ADOPTION AND DIFFUSION OF ELECTRONIC BANKING PRODUCTS IN GHANA-A CASE OF E-ZWICH CARD

BY

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NOVEMBER, 2014
DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references and other sources used in the work have been fully acknowledged.

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CERTIFICATION

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DEDICATION

I dedicate this work, first to the almighty God who continually renewed my strength throughout this MPhil programme in pursuit of my ambition and career. To my family, especially Joyce who continuously encouraged me to complete the programme, and Nana Serwaa, Edward and Nii Amponsah for their patience, understanding and support which made completion of this work possible, even under very difficult circumstances.
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ABSTRACT

The use of electronic banking products as been noted to be successfully implemented in most developed countries around the world, paving the way for the appreciation of a cashless society. Most Western economies emphasise the use of electronic transactions mediums for the purchase and delivery of products between sellers to consumers. In as much as these electronic transaction mediums are used for fast moving consumer goods in the developed countries; it is also practiced in the banking sector of these economies. Banking products has evolved through the adoption of electronic mediums or means of transactions, with its attendants risk, security and privacy issues. The study aims at examining factors that lead to the adoption of electronic banking products in the Ghanaian banking industry, using the E-zwich product as a case study.

Literature on the study discussed thematic areas such as: the global understanding of electronic banking, the pros and cons/risk associated with the adoption and use of electronic banking. In addition, deliberations were made on electronic banking (e-payment) initiatives in Africa, with an examination on two models or frameworks regarding e-banking, i.e.: the technology acceptance model and the adoption diffusion model, as well as the development of a conceptual framework for the study, under the basis of literature discussions from other studies (accessibility/availability, socio-cultural factors, perceived usefulness, ease of use and security and privacy).

The study adopted an exploratory research approach under a random sampling method of gathering primary data from two hundred (200) respondents. Data gathered were analysed using descriptive analysis, exploratory factor analysis and multiple regressions to produce findings for the study.

The findings of the study showed that, accessibility/availability significantly impacts consumers’ willingness to patronise electronic banking products, particularly the E-zwich product. Additionally, the study found that, both socio-cultural factor and perceived usefulness of electronic banking products significantly influences its mass adoption and use by consumers in Ghana, followed by ease of use and security and privacy as other factors contributing to the adoption of electronic banking products in Ghana. The study also provided some managerial implications and recommendations for future studies.
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CHAPTER ONE

BACKGROUND OF THE STUDY

1.0 Introduction

This chapter deals with an elaboration of the essence of electronic banking, which is an element of innovative bank products to meet the demanding needs of consumers in the banking industry. It seeks to emphasize the relevance of this product strategy in Ghana. The chapter provides outlines on the background of the study, the research problem, research objective and questions. It outlines the significance of the study, its purpose and the scope of the study.

1.1 Background of the study

It is alleged that in the olden days many Ghanaians saved their money in traditional ways and at unsecured places (Andoh, 1998). This situation was in existence for a long time until the banking system was introduced. This system was to educate and help Ghanaians to know the right way of saving money and its benefits. The Bank of Ghana, established in 1953 by the Bank of England, became the main banking institution in the country and oversaw issues of currency, business and personal banking (Bank of Ghana Annual report 1960 vol 1). Today, the banking system in Ghana has seen a wide range of policies implemented to keep up with the western world. However the clearing and payment system in Ghana was for a long time manual. Interbank transfers took a long time to be cleared and electronic payment systems were largely non-existent. The economy was, and is still, cash based (Ghipss Annual report 2008).

Electronic payment systems are becoming common as they help in facilitating business transactions without physical contact between the buyer and supplier (Milind, 1999). Some
major electronic payment systems are the credit card, the visa card, mobile payment, the
credit transfer and the debit instruments.

Electronic commerce has rapidly flourished because of the openness, speed, anonymity,
digitization, and global accessibility characteristics of the internet which facilitates real-time
business activities, such as advertising, sourcing, negotiation, auction sale, ordering and
paying for merchandise (Milind, 1999).

The Ghanaian economy in the early 1990s was used to the cash payment system. As the
economy grew, business activities picked up but their growth was restrained by the
cumbersome cash payment system where everyone needed to recheck the amount that had
been paid to them in cash. Volumes of cash were carried around on daily basis and a lot of
time was spent on checking and rechecking cash to make sure it was secure. This tended to
slow economic activity and a lot of time was lost as a result of moving cash from one place to
the other. Over ninety per cent (90%) of currency issued by the Bank of Ghana was held by
the non- bank public (Bank of Ghana 2007 Annual report). Only 20 percent of the population
had access to banking facilities and Ghana was rated as one of the counties in Africa with less
than 20 percent of households having access to financial services. This resulted in an under-
served population in terms of financial mediation (Bank of Ghana 2007 Annual report).

The cash based economy proved to be expensive as banks needed to provide the logistics to
serve their clientele and the rate of savings mobilization was low. The cost of funds was
unacceptably high partly as a result of the high interests demanded by their predominantly
commercial customers for deposits. Financial intermediation was low resulting in a high
percentage of borrowers seeking funds from non-banking sources and paying very high risk
premium on their borrowings, savings and investments. It was observed that substantial
accumulation of cash outside the banking system deprived the banks of vital deposits, while it
cost the nation scarce foreign exchange to replace defaced currency notes. This state of affairs could not be allowed to continue.

The innovation of electronic banking in Ghana was necessitated mainly due to the complains of theft, palfrey and unauthorized account transaction. It is through all these complains and situations that the Bank of Ghana acted by its Governor then, (Mr Paul Acquah) in collaboration with the banks introduced the National Switch Card (E-Zwich) which is to ensure the delivery of financial services to the un-banked, under-banked and banked segments of the population in Ghana.

Prior to the intervention by the Central Bank, one of the Commercial Banks, SSB launched the Sika-Card in May 1997, a smartcard payment system aimed at reducing the reliance of cash as a means of settling payments and making it possible for financial intermediaries to make it easy for people to put their money in the banks, so that the expected provision of more services by the financial system will materialize. (Ghana Web General news 17th May, 1997). The Sika Card, was similar to the world-wide "Smart Card", serving as an alternative to using bank notes and cheques because it enabled the holders to conduct transactions with one another and the bank without the use of cash. It was available to both customers and non-account operators of SSB at a price of fifty pesewas then. Once bought, the card will be loaded electronically with equivalent cash presented at the Bank's counter or transferred from an account in a bank other than SSB. The card, was basically meant to reduce dependency on physical cash, and could be used for payments of goods and services as well as debiting for cash at designated merchant points. (Ghana Web General news 17th May, 1997). Unfortunately, the Sika-Card could not achieve the objective for which it was introduced after two years of active marketing on to the Ghanaian market. It is currently extinct (Abdul-Rahman, et al (2009).
Barclays Bank introduced the Cheque Guarantee card around the same period to get customers to use cheques more often. Customers’ cheques were guaranteed by writing the card number at the back of the cheque to be guaranteed. Such a cheque will not be dishonoured for lack of funds, but this product was seen as the preserve of the affluent segment of the customer base. It also did not achieve the objective for which it was set up.

1.2 The Concept of E-zwich in Ghana

E-zwich is the brand name for the National Switch and Smart Card Payment System which enables approved Financial Institutions to offer electronic banking and payment services based on the biometric Smartcard. The system is an innovative method for improving accessibility to banking and retail services in Ghana. The E-Zwich system offers deposit taking financial institutions (i.e. Universal banks, Rural banks and Savings and Loans) a platform that enables them to interoperate (www.ghipss.net).

The E-zwich was set up by the Bank of Ghana in collaboration with the banks and was launched in May, 2008 under the management of the Ghana Interbank Payment and Settlement systems Ltd, a subsidiary of the Bank of Ghana.

It has three key components: The Smartcard, the Terminal (Point of sale, ATM, or Mobile phone) and the System host (the transaction processing centre). The Smartcard is a plastic card with an embedded microcomputer chip which allows you to store vital information such as personal name, address, home town, biometric information (finger prints) and accounts details, for example, funds loaded, payments, receipts, and available balance. The E-Zwich being an electronic payment system enables its cardholders to make payments for good and services or transfer money to others without having to carry physical cash. One can also perform banking and retail transactions at the outlets of other e-zwich financial institutions. The E-zwich POS supports both online and offline transactions. This dual capability ensures
that e-zwich services can be accessed in all parts of the country whether or not the area has good communications network. Transactions such as cash deposit, cash withdrawal and sale are completed offline and consequently could be successfully completed in the remotest part of the country without regard to the efficiency of the telecommunication infrastructure. (www.ghipss.net).

The key objectives of the E-Zwich were to:

- To promote financial inclusion by making it easier and more affordable for the unbanked and under-banked to access financial services.
- Reduce the over reliance on cash for payment transactions.
- Encourage Financial Deepening and promote savings.
- Reduce risks in Payments and Settlements,
- Increase efficiency and speed in clearing and settlement.

The product was designed basically for the benefit of the unbanked and under banked community of Ghana, for small scale businesses and individuals in the rural community and densely populated urban areas. The unbanked segment of the population could have access to affordable financial services in their locality since the E-Zwich system runs on a terminal that has a chip and works like a mobile phone with chargeable batteries that could last over 12 hours. Transfer of funds for payment of goods and services can easily be made from the rural community which may not have the benefit of electricity.

In terms of security, the E-zwich smart card is designed to run on a biometric platform. To access the service one needs to scan the fingerprints on to the database of the platform. Verification is done through the smartcard which has a chip containing the finger prints of the cardholder which made the E-zwich card an anti-fraud card. (www.ghipss.net).
Some few years down the line, the objectives of the deployment of the system seems to be threatened with failure due to the numerous challenges affecting easy access to the service which has eventually turned an excellent product into a mere plastic object in the wallets of those who signed up for it. Most of the challenges is alleged to have come as a result of difficulties in getting access to point of sale devices, and the frequent challenges faced during biometric authentication that are required to establish peoples’ identities before they can use the card. A number of complaints have come from users of the card about frequent false negatives during the biometric authentication sessions that are required to establish their identity before they can use the card. A false negative means that the terminal, after reading their fingerprints, returns a message that they are not the true owners of the card. Recently an Accra-based radio station, Joy FM, carried a news report to the effect that several merchants in Accra had complained of poor patronage of E-zwich point of sale terminals and the resulting inconvenience of having to service and power-up machines that were effectively useless. This is the motivation for the study.

1.3 Problem Statement

With the rapid development of e-commerce and the increasing volumes of business transactions, the traditional ways of payments (i.e., cash, cheques etc) are no longer appropriate for business transactions. Several disputes have been experienced by customers regarding timely payment, non-receipt of funds and reconciliation processes. Although some online payment solutions have been introduced, since the electronic payment system is the technology in development, its acceptance is still a bottleneck for the growth of e-commerce industry. (Abrazhevich, 2001; Mei & Lu, 2000)

It is common knowledge that the E-zwich system has experienced several bottlenecks since it was launched in May 2008 and it is increasingly becoming doubtful if it can achieve the
objective for which it was set up. There are challenges about its functionality in the urban and rural areas leading to the assertion that the promoters got it all wrong and have most likely blown away a chunk of the nation’s resources on what could pass for “misplaced priority”

In recent months, a Ghanaian Daily Newspaper, The Mail’s investigations have exposed a system fraught with confusion, inefficiency, ignorance and huge financial cost to the state (Boateng and Molla, 2006). Signals from the corporate world and individuals alike on challenges facing the system reveal a loss of confidence and trust in it by the public to whom it was targeted. The situation has reached disturbing levels, forcing users to abandon the E-zwich smart card which has failed to bring relief and comfort in the trading of goods and services in the country.

The problems plaguing the E-zwich are manifest as: lack of technical orientation on the part of the initiators of the scheme, a failure to enlighten the public and create adequate awareness on the use of the device, lack of maintenance of point of sale devices, failure to win public confidence and a seeming conflict of interest with the banks (Boateng et al. 2006).

Failure to win public confidence is another serious problem that has hindered the E-zwich card. An editor of one of the private newspapers in Accra, who was similarly introduced to the system by his bank has described it as a big hoax and perhaps an avenue for those who introduced it to get their “fat consultancy fees and bonuses. From another angle, it is becoming apparent that a conflict of interest exists between the banks and the initiators of the E-zwich card. Merchants are not the only ones complaining. Coupled with this challenge, the E-Zwich was in competition with the ATM cards introduced by the commercial and merchant banks in the country.
Despite the creative solution that E-zwich presents these challenges have crippled the effective adoption and implementation of E-zwich in Ghana (Boateng et al. 2006). The study attempts to empirically identify these challenges, examine other successful theoretical frameworks regarding electronic banking products and find acceptable solutions that can maximize the acceptability and successful implementation of the E-Zwich product in the Ghanaian banking industry. This research can be justified based on its ability to satisfy the existing gap in the literature.

1.4 Objectives of the study

This study is intended to achieve the following objectives:

1. Examine the barriers that impede the adoption of E-Zwich card in the Ghanaian market.
2. Establish the extent to which the E-zwich technology is easily available to prospective users?
3. Determine whether the E-Zwich product is useful to the target group to encourage mass usage of the product.
4. Determine the effect of socio cultural factors on the adoption of E-Zwich technology.

1.5 Research questions

In consonance with the objectives of the study, the following research questions would serve as blueprints to guide the direction and investigations of concepts or activities with regards to E-Zwich adoption in Ghana. These questions are:

1. What are the barriers impeding or limiting the adoption of E-Zwich in Ghana?
2. Is the E-Zwich technology friendly and useful to the target group?
3. Do the users of E-zwich find it easy to use?
4. Is the adoption of E-Zwich card system sustainable amidst competition in the banking sector?

1.6 Justification of the study

A number of studies have been done to investigate the success of e-banking (Akinci et al., 2004; Sathye, 1999; Heijden and Verhagen, 2004), but were conducted in western countries. Some research has been done to investigate e-banking in Ghana (Abor, 2004; Boateng and Molla, 2006), but has only focused on the key decisions to be made on the part of service providers when entering into electronic banking, and has not investigated e-products from the perspectives of customers in Ghana’s banking industry. Therefore, the customers’ perspectives of e-products in Ghana’s banking sector have not yet been studied and this research is intended to tackle it.

Payment systems play a major part in the conduct of a country’s monetary policy (Sathye, 1999). Electronic Payment Systems are being introduced in all spheres of business transactions since they tend to reduce the volume of paper money in the economy while improving the control of monetary aggregates (Singh and Malhotra, 2004). The features of the E-zwich smart card coupled with the quality of benefits makes the card a prime payment channel which should be acceptable to all businessmen, travelers and students. The quantum of investment on the part of the policymakers has obviously produced a yield that is below expectation. Much studies has been made with regards to e-commerce marketing in the Ghanaian banking industry. Some studies have focused on the service quality dimension of ATMs in banks, popularly termed as the ATMQual, whiles others have narrowed to examining the SERVQUAL dimension of service delivery (Zeithaml et al, 1990). This study seeks to identify the factors that contributed to the adoption of the E-Zwich services in...
Ghana, its implementation process and the challenges that were associated with its adoption. The study also seeks to produce implementable policy recommendations that could be used as solutions to the challenges faced by the E-Zwich package.

1.7 Significance of the study

The proposed research is significant mostly due to the fact that Electronic payment systems are now gaining familiarity in Ghana. E-zwich is the first national Electronic payment that has been implemented in Ghana by the Bank of Ghana, and since its implementation there hasn’t been any assessment yet. An empirical study in this area is expected to inform the stakeholders of how E-zwich and other Electronic payments systems has or has not made any economic impact. The stakeholders involved are GHIPPS, Government of Ghana, Banks, other Financial Institutions and individuals. According to a related study by (Appiah and Agyemang, 2007) offline technology will be most suited in Ghana considering the low level of technological infrastructure in Ghana. E-zwich is an offline payment and thus serves as an implementation of this recommendation. A study in this direction I believe is very important. Furthermore, this research is also expected to increase awareness of the challenges of electronic payments and serve as a guide for future implementation of such systems by developing countries with low level of technological infrastructure. Undoubtedly the last three decades have witnessed major advancement in payment technologies.

1.8 Limitation of the study

The researcher encountered some challenges with resources, access and locating members of the public who had registered E-Zwich cards and were using them. E-Zwich has a countrywide usage and Ghana has one hundred and thirty-eight (138) districts and therefore
using only Accra Business District places a huge limitation on the adequacy of information for the study. Moreover, socio-economic circumstances in the capital city of Accra are different from those obtained in other parts of the country and therefore this places some limitation on the generalization of the findings.

1.9 Structure of the study

To facilitate reading and comprehension of the report, the study is structured into five distinct chapters. Chapter one focuses on the transformation of research proposal and featured background information, problem statement, objectives of the study, research questions, significance of the study as well as scope and limitations of the study. Chapter two reviews contemporary publications on the adoption and diffusion of electronic banking products in Ghana, etc. Chapter three focuses on the details of the research methodology. Chapter four presents the analyzed data together with their interpretation as well as discussion of findings. Chapter five summarizes the study, makes appropriate recommendations and draws very useful conclusions.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction
This chapter reviews contemporary articles and publications on electronic banking with special emphasis on the E-Zwich platform in Ghana. It examines e-banking and its extended banking services as well as discusses ideas put forward to mitigate challenges associated with Electronic banking. The chapter also discusses how information technology is changing the face of banking and catalogues the challenges of electronics payment in African. Literature on internet banking is also reviewed.

2.1 Adoption of on-line E-payment technology in developing markets
Adoption of E-payment technology innovations is attracting more and more attention from researchers in recent years. (Venkatesh, Morris, Davis & Davis, 2003). Scholars and researchers are particularly interested in the factors that affect the adoption decision of potential adaptors (Adams, Nelson, and Todd, 1992; Chau & Tam, 1997, Teo, Wei, & Benbasat, 2003). These studies focused mainly on technology adoption and potential users’ perceptions of the technology being introduced and factors that influence their adoption or usage.

Rogers (1983, 1995) proposed the theoretical framework that reveals the relationship between perceived innovations attributes and the rate of adoption. It is regarded as an important theory to understand the adoption behavior of potential adopters and to predict the adoption of technological innovations. Based on this theoretical framework, researchers typically considered perceived innovation characteristics of potential adopters as independent variables so that the explanatory power of those characteristics on the innovation adoption was
examined empirically. (Adams et al., 1992; Agarwal & Prasad, 1997; Chau & Tam, 1997; Davis, 1989). Nevertheless, prior research reveals that the predictive power of perceived innovation characteristics tends to be varied with different innovations.

As an emerging technology, online e-payment is playing an important role in the development of e-commerce, enabling real time settlement of payments for goods and services, in that, the lack of online e-payment could hinder the successful implementation of e-commerce (Goldfinger & Perrin, 2001). Research so far has been carried out mainly on the acceptance of online e-payment from consumers’ points of view (Abrazhevich, 2001, Buch, 1996; Pilioura, 1998).

Prior research has empirically found positive relationship between perceive ease of use and perceived usefulness as critical factors on the use of e-banking (Venkatesh and Davis, 1996; Agarwal et al, 2000; Johnson and Marakas, 2000; Hong et al, 2001; Chau, 2001).

Recent developments in information and communications technology (ICT), and the rise in the volume of banking business transacted electronically are causing what will be a lasting impact on the business policies of financial institutions (especially banks), and on their risk situation (Bruno, 2003). Given the cross-border nature of electronic banking, banks cannot afford to restrict themselves to passing national rules and measures. Quite the opposite, it has become more important than ever before to intensify international coordination and cooperation among banking agencies (Burke, 1997). More generally, electronic banking is undergoing trends which require banks to gear their work more towards qualitative aspects that take due account of the specific situation of each individual country and develop electronic products to aid in banking transactions (Gupta, 1996).

The new information technology is becoming an important factor in the future development of financial services industry and especially banking industry. Banks are faced with a number
of important questions, for example how to take full advantage of new technology opportunities, how e-developments change, the ways customers interact with the financial services provider etc. E-banking is the newest delivery channel for banking services. Electronic banking has been defined by some scholars (Singh and Malhotra, 2004; Boateng and Molla, 2006) as a variety of the following platforms: (a) Internet banking (or online banking), (b) telephone banking, (c) TV-based banking, (d) mobile phone banking and (e) PC (personal computer) banking (or offline banking). Internet banking is a form of self-service technology, costing millions of dollars, which leading retail banks have made available in the recent past. An understanding of why users are accepting more of Internet banking services should help bank managers implement this self-service technology.

Studies have identified eight characteristics, which influenced the rate of adoption. Two of these characteristics, namely accessibility and confidentiality, are new to the literature. The results show that adopters of electronic banking perceive the service to be more convenient, less complex, more compatible to them and more suited to those who are PC proficient. Adopters were also found to be more financially innovative. The perceptions that adopters had about social desirability, confidentiality, accessibility and economic benefits were viewed no differently when adopters were compared with non-adopters. Joseph and Stone, (2003) said that the Internet deals with a large number of varied financial transactions like customer payments, securities transactions applications for loans or insurance acquisitions. The consequence of the structure and intention of the Internet to be an open network means high security risks are involved with financial transactions. Today, various techniques and standards are offered in order to control or even avoid these risks (Wang et al., 2006). Basic requirements are as follows: customer and financial institution have to authenticate each other; private data has to be encoded.
In recent years, Internet banking usage has become one of the most important e-commerce environments (Wang, et al., 2003). Sohail and Shanmugham(2003), pointed out that a bank’s promotional efforts indeed facilitate awareness of Internet banking adoption and its benefits. Technology has introduced new ways of delivering banking to the customer, such as ATMs and Internet Banking. Hence, Banks have found themselves at the forefront of technology adoption for the past three decades. Increasing labour costs in the 1960s placed pressure on labour intensive industries like banking to look forward automating some of their functions. Barclays Bank was the first to envisage the potential of ATMs, and introduced the first ever ATM in 1967. Initially, ATMs were not sophisticated, and served only as cash dispensers. Originally, banks offering an ATM service achieved an advantage over their competitors (O’Hanlon et al., 1993).

There was scant understanding of customers’ needs or expectations and the role of ATMs large in bank’s retail delivery system was vague (Violano et al., 1992). In the early market stage, ATM was a product based on a radical technological innovation, and did not represent a solution to a customer need at that point in time. In the mid-1970s, features like cash balance inquiry, deposits and funds transfer that permitted these customers to conduct the majority of their routine transactions without visiting a bank branch (O’Hanlon et al., 1993). By the late 1980s, ATMs were viewed as a generic service, a commodity with no competitive advantage. Since then IB has been able to successfully cross the chasm as a complete service within the financial service industry.

As SCN (Student Center Network) Education B.V. (2001) pointed out several advantages of E-Banking; firstly some banks who offer services on the net currently are very few, thus those who offer such services would be perceived as leaders in technology implementation thus they would enjoy a better brand image. Secondly; the costs incurred in delivering
various banking products and services would be reduced. Thirdly, banks which enter early will be able to get a better handle on the services and products which the consumers need. Also, these banks will require less time to develop and deliver products to their customers. Finally, the banks can use their web sites to sell their own as well as other third party products to their customers. The diverse range of products and services which can be sold through websites will lead to increase revenues for the banks.

Rotchanakitumnuai & Speece (2003) reported that many Thai banks are currently implementing Internet banking. Banks that offer service via this channel claim that it reduces costs and makes them more competitive. However, many corporate customers are not highly enthusiastic about Internet banking. An understanding of why corporate customers do not accept Internet banking can assist banks to implement this self-service technology more efficiently. In-depth qualitative interviews with Thai firms the researchers suggest that security of the Internet is a major factor inhibiting wider adoption.

Those already using Internet banking seem to have more confidence that the system is reliable, whereas non-users are much more service conscious, and do not trust financial transactions made via Internet channels. Non-Internet banking users tend to have more negative management attitudes toward adoption and are more likely to claim lack of resources. Legal support is also a major barrier to Internet banking adoption for corporate customers.

Rotchanakitumnuai & Speece (2003) state that though banks are very interested in Internet banking they are concerned with the risks connected with procedures for transactions over the Internet. Today, banks are already loosing enormous amounts through cheques and credit card fraud. The security solutions of the future are therefore major concern for banks. If customers distrust the security it may create multiple problems. Banks will find it hard to launch Internet banking services if demand is low because of security doubts. Though the
banks themselves believe that the security levels for bank transactions over the Internet are sufficient, they also believe that their customers distrust existing security solutions, primarily because they are software based. There are 3 security aspects in a transaction: content confidentiality, integrity and authentication and non-repudiation. These aspects are treated independently with various and often disparate standards. It is recommended that security be provided at all levels: client interface, transport and internal systems. Solomon (1997) claims that for client interface and transport, security is currently mainly ensured by the use of cryptographic instruments and by the set up of private financial network. Also, private networks are another solution to secure transactions. These networks can be used for corporate banking and retail banking.

2.2 Theoretical Framework of E-zwich

In order to understand the challenges of marketing the E-zwich product in Ghana, the Technology Acceptance Model and the Diffusion and Adoption models will be used.

2.3 Technology Acceptance Model

The Technology Acceptance Model (TAM) was proposed by Davis (1989) to predict the acceptance and use of new information technology (software and information systems) within organizations. In the model, behavioral intention can be explained by the attitude towards use of the system and its perceived usefulness. Attitude towards use of the system, in turn, can be explained both by its perceived usefulness and its perceived ease of use. Perceived usefulness was defined by Davis (1989) as “the degree to which individuals believe that using a particular system would enhance their job performance” (Davis, 1989) whereas perceived ease of use relates to “the degree to which individuals believe that using a particular system would require no effort”. (Davis, 1989).
By hypothesis, the greater the perceived usefulness and the perceived ease of use, the better are people’s reactions towards the innovation and the higher their intention to adopt it. According to TAM, perceived usefulness is also influenced by perceived ease of use because, all other things being equal, the easier the system is to use, the more useful it can be. (Davis, 1989).

Across the many empirical tests of TAM, perceived usefulness has consistently been a strong determinant of usage intentions. “TAM is considered to be well-established and robust. The model consistently explained a substantial proportion of the variance in usage intentions and behaviour. Several studies had extended the TAM model by emphasizing specifically on antecedents of ease of use and perceived usefulness, or added additional components to the model in order to account for the context specific nature of adoption studies”. Venkatesh and Davies added the subjective norm construct, and the new model became known as TAM2.

2.4 Adoption Diffusion Model

Diffusion is the “process by which an innovation is communicated through certain channels over a period of time among the members of a social system”. An innovation is “an idea, practice, or object that is perceived to be new by an individual or other unit of adoption”. “Communication is a process in which participants create and share information with one another to reach a mutual understanding” (Rogers, 1995).

One of the most widely held theories of communication in marketing is the Diffusion theory. The diffusion literature has developed across a number of disciplines to explain the flow of new ideas and practices and the adoption of new products and services throughout a social system. (Gatignon & Robertson 1985).

Rogers (1962) developed a model of diffusion which has become widely established in the marketing literature. The model of diffusion is based on the classical “bell-shaped” normal
distribution curve, where the curve represents the frequency of consumers adopting a product over time. Rogers (1983) contends that the adoption curve is normally distributed because of a learning effect due to personal interaction within social systems. As the number of adopters in the system increases so does the level of interpersonal influence on non-adopters. The result of this influence on adoptions is held to follow a binomial expansion, a mathematical function that follows a normal curve when plotted over a series of successive periods. Rogers (1983) states: “Many human traits are normally distributed, whether the trait is a physical characteristic, such as weight or height, or a behavioral trait such as intelligence or the learning of information. Hence, a variable such as innovativeness might be expected to be normally distributed”. Rogers (1983) defines innovativeness as “the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system”. Studying how innovation occurs, E.M. Rogers (1995) argued that it consists of four stages: invention, diffusion (or communication) through the social system, time and consequences. The information flows through networks. The nature of networks and the roles opinion leaders play in them determine the likelihood that the innovation will be adopted. Innovation diffusion research has attempted to explain the variables that influence how and why users adopt a new information medium, such as the Internet. Opinion leaders exert influence on audience behavior via their personal contact, but additional intermediaries called change agents and gatekeepers are also included in the process of diffusion. Five adopter categories are: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards. These categories follow a standard deviation-curve, very little innovators adopt the innovation in the beginning (2.5%), early adopters making up for 13.5% a short time later, the early majority 34%, the late majority 34% and after some time finally the laggards make up for 16%. (Rogers 1995) as indicated in fig 1 below.
Most diffusion research have focused on five elements: (1) the characteristics of an innovation which may influence its adoption; (2) the decision-making process that occurs when individuals consider adopting a new idea, product or practice; (3) the characteristics of individuals that make them likely to adopt an innovation; (4) the consequences for individuals and society of adopting an innovation; and (5) communication channels used in the adoption process.

### 2.5 Consumer Behavior and Adoption Strategies

Products are constantly being superseded by newer, more effective products. For this reason firms seek to develop new products; those firms that fail to innovate will, eventually only be producing products that are obsolescent. The product life cycle illustrates the process of introduction, growth, maturity and obsolescence in products (Kotler and Keller, 2006).

According to Blythe (2008), it is not unusual for products to disappear almost as soon as they are launched: test marketing sometimes shows disappointing results, so the product is taken off the shelves. But the product life cycle tells us that products often lose money at first-and some products are “sleepers” which do nothing for several years, and then suddenly take off for no apparent reason. There are also products which appear to be eminently sensible, and
which do not find a market, possibly through a lack of professionalism on the part of the marketers (Sohail and Shanmughan, 2003).

Everett M. Rogers (1983) postulated that products would be adopted if they possessed most of the attributes in Table 1 below.

**Table 1: Attributes necessary for adoption**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Explanation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relative advantage</strong></td>
<td>The product must have some advantage over the products already on the market. It must offer the consumer a better range of benefits than the existing solution, in other words.</td>
<td>Before Sony Walkman was launched, the only way to listen to stereo-quality music was to carry a “ghetto-blower” on your shoulder. The Walkman replaced this cumbersome and anti-social device with a few years.</td>
</tr>
<tr>
<td><strong>Compatibility</strong></td>
<td>The product must fit in with the consumer’s lifestyle.</td>
<td>At one time, the Welsh Valleys had the highest rate of VCR ownership in the world. This was due to the high unemployment and lack of entertainment facilities in the area, making a video recorder a very convenient way of providing entertainment.</td>
</tr>
<tr>
<td><strong>Trialability</strong></td>
<td>Products which can be tried out are more likely to succeed.</td>
<td>Whenever a motor manufacturer launches a new vehicle people are invited to test drive it.</td>
</tr>
<tr>
<td><strong>Observability</strong></td>
<td>The more observable the product, the quicker the diffusion process. If other potential consumers are able to see the product in use, this is bound to raise interest in it.</td>
<td>Part of the reason for the Walkman’s worldwide success is that it can clearly be observed in use. Likewise, new fashion ideas seem to catch on very quickly; this is due to the high level of observability.</td>
</tr>
</tbody>
</table>

There have been several models of the adoption process, most of which assume a somewhat complex process of assessing the new product in the case of radically new products (those
which will alter the user’s lifestyle) this may well be the case, but since most products which are classified as new are, in fact, adaptations of existing products, it might be safe to assume that the consumers do not necessarily carry out a lengthy evaluation of the type assumed by most researchers. (Blythe 2008).

Three main groups of variable have been identified thus far: socioeconomic factors, personality factors, and communication behavior. It should be noted, again, that all these studies are based on limited product categories, and are therefore not necessarily generally applicable.

The success of electronic commerce depends upon effective electronic payment systems. An efficient payment system reduces the cost of exchanging goods and services and is indispensable to the functioning of the inter-bank, money, and capital markets. However a weak payment system may severely drag on the stability and developmental capacity of an economy; its failures can result in inefficient use of financial resources, inequitable risk-sharing among agents, actual losses for participants, and loss of confidence in the financial system and in the very use of money. The tasks to design payment system infrastructures become even more complex as competition and innovation push constantly to the limit the search for better combinations of efficiency, reliability, safety, and system stability in the provision of payment services to larger numbers of individual users and institutions.

As stated by Mahon (2005), for banks to survive in the e-banking era, the retail banks will have to earn consumer loyalty through product features and services excellence. Customers perceived fears of divulging personal information to web sites might be misused by others over the internet, especially for financial transactions (Sathye, 2006). Obviously, customers have doubts about the trust-ability of the e-bank’s privacy policies (Gerrard and Cunningham,
According to Hofman et al. (2007) security and privacy are two important dimensions that may affect users’ intention to adopt e-based transaction systems.

Service quality attributes in e-banking industry are important since human-internet interaction is the main service delivery and communication channel. Offering high quality services to satisfy consumers’ needs, at lower costs, are potential competitive advantage of e-banking. Some studies show that e-banking has successfully reduced operating administrative costs (Siriluc and Speece, 2007). Cost savings have helped e-based banks offer lower or no service fees, and offer higher interest rates on interest bearing accounts than traditional banks (Gerlach, 2006) Therefore, it is hypothesized that fees and charges have negative impact on the acceptance of e-banking products.

On the other hand, some studies examine demographic characteristics of internet users. Some have shown internet consumers primarily as computer users (for example, Koufaris, 2007). Meanwhile, Wilhelm (2005) show that the lower socioeconomic group would be less likely to use the internet while Wilson (2006) reports that socioeconomically disadvantaged consumers would be less likely to pay for a monthly fee to subscribe to an internet service, and would be less likely to have a home computer. 

Global Scenario of diffusion of E-Banking products.

The concept of diffusion of innovation refers to the spreading of consumption of an innovation, through communication channels in a social system. An innovation is a product, service, idea, process, behavior, or any other object which is considered new by consumers. Innovations require acceptance from consumers to be successful, but they also require them to change their existing behavioral pattern and habits. (karem et al., 2003)

Based on change required and frequency of occurrence, innovations can be discontinuous (maximum change and rare), dynamically continuous (moderate change and infrequent), or continuous (least change and frequent) in nature. Innovations are sometimes resisted by
consumers because of barriers such as value, risk, image, etc. In such a case, some modification can facilitate its acceptance. (Forrester, 2009). The adoption process consists of five stages of consumer decision making - awareness, interest, evaluation, trial, and adoption/rejection. The longer the process and larger the number of decision makers, the longer the time taken to adopt. The innovativeness of the consumer depends on the adoption stage at which he/she is, as compared to other consumers. Based on these criteria, consumers have been classified as innovators, early adopters, early majority, late majority, and laggards.

The rate of adoption is the speed with which the innovation is being adopted by consumers. (Karem et al., 2003). Consumer innovators are identified on the basis of time elapsed after the launch or as a specific percentage of people out of total purchasers who buy early. Consumer innovators are venturesome, young, highly educated, high status and income individuals, who have an interest in new products and seek variety in life. They have low risk perception and have a positive attitude towards change. They are very sociable and in the role of opinion leaders and market mavens, they can be quite influential.

Karem et al (2003) argues that the effect of e-banking is to augment or facilitate existing banking and payment mechanisms, primarily by making many transactions cheaper, faster, more secure, and more convenient. As a result such types of banking have been expanding day by day. According to Forrester (2007), online banking has grown gradually in the UK over the past decade and is now used by 31% of adults, or 15 million people. But growth has slowed in the past couple of years. That’s odd because only 46% of UK Net users access their bank accounts online, yet 74% regularly shop online. By 2012, it was expected that 44% of adults will use online banking in the UK, or nearly 22 million people.

Forrester (2009) projects that, between 2009 and 2014, the total number of US online bill payment households will increase from 48 million to 63 million. Online banking has grown
steadily in France over the past decade, boosted by the growth in Net use overall, and is now used by 31% of adults, or 15 million people. Growth to continue at a similar rate for the next five years because French Net users are becoming increasingly confident with the channel and because banks can still do more to persuade customers to bank online, starting with reducing or eliminating the charges that many still impose on customers who bank online. By 2013, in the opinion of Forrester (2008), it is expected that 42% of adults will use online banking, or more than 22 million people. With only 12% of Swedish banking customers using branches, Sweden has the lowest branch use in Europe. Swedish banks have successfully migrated the majority of their customers to ATMs and online banking — 83% and 71%, respectively.

Forrester (2009) also projects that, by 2012/2013, 81% of Dutch and 47% of German consumers will use Internet banking. In Bangladesh, there is huge demand for e-banking from the business community as well as the urban retail customers. But it is still not much available due to a number of constraints such as unavailability of a backbone network connecting the whole country; inadequacy of reliable and secure information infrastructure especially telecommunication infrastructure; sluggish ICT penetration in banking sector; insufficient legal and regulatory support for adopting e-banking and so on. According to Forrester (2009), although all branches of foreign commercial banks (FCBs) and 99% branches of private commercial banks (PCBs) in Bangladesh were computerized by December 2006, the average for all bank branches was 37% since only 4% and 16% of specialized banks (SBs) and state-owned commercial banks (SCBs) respectively were computerized. Out of a total of 6,565 branches in 2006, 2,426 were computerized of which 651 branches of 22 PCBs and 7 FCBs together were providing any-branch banking facility under respective bank online network. During the period, the number of ATM booths and
POS terminals stood at 478 and 4,647 respectively covering important merchant outlets in six divisional cities and some other important district towns in Bangladesh while 43 banks became the member of SWIFT and 25 banks adopted router connection.

Since about 50% of total bank branches belong to SCBs spread throughout the country including the rural areas, ICT penetration is crucial for this category of banks. The recent corporatization of the NCBs, would influence the banks in this category to be competitive through improving their service quality incorporating the use of modern technology.

Although all these are positive developments, Rahman (2009) thinks more attention is needed to enhance ICT capabilities of the banking system especially the SCBs for successful implementation of e-banking all over the country.

2.6 Adoption of E- Banking products in Ghana

According to Boateng and Molla (2006), the beginning of the use of electronic services in banking in Ghana dates as far back as the telephone and facsimile have existed in Ghana. Banks initially were using the telephone and facsimile to communicate internally to their employees and externally to their customers (Boateng and Molla, 2006). With the advent of the personal computer (PC) in the 1980’s, banks adopted this automation device to facilitate the process(es) involved in serving their customers. However, there was still the problem of spatial convenience to customers which required banks to network their branches for every customer to be able to access his/her account, regardless of where the initial account was created (Abor, 2004).

The next phase of the evolution of e-banking in Ghana saw the Automated Teller Machine (ATM). This machine allows customers to access their accounts and withdraw cash outside the normal banking hours (Boateng and Molla, 2006). Due to the branch networking of the various banks, customers could further enjoy the services provided by the ATM if their banks
had them. The many advantages offered by the ATM have made many customers to factor this important technology in their scale of preference for choice of banks (Boateng and Molla, 2006). ATM was first introduced in Ghana by The Trust Bank (TTB) in 1995 but currently, almost all the banks in Ghana provide ATM services to their customers (Abor 2004). In order to add to the extended banking hours advantage that the ATM offers, online banking (which allows customers to access their accounts and make online purchases) is being introduced by some of the banks (Boateng and Molla, 2006).

The Trust Bank (TTB) provides online banking services to their corporate customers which allow them to access their accounts twenty-four hours a day, and seven days in a week (www.thetrustbank.com.gh). According to (Abor, 2004) online banking emerged in Ghana hand-in-hand with Telebanking. “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”.

Barclays Bank Ghana Limited and SSB (now SG-SSB) started telephone banking services in August 28 and September 19 (Sikatel or SSB Call Centre) 2002 respectively (Abor, 2004). With this system, customers are able to access product information, make enquiries, and make complaints and suggestions with regard to their (dis)satisfactions with their banks (Boateng and Molla, 2006).
2.7 E-Zwich Regime in Ghana

A little over a year ago, according to Nonor (2009), the Bank of Ghana made remarkable strides in keeping pace with general and growing international trends towards retail electronic payments, which are considered more efficient, reliable, and catalytic for higher economic growth. 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 has widely been described by analysts as 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.

In its first year of operation, Donkor (2009) explains that, the E-zwich system has made significant progress, considering the usual teething problems of attitudes to the adoption of new technologies. At present, there is a nationwide interoperability among all participating institutions with a total of 177 client cards issued to bank customers. (Bank of Ghana News Letter Vol. 1 2012). Additionally, all 26 universal banks have E-zwich services available on average to 70% of their branches, while seven out fourteen 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. 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). (Bank of Ghana News Letter Vol 1 2012).

In the view of Dogbevi (2009), these achievements however come with some challenges such as the general unacceptability of the system 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. A major
challenge of the system was summed up in the frustration of a middle aged man who had loaded all his money he had on his E-zwich card, and had to roam the city looking for a fuel station which accepts the card, so he could refuel his car. Taking stock of the prospects and achievements of the system so far, the Chief Executive of the Interbank Payment and Settlement Limited (GhIPPSS), Mr. Frederick France, acknowledged these challenges, and said his outfit was working around the clock to provide the right technical and operational training to all service providers, to enable them increase service quality and availability.

He indicated further that the appropriate financial literacy education would be given to all users to bring about the needed attitudinal and behavioural change from cash and paper-based payments to electronic payments. He added that GhIPPSS plans to, within the next twelve 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.

2.8 Benefits of Electronic Payments

According to Pyun et al (2002) the arrival of the internet has taken electronic payments and transactions to an exponential growth level. Consumers could purchase goods from the internet and send unencrypted credit card numbers across the network, which did not provide much security and privacy. But a wide variety of new secure network payments schemes have been developed as consumers became more aware of their privacy and security enhancing the usage and adoption of the system. Illison (2002) argue that, electronic payments have a significant number of economic benefits apart from their convenience and safety. The benefits when maximized can go a long way to contribute immensely to economic development of a nation.
Automated electronic payments help deepen bank deposits thereby increasing funds available for commercial loans—a driver of all of overall economic activity. In the view of Business Desk (2010), efficient safe and convenient electronic payments carry with them a significant range of macro-economic benefits. “Their impact of introducing electronic payments is akin to using the gears on a bicycle. Add an efficient electronic payments system to an economy, and you kick it into a higher gear. Add better-controlled consumer and business credits and you move economic velocity even further.” “While the high level of cash transactions creates an opportunity for the electronic payment industry, it also imposes a cost on local economies. Cash has to be minted, securely transported, counted and reconciled, kept secure and maintained for re-use time and time again. The per-payment cost is high, and will always remain high whereas the costs of electronic system are fixed. Mols (1998) explain that once the infrastructure has been built, the costs per-transaction is very low”. When cardholders use their cards at the point of sale they are helping to keep money in the banking system. Electronic Payment system can help displace shadow economies, bring hidden transactions into the banking system and increase transparency, confidence and participation in the financial system.

Robertson (2008) also mentioned that, there is a correlation between increase in point of sales volumes and rise in demand deposits. “Automated electronic payments act as a gateway into the banking sector and as a powerful engine for growth. Such payments draw cash out of circulation and into the bank accounts, providing low cost funds that can be used to support bank lending for investment—a driver of overall economic activity. The process creates greater transparency and accountability, leading to greater efficiency and better economic performance”. 
In the opinion of Aarma and Vensel (2001), electronic payment is very convenient for the consumer. In most cases you only need to enter your account information—such as your credit card number and shipping address—once. The information is then stored in a database on the retailer’s web server. When you come back to the Web site, you just log in with your username and password. “Completing a transaction is as simple as clicking your mouse: All you have to do is confirm your purchase and you are done”. The co-authors further emphasize the fact that electronic payment lowers costs for businesses. The more payments that is processed electronically, the less money is spent on paper and postage. Offering electronic payment can also help businesses improve customer retention. “A customer is more likely to return to the same e-commerce site where his or her information has already been entered and stored”.

According to Daniel (1999), “electronic payments can thus lower transaction costs, stimulate higher consumption and GDP, increase government efficiency, boost financial intermediation and improve financial transparency”. He further noted that “Governments play a critically important role in creating an environment in which their benefits can be achieved in a way consistent with their own economic development plans”.

Humphrey et al, (2005) also support the fact that the introduction and use of electronic payment instruments holds the promise of broad benefit to both business and consumers in the form of reduced costs, greater convenience and more secure, reliable means of payment and settlement for a potentially vast range of goods and services offered worldwide over the internet or other electronic networks. One such benefit is that the electronic payments enable bank customers to handle their daily financial transactions without having to visit their local bank branch. According to Osei ((2008), electronic payments products could save merchants time and expense in handling cash.
O'Sullivan (1997) explains that a research work carried out by Visa Canada Association in collaboration with Global Insight (a leading economic and financial consulting firm) revealed that electronic payments provide transactional efficiency to consumers, merchants, banks and the economy. Electronic payments have contributed CAD107 billion to the Canadian economy since 1983 and represents nearly 25% of the CAD437 billion cumulative growth in the Canadian economy over the same period. Over the same two decades, Visa Canada, (2004) notes that CAD60 billion of the increase in Personal Consumption Expenditures was directly attributable to electronic payments, with credit card holding a commanding share of this growth (CAD49.4 billion) over debit cards (CAD10.4 billion).

According to Donkor (2009), Ghana has lagged way behind most of the world (including many of its peers in Africa) in the general quest to boost micro economic activity by reducing the role played by physical cash in daily transactions and by encouraging the creation of a cashless society. However, experts in the financial sector have stressed that unless something radically innovative functional and savvy is introduced, which accounts for attitudes as well as the huge un-banked population, the country’s dream of building a functionally cashless society in the shortest possible time could be elusive.

2.8.1 Challenges of Electronic Payments in Africa

Electronic payments, despite its numerous benefits come with its own challenges even in the developed world. According to Taddesse & Judab (2005), the general challenges as identified by previous research work, mainly Security, Infrastructure, Regulatory and Legal issues and Socio-Cultural challenges. In a research work by Taddesse & Judab (2005), the following have been identified as barriers for the introduction, adoption and growth of Electronic payments in the African Context:
1. Most banks in Africa do not deliver credit cards. People usually have to open bank account outside the continent in order to get a credit card.

2. Behavioral constraints: The fact that African Society is cash-based, people are accustomed to using cash for most of their transactions.

3. Banks attitudes: African banks are very conservative; they use very few innovative products and marketing techniques.

4. Lack of confidence: the security issue is one of the major challenges in the development of e-payments in Africa.

5. In a related study by Worku (2010), the following are some of the challenges Ethiopia faces in adopting e-payments and e-banking:

6. Low level of internet penetration and poorly developed telecommunication impede smooth development and improvement in e-payments and e-commerce.


8. Inadequate banking system.

9. Political and economic instabilities in neighbouring countries: Political instabilities inevitably disturb smooth operations of business and free flow of goods and services.

10. High rates of illiteracy: low literacy rate is a serious impediment for adoption of e-payments as it hinders the accessibility of banking services. For citizens to fully enjoy the benefits of e-payments, they should not only know how to read and write but possess basic ICT literacy.

11. High cost of internet: The cost of internet access relative to per capita income is a critical factor. Compared to developed countries, there are higher costs of entry into the e-payments and e-commerce market. These include high start-up investments costs, high costs of computers and telecommunication and licensing requirements.
12. Frequent power interruption: Lack of reliable power supply is a key challenge for smoothly running e-payments and e-banking.

13. Resistance to changes in technology among customers and staff due to:
   a) Lack of awareness on the benefits of new technologies.
   b) Fear of risk.
   c) Lack of trained personnel in key organisations.
   d) Tendency to be content with the existing structures.
   e) People may be resistant to new payment mechanism.

According to Microfinance Nigeria (2010), urban dwellers are not receptive to the efforts of ICT investors to migrate payment system through substantial investments in crucial infrastructure like Point of Sale (POS) terminal in thousands of supermarkets, fuel stations, hotels, recreational centres and many others.

2.8.2 E-Payment Initiatives in Africa

As indicated earlier on, African e-payment system is not well developed and very limited in use. However, some African countries have seen remarkable progress in e-payments and e-commerce. As per Taddesse & Kidan (2005) study, some North African countries such as Tunisia and Egypt are well ahead of the other African countries.

The study revealed that, the Egyptian government formed the Ministry of Communication and Information Technology (MCIT) to facilitate Egypt’s transition into global information society.

It has adopted legal and regulatory framework for e-business and e-commerce. A complete and comprehensive e-payment infrastructure that allows for many payment options such as credit cards, pre-paid cards, transfer of checks and payment on fixed and mobile telephone has already started to develop. The study also indicated that Telecom Egypt introduced e-
billing system in 2001 that allows customers to view and pay their monthly telephone bill online. Forty eight thousand (48000) online bill payments were made within 18 months of its operation. Almost all the banks operating in Egypt are currently fully automated and have core-banking applications providing SWIFT and fast cash services, as well as their own switching software for online transactions. Information network linking the Central Bank of Egypt with 50 banks using the frame relay technology has been established. Furthermore banks have communication links between their branches.

According to Taddesse & Kidan (2005), Tunisia has also made considerable effort in the area of Electronic Payments. The government of Tunisia has passed a law regarding Electronic Exchange and Electronic Commerce in the year 2000. Furthermore there has been some initiatives to transform the banking system. For example, the national clearance network managed by the Societe Interbancaire de Telecompensation SIBTEL links all Tunisian banks using two Fiber Optic rings, ISDN, leased lines and X.25 links. The paper indicated that Tunisia has developed a multipurpose e-payment system called E-DINAR. E-DINAR allows for internet purchasing of goods and services, ATM money withdrawal and payment at POS. Tunisia has also developed e-payment gateway for international payment certified by VISA.

2.9 Internet banking as an Element of E-banking

According to Stewart (2000), “Internet banking” refers to systems that enable bank customers to access accounts and general information on bank products and services through a personal computer (PC) or other intelligent device. Internet banking products and services can include wholesale products for corporate customers as well as retail and fiduciary products for consumers. Ultimately, the products and services obtained through Internet banking may mirror products and services offered through other bank delivery channels.
Some examples of wholesale products and services, in the view of Roitman (2007) include cash management, wire transfer, automated clearinghouse (ACH) transactions, bill presentment and payment. He also notes that examples of retail and fiduciary products and services include; balance inquiry, funds transfer, downloading transaction information, bill presentment and payment, loan applications, investment activity and other value-added services. Other Internet banking services may include providing Internet access as an Internet Service Provider (ISP). O’Sullivan (1997) explain that a national bank subsidiary may provide home banking services through an Internet connection to the bank’s home banking system and, incidental to that service, may also provide Internet access to bank customers using that service.

Historically, according to Emor (2002) banks have used information systems technology to process checks (item processing), drive ATM machines (transaction processing), and produce reports (management information systems). In the past, the computer systems that made the information systems operate were rarely noticed by customers. Today, Websites, electronic mail, and electronic bill presentment and payment systems are an important way for banks to reach their customers.

In the opinion of Gugeliee (1996), national banks have experimented with various forms of online banking for many years. Some of the early experiments involved closed systems where the customers accessed banks through a dial-in or cable TV connection. These systems limited a bank’s potential customer base because they required out-of-area customers to either incur long-distance charges on their phone bills or subscribe to a particular cable TV service to access the bank. With the widespread growth of the Internet, customers can use this technology anywhere in the world to access a bank’s network.
Kerem et al (2003) explain that, the Internet as an enabling technology has made banking products and services available to more customers and eliminated geographic and proprietary systems barriers. With an expanded market, banks also may have opportunities to expand or change their product and service offerings.

Gurau (2002) notes that numerous factors including competitive cost, customer service, and demographic considerations are motivating banks to evaluate their technology and assess their electronic commerce and Internet banking strategies. The challenge for national banks is to make sure the savings from Internet banking technology more than offset the costs and risks associated with conducting business in cyberspace. Marketing strategies, in the view of Robertson (2008) will vary as national banks seek to expand their markets and employ lower cost delivery channels. Some of the market factors that may drive a bank’s strategy include the following:

**2.9.1 Competition**

Pyun et al (2002) think competitive pressure is the chief driving force behind increasing use of Internet banking technology, ranking ahead of cost reduction and revenue enhancement, in second and third place respectively. Banks see Internet banking as a way to keep existing customers and attract new ones to the bank.

**2.9.2 Cost Efficiencies**

Mols (1998) explain that national banks can deliver banking services on the Internet at transaction costs far lower than traditional brick-and-mortar branches. The actual costs to execute a transaction will vary depending on the delivery channel used. National banks have significant reasons to develop the technologies that will help them deliver banking products and services by the most cost-effective channels. Many bankers believe that shifting only a
small portion of the estimated 19-billion payments mailed annually in the U.S. to electronic delivery channels could save banks and other businesses substantial sums of money. However, national banks should use care in making product decisions. Management should include in their decision making the development and ongoing costs associated with a new product or service, including the technology, marketing, maintenance, and customer support functions. This will help management exercise due diligence, make more informed decisions, and measure the success of their business venture.

2.9.3 Geographical Reach

Nathan (1999) is of the conviction that, internet banking allows expanded customer contact through increased geographical reach and lower cost delivery channels. In fact some banks are doing business exclusively via the Internet; they do not have traditional banking offices and only reach their customers online. Other financial institutions are using the Internet as an alternative delivery channel to reach existing customers and attract new customers.

2.9.4 Customer Demographics

Aarma and Vensel (2001) note that, Internet banking allows national banks to offer a wide array of options to their banking customers. Some customers will rely on traditional branches to conduct their banking business. For many, this is the most comfortable way for them to transact their banking business. Those customers place a premium on person-to-person contact. Other customers are early adopters of new technologies that arrive in the marketplace. These customers were the first to obtain PCs and the first to employ them in conducting their banking business. The demographics of banking customers will continue to change. The challenge to national banks is to understand their customer base and find the
right mix of delivery channels to deliver products and services profitably to their various market segments.

Despite the valued benefits that are produced by the patronage of internet banking, there are some challenging issues impeding its acceptability and adoptability. These issues are related to privacy, availability, security, authentication, trust and non-repudiation issues.

2.10 CONCEPTUAL FRAMEWORK

*Proposed E-Zwich adoption model*

The previous sections have discussed the concept of E-banking and some of the challenges involved with adoption. On the basis of literature and empirical evidence from other countries, a set of factors or determinants have been identified to show some characteristics leading to the adoption of electronic banking products, in the banking sector. Some of the determinants leading to adoption factors in the banking sectors are: perceived ease of use (Amoako-Gyampah and Salam, 2004), perceived usefulness (Palmer, 2002), availability (Boateng, et al. 2006), socio cultural factors (Mathwick, 2002), privacy and security (Abor, 2004). The study adopts these determinants to examine the adoption factors of the E-zwich banking products in the Ghanaian banking sector. The framework as illustrated in *Figure 2* assumes that some key factors will determine the adoption of E-Zwich. The factors, mainly adapted from the Technology Acceptance model, will be discussed in this section.
Figure 2: Adoption Factors

2.10.1 Perceived ease of use

According to the Technology Acceptance Model perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). Hence an application or system perceived to be easier to use than another is more likely to be accepted by users. Explaining Perceived Ease of Use (PEOU), Hosein (2010) noted that, perceived ease of use is the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Commenting on Perceived ease of use Pikkarainen et al (2004) revealed that Perceived ease of use is a major factor that affects acceptance of electronic payment system and information system. Hence an application perceived to be easier to use than another is more likely to be accepted by users. Moon and Kim (2000) also revealed that, “…ease of use and usefulness is believed to be fundamental in determining the acceptance and use of various electronic applications and corporate IT systems.” Shih (2004) also developed an extended model to predict consumer acceptance of electronic shopping based on the theory of reasoned action (TRA) and the TAM and found that, “perceived ease of use of online payment systems and perceived usefulness significantly
determine individual attitudes toward e-shopping and e-payments applications. Therefore, the study proposes that if Ghanaian customers find it easy to use the E-Zwich system they will adopt it, and vice versa. Perceived ease of use therefore has a positive effect on consumer acceptance of the E-Zwich.

2.10.2 Perceived Usefulness

The Technology Acceptance Model indicates that perceived usefulness is a significant factor affecting acceptance of any E-product (Davis et al, 1989). Davis defined perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance”. Perceived usefulness is therefore proposed to have a positive effect on consumer acceptance of the E-Zwich product.

It has further been noted that users’ attitude towards acceptance of a new E-product has a critical impact on the successful adoption of the product. (Venkatesh and Davis, 1996) If users are not willing to accept the E-product, it will not bring full benefits to the innovator. A product that satisfies user’s needs reinforces satisfaction with the product and users are motivated to adopt the system. Whether the system is regarded as good or bad depends largely on how the user feels about the system. According to TAM, actual behavior towards the system is based on Perceived usefulness. Users will use the system so long as they find it useful (Davis 1993). Hosein (2010) defined Perceived Usefulness (PU) as “the degree to which a person believes that a particular system would enhance their performance”. Prompattanapakdee (2009) also noted that, “Perceived Usefulness is the extent to which a person finds that using personal internet banking enhances their banking activities”. According to Pikkarainen et al (2004), “Technology Acceptance Model posits that Perceived usefulness is a significant factor affecting acceptance of an information system. Furthermore, Yuttapong, Sirion and Howard (2009) stated that, “perceived usefulness is an important
factor in determining the adaptation of innovations. A person’s willingness to transact with a particular system is already considered as perceived usefulness. The perception of usefulness is formed in interaction with other individuals and a system. According to Liao and Cheung (2002), consumer attitudes toward the usefulness of and willingness to use-Banking were identified and measured. The research was undertaken in Singapore, because its geography and well-developed infrastructure implied similar and small physical and telecommunication costs, thereby highlighting the differences between traditional and internet based banking upon the latter’s introduction. The data showed that expectations of accuracy, security, network speed, user-friendliness, user involvement and convenience were the most important quality attributes underlying perceived usefulness.

Offering a perspective on Perceived usefulness, Zanid, Mujtaba and Riaz (2010) noted that, “people adopt a particular technology presuming that using this technology and information system would enhance their performance. There is also extensive research in the information system community that provides evidence of the significant effect of perceived usefulness on usage intention. As a result the study proposes that perceived usefulness is a strong determinant of behavioral intention to adopt E-banking.

2.10.3 Availability of Service

Availability is ensuring that the technology is ready for use when it is needed; often expressed as the percentage of time that a system can be used for productive work. All parties require the technology to be available to make or receive payments whenever necessary (Asokan e al, 2000).

According to a recent survey by ServiceXRG, a service excellence research group, of enterprise users, availability of support when the customer needs it is the leading characteristic of service excellence. Availability of services is at the heart of service
excellence. What makes this characteristic particularly important is that no other element of service, including quality or timeliness, matters if services are not accessible.

Impact on Business - The Service XRG survey noted that “The emphasis on service availability is also directly related to the impact on the customer’s business. Over 80% of enterprise and technology users that request for support classify their problem as important to severe with varying degrees of lost data and/or productivity. Users cannot predict when they will need assistance, so when problems arise immediate access to assistance is the difference between average and excellent service. The importance of service availability is tied to the potential impact on the customer’s business. As the severity of an issue grows the importance of availability grows. W.Ladd Bodem (ServiceXRG report 2010). Therefore the study proposes that the E-Zwich service must necessarily be available to the user, when he wants and how he wants it. The point of sale terminals need to be evenly spread country wide for consumer adoption to be effective.

2.10.4 Socio cultural factors

It is alleged that the Ghanaian loves to transact his business in cash, and feels secure when he can see his wealth as a store of cash. According to Wong et al., (2009), numerous research studies have been conducted to identify what factors drive or inhibit the adoption of e-banking by consumers (Gerrad et al., 2006). It has been identified that the lack of trust was one of the main reasons why consumers are still reluctant to conduct their financial transactions through the E-channel Wong et al., (2009). Cultural and historical differences in attitudes towards new product innovations, the love for cash transactions and the lack of trust in the financial system complicate the task of developing an effective electronic payment system in Ghana. Trust is essential in situations where risk, uncertainty and interdependence exist (Mayer et al., 1995) and the e-Banking environment certainly encapsulates these factors.
In an E-banking environment, there is no direct physical contact between buyer and seller. This spatial distance means that consumers cannot use the physical cues, such as observing the sales staff or the physical office/store space, in order to judge trustworthiness (Reichheld and Schefter, 2000) cited in Wong et al., (2009). Consumer confidence and trust in the traditional payment systems has made customers less likely to adopt new technologies. New technologies will not dominate the market until customers are confident that their funds are secure and promptly available (Taddesse and Kidan, 2005). Another reason for the increased need for trust in the e-banking contexts is consumers’ fear for the safety of their personal information due to hackers or other harmful possibilities (Hoffman et al., 1999) cited in Wong et al (2009). This attitude will affect the adoption of the E-zwich product.

Research studies conducted examining the role of trust in e-banking (Vatanasombut et al, 2008) cited in Wong et al, (2009), found that trust plays a key role in the adoption and continued use of e-banking. Furthermore, it was found that trust not only affects the intent to use e-banking (Suh and Han, 2002) cited in Wong et al, (2009), but trust in e-Banking has also been found to be an antecedent to commitment in e-banking (Vatanasombut et al., 2008) and is therefore useful to reduce the perceived risk that consumers feel is present in an e-banking environment (Pavlou 2002) cited in Wong et al, (2009). The study proposes that a conscious effort is required to educate and inform the Ghanaian that cash transactions are unsafe and very expensive, and the panacea for this situation is to adopt the E-Zwich technology.

2.10.5 Privacy and Security

Caron (2005) believes that, information security is essential to a financial institution’s ability to deliver e-banking services, protect the confidentiality and integrity of customer information, and ensure that accountability exists for changes to the information and the
processing and communications systems. For customers to get attracted, the technology must satisfy the following security standards.

Ensure the security and confidentiality of customer information;

Protect against any anticipated threats or hazards to the security or integrity of such information;

Protect against unauthorized access to or use of such information that could result in substantial harm or inconvenience to any customer.

Effective information security comes only from establishing layers of various control, monitoring, and testing methods. While the effectiveness of risk mitigation depends on many factors, in general, each financial institution with external connectivity should ensure they have adequate controls over their platform so that users information do not get to unauthorized persons. The study proposes that the E-Zwich technology must ensure the security and confidentiality of customer information and protect the unauthorized access to or use of customer information.

2.10.6 E-Zwich Adoption

According to Hall and Khan (2002) technology adoption is the choice to acquire and use a new invention or innovation and diffusion is the process by which something new spreads throughout a population.

The model indicates that for adoption of technology to take place, the user will consider five main factors. First the user must find the technology easy to use. Secondly, the user must see the system as useful. This will make the user develop enough interest in the system so as to use it often. Thirdly, the technology must be available anytime and whenever the user needs to use it. Social and cultural trends are also likely to affect users interest in E-Zwich. Users also consider if their information will be secure and protected by the system.
Reviewing adoption and diffusion of technology systems, Hall and Khan (2002) observed that “the contribution of new technology to economic growth can only be realized when and if new technology is widely diffused and used. Diffusion itself results from a series of individual decisions to begin using the new technology, decisions which are often the result of a comparison of the uncertain benefits of the new invention with the uncertain costs of adopting it. An understanding of the factors affecting this choice is essential for both economists studying the determinants of growth and the creators and producers of such technologies.

Everett M. Rogers (1983) postulated that products would be adopted quickly if they possessed most of the following attributes:

**Relative advantage** - The product must have some advantage over the products already on the market. It must offer the consumer a better range of benefits than the existing solutions.

**Compatibility** - The product must fit in with the consumer’s lifestyle.

**Observability** - The more observable the product, the quicker the diffusion process. If other potential consumers are able to see the product in use, this is bound to raise interest in it.

The study used E-Zwich adoption to denote a situation where customers register for the technology and use it to carry out their financial transactions. It proposes that procurement of the E-Zwich card should be easy and the operation of the Point of sale terminal should also be easy. The E-Zwich technology must be widely available with point of sale terminals evenly distributed across the country and users must build confidence and trust in the E-Zwich technology for adoption to happen.
CHAPTER THREE
METHODOLOGY

3.0 Introduction
In the previous chapter, literature relevant to this thesis was reviewed. This chapter outlines the methodology used for the research. The chapter is further divided into sub-sections which discusses philosophical perspectives, research approach, research design, research strategy, sample frame, data collection methods, data analysis techniques, ethical considerations, quality criteria and research limitations and practical challenges.

3.1 Methodological overview
According to Cooper and Schindler (2006), research can be defined as any organized inquiry carried out to provide information for solving problems. They further posit that business research is a systematic inquiry whose objective is to provide information to solve managerial problems or management dilemma: the problem or opportunity that requires a management decision. Many writers have written extensively on research methodology. The underlying factor in most studies on research methodology is that the selection of methodology is based on the research problem and stated research questions. Methodologies cannot be true or false, only more or less useful (Silverman, 2001). Earlier, Nachamias et al (1996) had stated for instance that, methodologies are considered to be systems of explicit rules and produced upon which research is based, and against which claims for knowledge are evaluated. Conducting any type of research should be governed by a well-defined research methodology based on scientific principles. Eldabi et al (2000) have suggested a series of steps as a research paradigm to be followed in a methodology in a research. They include philosophical
perspectives, research approach, design, purpose, data collection and data analysis methods. These have been discussed procedurally in the subsequent sub-sections.

3.2 Philosophical Perspectives

All academic research has been noted to be established on a philosophical perspective (Proctor, 2005; Holden and Lynch, 2004). Essentially, a philosophical position enables the researcher to precisely define, in deeper terms, the “why” for the research other than just choosing the methodology- the “how” (Holden and Lynch, 2004). Easterby-Smith et al. (2002) provide a comprehensive summary of the importance of a philosophical position in any research. According to them, a philosophical position primarily helps to clarify the research design in terms of its overall approach, unveils to the researcher which research design would work best or otherwise and also enables the researcher to identify and even create designs that may be outside his or her past experience. Proctor (2005) postulates that the two extreme dimensions of philosophical positions can be categorized into Positivism and Phenomenology. It is imperative to mention that although the labels of philosophical positions have been described differently by various authors, the concepts they express remain resolute. For example instead of “Phenomenology” as used by Proctor (2005), Malhotra and Birks (2007) and Easterby-Smith et al. (2002) entitle it “Interpretivism” and “Social Constructionism” respectively, whereas Holden and Lynch (2004) label them as Objectivism and Subjectivism.

The central belief of the positivism approach is the view of the social world that exists as an external environment where definite structures affect people in similar ways and vice versa (Proctor, 2005) and therefore its properties should be measured through objective methods, rather than being inferred subjectively through sensation reflection or intuition (Easterby-Smith et al., 2002). Being scientific in nature, positivism perceives the main purpose of
marketing to be the establishment of causal laws by use of reliable information or facts that enable the prediction and explanation of marketing phenomena (Malhotra and Birks, 2007). However, phenomenological perspectives, also described as “social constructionism” or “interprevism” portray a sharp contrast. Within this domain of philosophy, “The focus should be on what people, individually and collectively, are thinking and feeling, and attention should be paid to the ways they communicate with each other, whether verbally or non-verbally” (Easterby-Smith et al., 2002).

The objective of the researcher here is to interact with the subjects of the research and understand their attitude towards the system and not the way the system works. Malhotra and Birks (2007) contrasting both paradigms, argue among other features that whereas positivism seek unbiased findings through value-free approach and ensures the independence of the researcher and respondent, interpretivist researchers are value-laden with a predisposed bias and also tend to be interactive with respondents. Furthermore, a positivist approach requires the need to reduce the problems into comprehensible sub-units, operationalize the concepts in order to make measurements, select appreciable large samples to increase validity, and develop hypotheses to demonstrate and test their authenticity (Easterby-Smith et al., 2002). In this respect the positivist approach is adopted in this research.

3.3 Research Purpose

A research purpose provides the basic direction for carrying out the research. Basically, in social research, there are three categories of research purpose: exploration, description, and explanation (Saunders et al. 2009). These categories differ in several aspects including the way research questions or hypotheses are formulated, and the way data is collected.
**Exploratory Studies**

This type of research is typically used when a researcher examines a new interest or when the subject of study itself is relatively new. The major emphasis of exploratory research is on the discovery of ideas and insights (Saunders et al. 2009). The research questions or assumptions might be difficult to understand because the phenomenon of interest is considerably new and unfamiliar to the researcher. More information is needed to clarify the concept and scope of the study and to make the researcher understand the problem better. The exploratory research could be conducted through a number of techniques including literature review, interviews, focus group and case study.

**Descriptive Studies**

Descriptive research is employed to provide an accurate snapshot of some aspect of the observed persons, events, situations, and environments. Descriptive research is conducted to describe situations and events. The researcher observes and then describes what was observed (Babbie 2004). This type of research purpose is frequently used when a problem is well structured.

**Explanatory Studies**

The focus of this research purpose is on studying a situation or a problem in order to explain the relationships among variables (Saunders et al. 2009). It is concerned with determining cause-and-effect relationships. Explanatory research aims to develop precise theory that can be used to definitively explain the phenomena, which leads to the generalization from the research. Does a change in one event bring about a corresponding change in another event? Since there is fairly no studies conducted on the area under study with respect to the product
and the contextual area, this study is purposed on an exploratory basis with the intent of
discovering an idea and gaining insights in a specific aspect of consumers’ behaviour.
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3.4 Research Approach

Scholars of research methodology (Denzin and Lincoln, 2000; Potter, 1996) discuss two
general research approaches: quantitative and qualitative research (Engstrom and Salehi-
Sangari, 2007) although some researchers have adopted a combination of both approaches.
Virtually all research will involve some numerical data or contain data that could usefully be
quantified to help in answering research questions and meet objectives. Quantitative data
refers to all such data and can be a product of all research strategies ranging from simple
counts such as frequency of occurrences to more complex data such as test scores or prices.
(Saunders et al. 2009). Hair et al (2003) contends that quantitative research is primarily
cerned with numbers, high concern for representativeness and highly structured methods
for data collection. Where there is a limited understanding of the phenomenon under
vestigation qualitative research is best; since it provides the researcher more descriptive
space (Cooper and Schindler, 2006). Each method is considerably different in the way data is
collected and analyzed. Both methods are widely used in business research.

Quantitative versus Qualitative Approach

A quantitative method means that the data collection techniques and data analysis procedures
enerate or use numerical data. In contrast, qualitative method refers to any data collection
technique and data analysis procedures that generate or use non-numerical data (Saunders et
al. 2009). It is the research problems and purposes that determine which method is more appropriate. For quantitative study, the vital skills needed for the researcher are the ability to develop proper hypotheses, test them with proper statistical techniques, and interpret statistical information into descriptive information. A large sample size is preferred and it should be possible to generalize from the findings.

In most qualitative research there are, in contrast to quantitative research, no statistical calculations aimed at establishing correlations between certain stated variables, with the ambition to give an exact representation of an objective reality “out there”. It is possible to use a variety of qualitative techniques such as interviews, observations, and analysis of texts and documents. Using different techniques and combining them within one study gives a possibility to cover multiple perspectives of the phenomenon under study (Yin 2009).

**Inductive versus Deductive**

Researchers approach the building and testing of theory from two directions; deductive and inductive (Neuman, 2006). The inductive approach typically moves from specific observations to broader generalizations and theories. The researchers may begin with specific observations and measures, to detect patterns and regularities, and then formulate some tentative hypotheses that they can explore. They might end up by developing some general conclusions or theories. The study of a small sample size of subjects might be appropriate (Saunders et al. 2009). In contrast, a deductive approach commonly works from the more general to the more specific. The deductive research approach begins with abstract logical relationship among concepts and then moves towards concrete empirical evidence (Neuman, 2006). Researchers might begin by examining theories related to their topic of interest. They then narrow those theories down to more specific research questions or hypotheses that can be tested. Then, the researchers answer questions or confirm hypotheses
through a number of research methods, mainly in quantitative ways in order to be able to
generalize the findings (Saunders et al. 2009).

These two approaches are different ways to conduct research. In short, the difference
between the two approaches is that one is building the theory (inductive) while the other one
is testing the theory (deductive). The selection of approach depends on the extent to which
existing knowledge and theories are available related to the topic of interest.

In this research the deductive approach is applied to determine if a logical relationship exists
between the concept being tested and the behavior of the respondents.

3.5 Research Strategy

The research strategy refers to the research procedure used to answer research questions and
fulfill the purposes of the research. The choice of research strategy is guided by the research
questions and objectives, the extent of existing knowledge, the amount of time and other
resources available, and the researcher’s philosophical foundation (Saunders et al. 2009).
There are several research procedures that can be labeled as research strategies including case
study, survey and experiment.

Case Study

If the phenomena to be investigated are complex and deeply embedded in the organizational
context of a company, the case study can be chosen as a suitable research strategy (Yin
(2009). When conducting a case study, a natural question is whether to focus on one case or
go for multiple cases. Yin (2009) argues for choosing one case if it represents a unique or
extreme case of the studied phenomenon. Usually, one case implies a one case company,
although Yin (2009) discusses the embedded case design, where the main case can contain
several intertwined sub-cases. For example, one and the same company in different markets
can become the embedded case with local markets as sub-cases and the corporate one as an umbrella case. A case study is most often used in exploratory and explanatory research with the ability to answer the question “why” as well as “what” and “how” (Saunders et al. 2009). Both quantitative and qualitative techniques can be applied for data collection in case study research (Yin 2009).

**Survey**

The survey research strategy is the most popular and common strategy for social research, including business disciplines (Saunders et al. 2009). This strategy can be used to answer “who”, “what”, “where” and “how” questions and is mainly used in descriptive and exploratory research. A survey is a means of obtaining information about the characteristics, actions, or opinions of a large group of people, referred to as a population (Malhotra and Birks, 2007). It is generally associated with the deductive research approach. In addition, a survey strategy allows researchers to collect a large amount of data from a substantial population at a very low cost. The data are typically quantitative and gathered by questionnaire. The data can be easily compared and analyzed using various statistical techniques. Survey is usually the preferred research strategy for researchers who are interested in collecting original data to describe a population that is too large to observe directly. Careful probability sampling provides a group of respondents whose characteristics may be taken to reflect those of the larger population, and carefully constructed standardized questionnaires provide data in the same form from all respondents (Babbie 2004). Questionnaires are not the only data collection technique in the survey research strategy. Structured observation and interviews can also be employed in survey research, but the questionnaire remains the most commonly used tool in survey.
Experiment

Experiment is used in both natural and social science research. Experiment tends to be used in exploratory and explanatory study to answer “how” and “why” questions (Saunders et al. 2009). Two groups are set and members in each group are basically similar in all aspects. The researcher uses one group as the experimental group and another one as the control group. At the beginning, the dependent variable is measured for both groups and the two measurements are compared with each other. Then, the researcher places some form of planned intervention or manipulation only to the experimental group. The intervention or manipulation is the independent variable. Finally, the dependent variable from each group is re-measured. The researcher is now able to compare the results before and after the manipulation of the independent variable for both the experimental and the control group. This allows the researcher to see if there is a causal relationship between the independent and dependent variables. This experimental research strategy can be conducted in either laboratory experiments or field experiments (Saunders et al. 2009). In business disciplines, an experiment strategy could be used in several ways but this research strategy is typically expensive and complicated.

3.6 Research Design

A research methodology refers to the procedural framework within which a research is conducted (Malhotra and Birks, 2007). This framework involves bringing together claims being made about what constitutes knowledge, a strategy of inquiry and specific methods (Creswell, 2003). In order to draw meaningful conclusion from any piece of research, the procedural framework of data collection must be appropriate and relevant. Additionally, Churchill and Iacobucci (2009) argue that not only does a research design facilitate the collection and analysis of data, but also it helps to specify the details of the procedures
necessary for obtaining the information needed to structure or solve marketing research problems. Ideally, it is a plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically (Kumar, 2005). Broadly, research design could be divided into two groups; exploratory design and conclusive design. Whereas exploratory design can either be quantitative or qualitative in nature, conclusive research design constitutes either a descriptive or causal research.

Exploratory research is mostly used when marketing research areas are inherently difficult to measure, especially in a quantitative manner (Malhotra and Birks, 2007). It may also be used in areas where it is necessary to define the problem more precisely, identify relevant courses of action, or gain additional insights before going on to confirm findings using a conclusive research design (Malhotra & Birks, 2007). The exploratory research design is seen as being versatile and flexible in respect to the methods being used. The marketing researcher responds to ideas and insights from the research subject and may change the research techniques according to what type of information he is aiming to get. Exploratory research is used when little is known about the subject or problem which is to be analyzed, or when the problem needs to be defined more precisely and when the subject of the study cannot be measured in a structured manner (Malhotra and Birks, 2007). It is not necessary to always begin with exploratory research, because it depends on the precision with which the problem has been defined. Exploratory research may be categorized into either descriptive or causal research.

Causal research design is a form of conclusive research, where the major aim is to analyze the cause and effect relationship. It includes defining which variables are the cause and which variable is the effect in connection to marketing phenomena (Malhotra and Birks, 2007).
Furthermore this kind of research tests hypotheses and like descriptive research, also uses planned and structured designs. The most used method of causal research is experimentation (Malhotra and Birks, 2007). The descriptive research is characterized by specific research questions and often hypotheses. The research is mostly well planned and highly structured. That is possible, because the information needed is clearly defined. The most significant difference between exploratory and descriptive research is the formulation of a hypotheses and research question early in the research process.

In the context of the above discussions it is safe to posit that this research is undertaken with a positivist’s philosophical position. Two approaches identified by Zikmund and Babin (2010), namely positivist and phenomenological, were adopted by the researcher in his research design. The positivist consists of facts and quantitative analysis to test formulated research questions and phenomenological consists of qualitative analysis to develop ideas from information gathered.

Qualitative research according to Strauss and Corbin (2000) is the collecting, analysis and interpreting of data by observing what people say or do. Quantitative research involves the use of structured questions where response options have been predetermined. Pluralistic research in the view of Winsome and Johnson (2000) is a combination of both qualitative and quantitative research where the advantages of both can benefit the study. The researcher used the pluralistic approach, which ensured that qualitative pieces of information picked up by the questionnaire were quantified and analyzed to realize the desired objectives of the study.

Furthermore, the current research is quantitative in nature and adopted the survey approach in collecting the data; specifically, through the use of a questionnaire. The research problem was formulated based on existing theory, and the intention is to create more knowledge about specific factors. For this reason, a deductive approach has been adopted in this thesis.
This thesis adopted the survey strategy because the study is cross-sectional in nature and previous cross-sectional studies have mainly employed the survey strategy (such as Easterby-Smith et. al., 2002; Robson, 2002; Holt, 2006; Bughin et al., 2010). The choice for this research design therefore became necessary due to the exploratory nature of the study and also because it has been found to be suitable for analyzing a phenomenon, situation, problem, attitude or issues by considering a cross-section of the population at one point in time (Robson, 2002; Lin and Chang, 2003; Litvin et al., 2008). Again the suitability of using the survey strategy in this study is to help the researcher identify and explain statistically, the factors that explain how E-Zwich customers perceive the technology. This research tests the relevant hypotheses stated earlier in the research process using a structured approach and is therefore based on conclusive research.

3.7 Sample frame, population and size

Collecting and analyzing data from every potential case or group member included in a research problem is known as a census. However, for many research questions and purposes, it becomes impossible to either collect or analyze all the data available in a population due to restrictions in time, money, and often, access. Saunders et al. (2003) emphasize that a census investigation does not necessarily provide more useful results than a well-planned sample survey. As long as the study sample is representative, generalizations about the underlying population can still be drawn (Churchill and Iacobucci 2009; Zikmund 1994). Consequently, considering the fact that there are over half a million people having the E-Zwich card (Ghanaian Chronicle, 28 March, 2011), a sample investigation was deemed more appropriate than a census. For the purposes of generalization, the research, the research population for this study was taken from the Accra Metropolis where a crosssection of stakeholders, especially, point of sale merchants, students, offices, petrol filling stations,
commercial banks and good quality patrons (customers/subscribers) reside and operate. This area was chosen because it is metropolitan in nature and is inhabited by all kinds of people who are connected in one way or the other with payment of funds, cash transactions and have access to point of sale terminals of the E-Zwich technology. It also happens to be one of the biggest commercial areas in Ghana where there is a high concentration of the administration of the E-Zwich electronic card system. This is in agreement with Salant and Dillman, (1994), who observed that a prerequisite to sample selection is to define the target population as narrowly as possible and that sample selection depends only on the population size, its homogeneity, the sample media, its cost of use, and the degree of precision required. Since it may not always be possible to know the true population, researchers have suggested that a theoretical sample may be used (Attewell and Rule, 1991). Theoretical samples purposively select respondents that exhibit the desired features of prime focus to the researcher. Theoretically, therefore the research population for the study comprised two hundred E-Zwich Card holders. These were targeted at households, offices and shopping centres and included people from all walks of life including top business executives, public service personnel, and private business owners. Also some of the variables included in the questionnaire required that respondents answer certain questions with respect to their cultural beliefs, availability of E-Zwich and its security features, how easy they found its usage and whether they considered it useful.

3.8 Determination of Sample Size

Burns (2000), advises researchers to use large sample sizes as much as possible for the following reasons. First it maximizes the possibility that the mean, percentages and other statistics reflects the true estimates of the population. Again large sample sizes give the effects of randomness the chance to work (Malhotra and Birks, 2007). Finally, the chances of
errors are reduced as the sample size increases. Thus to achieve accuracy, it is important to use a large sample size in a survey study and this issue is captured in this current research. For some research, it might be possible to collect and analyse data from every possible case or member of the whole interested population if such research focuses on a small group. However most research such as the current study need to employ sampling procedures because the group of interest is typically large containing too many cases or members which makes it impossible to collect data from all of them. Sampling techniques are divided into two broad categories; probability and non-probability sampling.

In probability sampling, each element in the sample frame has an equally known chance of being included in the sample, which allows for statistical inferences. This allows researchers to answer research questions and to achieve purposes that require them to estimate statistically the characteristics of the population inferred from the sample. Probability sampling is often associated with survey and experimental research strategies. In contrast, in non-probability sampling, it is not possible to make valid inferences about the population. All non-probability samples rely on personal judgement somewhere in the process, which implies that such samples derived from non-probability sampling are not necessarily representative of the entire population.

Researchers however, may still be able to generalize from non-probability samples about the population, but not from a statistical standpoint. Non-probability sampling is more generally used in case study research (Saunders et al, 2009).

In this study, the intention is to gather information about what drives E-zwich card holders to adopt and use the technology. Since it is not a study that relies on any specific case study but rather on a large population, this research was conducted using probability sampling in which
samples were randomly drawn based on the number of E-zwich card holders that could be identified by walking through the metropolis.

3.9 Data Collection Methods

There are two basic types of data collection methods; primary data collection method and secondary data collection method. The critical distinction between the types of data is that primary data is collected by the researcher specifically for the purpose for which the data are required. Secondary data have been collected for another primary purpose (i.e. all secondary data have been primary data themselves for other earlier studies). It must be noted that both primary and secondary data sources can yield either qualitative or quantitative data (Babbie, 2004).

Whiles primary data may be collected through the use of observation, interviews or questionnaires, secondary data may include both raw and published summaries such as data collected by other researchers, organizations, governments and other statistical institutions. Routine data collected by institutions participating in an activity could be exceptionally good sources of secondary data which could be replicated by primary data collection without unreasonable expense. The use of secondary data could result in cost and time savings (Saunders et al, 2009).

In this study, it was relevant to get information directly from the respondents on their views and opinions concerning what key factors motivate them in choosing to adopt the technology or not. Secondary data on the current study is limited and thus the researcher had no choice than to resort to primary data generated from the questionnaires administered to the sampled E-Zwich card holders. A questionnaire, in Oppenheim’s (2008) argument, is not some sort of official form with casually jotted-down questions, but rather an important instrument of measurement in research. In fact, being a commonly used approach in marketing research
(Churchill, 1995), a questionnaire— which constitute a formalized set of questions for obtaining information from respondents represents a typical sub-element of the data collection procedure (Malhotra and Birks, 2007). The advantages associated with the use of questionnaires includes the simplicity to tabulate and analyze (Peterson, 2000), and the reliability it churns as a result of the framework of fixed alternatives (Smith and Albaum, 2005). However, the fact that the respondent could be coerced to choose an option which may not exactly represent the true situation, as he does not have the possibility to answer in his own words, strikes a disadvantage (Churchill, 1995).

The researcher was however mindful of the disadvantages associated with written questionnaires. There is the possibility that written questionnaires will be misunderstood and interpreted differently by different people. To overcome this problem, the researcher carried out an initial pre-testing of questionnaires to evaluate respondents understanding of the research area. To further minimize the errors associated with written questionnaires, respondents were given the opportunity to request for any further explanations regarding the questionnaire. This was helpful in achieving content validity; a self-evident measure which relies on the assurance that the researcher demonstrates an adequate knowledge of the know field, after critically reviewing the literature and constructing questions or instruments to cover the known content represented in the literature (Malhotra and Birks, 2007).

3.10 Questionnaire Design and Administration

In this study, Malhotra and Birks (2007) steps for designing questionnaires serves as the framework for the development of the questionnaires. These have been detailed subsequently for validity and reliability purposes. It is essential to discuss these procedures to ensure high quality criteria within which it could be demonstrated that the operations of a study can be repeated with the same or slightly modified results. Moreover in order to establish correct
operational measures for the concepts being studied, establishing causal relationships whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships and establishing the domain to which a study’s findings can be generalized, this section cannot be underestimated.

The prime step of specifying what information needed is rooted in the thorough review of components of research questions, hypotheses, and other characteristics that influence the research design (Malhotra and Birks, 2007). In the context of this study, which seeks to ascertain the adoption of E-Zwich by card holders within the electronic payment system, information sought by the questionnaire were tailored around some independent and dependent variables. The independent variables obtained from a review of extensive literature were perceived ease of use, usefulness, accessibility and availability, security and privacy, socio cultural factors whiles the dependent variable is represented as E-Zwich adoption.

The researcher employed a structured questionnaire for the study and took the form of self-administered personal interviews because as Churchill (2005) purports, through this mode, respondents can either seek clarification on points of confusion in the presence of the interviewers. For E-Zwich card users, this method allowed the respondents to seek clarification from the researcher. Additionally, it is worth mentioning that the questionnaires were undisguised and structured, where the purpose of the project was disclosed to respondents, and the questions presented in exactly the same wording across board and ordered with fixed alternatives respectively.

With respect to content the questions used in the questionnaire were generated by the researcher based on the research questions and objectives stated in the first chapter in relation to the postulations obtained from the literature review in the subject area. Furthermore the researcher put in measures to overcome respondent’s inability and unwillingness to answer as
suggested by Churchill, (1995) by eliminating questions which might have been very sensitive and seemingly personal. Furthermore the respondents were mainly users who could read and write and understand the ramifications of the study so as to give subjective accurate responses.

Structuring questions in a questionnaire can broadly be developed on the basis of multi-choice, dichotomous, and on scales (Proctor, 2005; Peterson, 2000; Churchill, 1995). Since the survey performed in this study is not a comparison, the non-comparative scaling techniques were adopted. Non-comparative scales can be continuous rating scales or itemized rating scales (which consist of three other scales; Likert, Semantic differential and Stapel). The types of questions used for this survey were multi-choice in nature and were mainly 5 point likert scales. To obtain a high response level from the respondents and also reinforce easy comprehension, the questionnaire were worded in simple language which could be understood by any lay person who could read and write without necessarily including jargons and terminologies as recommended by scholars (Malhotra and Birks, 2007; Smith and Albaum, 2005; Peterson, 2000).

Scholars prescribe that questionnaire for a study need to be pre-tested on a small sample of respondents in order to identify how it will perform under the actual data collection (Malhotra and Birks, 2007; Peterson, 2000). This study was pretested on fifty (50) Executive MBA students of the University of Ghana Business School who owned cars and thus understand the ramifications of the study. Initial problems ascertained were rectified and corrected so as to produce questionnaires on large scale for the general targeted public. This was done premised on the fact that the questions were formulated by the researcher and not adopted from any previous studies.
3.11 Data Analysis Techniques

With regard to data analysis, quantitative analysis is the numerical representation and manipulation of observations/data for the purpose of describing and explaining the phenomena that those observations/data reflect whilst qualitative analysis refers to the non-numerical examination and interpretation of observations for the purpose of discovering underlying meanings and patterns of relationships (Babbie, 2004).

Alvesson and Sköldbery (2009), state the three ways for drawing conclusions. These are Inductive, Deductive, and Abductive. Inductive method is used to draw conclusions based on empirical findings. This method is normally used when established theories in the field of study are limited and the purpose is to form a new theory. Deductive method is used when drawing conclusion perceived as valid when it is logically connected. Usually in deductive studies, theories and literature that have been established already is used as foundation for the new research. Abductive method is similar to Inductive method. Here the researcher starts with the empirical facts, just as in the inductive method. However, theoretical preconceptions are not rejected. In abductive method a separate case is interpreted according to the theoretical pattern as if it was true, would explain the case. The result is then confirmed based on the new observations. The new observation from the study is then compared with the theoretical frame of reference. Based on the explanations above, the method of analysis for this thesis is based on the deductive since the hypotheses tested were based on a review from extant literature on brands management and brand choices.

A significant number of the studies on consumer brand choices (e.g. Bhat and Reddy, 1998; Holt, 2006; Lin and Chang, 2003; Litvin et al., 2008; Bughin et al., 2010) have made use of structured questionnaires. Subsequently, these research studies have employed purely quantitative research techniques in their data analysis. It is thus important to note that to test
the validity of an integrated study of this nature, similar or same data analysis technique should be employed in order to ascertain the reliability of the results generated from the hypotheses tested. The analytical instrument for this study is the Statistical Package for Social Science (SPSS) version 18.0 using multiple regression model and descriptive statistics. This software has been widely used by researchers as a data analysis technique (Zikmund, 2003).

3.12 Unit of Analysis

The unit of analysis for the study is the individual customer. That is, the client being the direct recipient of services delivered by E-zwich provider. Most research works on service management and choice of technology have used customers as the unit of analysis (Olsen, 2004). The present study agrees with the conceptualization in the literature that studies on adoption of technology are best viewed from the viewpoint of the customers and that, it is usually the customers that represent the final consumers of the technology and thus are able to tell whether the purposes served by the new technology are positive or negative.

3.13 Initial considerations

Data Screening and Cleaning

Checking the data set for errors, is an essential prelude to data analysis. This stems from the fact that mistakes are quite easily made when entering data which can eventually muddy the results of the analysis. Pallant (2003) further argues that not only are some analyses very sensitive to "outliers", a commonly used term to describe values that are below or above the other scores, but also the process of data screening process consists of three vital steps:

- Step I: Checking for errors - First, there is the need to check each of your variables for scores that are out of range (that is, not within the range of possible scores).
- Step 2: Finding the error in the data file - Second there is the need to find where in the data file this error occurred (which case is involved).

- Step 3: Correcting the errors in the data file - Finally, there is the need to correct the error in the data file itself.

A thorough data screening process was performed on each of the variables for scores that might be out of range, missing or even wrongly inputted and none was detected to be incongruous.

**Descriptive Statistics**

Scholars such as Pallant (2003) suggest that data should be first subjected to descriptive analysis before any further data validation and analysis. Descriptive statistics are numerical and graphical methods used to summarize data which include:

- Measures of central tendency (mean, median, mode) and normality
- Measures of variability (range and variance)

Table VII in chapter 5 captures the results for the descriptive statistics relating to all the variables in the model to determine the relative mean and standard deviations.

**Exploratory factor analysis**

An exploratory factor analysis was performed to check for internal consistencies among the variables used. Reliability refers to the extent to which measurement reproduces consistent results particularly if the process of measurement is to be repeated in further study.

Corroborating the essence of reliability, Pallant (2003) postulates that the scales used for analysis should be checked for reliability to ensure that the items that make up the scale "hang together" (i.e. internal consistency). The most commonly used indicator of internal consistency, Cronbach”s alpha coefficient, was employed to check the reliability of the scales
used for this survey. Scholars (such as Pallant, 2003; Costello and Osborn, 2005; Field, 2005 and Hair et al, 2010) admonish that ideally this value should be greater than 0.7.

**Multiple regression analysis**

Multiple regression analysis represents a family of techniques that can be used to explore the relationship between one continuous dependent variable, and a number of independent variables (Malhotra and Birks, 2007). It has been adapted as system of analysis for this survey because, it can address the issues of:

- How well a set of variables is able to predict a particular outcome?
- Which variable in a set of variables is the best predictor of an outcome; and
- Whether a particular predictor variable is still able to predict an outcome when the effects of another variable are controlled.

Therefore by using adoption as a dependent variable and the other factors, (Perceived ease of use, Perceived Usefulness, Availability, Socio Cultural Factors and Privacy and Security) as the independent variables, a multiple regression analysis was performed to identify which of the independent variables influence consumer adoption the most. The results and interpretations have been explained in detail in chapter 5.

**3.14 Ethical Considerations and Quality Criteria**

One very important consideration a researcher must not overlook is the issue of ethics in research (Malhotra and Birks 2007). The researcher in accordance with this took steps to make sure that no respondent or any participant in this research work was harmed in any way. The researcher made sure that permission was sought and the aims and objectives of the study made known to the respondents through introductory letters and cover letters respectively. Respondents were also assured of the fact that the study is only for academic
purposes. Respondents were also not forced but rather encouraged to voluntarily participate and the researcher further made sure that personal or demographic information were kept confidential.

3.15 Validity and Reliability

Research quality is generally described by the validity and reliability of the research methodology and data. In this thesis where the research is more of a quantitative assessment the researcher applied the quality criteria for the purpose of generating understanding about what drives consumers to appreciate a particular technology. Patton (2002), states that reliability is a factor any researcher should be concerned about while designing a study, analyzing results and judging the quality of the study.

Reliability means dependability or consistency (Neumann, 2006: 196). It indicates the likelihood that a given measurement technique will repeatedly yield the same description of a given phenomenon. The role of reliability is to minimize the errors and biases in a study (Yin, 2003). To ensure reliability in this study the researcher mapped out the detailed procedure for sample selection, selection of research instruments (mainly questionnaire), designing the questionnaire, and administration of questionnaire.

To ensure candid response each respondent was assured of the anonymity of his or her answers. Similarly to have a better understanding of the issue being addressed the questionnaires were distributed to willing and capable respondents.

3.16 Conclusion

The aim of this chapter was to present the methodology used in this study. It can be summarized as follows: the researcher discussed a methodological review and posit that the current study is exploratory and the approach deductive and quantitative, the strategy a single
case study, the sample selection based on non-probability samples, the data collection method is primary in nature, the data analysis technique used is quantitative data analysis and careful attention has been given to create high reliability validity in the study.
CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter deals with the output of the analysis of the data collected for the study. Here empirical data collected through self-administered questionnaires on electronic banking products adoption are presented. Following the previous chapters, which discussed the literature review and the research methodology for this study respectively, this chapter provides the results of the survey conducted on adoption and diffusion of electronic banking products in Ghana using the E-Zwich product as a case in point. The analysis is primarily based on demographic profile of respondents, the descriptive statistics, exploratory factor analysis and multiple regression analysis.

4.1 Demographic characteristics

The demographic profiles of the sampled respondents from Table I below indicate that 45.0 percent of the respondents were males while 55.0 percent were females. There was no bias in the proportion of gender selection as respondents were contacted on their basis of availability and willingness. However, it could be inferred from the results that the number of females who patronize E-Zwich services are practically more than their male counterparts. In terms of age, majority of the sampled respondents (cumulatively 76.5 percent) were between the ages of 18 years and 35 years denoting a relatively youthful dominance of electronic banking service users. Those within the ages of 36 years and 45 years were 17.0 percent with 5.5 percent belonging to a section within the 46-55 age groups whilst 1.0 percent of the sampled respondents were 56 years and above. The reasons for this outcome could be attributed to the fact that electronic banking service users have been found to be mainly youth and young
adults less than 21, and between the ages of 21-35 (Tan and Teo, 2000; Karjaluoto et al., 2002). It can also be attributed to the fact that electronic banking services provide the possibility of improved levels of service, the opportunity to bank whenever they choose 24 hours around the clock, enhanced convenience, in addition to lower fees, which are best suited to the lifestyle of the above mentioned age group (Howcroft et al., 2002). However respondents from all the sampled age groups expressed some degree of interest in adopting the electronic banking service.

Regarding the educational background of the sampled respondents, majority of them (a value of 59.0 percent) had a minimum of a university degree qualification. A chunk of them were also having Diploma certificates representing 17.5 percent whilst 11.5 percent of the sampled respondents were people with SHS/Vocational qualifications. The remaining 12.0 percent of the respondents were post-graduate degree holders. With this in mind, it could be said that most of the sampled respondents were highly educated and thus understand the ramifications of the current study. Additionally, it was found out from the statistics that from the sampled respondents 26.5 percent of them were self-employed whilst the remaining 73.5 percent.

Finally, with regards to the frequency of usage of E-Zwich services, a majority of the sampled respondents (71.0 percent) seldom use their E-Zwich cards for transactions. About 16.5 percent use it quite often whilst 11.0 percent of the respondents use it more often. Only 1.5 percent of the sampled respondents use their E-Zwich cards always for transactions.
Table 2 – Demographic Profile of respondents

<table>
<thead>
<tr>
<th>Profile of respondents</th>
<th>Measurements</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>90</td>
<td>45.0</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>110</td>
<td>55.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Age (in years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>80</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>26-35</td>
<td>73</td>
<td>36.5</td>
<td></td>
</tr>
<tr>
<td>36-45</td>
<td>34</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>46-55</td>
<td>11</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>56 and above</td>
<td>2</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Educational background</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHS/Vocational</td>
<td>23</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>35</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>University Graduate</td>
<td>118</td>
<td>59.0</td>
<td></td>
</tr>
<tr>
<td>Post graduate</td>
<td>24</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Employed</td>
<td>53</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>147</td>
<td>73.5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Frequency of E-Zwich use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seldom</td>
<td>142</td>
<td>71.0</td>
<td></td>
</tr>
<tr>
<td>Quite often</td>
<td>33</td>
<td>16.5</td>
<td></td>
</tr>
<tr>
<td>More often</td>
<td>22</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>3</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

4.2 Descriptive statistics

The t-test table below displays the means and standard deviations of the various variables used and these indicate the extent to which the respondents disagreed or agreed with the statements in the questionnaire. The mean results of the variables indicate how each statement performed from the two hundred (200) respondents’ points of view. From the table the highest means were 4.50 (E-Zwich terminals are not available in all parts of Ghana), 4.47 (I prefer not to use E-Zwich cards because it is not always accessible) and 4.16 (I have received not enough information about the benefits of using electronic banking from my
bank) whilst the lowest was 2.30 (I generally have problems with the security of E-Zwich services).

Table 3 – t test (descriptive statistics)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>T</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have not received enough information about electronic banking from my bank</td>
<td>4.10</td>
<td>1.157</td>
<td>46.134</td>
<td>.000</td>
</tr>
<tr>
<td>I have not received enough information about the benefits of using electronic banking from my bank</td>
<td>4.16</td>
<td>1.319</td>
<td>44.826</td>
<td>.000</td>
</tr>
<tr>
<td>I find it difficult to do what I want to do with my bank using electronic banking</td>
<td>3.17</td>
<td>1.114</td>
<td>36.421</td>
<td>.000</td>
</tr>
<tr>
<td>Learning to use E-Zwich is difficult for me</td>
<td>3.38</td>
<td>1.171</td>
<td>37.992</td>
<td>.000</td>
</tr>
<tr>
<td>I cannot easily become skillful using E-Zwich</td>
<td>3.18</td>
<td>.649</td>
<td>57.650</td>
<td>.000</td>
</tr>
<tr>
<td>Overall I find E-Zwich difficult to use</td>
<td>3.76</td>
<td>.523</td>
<td>63.201</td>
<td>.000</td>
</tr>
<tr>
<td>Learning to use E-Zwich for transactions is difficult for me</td>
<td>3.57</td>
<td>1.189</td>
<td>56.229</td>
<td>.000</td>
</tr>
<tr>
<td>I cannot use E-Zwich card to pay for goods and services when I go shopping</td>
<td>3.38</td>
<td>1.251</td>
<td>50.503</td>
<td>.000</td>
</tr>
<tr>
<td>I hardly use E-Zwich card to pay utility bills (telephone, electricity, water)</td>
<td>3.72</td>
<td>.899</td>
<td>87.412</td>
<td>.000</td>
</tr>
<tr>
<td>My employer does not pay my salary through my E-Zwich card</td>
<td>2.85</td>
<td>.893</td>
<td>85.957</td>
<td>.000</td>
</tr>
<tr>
<td>I do not trust in the technology of E-Zwich services</td>
<td>3.00</td>
<td>1.120</td>
<td>50.593</td>
<td>.000</td>
</tr>
<tr>
<td>I do not trust in the ability of E-Zwich to protect my private information</td>
<td>2.51</td>
<td>1.096</td>
<td>59.973</td>
<td>.000</td>
</tr>
<tr>
<td>I generally have problems with the security of E-Zwich services</td>
<td>2.30</td>
<td>1.011</td>
<td>68.853</td>
<td>.000</td>
</tr>
<tr>
<td>The security of E-Zwich services cannot be fully guaranteed</td>
<td>2.65</td>
<td>1.321</td>
<td>51.693</td>
<td>.000</td>
</tr>
<tr>
<td>Using E-Zwich is financially insecure</td>
<td>2.67</td>
<td>1.215</td>
<td>41.191</td>
<td>.000</td>
</tr>
<tr>
<td>My bank’s E-Zwich services are not safe</td>
<td>2.79</td>
<td>1.067</td>
<td>66.539</td>
<td>.000</td>
</tr>
<tr>
<td>I cannot access my E-Zwich account anytime I want to</td>
<td>2.63</td>
<td>1.218</td>
<td>40.376</td>
<td>.000</td>
</tr>
<tr>
<td>E-Zwich terminals are not available in all parts of Ghana</td>
<td>4.50</td>
<td>1.218</td>
<td>52.211</td>
<td>.000</td>
</tr>
<tr>
<td>E-Zwich terminals do not function when there is power failure</td>
<td>4.10</td>
<td>1.401</td>
<td>41.381</td>
<td>.000</td>
</tr>
<tr>
<td>E-Zwich point-of-sale terminals do not provide 24 hour services</td>
<td>4.06</td>
<td>.864</td>
<td>87.958</td>
<td>.000</td>
</tr>
<tr>
<td>I prefer not to use E-Zwich cards because it is not always accessible</td>
<td>4.47</td>
<td>.869</td>
<td>89.777</td>
<td>.000</td>
</tr>
<tr>
<td>I prefer to do my transactions in cash rather than E-Zwich card</td>
<td>3.76</td>
<td>1.287</td>
<td>40.128</td>
<td>.000</td>
</tr>
<tr>
<td>Using E-Zwich is inconsistent with my cultural values, beliefs and norms</td>
<td>3.90</td>
<td>.785</td>
<td>51.998</td>
<td>.000</td>
</tr>
<tr>
<td>Fraud and other social vices make it unattractive to use E-Zwich cards</td>
<td>3.86</td>
<td>.790</td>
<td>58.853</td>
<td>.000</td>
</tr>
<tr>
<td>Lack of user protection laws make it difficult for me to use E-Zwich cards</td>
<td>3.72</td>
<td>.653</td>
<td>61.234</td>
<td>.000</td>
</tr>
</tbody>
</table>
The cumulative means and standard deviations of the factors which categorize the variables are also displayed in table III below. These explain the cumulative extent to which respondents agreed/disagreed with the factors.

**Table 4 – Means of the Factors**

<table>
<thead>
<tr>
<th>Factors</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Ease of use</td>
<td>200</td>
<td>2.9280</td>
<td>1.033</td>
</tr>
<tr>
<td>Perceived usefulness</td>
<td>200</td>
<td>3.9081</td>
<td>1.041</td>
</tr>
<tr>
<td>Security and privacy</td>
<td>200</td>
<td>1.6177</td>
<td>1.254</td>
</tr>
<tr>
<td>Availability/accessibility</td>
<td>200</td>
<td>3.5305</td>
<td>1.087</td>
</tr>
<tr>
<td>Socio-cultural factors</td>
<td>200</td>
<td>2.1488</td>
<td>.606</td>
</tr>
</tbody>
</table>

**Initial Considerations**

Prior to the extraction of factors, the Bartlett test of Sphericity (Approx: Chi-square=4923.383, df. 159, sig. 0.000) and the KMO measure of sampling adequacy (Value of .931) confirmed that there was significant correlation among the variables to warrant the application of exploratory factor analysis. The table below displays the results of the KMO test which was ran for the data obtained from the respondents. The KMO overall statistic of .962 for the variables used in the study gives an indication that there is a higher possibility that there exists an inter-correlation between the variables thereby making them sensible for analysis.

**Table 5 - KMO and Bartlett's Test**

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</th>
<th>.962</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett's Test of Sphericity</td>
<td></td>
</tr>
<tr>
<td>Approx. Chi-Square</td>
<td>4923.383</td>
</tr>
<tr>
<td>df</td>
<td>159</td>
</tr>
<tr>
<td>Sig.</td>
<td>.000</td>
</tr>
</tbody>
</table>

The variable loadings for exploratory factor analysis are considered “high” if they are all .8 or greater (Velicer and Fava, 1998) – but this is unlikely to occur in real data. Hair et al, (2010) posit that ideally variables should have loadings greater than 0.5 to be retained for analysis.
However more common magnitudes in the social sciences are low to moderate variable loadings of above .40. If an item has a loading of less than .40, it may either not be related to the other items, or may suggest an additional factor that should be explored. Scholars like Costello and Osborne (2005) assert that the researcher may consider why that item was included in the data and decide whether to drop it or add similar items for future research. However it is worthy to note that these numbers are essentially correlation coefficients, and therefore the magnitude of the loadings can be understood similarly.

Additionally, only factors whose Eigen values were equal or greater than 1 were selected (Malhotra and Birks, 2007). Moreover variables with loadings of at least 0.5 (Hair et al., 2010) and factors with a reliability threshold of 0.7 were selected for the analysis. In the initial exploration, all the twenty-five (25) variables were factor analyzed which subsequently yielded five factors as illustrated in the Principal Component factor loadings Table V. The four factors altogether explain approximately a satisfactory value of 75.63% of variance.
Table 6: Principal Component Factor Loadings

<table>
<thead>
<tr>
<th>Variables</th>
<th>Communality</th>
<th>Factor</th>
<th>Eigen Value</th>
<th>Percent of Variance</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have not received enough information about electronic banking from my bank</td>
<td>.766</td>
<td>1</td>
<td>3.052</td>
<td>22.252</td>
<td>22.252</td>
</tr>
<tr>
<td>I have not received enough information about the benefits of using electronic banking from my bank</td>
<td>.611</td>
<td>2</td>
<td>2.103</td>
<td>18.317</td>
<td>40.569</td>
</tr>
<tr>
<td>I find it difficult to do what I want to do with my bank using electronic banking</td>
<td>.857</td>
<td>3</td>
<td>1.467</td>
<td>16.334</td>
<td>56.903</td>
</tr>
<tr>
<td>Learning to use E-Zwich is difficult for me</td>
<td>.704</td>
<td>4</td>
<td>1.305</td>
<td>11.493</td>
<td>68.396</td>
</tr>
<tr>
<td>I cannot easily become skilled using E-Zwich</td>
<td>.744</td>
<td>5</td>
<td>7.236</td>
<td>7.236</td>
<td>75.632</td>
</tr>
<tr>
<td>Overall I find E-Zwich difficult to use</td>
<td>.693</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to use E-Zwich for transactions is difficult for me</td>
<td>.799</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I cannot use E-Zwich card to pay for goods and services when I go shopping</td>
<td>.600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hardly use E-Zwich card to pay utility bills (telephone, electricity, water)</td>
<td>.813</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My employer does not pay my salary through my E-Zwich card</td>
<td>.787</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not trust in the technology of E-Zwich services</td>
<td>.664</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not trust in the ability of E-Zwich to protect my private information</td>
<td>.865</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I generally have problems with the security of E-Zwich services</td>
<td>.821</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The security of E-Zwich services cannot be fully guaranteed</td>
<td>.611</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using E-Zwich is financially insecure</td>
<td>.857</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My bank’s E-Zwich services are not safe</td>
<td>.704</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I cannot access my E-Zwich account anytime I want to</td>
<td>.744</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich terminals are not available in all parts of Ghana</td>
<td>.693</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich terminals do not function when there is power failure</td>
<td>.799</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich point-of-sale terminals do not provide 24 hour services</td>
<td>.600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer not to use E-Zwich cards because it is not always accessible</td>
<td>.813</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer to do my transactions in cash rather than E-Zwich card</td>
<td>.787</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using E-Zwich is inconsistent with my cultural values, beliefs and norms</td>
<td>.664</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud and other social vices make it unattractive to use E-Zwich cards</td>
<td>.865</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of user protection laws make it difficult for me to use E-Zwich cards</td>
<td>.781</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey Data 2012
Varimax Rotated Principal component loadings

The twenty-five (25) variables (factor loadings) were later rotated using the Varimax rotation as the extraction method. The results revealed that the variables loaded perfectly onto the five factors. Six variables loaded highly on Factor 1 and were all related to ease of use. Furthermore, factor 2 also had four variables which were also related to perceived usefulness whilst factor 3 also had six variables pertaining to security and privacy. The fourth factor had 5 variables relating to accessibility/availability whilst the final factor also had four variables all relating to socio-cultural factors. Subsequently, the internal reliability of the four factors was analyzed through Cronbach’s alpha coefficient. Only factors that met the minimum value of 0.7 as recommended by Hair et al (2010) were accepted for further analysis. Also, in order to test the value of the variables that loaded onto the factors, item–to total correlation was set to the minimum recommended value of 0.3 as postulated by Malhotra and Birks (2007). The result is illustrated on Table IV. Consequently, the factors that relates to electronic banking adoption were found to be Perceived ease of use, perceived usefulness, security and privacy, accessibility/availability and socio-cultural factors.
<table>
<thead>
<tr>
<th>Factor and Items</th>
<th>No of items</th>
<th>Loadings</th>
<th>Item-total correlation</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: Ease of use</strong></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have not received enough information about electronic banking from my bank</td>
<td>.682</td>
<td>.493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have not received enough information about the benefits of using electronic banking from my bank</td>
<td>.557</td>
<td>.658</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it difficult to do what I want to do with my bank using electronic banking</td>
<td>.807</td>
<td>.674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to use E-Zwich is difficult for me</td>
<td>.785</td>
<td>.595</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I cannot easily become skillful using E-Zwich</td>
<td>.758</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall I find E-Zwich difficult to use</td>
<td>.698</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 2: Perceived usefulness</strong></td>
<td>4</td>
<td></td>
<td></td>
<td>.803</td>
</tr>
<tr>
<td>Learning to use E-Zwich for transactions is difficult for me</td>
<td>.652</td>
<td>.591</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I cannot use E-Zwich card to pay for goods and services when I go shopping</td>
<td>.693</td>
<td>.485</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hardly use E-Zwich card to pay utility bills (telephone, electricity, water)</td>
<td>.663</td>
<td>.587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My employer does not pay my salary through my E-Zwich card</td>
<td>.879</td>
<td>.498</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 3: Security and privacy</strong></td>
<td>6</td>
<td></td>
<td></td>
<td>.709</td>
</tr>
<tr>
<td>I do not trust in the technology of E-Zwich services</td>
<td>.563</td>
<td>.607</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not trust in the ability of E-Zwich to protect my private information</td>
<td>.692</td>
<td>.563</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I generally have problems with the security of E-Zwich services</td>
<td>.785</td>
<td>.560</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The security of E-Zwich services cannot be fully guaranteed</td>
<td>.698</td>
<td>.501</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using E-Zwich is financially insecure</td>
<td>.692</td>
<td>.691</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My bank’s E-Zwich services are not safe</td>
<td>.752</td>
<td>.583</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 4: Accessibility/availability</strong></td>
<td>5</td>
<td></td>
<td></td>
<td>.763</td>
</tr>
<tr>
<td>I cannot access my E-Zwich account anytime I want to</td>
<td>.692</td>
<td>.562</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich terminals are not available in all parts of Ghana</td>
<td>.704</td>
<td>.501</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich terminals do not function when there is power failure</td>
<td>.744</td>
<td>.643</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Zwich point-of-sale terminals do not provide 24 hour services</td>
<td>.693</td>
<td>.563</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer not to use E-Zwich cards because it is not always accessible</td>
<td>.799</td>
<td>.498</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 5: Socio-cultural factors</strong></td>
<td>4</td>
<td></td>
<td></td>
<td>.801</td>
</tr>
<tr>
<td>I prefer to do my transactions in cash rather than E-Zwich card</td>
<td>.733</td>
<td>.521</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using E-Zwich is inconsistent with my cultural values, beliefs and norms</td>
<td>.765</td>
<td>.601</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud and other social vices make it unattractive to use E-Zwich cards</td>
<td>.760</td>
<td>.637</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of user protection laws make it difficult for me to use E-Zwich cards</td>
<td>.698</td>
<td>.648</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey Data 2012*
The Dependent Variable

The variables measuring electronic banking adoption were also checked for their loadings and Cronbach’s alpha. Results showed that all the variables used had high loadings between .701 and .852 with a satisfactory Cronbach’s alpha value of .887, giving an indication that the variables used also represent a complete structure measuring electronic banking adoption. This means that the variables used to represent electronic banking adoption were fitting for the model.

Table 8 – Reliability of scales for dependent variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Loadings</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will not use E-Zwich cards for my financial transactions</td>
<td>.701</td>
<td>.887</td>
</tr>
<tr>
<td>I will not recommend E-Zwich cards to family and friends</td>
<td>.762</td>
<td></td>
</tr>
<tr>
<td>Overall, I do not want to patronize E-Zwich cards for electronic banking</td>
<td>.852</td>
<td></td>
</tr>
</tbody>
</table>

In order to test the relationship between the determinants of electronic banking and customer adoption of electronic banking services, a multiple regression analysis was used. Electronic banking adoption was used as the dependent variable whilst the independent variables were represented by ease of use, perceived usefulness, accessibility/availability, security and socio-cultural factors.
Table 9 – Multiple regression analysis for electronic banking adoption in Ghana

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>S.E</th>
<th>t</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.233</td>
<td>4.821</td>
<td>4.821</td>
<td>.000</td>
</tr>
<tr>
<td>Socio-cultural factors</td>
<td>.386</td>
<td>.065</td>
<td>3.382</td>
<td>.002</td>
</tr>
<tr>
<td>Accessibility/availability</td>
<td>.734</td>
<td>.089</td>
<td>7.775</td>
<td>.000</td>
</tr>
<tr>
<td>Perceived usefulness</td>
<td>.279</td>
<td>.052</td>
<td>2.305</td>
<td>.002</td>
</tr>
<tr>
<td>Security and privacy</td>
<td>.201</td>
<td>.032</td>
<td>2.118</td>
<td>.018</td>
</tr>
<tr>
<td>Ease of use</td>
<td>.310</td>
<td>.041</td>
<td>3.011</td>
<td>.003</td>
</tr>
<tr>
<td>S.E of estimate</td>
<td>.37513</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-Square</td>
<td>.717</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R-Square</td>
<td>.689</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistics</td>
<td>74.961</td>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td>N = 120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob. (F-stats.)</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3 Regression analysis

The regression analysis above indicate that there is a strong and significant relationship between determinants of electronic banking and electronic banking adoption by customers (F=74.961, P = 0.000 < 0.00). The R-Square value of 0.717 shows that the five factors altogether explain 71.7% of the variance in electronic banking adoption with an adjusted R-square value of 68.9%. In assessing the performance of the individual dimensions, accessibility/availability emerged as the highest dimension measuring the dependent variable (β =0.734, t=7.775, P = 0.000 < 0.00). This is followed by socio-cultural factors (β =0.386, t=3.382, P = 0.002 < 0.05) and ease of use associated with electronic banking (β =0.310, t=3.011, P = 0.003 < 0.05). The fourth factor was found to be perceived usefulness (β =0.279, t=2.305, P = 0.002 < 0.05). Finally, security and privacy dimension emerged as the last determinant with respect to electronic banking adoption (β =0.201, t=2.118, P = 0.018 < 0.05). This is to suggest that in the current study, sampled customers found availability/accessibility as the major stifling dimension affecting their electronic banking adoption with respect to the use of E-Zwich cards.
4.4 Discussion of results

The banking sector has in recent times proved itself to be a major contributor of Ghana’s economy. In recent times, the nature of competition among players within the industry has compelled most banks to adopt various technological platforms as a means of delivering effective and efficient quality of service to their customers. The primary objective of the study was to explore the challenges of electronic banking adoption among bank customers using E-Zwich as the focal product. The results from the above statistical presentations draws attention to the fact that accessibility/availability plays a major effect in the challenges of consumer adoption of electronic banking. Although previous literature (see Jahangir and Begum, 2008; Yuttapong et al. 2009) have suggested that easy accessibility of electronic devices by consumers facilitates their adoption of electronic banking, the antithesis of this factor could also pose a major barrier towards consumer adoption of the same electronic banking services. In the current study, accessibility problems faced by users of the E-Zwich cards in lieu of electronic banking included situations such as their inability to access E-Zwich account anytime they want to, together with other situations including E-Zwich terminals not available in all parts of Ghana and E-Zwich point-of-sale terminals not being able to provide 24 hour services. In view of these negativities, most users of E-Zwich cards prefer not to use E-Zwich cards because it is not always accessible on these grounds.

In addition, the study revealed that socio-cultural factors played a significant role in inhibiting consumers towards the patronage of E-Zwich cards as an electronic banking device. In discussing this factor which some scholars refer to as “compatibility”, this measured the degree to which the use of an innovation is considered by the individual as consistent with the user’s values, socio-cultural beliefs, and past and present experiences. It also refers to the fact that an innovation is more likely to be adopted when it is compatible
with an individual’s culture and value systems (Tat et al, 2008; Matilla et al, 2003). The current study found that within the socio-cultural make-up of bank customers, most of them would prefer to do transactions in cash rather than E-Zwich card because they found the E-Zwich is inconsistent with their cultural values, beliefs and norms. Also the general issue of fraud and other social vices make it unattractive to use E-Zwich cards adding to the fact that there is lack of user protection laws making it difficult for several customers to use E-Zwich cards.

Furthermore, consumers’ ability to become easily familiar with electronic banking platforms with a minimal degree of effort describes the ease of use (EOU) factor. Explaining and commenting on this, scholars (such as Pikkarainen et al., 2004; Jahangir and Begum, 2008; Hosein, 2010) have asserted that EOU is a major factor that affects acceptance of information system. Hence an application perceived to be easier to use than another is more likely to be accepted by users. Moon and Kim (2000) also revealed that ease of use and usefulness is believed to be fundamental in determining the acceptance and use of various corporate ITs. Later Shih (2004) also developed an extended model to predict consumer acceptance of electronic shopping based on the theory of reasoned action (TRA) and the TAM and found that, “perceived ease of use of trading online and perceived usefulness significantly determine individual attitudes toward e-shopping. In line with these previous findings, the current study reveals that lack of information about the E-Zwich product and its benefits makes it difficult for consumers to make transactions with their cards. They consider the entire system to be difficult to use.

The degree to which a person believes that a particular system would enhance their performance is what some scholars define as perceived usefulness. A person’s willingness to transact with a particular system is already considered as perceived usefulness. Embedded within this dimension is the point that electronic banking should be able to be used for
transactions such as paying for goods and services when shopping. As hinted by Liao and Cheung (2002), these payments may range from physical products to utility bills such as telephone, electricity and water. However the current study found that consumers of E-Zwich cards could barely utilize their cards for such useful transactions. For some employees whose salaries could have been paid through this system, it was found that this is not the norm as such systems seem to be a new and “now growing” phenomenon. According to Pikkarainen et al (2004), TAM posits that perceived usefulness is a significant factor affecting acceptance of an information system. Furthermore, Yuttapong et al. (2009) stated that, “perceived usefulness is an important factor in determining the adaptation of innovations. The perception of usefulness is formed in interaction with other individuals and a system”. According to Liao and Cheung (2002), consumer attitudes toward the usefulness of and willingness to use electronic retail banking are positive if they derive maximum benefits from adopting the particular platform. People adopt a particular technology presuming that using this technology and information system would enhance their performance.

Finally, with regards to security and privacy associated with electronic banking services, the study found this dimension as the least challenge hindering the adoption of electronic banking services with regards to the use of E-Zwich cards, although it is considered a significant factor. In consonance with some scholars (for instance Howcroft et al., 2002; Laukkenan et al., 2008; Woldie et al, 2008), security and privacy issues relating to electronic banking adoption cannot be underestimated when it comes to consumers’ interests. The feelings of trust for the electronic banking system coupled with the ability of the system to protect customers’ private information are major factors considered by most customers who subscribe to electronic banking services. As the least factor found in this study, it presupposes that a lot of consumers of electronic banking services seem to have some trust in the security
of the system. The entire technology of E-Zwich has the ability to protect customers’ private information and ultimately makes the system’s security and safety fully guaranteed. The biometric nature of this makes the security of this system very high as customers’ information is safe without any third party tempering with them.

This chapter presented the results of the research findings in line with the objectives as well as research questions as discussed in chapter one of the research thesis. The next chapter discusses the summary of findings as well as draw conclusion based on other research findings. Appropriate wordings and tables have been used to interpret the findings of the survey to give graphical clarification. The quantitative analysis of the findings support the applicability of the conceptual framework presented under chapter two of this study. Apparently, most of the findings were shown to have some consistencies with prior empirical studies in the area.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND MANAGERIAL IMPLICATIONS

5.0 Introduction

The previous chapter presented the empirical tests and results found in the study. This concluding chapter provides a summary of the research, conclusions, implications and direction for future study. The chapter also highlights the critical lessons drawn from the study and makes some recommendations for stakeholders of the study as well as the role the entire banking industry in plays in Ghana.

5.1 Summary of the findings

This study examined electronic banking adoption within the Ghanaian banking industry. More specifically, the study looks at the key challenges affecting electronic banking among bank customers using E-Zwich – the focal electronic bank product – as a case in point. Thus the study sought to find answers to the question “what are the key challenges affecting electronic banking adoption in Ghana?” An important premise that makes this study not only timely but very relevant is the nature of competition that is exhibited among key players within the banking industry. This competition has forced some players to adopt several technological platforms as a means of not only satisfying existing customers but also reaching prospective customers and advancing with the quest to become the best in their category.

With twenty-six banks currently operating in the country, it is pertinent to understand how the adoption of the various technological platforms combined with the brick-and-mortar facilitate the achievement of organizational objectives of delivering excellent customer service to bank clients. In order to find empirical answers to the questions posed and
objectives set out in the study, literature was reviewed in areas related to electronic commerce, electronic banking adoption and theoretical areas within the Technology acceptance model (TAM) which served as the principal framework for this study. The bulk of the respondents had more than SHS education and were employees of various organizations. A greater portion of the respondents were within the ages of 18 – 45 years emphasizing the point that technology adoption is high among the youth.

A survey approach was adopted in the methodology in which two hundred questionnaires were self-administered, retrieved and used for analysis. The content of the questionnaire were formulated based on the discussions in the reviewed literature (primarily on the TAM) and with respect to the objectives outlined in the study. Furthermore, using statistical package for social sciences (SPSS) version 20 for windows, the data obtained was analyzed using descriptive statistics, exploratory factor analysis and multiple regression analysis. This was premised on the fact that quantitative data analysis techniques enable numerical representation and manipulation of observations/data for the purpose of describing and explaining the phenomenon which reflects the observations/data. In all ninety (90) males and one hundred and ten (110) females took part in the study.

The study further revealed that all the dimensions in the TAM had strong and positive significant relationships with electronic banking adoption. More explicitly, the factors contributing to electronic banking adoption among customers within the Ghanaian banking sector in terms of priorities were found to be:

- Availability/accessibility
- Socio-cultural factors
- Ease of usage of electronic banking
- Perceived usefulness and
- Security and privacy
These were found to be the key dimensions affecting electronic banking adoption among electronic banking customers of banks in Ghana.

Accessibility was found to be the key determinant of electronic banking adoption among bank customers. Although the cost of acquiring electronic cards is relatively very low within the Ghanaian banking system, the average user seem to face the challenge of not being able to utilize these cards (especially the E-Zwich in particular) in every possible platform and place. Most of these customers agitate the impossibility to access their accounts anytime they want to. Worst of it all, the terminals for which the E-Zwich operates are not available in all the regions and districts in Ghana and as such getting access to funds on a 24-hour basis becomes a predicament instead of the intended positive edge.

Furthermore, our cultural orientation still makes Ghana a largely cash economy. Anecdotal evidence suggests that many Ghanaians would prefer handling physical cash instead of carrying a debit or credit card. To put it in the more concrete term, the average Ghanaian wants to ‘feel’ the cash. Coupled with low IT literacy levels, the general IT policy in the country seem to be loose with respect to advocacy on the use of electronic banking platforms. Others also relates to the apathy with which customers embrace technological platforms especially when customers have heard about some past unfortunate situations regarding the inconveniences posed by these electronic systems to other customers.

With regards to the ease of usage, customers’ belief that electronic banking will be free of effort culminates into their acceptance and adoption of electronic banking services. Hence if the application/system is perceived to be easier to use than another platform, customers of the bank are most likely ready to accept it. For Ghanaian bank customers, a system of banking devoid of associated complexities but offering simplicity in operation is most welcome. The
situation seems to be different in the case of the E-Zwich which appears a bit cumbersome for customers to go through.

Again, regarding Perceived usefulness, the study hints that the degree to which customers believe that using electronic banking will enhance their transactional activities was of prime concern. This perception is formed as the customers interact with the system with respect to its ability to lessen their efforts and enable customers save a lot of time for other productive endeavours. In this regard, customers’ expectations of accuracy, security, network speed, user-friendliness, user involvement and convenience are quality attributes underlying perceived usefulness of using E-Zwich for electronic banking purposes. However, this simple platform should also possess a highly secured feature which guarantees the safety of customers’ information and finances. Thus electronic banking as found from the study should be highly fortified with features impregnable by other intruders.

5.2 Managerial Implications
The twenty-first century is characterized by the use of information and communication technology which has revolutionized our working and living patterns. A new era of banking, termed “e-banking” or “Electronic banking” has emerged, where customers can perform their financial transactions electronically over platforms such as the internet through their personal computer or laptop as well as on portable electronic cards at a time convenient to them, without having to be restricted to regular branch operating hours. Furthermore, customer is expected to perform at least one of the following transactions electronically, namely viewing account balance and transaction histories, paying bills, transferring funds between accounts, ordering cheques, managing investments and stock trading. As such reasons for e-banking infrastructure investment include the promise of transaction cost reduction by limiting overheads associated with bank staff and bank branch costs and to provide better services to
customers who increasingly desire 24 hour banking. The E-Banking products make the customer to avoid queuing in overcrowded banking halls, avoid the stress of travelling long distances to access banking facilities therefore saving the customer transportation costs and other overheads while accessing banking facilities. To this end, management must recognize the indispensable role played by electronic banking in ensuring an effective and efficient way of meeting customer needs through the establishment and sustenance of electronic banking systems.

In line with this, the following issues have also been suggested for consideration by Management of Banks in Ghana especially in the area of electronic banking. The emergence of quality of electronic connection and information on electronic banking as the most critical predictors to consumers’ electronic banking adoption poses considerable concerns for stakeholders in the banking industry. Hence stakeholders within the industry should take cognizance of the following:

- Government—as a regulator in the banking sector—must strive to facilitate improvements related to electronic connectivity within the country. Whilst this concern has evolved in different sectors of the country’s growth at different times, enhancements in terms of speed will particularly encourage electronic banking adoption. Most importantly, having a strong policy that ensures the easy accessibility of electronic banking platforms across the length and breadth of the entire country will facilitate better adoption rate among the ever-growing and dynamic customers.

- Bank Marketing managers and members of technical teams should pay particular attention to the substance and channels via which messages regarding electronic banking usage is communicated.
Not only must creative messages which amplify benefits of electronic banking be developed; but also innovative media must be employed to transmit those messages to the target audience.

Typically electronic media platforms such as interactive ads, viral marketing, search engine optimization, and social networks in addition to content creation and multi-channel delivery, must be well-tailored to attract the youthful, vibrant, trendy, and ‘IT-savvy’ target group of ages 18 to 45.

Furthermore, in the interim, the technical team as well as marketing managers of the banks must ensure that elements such as navigation schemes, text editors and graphics are not overloaded, so as to match the extant moderate speed of electronic connectivity.

It is also noted that E-Banking is increasingly becoming the platform for which E-transactions will be conducted and customers as well as businesses will strive to acquire equipment to facilitate usage of the technology. Adequate protection and security is therefore needed to protect the system from virus attack and hackers as some of the viruses can virtually prevent the system from functioning thereby creating unexpected flaws in the system.

Another cultural fact is that almost all commercial banks in the country are operating on different banking software. These different banking software and ICT platforms make interbank transactions rather very cumbersome. To be able to effectively market e-banking services to customers whose needs albeit many are already bogged down by numerous factors, marketers have to position their product offerings such that they become congruent with the needs and aspirations of the consumers. All these factors have led to excessively long queues in the banking halls leading to regular complaints about poor customer service by the banks.
5.3 Implications for Theory and Further Research

The main subject matter for the current study was to explore electronic banking adoption among Ghanaian bank customers. The current study in that regard has enriched the literature on electronic banking with specific reference to the area of electronic card systems. This has been done by exploring previous research in the area from which the researcher developed his frame of reference – the conceptual framework. It is the contention of the researcher that the results may not be the same in other studies and may also differ based on sample sizes, and other factors. Thus the researcher puts forward some propositions:

One is to discuss the drivers, development challenges, and expectations of Electronic banking from the perspectives of general and IT managers in Ghanaian commercial banks. Also the study on adoption of Electronic banking in Ghana can be expanded to business or corporate customers. Comparisons can then be drawn between individual customers (personal Electronic banking) and corporate or business customers (online business banking) in terms of the factors influencing their adoption decision, the criteria for selecting an Electronic banking service and the types of products and services perceived to be useful and easy to use.

Last but not least, further research can expand the TAM model to include other variables such as customer loyalty to Electronic banking and perceived risk to test the applicability of these factors in similar or different disciplines such as mobile banking at various financial institutions in sub-Saharan Africa and other developing countries, to determine if comparable results are achieved.
5.4 Limitations and directions for future research

The current research has the following limitations:

- **Scope**
- **Time limitation**
- **Limited sample size**

There are currently over five hundred thousand (500000) E-Zwich users in Ghana and numerous electronic banking customers in all banks in Ghana. This made it impossible to consider the entire population and thus limited the scope to only a few bank customers with a limited sample size of 200 customers. Also for a study of this nature, much time is required to carry out. But in the case of the current study, the researcher had only a few months to conduct this work. Furthermore it was difficult getting a lot of respondents for the study due to the busy schedules and fragmentation of these customers.

Finally a possible limitation of this study concerns the fact that information about Electronic banking and its use in Ghana is still in its infancy stage and a number of innovative measures were being introduced at the time of the study. Therefore, information and literature available on the subject came mainly from other countries such as US, UK, Europe and Asian countries and such literature may not accurately describe the situation in Ghana with regards to cultural infrastructure differences. Despite these inadequacies, the generalizability of the results to the customers of banks in Ghana is deemed to be representative with a high confidence.

In conclusion, my study has made a significant contribution in examining factors that have impeded the swift adoption of the E-zwich payment system in Ghana. I also consider that the objectives set out in the study have been met, and sufficient foundation has been laid out for future studies in the adoption of E-banking as the system becomes prevalent in the banking sector.
REFERENCES


APPENDIX

QUESTIONNAIRE TO BE ANSWERED BY USERS OF E-ZWICH CARDS

Sir/Madam,

I am an MPhil student of the Methodist University College Ghana. I am currently undertaking a research project on the topic Adoption of Electronic Banking Products in Ghana-A Case of E-Zwich Card. Any information provided to help the course of this study will be treated as confidential and will be used for academic purposes only.

Biographic Data

1. Gender
   [ ] male  [ ] female

2. Age
   [ ] 18-25  [ ] 26-35  [ ] 36-45  [ ] 46-55
   [ ] 56 and above

3. Educational Background
   [ ] Primary  [ ] SHS/vocational  [ ] diploma  [ ] university graduate  [ ] post graduate

4. Employment
   [ ] self-employed  [ ] employee

5. How long have you been using the E-Zwich card?

<table>
<thead>
<tr>
<th>Years</th>
<th>Never used it</th>
<th>Under 1 year</th>
<th>1 - 2 years</th>
<th>3 years</th>
<th>4 years</th>
<th>Within 5 years</th>
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<tr>
<td>Tick</td>
<td>(✓)</td>
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Section B: E-Zwich Information

On a scale of 1-5, please indicate by ticking (✓) the level to which you agree or disagree with the following statements.

1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

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<thead>
<tr>
<th>No</th>
<th>Statement</th>
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<th>5</th>
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<tbody>
<tr>
<td>1</td>
<td>I have not received enough information about E-Zwich from my bank</td>
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<td>2</td>
<td>I have not received enough information about the benefits of using E-</td>
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<td>Zwich from my bank</td>
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<td>3</td>
<td>I find it difficult to do what I want to do with my bank using E-Zwich</td>
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<td>4</td>
<td>Learning to use E-Zwich is difficult for me</td>
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<td>5</td>
<td>I cannot easily become skillful at using E-Zwich</td>
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<td>6</td>
<td>Overall I find E-Zwich difficult to use</td>
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<tbody>
<tr>
<td>1</td>
<td>I cannot use E-Zwich card to pay for goods and services when I go</td>
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<td>shopping.</td>
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<td>2</td>
<td>I hardly use the E-Zwich card to pay my utility bills-telephone,</td>
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<td>electricity, water</td>
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<td>3</td>
<td>My employer does not pay my salary through my E-Zwich card</td>
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<td>4</td>
<td>I have not benefitted a lot from having the E-Zwich card</td>
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### SECURITY AND PRIVACY

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<tr>
<td>1</td>
<td>I do not trust in the technology of E-Zwich services</td>
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<td>2</td>
<td>I do not trust in the ability of E-Zwich to protect my private information</td>
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<td>3</td>
<td>I have problems with the security of E-Zwich</td>
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<td>4</td>
<td>The security of E-Zwich cannot be fully guaranteed</td>
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<td>5</td>
<td>Using E-Zwich is financially insecure</td>
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<tr>
<td>6</td>
<td>My bank’s E-Zwich is not safe</td>
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### AVAILABILITY/ACCESSIBILITY

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<tbody>
<tr>
<td>1</td>
<td>I cannot access my E-Zwich account any time I want to.</td>
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<td>2</td>
<td>E-Zwich terminals are not available in all regions in Ghana.</td>
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<td>3</td>
<td>E-Zwich terminals do not function when there is power failure.</td>
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<td>4</td>
<td>The Point of Sale terminals are not well maintained to provide 24 hour access.</td>
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<td>5</td>
<td>I prefer not to use the E-Zwich card because it is not always accessible</td>
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### SOCIO-CULTURAL ISSUES

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<tbody>
<tr>
<td>1</td>
<td>I prefer to do my transactions in cash rather than the E-Zwich card.</td>
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<td>2</td>
<td>Using E-Zwich is inconsistent with my cultural values, beliefs and norms</td>
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<tr>
<td>3</td>
<td>Fraud and other social vices make it unattractive to use E-Zwich cards</td>
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<td>4</td>
<td>Lack of user protection laws make it difficult for me to use E-Zwich cards</td>
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### E-ZWICH ADOPTION

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<tbody>
<tr>
<td>1</td>
<td>I will not use E-Zwich cards for my financial transactions</td>
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<td>2</td>
<td>I will not recommend E-Zwich cards to family and friends</td>
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<td>3</td>
<td>Overall, I do not want to patronize E-Zwich cards</td>
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<td>4</td>
<td>Lack of user protection laws make it difficult for me to use E-Zwich cards</td>
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What are your general perceptions of E-Zwich?

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