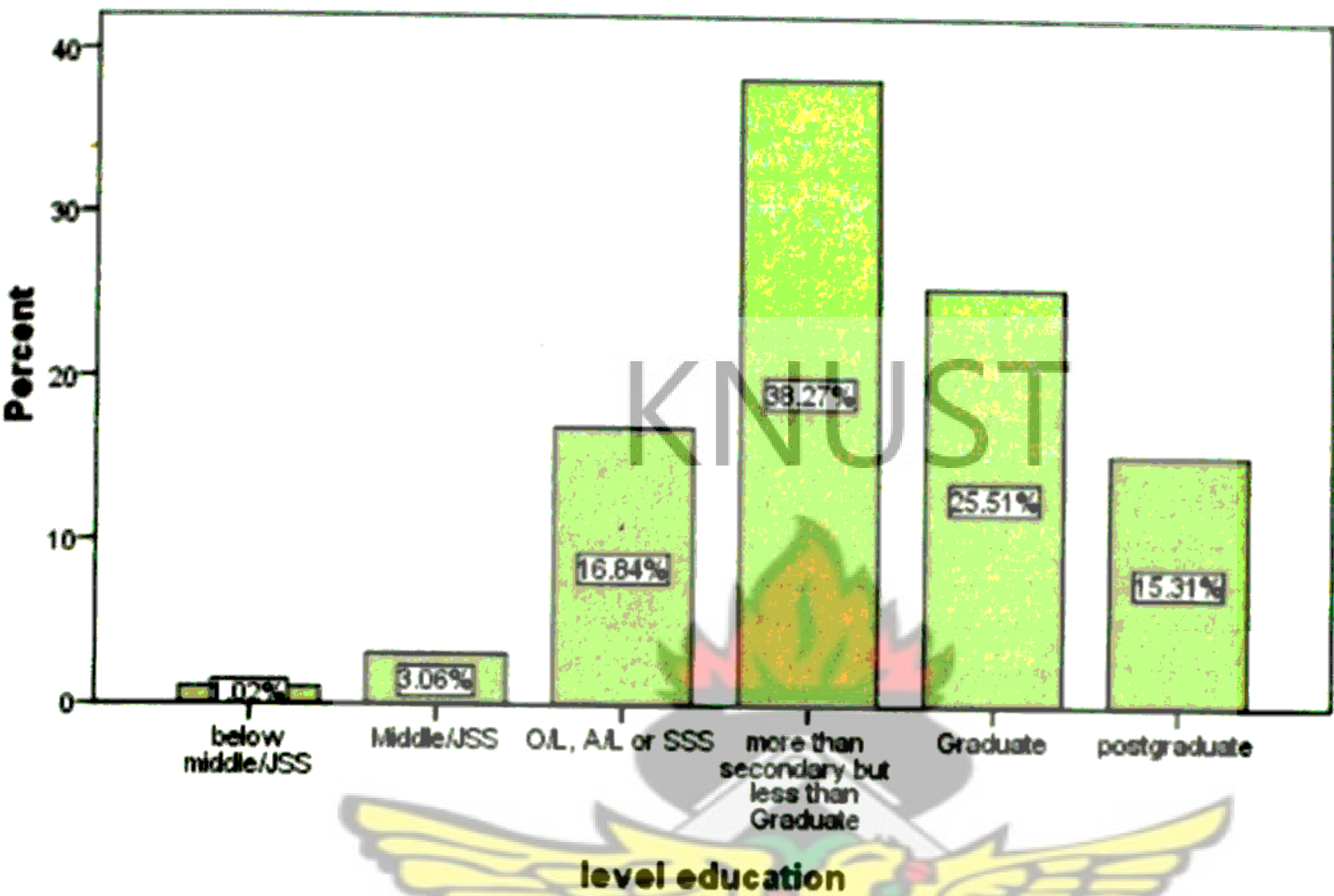
Figure 2: Sex of respondents of e-zwich smartcard holders



The percentage of respondents who were females were more than those who were males. The females constituted 57.14% while the males represented 42.86%.

4.1.3 Educational Level (Cardholders)

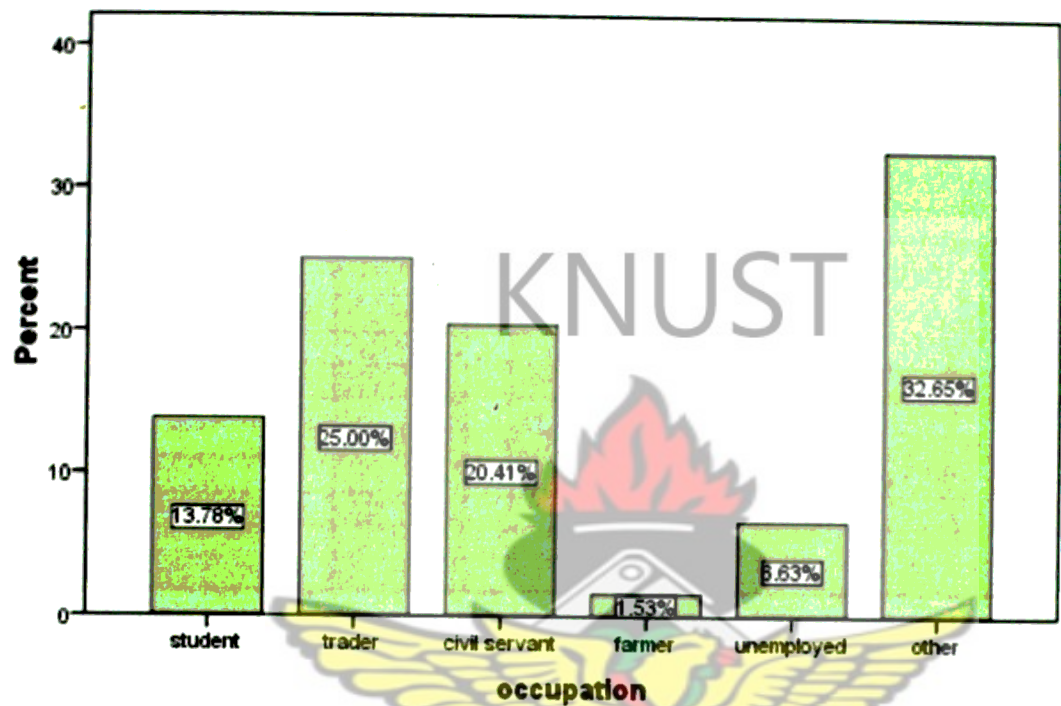
Figure 3: The level of Education of respondents of e-zwich smartcard holders



The Educational status of the study population of cardholders is provided in Figure 3 above. Respondents who fell within more than Secondary but less than Graduate level among the study population of the cardholders formed the highest group with 38.27%. This was followed by those who are Graduates with 25.51%, O/L or A/L or SSS holders followed with 16.84%. This is followed by Postgraduate and Middle/JSS who had 15.31% and 3.06% respectively. The least group, below middle /JSS had 1.02%.

4.1.4 Occupational Level (Cardholders)

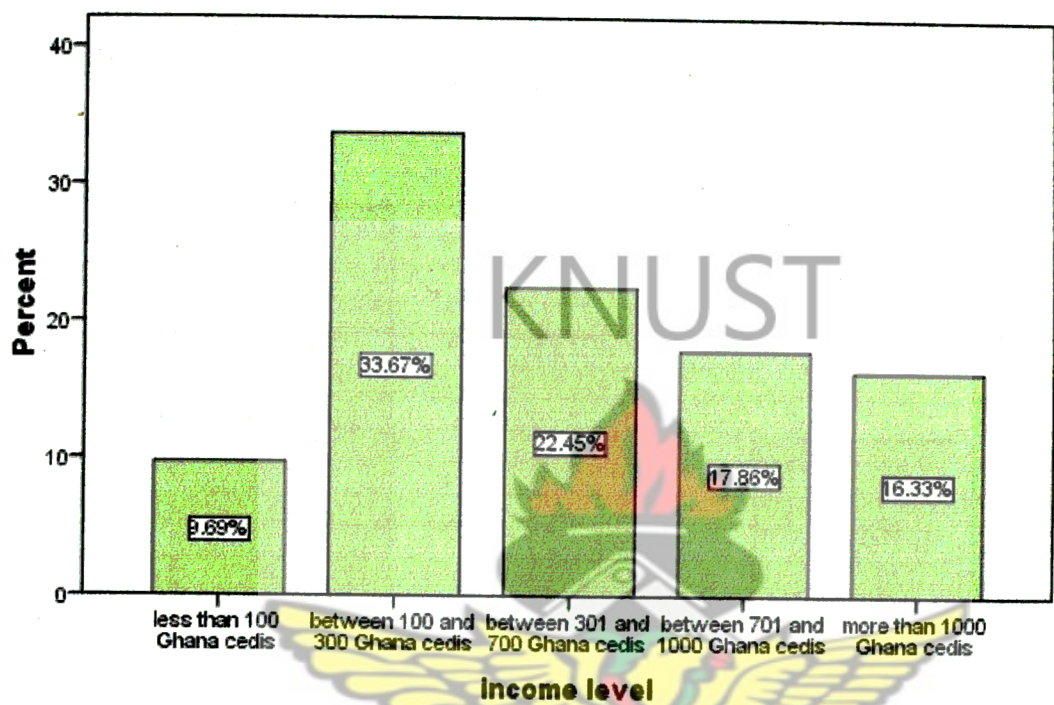
Figure 4: The type of Employment of respondents of e-zwich smartcard holders



For the respondents to the survey questions, 32.65% of the customers were either doing their national service or were Bankers (others) meaning that higher proportion of bankers and National service Personnel's patronized the e-zwich service more than any other occupation. This was followed by Traders with 25%, followed again by civil servants with 20.41%, then students' with 13.78% and then unemployed with 6.63%. The least occupation that patronized the e-zwich service based on the responds were farmers 1.53%.

4.1.5 Income Level (Cardholders)

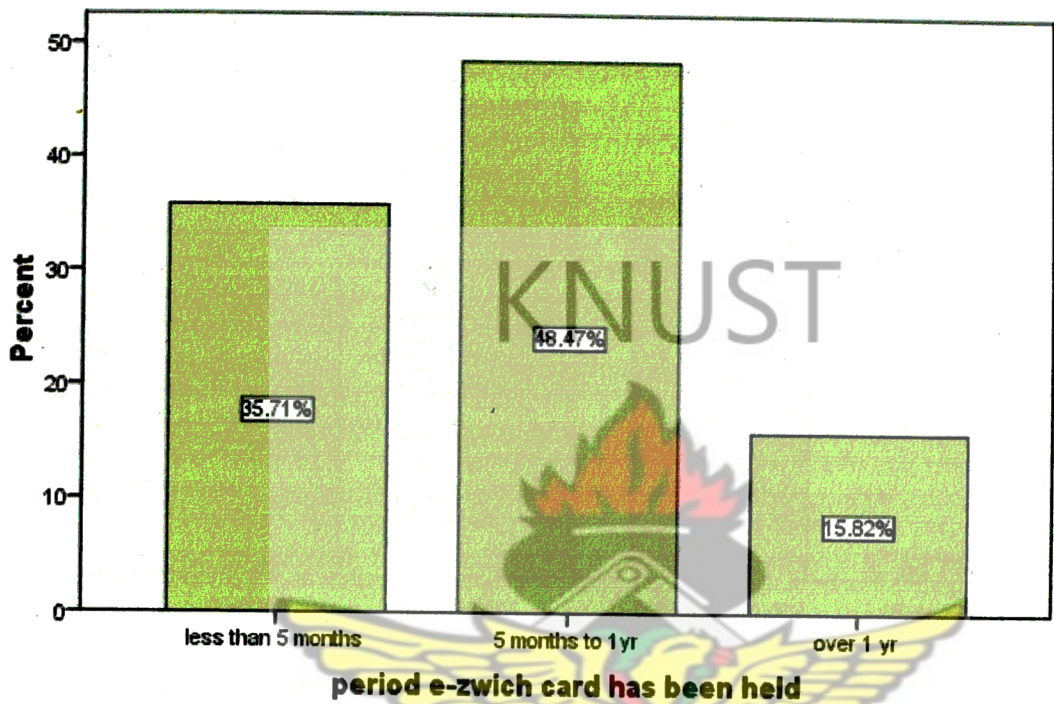
Figure 5: The income level of respondents of e-zwich smartcard holders



The analysis of income level of those who responded to the questionnaire revealed the following: majority of those who answered the questionnaire earn between 100 and 300 Ghana cedis representing 33.67% of the respondents. This was followed by those who earn between 301 and 700 Ghana cedis with 22.45%, followed by those who earn between 701 and 1000 Ghana cedis with 17.86%. Closely followed was the group who earn more than 1000 Ghana cedis representing 16.33%. The least group was those who earn less than 100 Ghana cedis with 9.69% of the respondents.

4.1.6 Period card has been held (Cardholders)

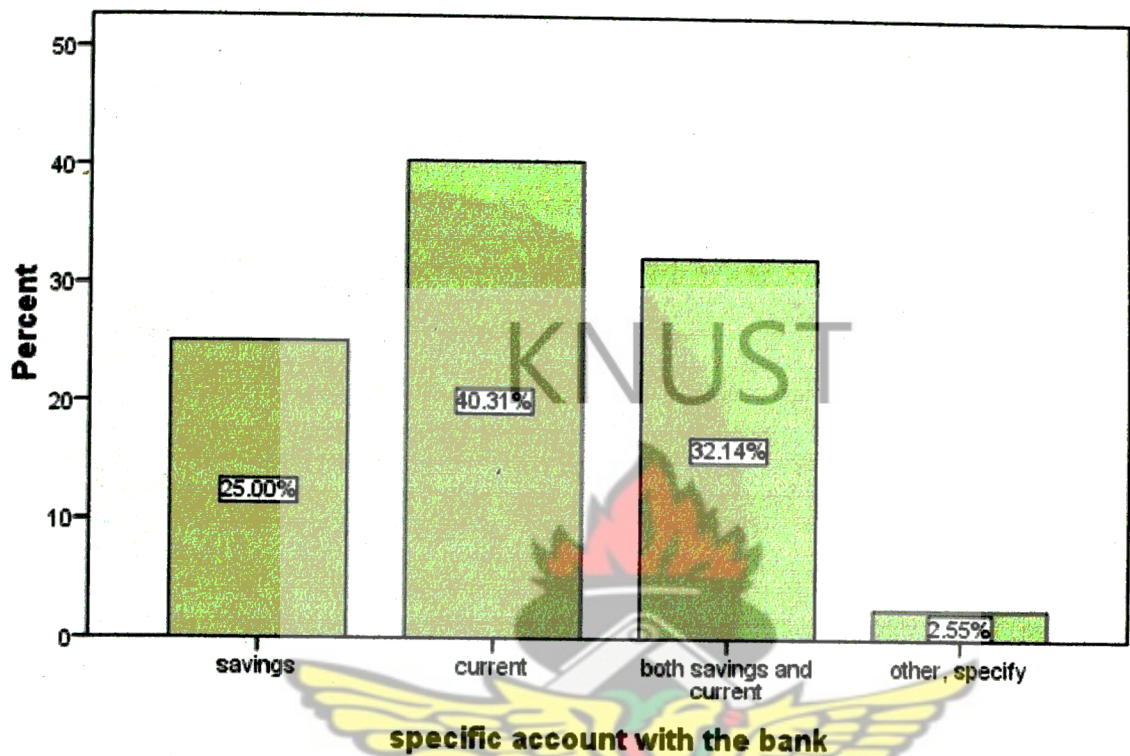
Figure 6: Period respondents have held the e-zwich smartcard



48.47% of the respondents have been using the cards or got their cards over five months to one year ago. 35.71% of the respondents got their cards less than five months ago while 15.82% of the respondents got their cards over one year ago.

4.1.7 Account Type (Cardholders)

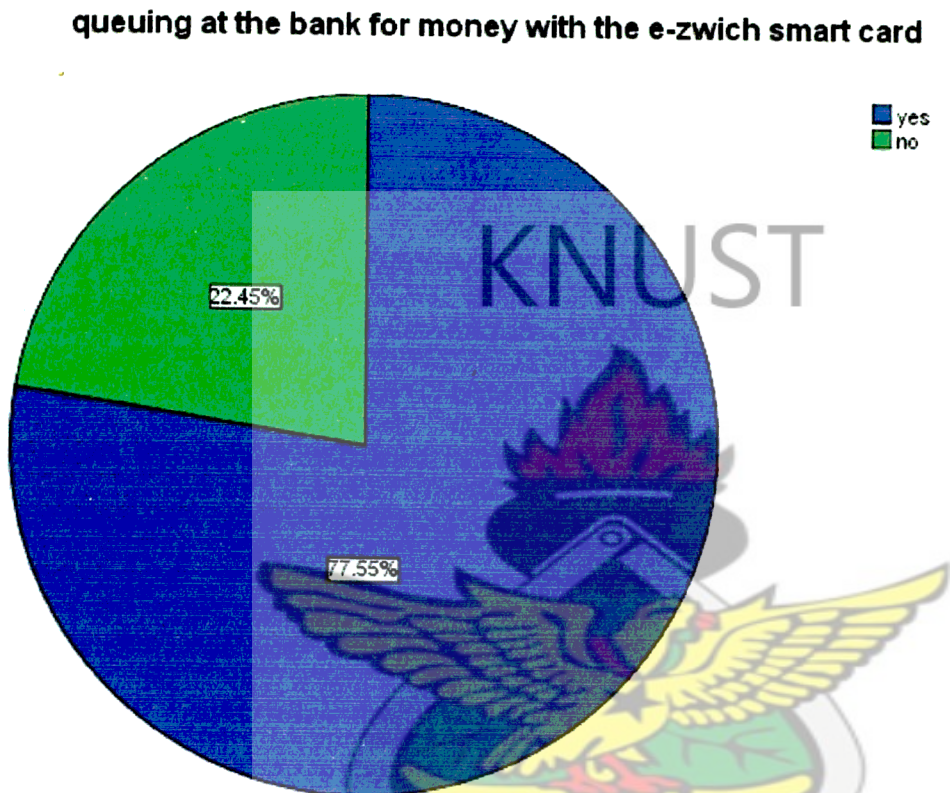
Figure 7: The specific account respondents operate with the Bank



40.31% of the respondents operate current account only, 32.14% of the respondents operate both current and savings account while 25% of the respondents operate savings account only. 2.55% of the respondents represent the least group who do not operate any account with the bank but were issued e-zwich smartcards by the bank. This means that you do not need to be a customer of a bank before you can get the e-zwich card.

4.1.8 Queuing at the bank for money (Cardholders)

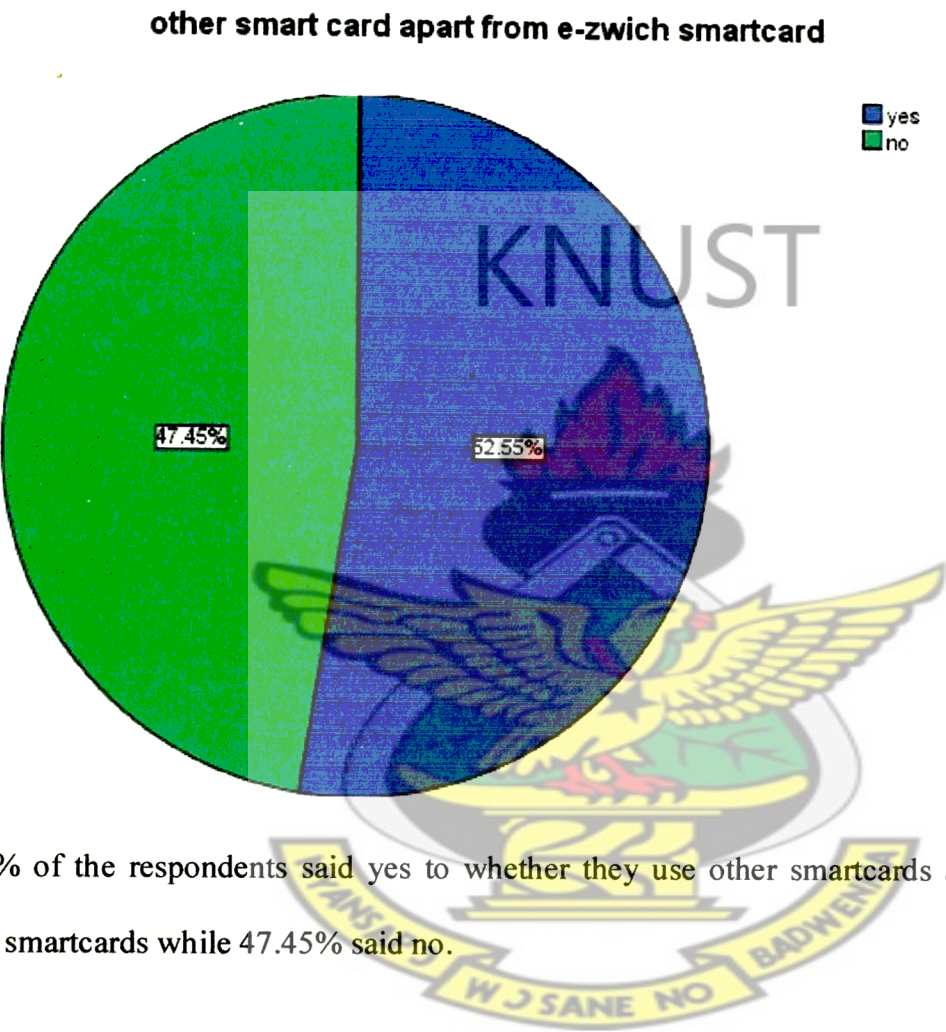
Figure 8: Queuing at the Bank for money with the e-zwich smartcard



77.55% of the respondents admitted that they still queue at banks for money while 22.45% said they do not queue any more due to the use of the e-zwich smartcard.

4.1.9 Other smartcard(s) used (Cardholders)

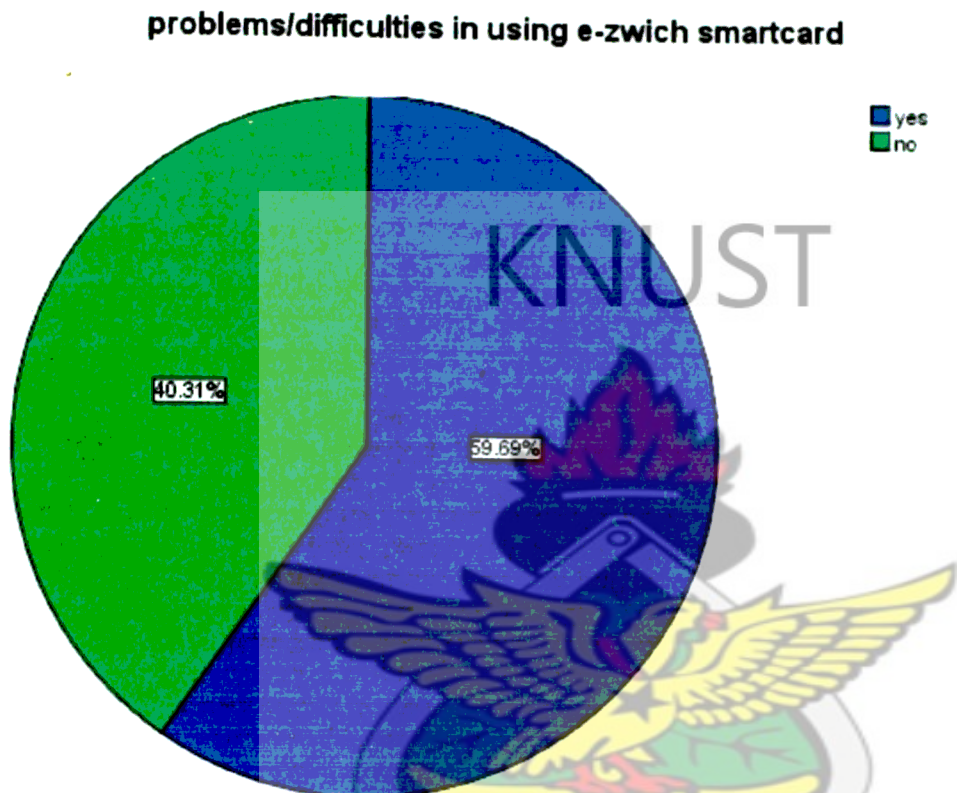
Figure 9: Other smartcard(s) used by respondents apart from the e-zwich smartcard



52.55% of the respondents said yes to whether they use other smartcards apart from e-zwich smartcards while 47.45% said no.

4.1.10 Problems/difficulties with the use of e-zwich smartcard (Cardholders)

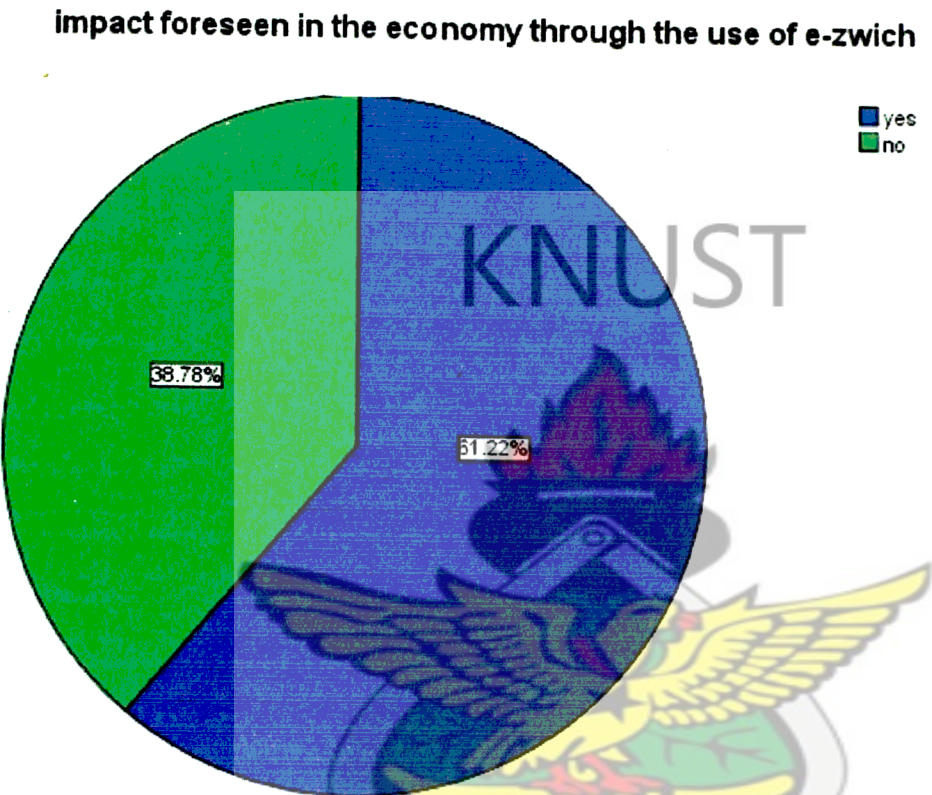
Figure 10: Status of problems/difficulties in using e-zwich smartcard



59.69% of the respondents said that they face problems or encounter difficulties when using the e-zwich smartcard. 40.31% of the respondents also said they do not encounter problems or difficulties with the use of the e-zwich smartcard.

4.1.11 Impact e-zwich can have in the economy (Cardholders)

Figure 11: status of positive impact in the economy through the use of e-zwich



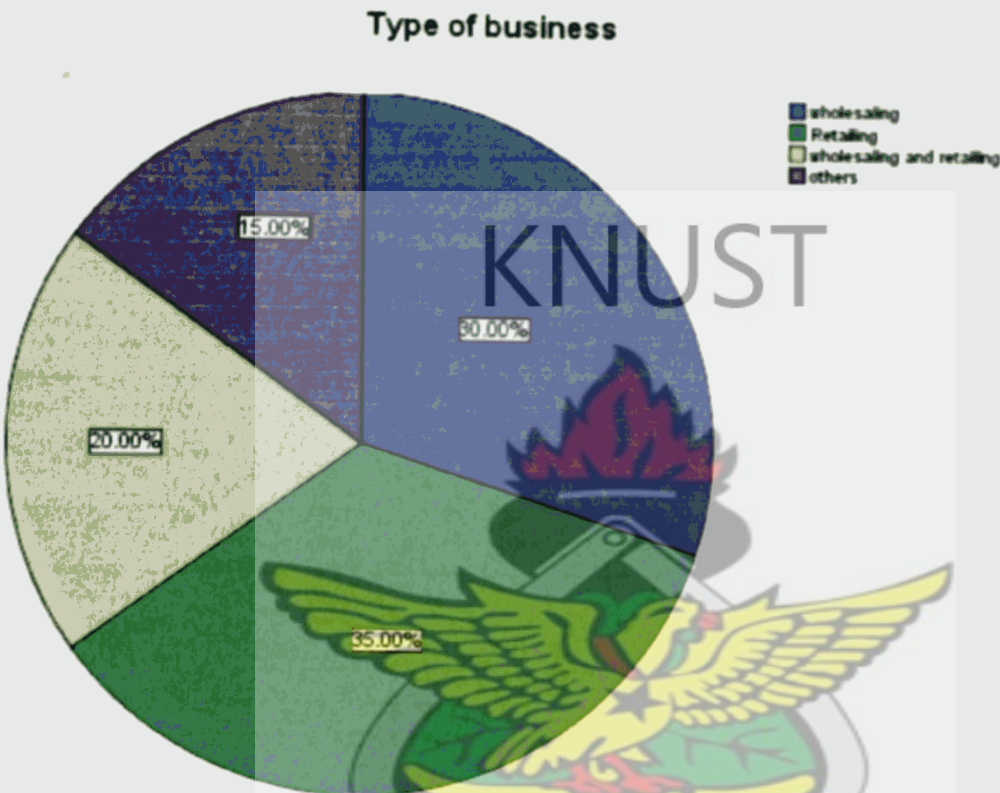
61.22% of the respondents believe that e-zwich can have positive impact in the economy while 38.78% of the respondents also believe otherwise.

4.2 Analyses of data gathered from e-zwich Merchants

The data gathered from the questionnaires sent to merchants (those who operate point of sale services) of e-zwich from the selected banks were analyzed as follows:

4.2.1 Type of business

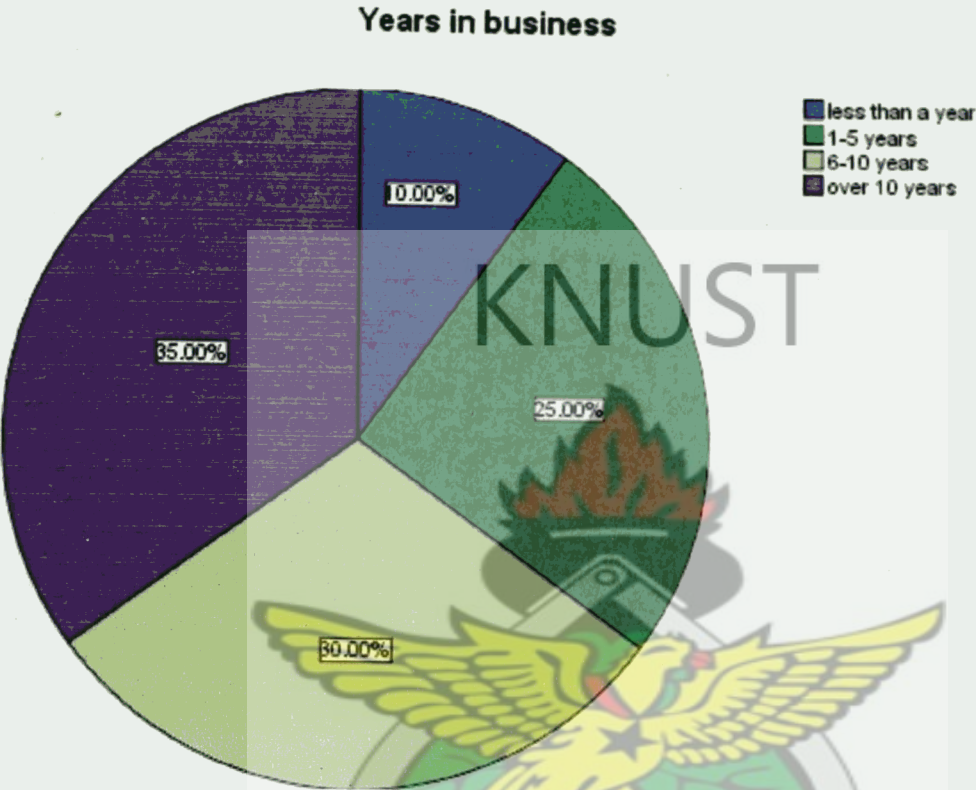
Figure 12: The type of business operated by the e-zwich merchant



Out of the twenty respondents, 35% were retailers, 30% were wholesalers, 20% were both wholesalers and retailers and 15% were neither wholesalers nor retailers (thus post office and insurance companies)

4.2.2 Number of years in business

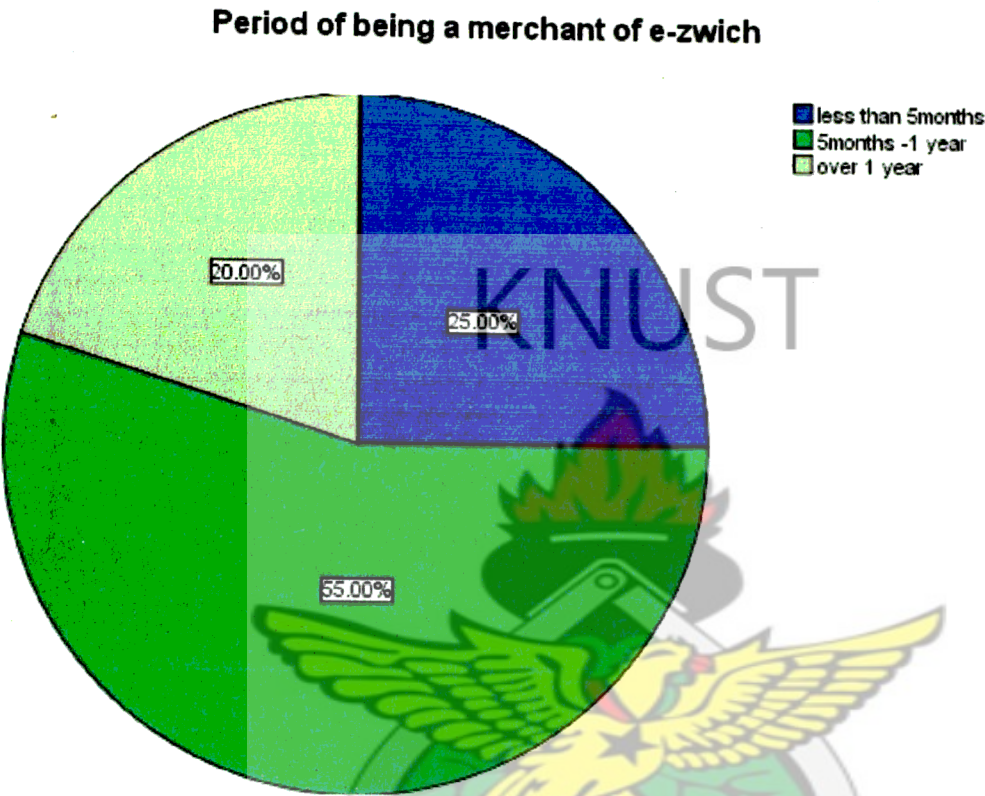
Figure 13: Status of the number of years the merchant has been in business



35% of the respondents established their business over ten years ago, 30% of them have operated between six to ten years and 25% of the respondents have operated between one to five years while 10% of them established their business less than a year ago.

4.2.3 Number of years as a merchant

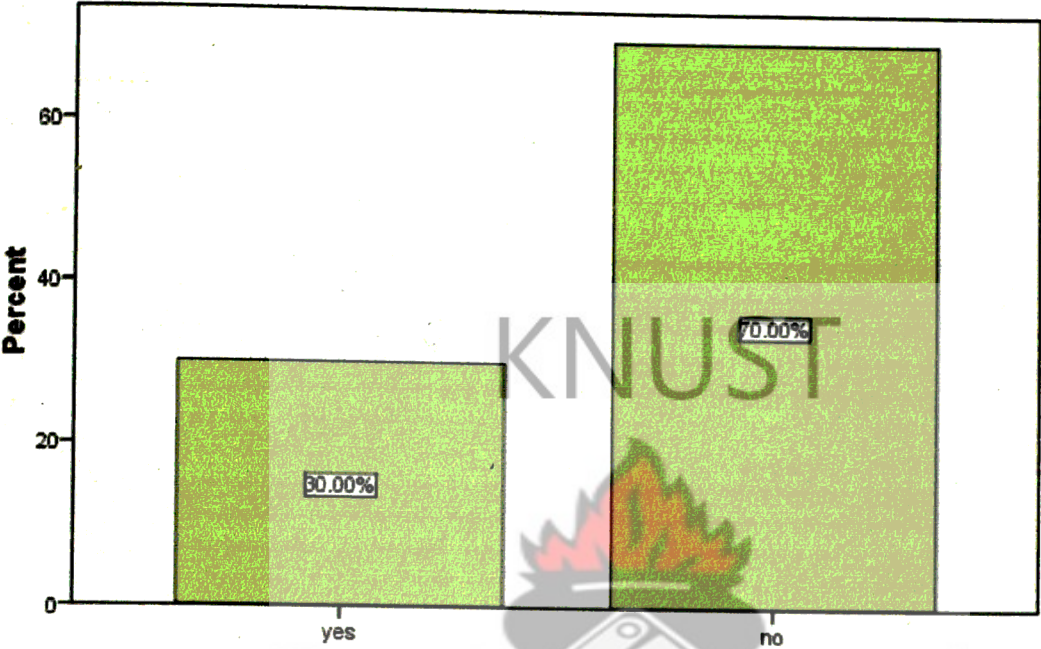
Figure 14: The number of years for operating as an e-zwich merchant



55% of the respondents have been merchants for between 5month to one year, 25% have been merchants for less than 5months while 20% of the respondents have operated as merchants for over 1year.

4.2.4 Patronization of the e-zwich services

Figure 15: How customers patronize the e-zwich services

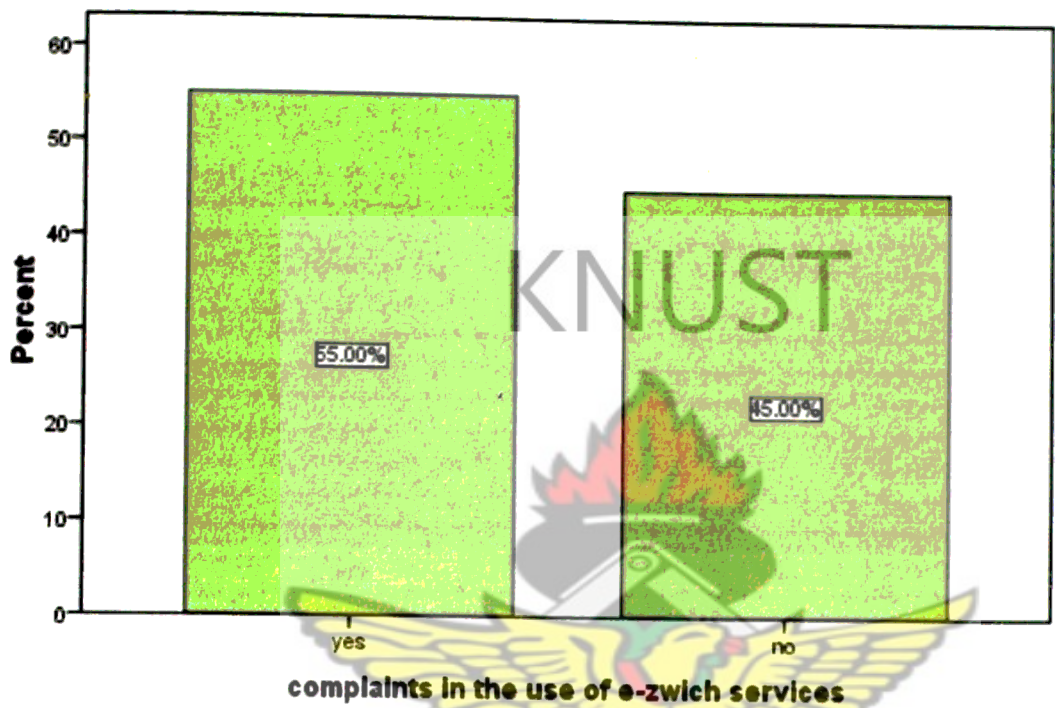


patronization of the e-zwich services

70% of the respondents said that users of the e-zwich smartcards do not patronize the services while 30% of the respondents admitted that users do patronize the e-zwich services.

4.2.5 Complaints in the use of e-zwich

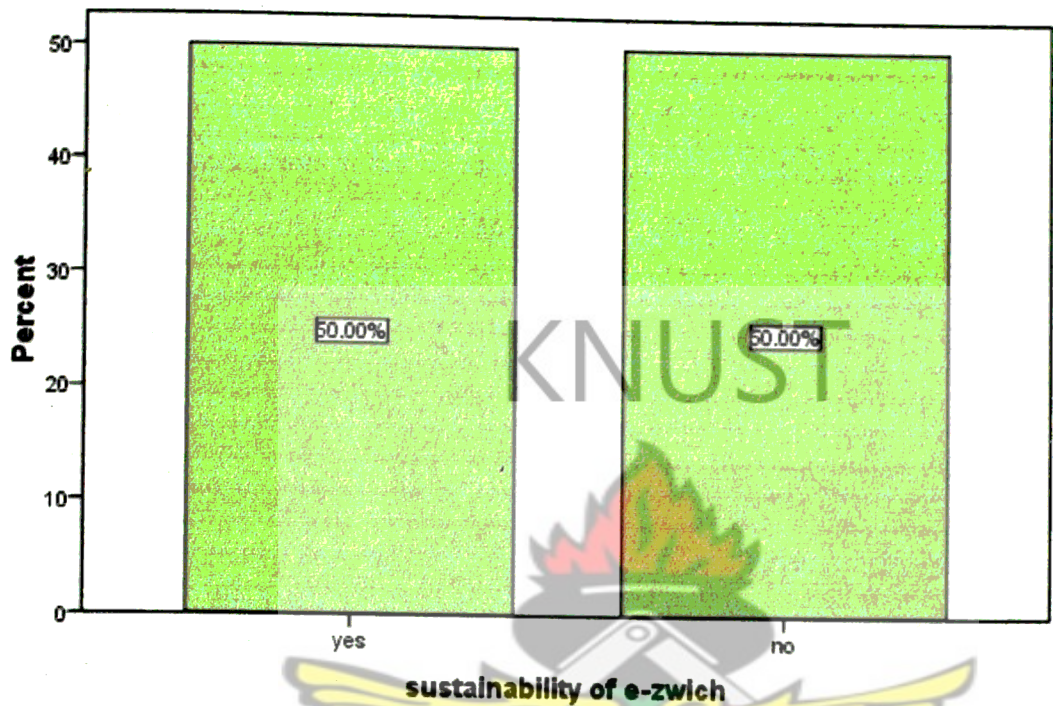
Figure 16: Status of complaints of users of e- zwich to merchants



55% of the respondents admitted that users of the e-zwich smartcard do make complaints while 45% of the respondents also said users of the e-zwich smartcard do not make complaints.

4.2.6 Sustainability of e-zwich

Figure 17: How merchants see the sustainability of the e-zwich.



50% of the respondents believe that the e-zwich is sustainable while the remaining 50% also think otherwise.

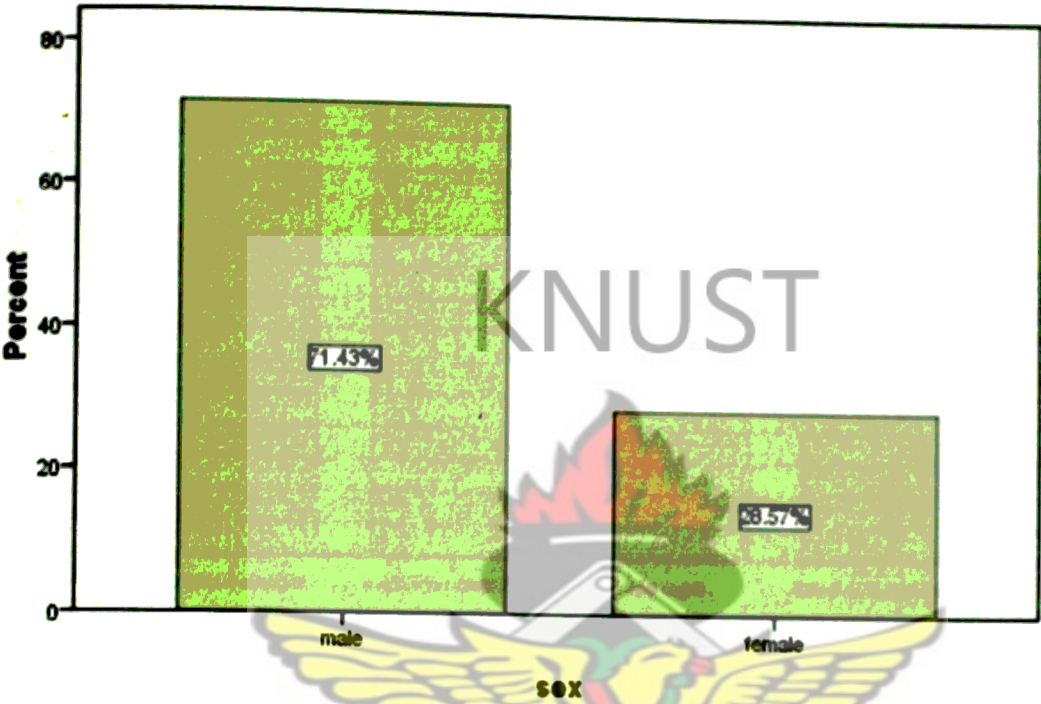
4.3 Semi - structured interviews

In all 13 Commercial bank officials and official from the Apex bank as well as an official from Ghana Interbank Payments and Settlement System (GhIPSS) were sampled and interviewed using a guide to solicit for their views.

The 13 Commercial Bank officials and the official from Apex bank gave similar responses and were coded and analyzed as follows:

4.3.1 Sex of Interviewees

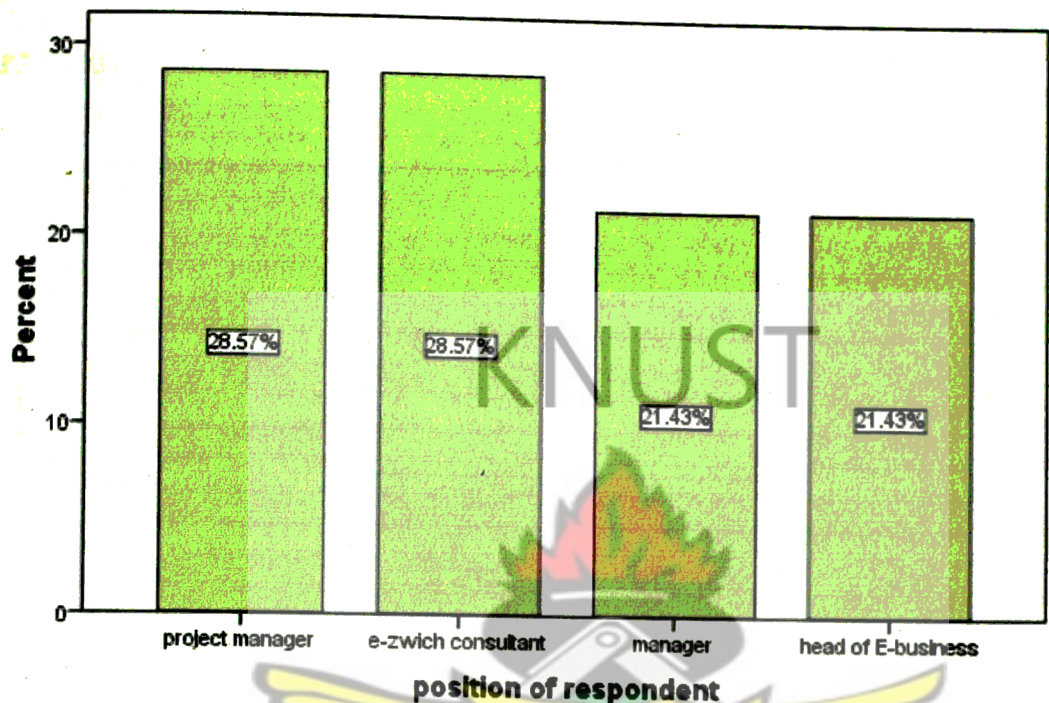
Figure 18: Sex of Bank officials interviewed



Out of the 14 officials interviewed 71.43% were males while 28.57% were females.

4.3.2 Interviewees positions

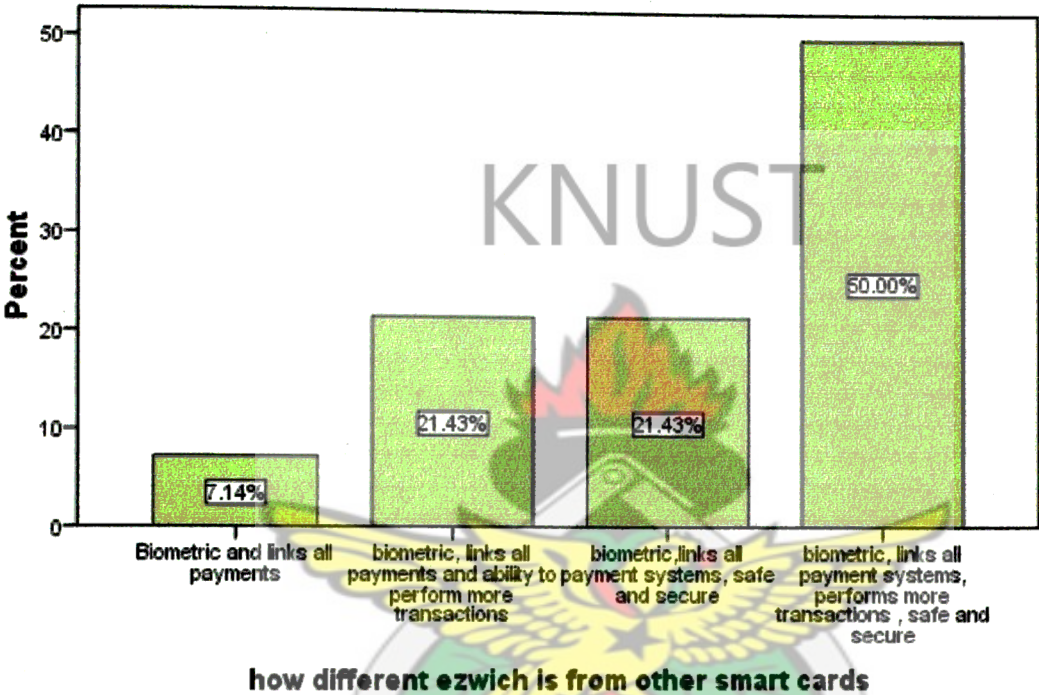
Figure 19: Positions held by interviewees



28.578% each of the interviewees were project managers as well as e-zwich consultants while 21.43% each were head of E- business and managers in their respective banks.

4.3.3 Differences between e-zwich smart cards and other smartcards issued by Banks.

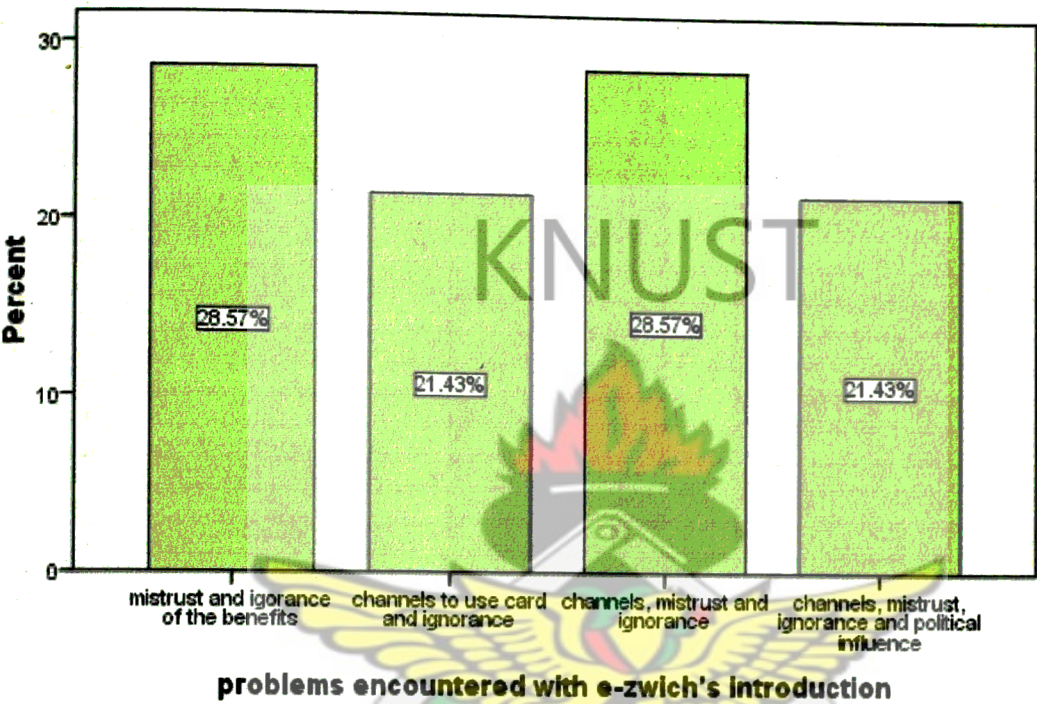
Figure 20: Responses of interviewees on how e-zwich is different from other smartcards



50% of those who were interviewed said that e-zwich is biometric, it links all payment systems, can perform more transactions and it is safe and secure, 21.43% of the interviewees said that e-zwich is biometric, it links all payment systems and it is safe and secure. 21.43% of the interviewees also said that the e-zwich is biometric, it links all payment systems and has the ability to perform more transactions. 7.14% of the interviewees also believe that it is biometric and links all payment systems. This means that all the interviewees believe that e-zwich is different from other smartcards because it is biometric and can link all payment systems while the other smartcards are not.

4.3.4 Problems encountered with the introduction of e-zwich.

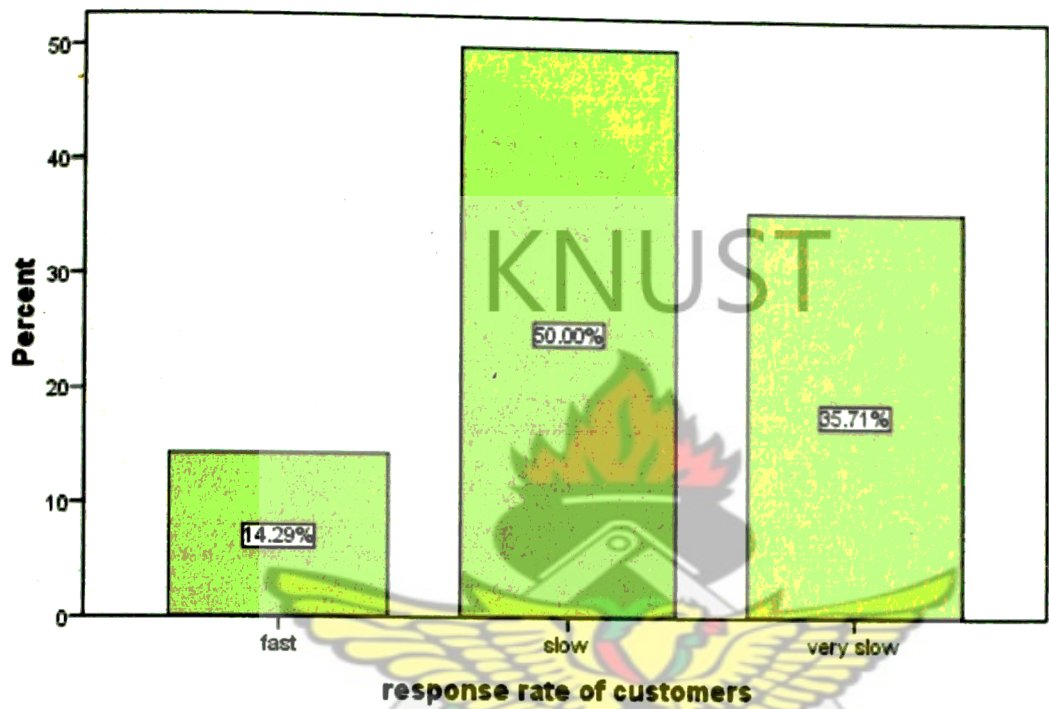
Figure 21: Problems banks encountered with the introduction of e-zwich to customers.



28.57% of the officials interviewed said that there were problems of mistrust and ignorance on the part of the general public. Another 28.57% of the interviewees also said that the channels or avenue to use the card and ignorance on the part of the general public. 21.43% of those interviewed also said the channels or avenues to use the card and ignorance were some of the problems encountered while another 21.43% also said the channel/avenues to use the card, mistrust, ignorance and political influence were the main problems they encountered with its introduction

4.3.5 Response rate of customers and merchants.

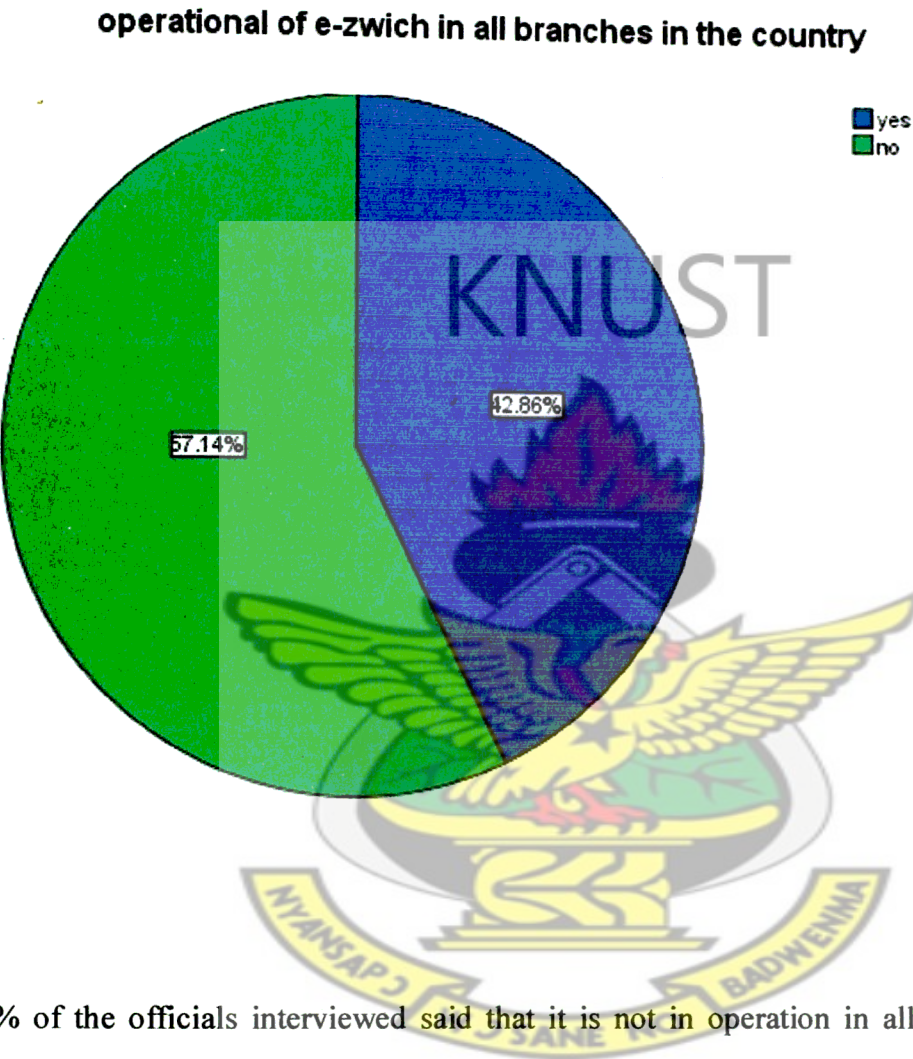
Figure 22: Response rate of both Customers and Merchants of e-zwich after its introduction.



50% of the interviewees believe that the response rate is slow, 35.71% of the interviewees also think that the response rate is very slow while 14.29% of them also believe the response rate is fast.

4.3.6 Operations of e-zwich in all bank branches.

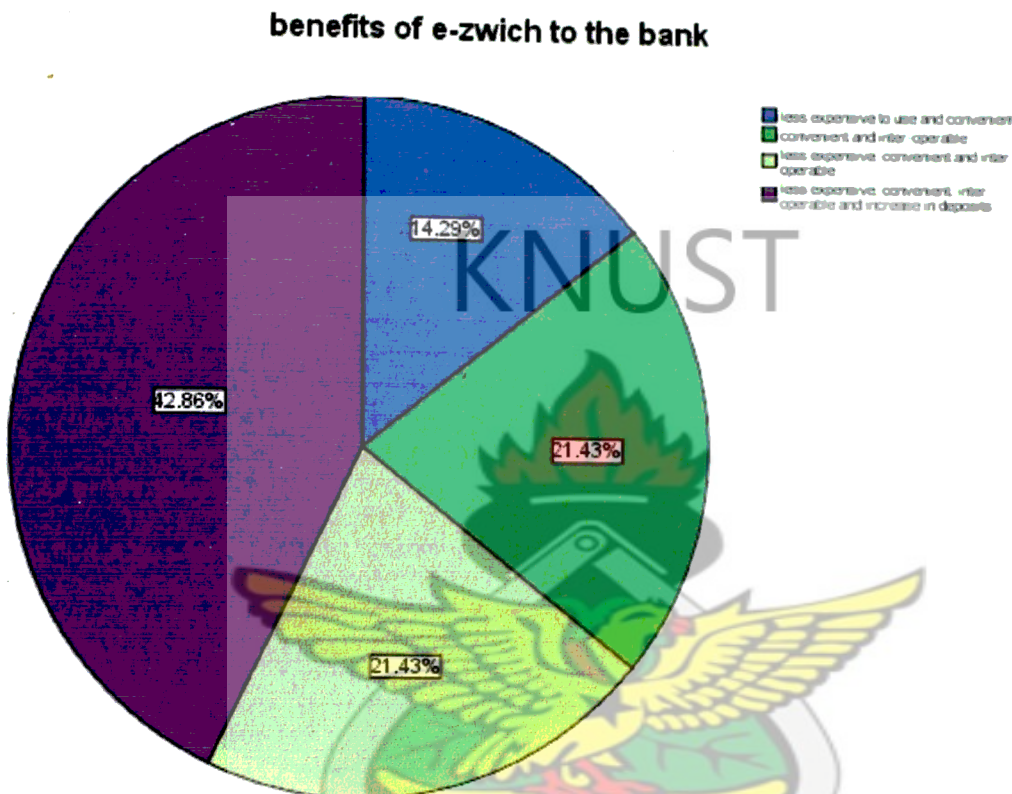
Figure 23: The operations of e-zwich in all branches of the banks in the country.



57.14% of the officials interviewed said that it is not in operation in all their branches while 42.86% said it is functioning at all their branches.

4.3.7 Benefits of e-zwich to the bank.

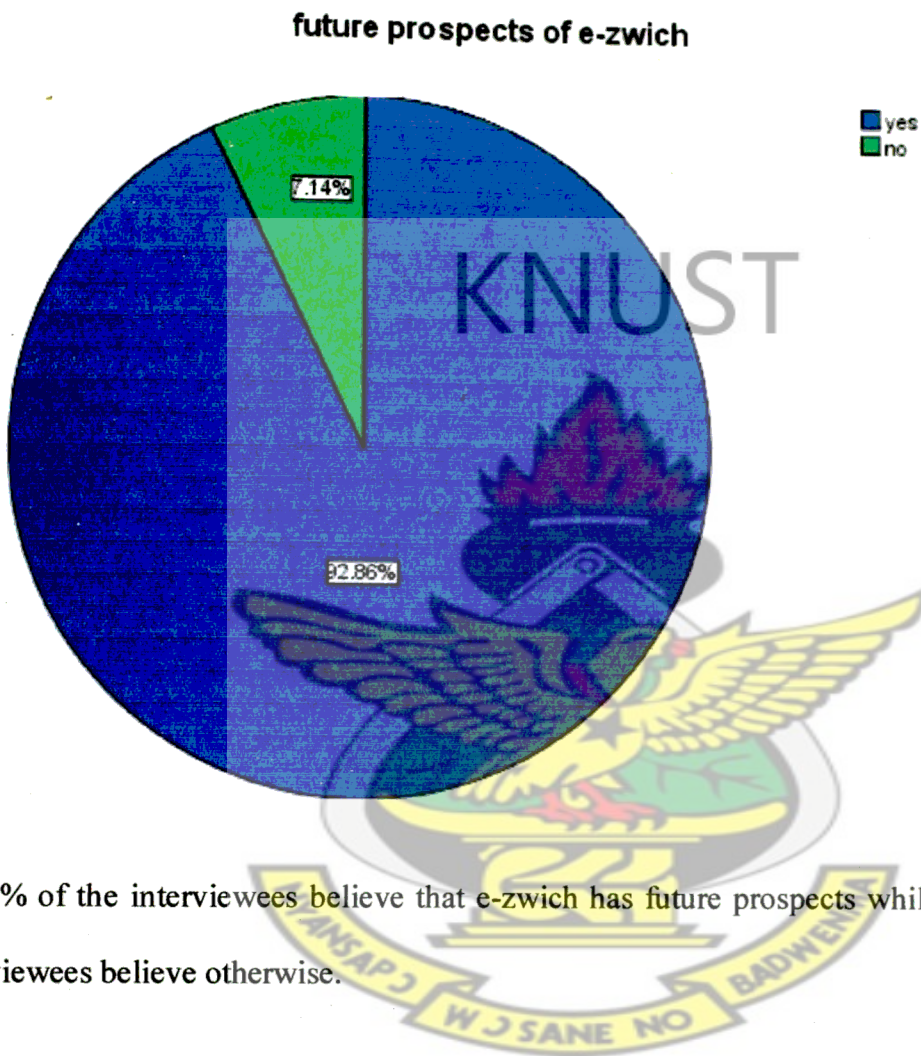
Figure 24: the benefits that banks derive from e-zwich



42.86% of the officials interviewed said that the banks it is less expensive, convenient, inter-operable and increase in deposits. 21.43% of them said it is less expensive, inter-operable and convenient to use. Another 21.43% also said it is convenient and inter-operable while 14.29% said it is less expensive and convenient to use.

4.3.8 Future prospects of e-zwich.

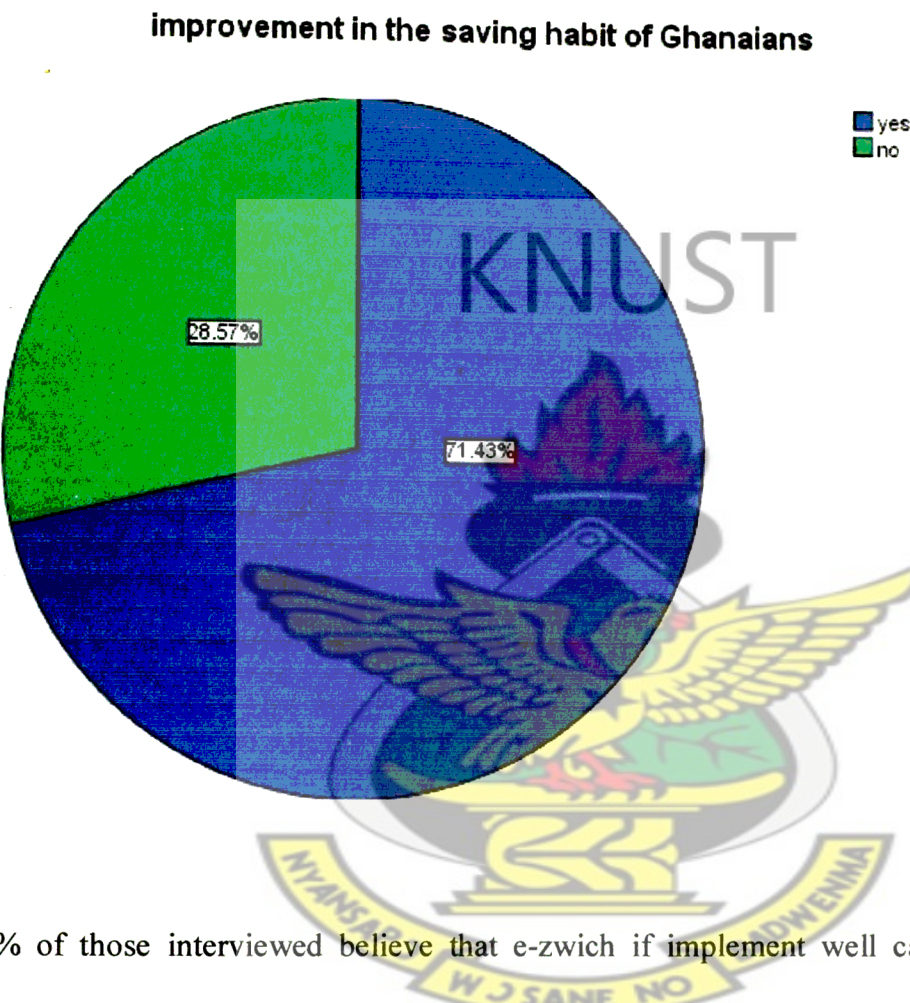
Figure 25: the status of whether e-zwich has future prospects



92.86% of the interviewees believe that e-zwich has future prospects while 7.14% of the interviewees believe otherwise.

4.3.9 Improvement in savings habit.

Figure 26: Status on whether e-zwich can improve savings habit of Ghanaians



71.43% of those interviewed believe that e-zwich if implement well can improve the savings habit of Ghanaians while 28.57% of the interviewees also believe that it cannot improve the savings habit of Ghanaians.

4.3.10 Response and views from the official of GhIPSS.

The manager in charge of Business Development at GhIPSS was interviewed using an interview guide.

He explained that e-zwich as compared to other smartcards does not use personal identification like pin codes but rather it uses fingerprint. Other differences are:

- It is a magnetic strip card. (Some of the smart cards have no micro computer chips but e-zwich smartcard uses micro computer chip.)
- It has bigger capacity and can store more information.
- It also records all transactions it performs.

Having the e-zwich smartcard makes you interoperability. Thus having the card makes you a customer of any bank or all banks in the country.

He said they had problems introducing it because it is a new product. These are:

- The banks did not see it as their own product so some of them tried to resist its introduction.
- The general public did not understand how it will have positive impact on their lives
- Ghanaians are not ready to change their attitude toward new development. Thus innovation diffusion.

GhIPSS biggest problem now is when full integration will take place but was quick to say that the system is improving. On whether e-zwich can change the minds of the unbanked

population, he said that it can change the way they perceive banking systems but not total change.

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CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 Discussion on finding of cardholders

According to the survey conducted, majority of the respondents who have the e-zwich smartcards fall between the ages of 18years and 45years, which constitutes 76.02% of the total respondents. This means that the service is mainly patronized by the youth. This shows that with more education, the system would be a success since new technologies and innovations are always used by the youth who in turn convince the adults to change their attitude towards new innovations.

57.14% of the respondents were females while 42.86% were males. This shows that females use the e-zwich smartcard more than males. Females can convince their male counterparts more and can change their partners' attitude more than the males can do. This shows that e-zwich has bright future.

Majority of the respondents are highly educated thus more than secondary education. These people constituted 79.09% of the respondents. Before any innovation can be effective, it needs the educated elites to try the product and confirm its importance to the illiterates. Once the product is certified by someone the society respects or believes in it becomes acceptable by all and sundry. This means that with time the system will be embraced by all.

Under the employment level of card holders, national service personals and bankers constituted greater percentage (32.65%). This was followed by traders (25%), civil servants (20.41%) and students (13.78%) respectively. Unemployed (3.63%) and farmers (1.53%) had the least percentage of respondents. This shows that people who are employed patronize e-zwich payment system.

Majority of the respondents earn between 100 and 300 Ghana cedis this people constituted 33.67%, 22.45% of the respondents also earn between 301 and 700 Ghana cedis. Those who earn between 701 and 1000 Ghana cedis (17.86%), more than 1000 Ghana cedis (16.33) and below 100 Ghana cedis (9.69%) constitute the least percentage of respondents of e-zwich smartcard holders. This shows that the high income earners as well as the low income earners do not patronize the system.

Despite the fact that the e-zwich has been in existence for about two years, only 15.82 % of the respondents have been using the card for over one year. 48.4% of the respondents have been using the card for more than five months to one year. 35.71% of the respondents have been using the card for less than five months. This indicates that people have started embracing the e-zwich service and with more education the adoption rate will be high.

It was detected that one need not to be a customer of the bank before he/she can be issued e-zwich smartcard since 2.55% of the respondents do not operate neither current nor savings account or both.

According to the survey, customers or holders of the e-zwich smartcard still queue at the banks for money. These shows that people still do not know or are not well educated on the use of the e-zwich smartcard though majority of the respondents use other smartcards issued by their various banks, they will not go to queue at the banks for money if they do.

On whether users encounter problems in the use of the smartcard, majority of the respondents admitted having difficulties with the use of the card. They even went ahead and mentioned net work problems, inadequate point of sale terminals and merchants not ready to give money to cardholders (cash back services).

Though they still believe if these problems are addressed properly e-zwich will be one of the best electronic payment innovations in the country which has huge economic impact.

5.2 Discussion on finding of Merchants

Majority of the merchants who administered the questionnaires were retailers and wholesalers or both with few of them who were neither wholesalers nor retailers (Insurance companies and the post offices).

35% of the merchants have operated the business for over ten years, 30% of them have been in existence for six to ten years and 25% were established between one to five years

with only 10% of the respondents establishing their business for less than a year ago. This shows that merchants who have been in existence from six years going patronize the e-zwich services more. This is because they believe they have majority customers and therefore should not disappoint or deprive them of the e-zwich services.

Although the e-zwich was introduced about two years ago, 80% of the respondents have been merchants for more than 5months. This shows that merchants are ready to operate the system and they also know the benefits they will derive from the system if it is well patronized.

However when asked about how clients are patronizing the system, 70% of the respondents indicated that the services is not being patronized by clients. This could be that customers are used to cash transactions more than electronic payments.

The merchants also indicated that 55% of the merchants do not complain however 45% of the merchants indicated that clients complain of net work problems, inadequate point of sale terminals and the inability of clients to withdraw or take money from the merchants.

50% of the respondents believe the system is sustainable while the other 50% also think otherwise. They all argued that education is the key to e-zwich sustainability. They also believe that network problems and the other petty problems need to be tackled before the system can be sustained.

5.3 Discussion on finding of the semi-structured interviews

Majority of the bank officials interviewed were males and they hold various positions like project managers, e-zwich consultants, managers and head of E-business. This shows that they have ample knowledge in the system.

When asked about the differences between e-zwich smartcard and other smart cards issued by their various banks. They all agreed that e-zwich is biometric, links all payment systems, perform more transactions and it is safe and secure.

The interviewees admitted they encountered various problems in the e-zwich introduction. Among these problems encountered are mistrust, ignorance, channels or avenues to use the card and political influence.

Mistrust and Ignorance

Change is very difficult to implement especially when that product or service has been implemented before without success. Any time there is a product or service failure in Ghana, there is the perception that similar product or service may not do well and therefore reintroduction becomes a bit difficult. A typical example is sika card introduced by SGSSB which did not last long after some few years of its introduction. This has made most Ghanaians ignorant and lost trust in the introduction of e-zwich.

Channels or avenues

The banks admitted that the POS device is very costly and is distributed to the merchants free of charge. Genuine merchants are therefore deprived of the device due to the price of

the device this brings about inadequate POS device in the country which in turn deprives valuable customers of the use of the e-zwich. Most customers have seen or heard the advert on radios and Televisions but have not seen or feel the smartcard and therefore do not know how it is operated. This deters customers from patronising the system since the channels or avenues to use the card are not well communicated to them or are not readily available.

Political influence

Some of the banks also think that the timing of the introduction was not the best since people played politics with it. The government on power at that time should have waited and educated the general public as well as solicited for the views of the banks before implementing it. Some customers saw it as political influence and therefore decided not to enrol in the e-zwich.

Touching on the response rate, 50% of the interviewees said the response rate is slow, 35.71% said the response rate is very slow and 14.29% said the response rate is high. Looking at these figures it can be concluded that the response rate is slow and something has to be done to ginger the public to respond positively to the system. The introducers as well as the banks should introduce promotions that will entice the general public to patronize the system. This can be in the form of entertainment. This will also market the product itself.

For example major sporting competitions/ activities can be sponsored and all spectators giving the e-zwich smartcard free of charge. Any spectator who wants to take part has to pay with the e-zwich smart card. Those without the card have to be given one before they take part. This will encourage the public to patronise the product which will improve the response rate.

57.14% of the interviewees said the system is not operational in all their branches whilst 42.86% of the interviewees said the system is operational in all their branches. This means that majority of their clients are deprived of the service and efforts should be made to bring the service to the door steps of the customers.

However the interviewees responded that despite the fact that the system is not operational in all their branches there are a lot of benefits the banks derive from e-zwich. These are:

- ❖ It is less expensive to operate
- ❖ It is convenient to use
- ❖ It is interoperable
- ❖ It increases deposits.

This shows that it is not only the clients or the customers who benefits from the service, the banks also do benefit.

On whether the system can improve savings habit of Ghanaians, 71.43% of the interviewees have the view that the system can improve the savings habit of Ghanaians whilst 28.57% of the interviewees also have the view that e-zwich can not improve the savings habit of Ghanaians. This shows that e-zwich can improve the savings habit of Ghanaians since money is mobilised to the banks from the unbanked through the use of the e-zwich.

92.86% of the bank officials interviewed said the e-zwich has bright future while 7.14% also believe the system has no future. This means that if the system is well managed and the necessary actions taken, it will be one of the best electronic payment systems in Africa.

The following suggestions also came out through the interviews conducted with the bank officials and the GhIPSS official as some of the prospects and challenges of e-zwich.

5.4 Prospects

It has long been clear that electronic payment products offer a series of benefits to all parties - Governments, consumers, merchants, and financial institutions. For about two decades now, business journalists and economists have heralded the coming of a paperless society in which electronic payments will replace the use of cash and paper cheques in retail transactions. (Experts on Electronic Commerce, undated).

5.4.1 Increase velocity of money

Movement of money in the economy will be very fast since the system can work both on line and off line.

5.4.2 Reduction of pressure on banks

Over the years there have been long queues in the banks especially getting to the later days of the month. With the e-zwich being in full force salaries and wages would be paid straight on the cards, payment for goods and services can also be done using the card which will in turn reduce the number of people who go to bank to queue for money.

5.4.3 Reduction in the cost of printing.

The central bank, BoG spends huge sums of money in printing currencies. With the use of e-zwich, circulation of money in the system will be minimal.

5.4.4 Eliminates inflationary price.

Price rounding up practices are eliminated since any amount for payment of goods and service are deducted from the smartcard without no change practices in most of shops and markets.

5.4.5 Reduction in Armed Robbery Attacks

Recent incidents of armed robbery attacks on customers who withdraw huge sums of money from the banks have heightened customers' fears about withdrawing large sums of money from the banks. It is uncommon in Ghana to find a whole business organization withdrawing physical cash to pay workers wage manually. Some of them end up being attacked on their way from the banks resulting in huge losses to those organizations. Wages and salaries of workers can be paid direct to their e-zwich smartcard.

5.4.6 Reduction in the use of Counterfeit Bank Notes

The use of banks notes for most business transactions has brought about the notorious activities of people who circulate counterfeit money. With a good business strategy, if more people are encouraged to use e-zwich, it will help put a check to the activities of these people.

5.5 Challenges

Although tremendous improvements in telecommunications and innovations have facilitated the development of safe, electronic retail payments, neither the number nor volume of paper-based transactions have dropped appreciably in most economies worldwide (Appiah et al, 2008) which Ghana is no exception. While prospects for electronic payments in Ghana continue to improve, challenges persist.

5.5.1 Accessibility of the system

It has been discovered that most customers are interested in shopping at other shops which do not have the terminals and that comparatively offer better prices.

5.5.2 Telecommunication Infrastructure

The telecommunication infrastructure in Ghana is underdeveloped. But for the e-zwich to thrive, this infrastructure is a primary requirement. The telecommunication services are generally of poor quality, which impedes against the development of retail payment technologies. The speed and quality of line is unsatisfactory, especially outside metropolitan areas.

5.5.3 Lack of Knowledge and Skill

Both consumers and business enterprises have limited knowledge of what services exist, how they operate and what benefits to be derived. Due to high level of illiteracy, most of the people do not recognize the economic importance of electronic retail payments. Most Ghanaians especially the aged, lack the skills and knowledge required to ensure efficient and effective use of the system.

My investigation showed that only a few number of the adult population have knowledge in electronic payment systems. The low level of knowledge in the payment devices and how each of them works has led to low patronage of the existing retail payment products.

Information on practical issues with regard to handling, confidence-related issues on security, integrity and consumer law issues concerning internal and external trade are necessary to increase patronage.

5.5.4 Acceptance and Network Externalities

For electronic payments to be a success there should be user acceptance. Any medium of exchange should be generally accepted. It is identified that, consumers seem to have strong preferences for paper payment vehicles, partly because of the high degree of familiarity. Even the few electronic stores prefer to a large extent payments with cash on delivery. More restricted is the possibility of payment with modern payment means, such as prepaid cards. This fact demonstrates the general mistrust and lack of faith that characterizes the Ghanaian consumer public with regard to electronic retail payments.

Besides, consumers are reluctant in replacing cash and cheques with electronic innovations like the stored value cards because of low network externalities (POS services). Network externalities occur when the benefits a consumer expects to receive from a good or service depends on the number of consumers already using the commodity. This implies that, a consumer's benefits from having a card depend on how many businesses will accept it in payment for goods and services. However merchants will refuse to invest in the systems needed to accept the cards until they are assured of enough customer demand to justify the expense.

This work reveals that this interdependency of demand will remain an obstacle until the innovation achieves the critical mass, either in its own time or with the help of policy makers.

The interdependency of demand means that the market for the network good must attain a minimum size in order to achieve a sustainable equilibrium. Economides & Himmelberg (1995) refer to this minimum size as the network's "Critical Mass".

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5.5.5 Uncoordinated Banking System

The current banking system in Ghana where each and every bank is doing its own thing is not the best for the country. With an uncoordinated and unconcentrated banking system, it has been more difficult for Ghanaian banks to cooperate and switch to electronic than in other developed countries. The provision of banking infrastructure for electronic payment system cannot be left to only one or two banks. The cost involved is high, but with a consented effort from all the major banks, it will be within their reach.

5.5.6 Operational Disruptions

There are risks such as operational disruption that affect the stability of electronic payment system. Numerous examples exist that is caused by failure of operations – for instance, the computer problem that caused the Bank of New York a whopping \$22 billion overdraft in 1985; a roof collapse after a heavy snow, resulting in a shutdown of an Electronic Data

System facility for processing ATM transactions, affecting more than 5000 ATMs in the US in 1993; the disruption of the operations of the Internet as a result of the “worm” virus in 1987; and a host of other disruptions. (McAndrews, 1996) Due to the network nature of electronic payment instruments, the disruption or interruption of a facility supporting the system can caused a breakdown of the whole payment system. Such incidents may serve to discourage consumers.

It could therefore not be overemphasized that, the challenge of the unbanked is a daunting one, to which the banking sector has not devoted much attention and resources.

5.5.7 Attitude to New Products

Ghanaians have bad attitude towards new development and therefore finds it very difficult to adapt to new things.

The problem of reaching a critical mass is explained by the reluctance of people to use new schemes until a sufficient relative number of their associates use them. It is difficult to convince customers to switch providers especially if they are not particularly dissatisfied with the systems they have been using. (Appiah, *et el*, 2008)

In reality, major commercial banks already have significant investments in the existing structure of the payment system. They are likely to be wary of introducing new initiatives which may simply serve to increase their cost base without generating incremental revenue.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

Although the purpose for which e-zwich was introduced may not have been achieved, there are still a lot of transactions that make it very useful. Previous perceptions about the card have now changed as clients continue to patronize the product.

With the exception of few technical hitches such as poor connectivity to the system and so on, it seems all is well and that it has a bright future as compared to other products introduced earlier by Bank of Ghana

6.2 Conclusion

Given the important role of the payment systems at the core of any financial system, the introduction of the E-zwich payment system by the bank of Ghana is timely, as it underscored the Bank of Ghana's quest at increasing electronic payments in the economy, while reducing to a large extent, the over reliance on cash and paper-based payments.

There is a nationwide interoperability among all participating institutions

Additionally, all 26 universal banks have E-zwich services available on average to 70% of their branches, while seven out 14 savings and loans companies, 59 out of the 146 community and rural banks, and 94 out of major post offices in the country, have all been hooked to the platform. (Ghanaian Chronicle, 2009).

The banks are doing well in promoting electronic payments products but majority of Ghanaians still pay their bills by paper cheques and cash. Therefore, there is the need to create more awareness to entice the unbanked people into the banking system.

Instructively, six banks have completed and have in operation technology that enables their customers to access cash in their traditional accounts electronically, at any point of sale device (card to bank and bank to card). (Ghanaian Chronicle, 2009).

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The other banks have to emulate these banks so that e-zwich customers can access cash in their traditional accounts electronically at any point of sale device.

In order to make the system more effective, the following should be noted well and must be addressed by Bank of Ghana:

6.2.1 Cash withdrawal

This is an important transaction on the POS terminal since most Ghanaians are accustomed to the use of physical cash for payment of goods and services. Many e-zwich smartcard holders mostly request for cash withdrawal which merchants find difficult to perform due to their less cash holdings. Easy access to one's money anywhere at any time as the adverts portray becomes a mirage.

6.2.2 Third party bill payment

Only post paid customers for Electricity Company of Ghana and Ghana Water Company are enjoying this service. Prepaid customers are left out of the scene.

6.2.3 Clients taking multiple cards

Some clients take multiple cards from different banks and end up using only one or none of them.

6.2.4 Cost of POS Terminals

The Banks buy the POS Terminals at huge cost (\$950.00 for each) and give to the merchants to use for free because they have to be encouraged to use to make the device accessible. The merchants perform only sales since customers do not usually request for the other transactions such as balance enquiry (printed), loading and money transfer among others that would attract charges. This however goes against the banks and discourages the deployment of POS terminals to deserving merchants.

Some of the merchants who get the opportunity of getting the POS Terminals also fail to use them since they are addicted to cash transactions.

6.3 Recommendations

For the e-zwich to achieve its purpose the following is recommended to be done:

- GhIPSS has to work around the clock to provide the right technical and operational training to all service providers, to enable them increase service quality and availability.
- Appropriate financial literacy education should be given to all users to bring about the needed attitudinal and behavioural change from cash and paper-based payments to electronic payments.
- GhIPSS has to within the next few months work with the banks and financial institutions to consolidate and expand existing e-zwich services to the doorsteps of all Ghanaians, and introduce new products that would make e-zwich services more accessible.
- The general public unacceptability of the system is due to inadequate education, low level commitments of some banks to the system and the perceived or real notion that the system was in competition with the normal banking system in the country among others must be addressed critically to disabuse the minds of Ghanaians to accept the system which if the public accepts will help improve the economy.
- The forty- eight hours it takes for a customer to get his /her money back in case there is a card replacement should be reviewed because some clients usually have all their monies on the card.

- The POS devices or terminals should be common and must be available at every shop and supermarket no matter the size of the shop or the supermarket for easy accessibility.
- The telecommunication infrastructure/network in Ghana must be improved since the e-zwich system relies on GPRS system, therefore POS device cannot work when there is network problem
- GhIPSS should make e-zwich more flexible and should provide for full interoperability among all banks for development and management of existing and new products since managing it properly has good prospects in the economy.
- Major activities and events like national festivals and sporting events must be sponsored with the main product or centre of attraction being the e-zwich smartcard. The method of payment for these activities or events should be the e-zwich smartcard. This will increase participants' interest and confidence in the system there by promoting it for massive patronization.
- Exhibitions and promotions can be done with the e-zwich smartcard to arouse customers interest, trust and confidence in the product.

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Appendix 1: sample questionnaire for customers (cardholders)

The introduction of e-zwich in Ghana: Prospects and Challenges

Please tick the appropriate response(s) and provide your own answers where necessary.

1. What is your age?

- 18 – 251 []
- 26 – 352 []
- 36 – 453 []
- 46 and above4 []

2. Sex Male1 []
- Female2 []

3. What is your level of education?

- None1 []
- Below middle / JSS2 []
- Middle / JSS3 []
- O/L, A/L or SSS4 []
- Under Graduate5 []
- Graduate6 []
- Post Graduate7 []

4. What is your occupation?

Student	1	[]
Trader	2	[]
Civil servant	3	[]
Farmer	4	[]
Unemployed	5	[]
Other, specify	6	[]

5. How much do you earn in a month? (income level)

Less than GH¢ 100	1	[]
Between GH¢100 and GH¢ 300	2	[]
Between GH¢ 301 and GH¢ 700	3	[]
Between GH¢701 and GH¢ 1000	4	[]
More than GH¢ 1000	5	[]

6. For how long have you held this e-zwich card?

Less than 5 months	1	[]
From 5 months to 1 year	2	[]
Over 1 year	3	[]

7. What specific account do you hold with the bank?

- | | | |
|--------------------------|---|---------------|
| Savings | 1 | [] |
| Current | 2 | [] |
| Both Savings and Current | 3 | [] |
| Other, specify | 4 | [] |

8. Did you go through difficult processes before getting the e-zwich smartcard?

- | | | |
|-----|---|---------|
| Yes | 1 | [] |
| No | 2 | [] |

9. If yes state the nature of the problem(s)

.....

.....

.....

.....

.....

.....

10. Do you still queue at the bank for money with your e-zwich smartcard?

- | | | |
|-----|---|---------|
| Yes | 1 | [] |
| No | 2 | [] |

.....

.....

14. What are some of the transactions/services that you can use your e-zwich smartcard to perform?

.....

.....

.....

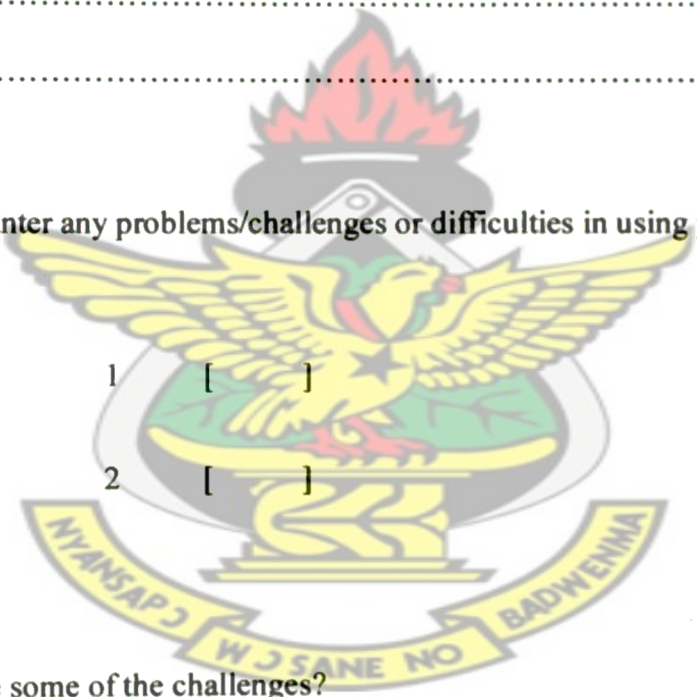
.....

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15. Do you encounter any problems/challenges or difficulties in using your e-zwich smartcard?

Yes	1	[]
No	2	[]



16. If yes what are some of the challenges?

.....

.....

.....

.....

.....

.....

.....

17. What do you think can be done to solve these problems/challenges?

.....

.....

.....

.....

.....

18. What should the introducers or the banks do to improve upon the services of e-zwich?

.....

.....

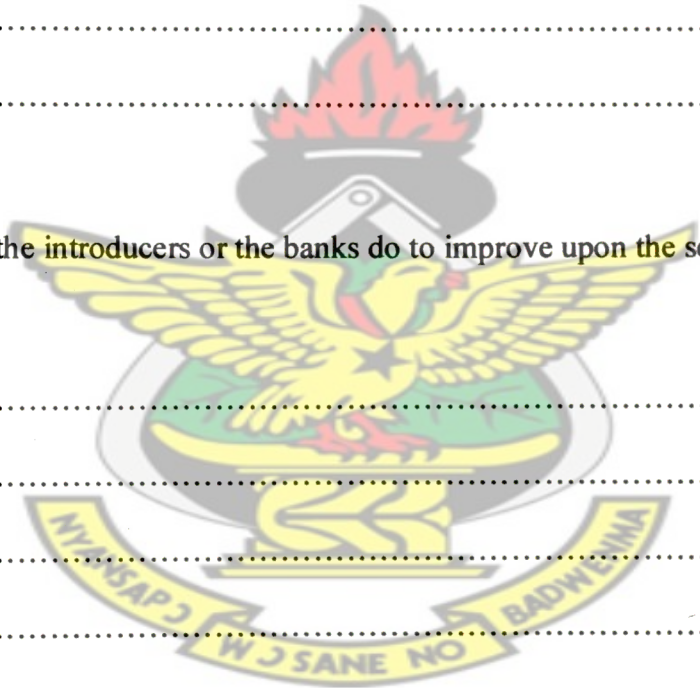
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.....



19. Do you foresee any impact in the economy through the use of the e-zwich smartcard?

Yes 1 []

No 2 []

20. If yes, can you mention them?

.....

.....

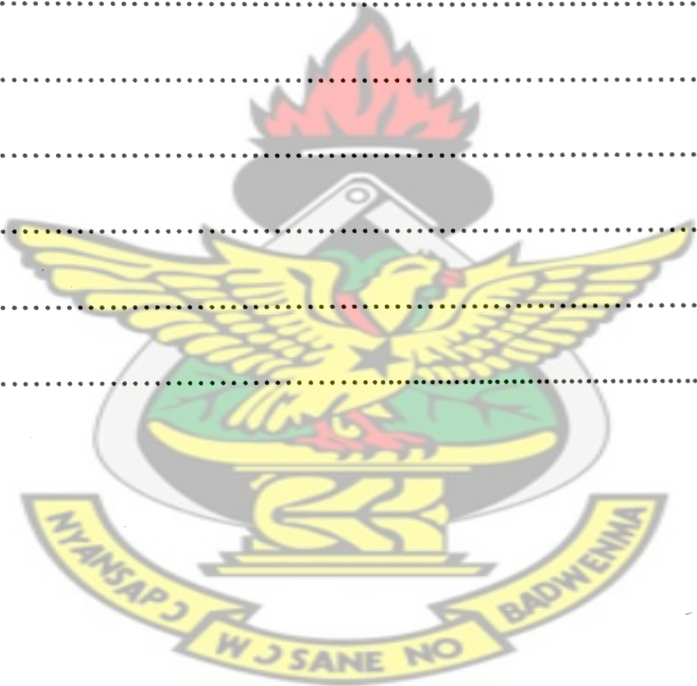
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Appendix 2: sample questionnaire for Merchants

The introduction of e-zwich in Ghana: Prospects and Challenges

Please tick the appropriate response(s) and provide your own answers where necessary.

1. Type of business.

- Wholesaling

1

[]
- Retailing

2

[]
- Wholesaling / Retailing

3

[]
- Other, specify

4

[]

2. How long have you been in this business?

- Less than 1 year

1

[]
- 1 year to 5 years

2

[]
- 6 years to 10 years

3

[]
- Over 10 years

4

[]

3. How long have you been a merchant of e-zwich?

- Less than 5 months

1

[]
- 5 months to 1 year

2

[]
- Over 1 year

3

[]

4. Has the introduction of e-zwich increased your sales?

Yes 1 []

No 2 []

5. Did you encounter difficulties in securing the Point of Sale (POS) device?

Yes 1 []

No 2 []

6. If yes, mention the problem or the difficulties you went through.

.....

.....

.....

.....

.....

7. Is the POS device difficult to operate?

Yes 1 []

No 2 []

8. If yes what do you suggest can be done to make its operation very simple and flexible?

.....

.....

.....

.....

.....

9. Do customers patronize the services of the e-zwich?

Yes	1	[]
No	2	[]

10. If no why are they not patronizing?

.....

.....

.....

.....

.....

.....

11. Do customers complain of the services of the use of the e-zwich?

Yes	1	[]
No	2	[]

12. If yes, what do they complain about?

.....

.....

.....

17. If yes, give reasons.

.....

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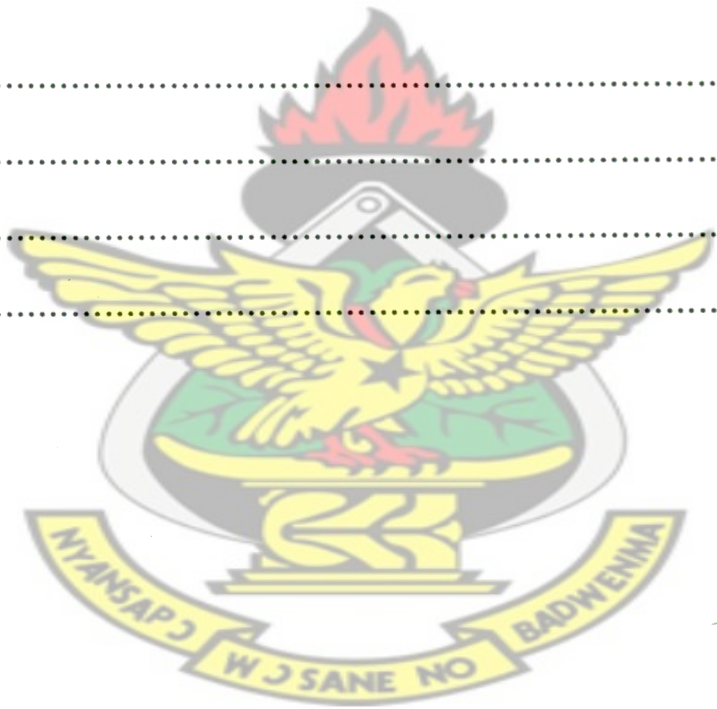
18. If no, why not?

.....

.....

.....

.....



Appendix 3: Interview guide for semi-structured interview.

The introduction of e-zwich in Ghana: Prospects and Challenges

Bank Officials

- 1. Name of the bank of the respondent
.....
.....
- 2. Sex of respondent.
Male [] Female []
- 3. Position of respondent.....
- 4. What is e-zwich?
- 5. How is it different from the other smartcards issued by your bank?
- 6. What problems did you encounter with its introduction to your customers?
- 7. After months of its introduction, how is the response rate of both customers (individuals and merchants)? Give figures if possible
- 8. Is the e-zwich operational in all your branches in the country?
- 9. If no, when is it going to cover the entire branches you have in the country?
- 10. What have been your major challenges?
- 11. What are some of the benefits of e-zwich to your bank?
- 12. Does the introduction of e-zwich have future prospects?
- 13. Can it have good prospects in the economy
- 14. Can it help solve the cash based economy problems?
- 15. Do you think the introduction of e-zwich can improve the savings habit of Ghanaians?
- 16. Do you have any other comment to make?

Appendix 4: Interview guide for semi-structured interview.

The introduction of e-zwich in Ghana: Prospects and challenges

Ghana Interbank Payment Settlement System (GhIPSS) official

1. Sex of respondent.

Male [] Female []
2. Position of respondent.....
3. What is e-zwich?
4. How is it different from the other smartcards issued by Banks?
5. What problems did you encounter with its introduction?
6. Do you still face problems after some months of its introduction? If yes, what are some of the problems?
7. What is the response rate of the banks?
8. Has it taken off in all the banks in the country? (Both commercial and rural banks). If yes go to Question 10. If no, why?
9. When is it going to cover the entire country?
10. What services does the e-zwich smartcards perform?
11. Do you think the e-zwich can change the minds of the unbanked population?
12. Can the e-zwich reduce cash transactions in the economy and channel more money through banking system?
13. Can e-zwich reduce cost of borrowing and make Ghanaians have confidence in the banks?
14. Do you see good prospects if it becomes operational in the whole country?
15. What can be done to improve upon the services of e-zwich after months of its

introduction?

16. What are some of the challenges you anticipate to encounter and what measures are you putting in place to meet them?

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17. Do you have any other comments?

