The Impact of Customer Demographic Variables on the Adoption and Use of Internet Banking in Developing Economies

AMEME BK

Postgraduate Student, Information Communication and Technology Management, Ghana Technology University College, Ghana Tel: +233244785866

Email: **amemebright@yahoo.com**

Abstract

Whilst most banks introduced internet banking services for the benefit of their customers, the adoption and use of the service had been very low. Strategies to increase the adoption and use of internet banking services eventually lead to the banks' goal of maximizing profit. It is therefore essential for banks to understand the factors that affect the adoption of internet banking services. The purpose of this paper is to determine demographic factors that influence the adoption of internet banking services in a bid to improving the situation. Due to the limitations in accessing the population of developing economies, a sample of one bank was selected from a developing nation, Ghana. Ghana was strategically chosen due to the high internet penetration rate. Out of 506,203 customers of the chosen bank, only 32,337 customers who subscribed to the internet banking services were used for data analysis. 31, 886 representing 98.61% of internet banking customers were resident in Ghana whilst the remaining 451 representing 1.39%

were non-residents, suggesting that the data for analysis represented the behavior of Ghanaians as citizens of developing economies, though the restriction to just one bank may limit the generalization of the findings. Chi-square techniques were employed in the study, using historical data of over eight years. The findings of the study revealed that demographic factors such as gender do not have significant effect on customers in adopting and using internet banking services. The study further concluded that there is a strong correlation between employment status, educational level and customer adoption and usage of internet banking services in Ghana. These findings will help banks to develop appropriate strategies in attracting and retaining their customers, through the design of specific marketing campaigns geared towards certain category of internet banking customers who are likely to adopt and use internet banking services.

Keywords: **Adoption; Internet banking; Demographic; Security**

INTRODUCTION

The term internet banking has been defined as banking services over the public network (the internet), through which customers can use different kinds of banking services ranging from the payment of bills to making investments [1]. Most developed countries today, have adopted internet banking services while the developing countries are beginning to embrace these services. In recent times, banks in Ghana have embraced information and communication technology in the delivery of their products and services. With the proliferation of internet, many of these banks are offering internet banking services to their customers, in a bid to provide convenience, and to remain competitive. In an attempt to improve the quality of service delivery and customer experience, some banks in Ghana have deployed internet banking services to their customers, to enable them perform basic financial transactions such as balance enquiry and funds transfer. According to Clemes, Gan, Du [2], "the advent of the internet has a significant impact on banking service that is traditionally offered by the branches to the customers. Internet banking can be defined as performing financial transactions over the internet through a bank's website".

As of March 2015, there were 28 universal banks operating in Ghana. According to World Bank Report (2014), "Ghana faces significant macroeconomic challenges in 2014, with large twin-deficits lingering, fueling government debt and inflation, a sharp depreciation of its currency, and a weaker pace of economic growth. Macroeconomic challenges continue to weigh on economic growth. Other inherent risks in the economy include the rising wage bill, high and rising interest rates, and the loss of net international reserves". Despite these

challenges, banks play significant role in the Ghanaian economy. The commercial banks continue to achieve impressive growth in terms of assets while providing the Ghanaian economy with the necessary financial services. "The advent of internet technology has significantly revolutionized the way business and service delivery is carried out by companies and businesses around the world today" [3]. According to Veeraraghavan Jagannathan [4], the internet is the nervous system of the 21st century and organizations, today, are harnessing the benefits of the internet's neural network; and, the banking sector is no exception. According to Clemes [2], "internet banking is one of the most rapidly diffused banking technologies and providing internet banking is a vital strategy for banks and financial institutions to keep customers engaged and remain competitive".

Internet banking has become a useful channel of banking adopted by most banks to serve their valuable customers. Contrary to the assertion by Njuguna, Ritho, Olweny, and Wanderi [5] that "the adoption of internet banking as a platform for carrying out banking services has continued to rise globally", most banks particularly, in developing economies such as Ghana have recorded very low internet banking users over the years. Without the availability of internet access, customers will not be able to make use of the internet banking services offered by banks. Ghana had full internet connectivity since 1993 and according to the NCA (2014), "with a penetration rate of 59.02%, mobile data figures in Ghana recorded an increase from 15,710,652 subscribers in November 2014 to 15,805,925 at the end of December, 2014". Despite this impressive and rapid growth of internet usage with the significant increase in the use of smart phones in Ghana, the number of internet banking users remains relatively low as compared to developed countries. This is in contrast to a study by Maria [6], indicating that "an increase in the use of electronic banking services is due to increase internet penetration among the population".The difference in these assertions is likely due to the fact that other factors aside the internet penetration rate lead to internet banking adoption. Some attractive features of internet banking service is the ability of customers to access their bank accounts from anywhere, at any time and to perform such transactions as balance enquiry, cheque book request, statement of accounts request and electronic funds transfer. Despite these convenient features, most customers prefer other channels of banking in Ghana, particularly the brick and mortar method of electronic funds transfer.

The issue of problem and incident handling in internet banking therefore becomes very critical to banks as the physical interaction encountered in the brick and mortar services becomes absent in internet banking. Banks therefore need to ensure that these innovative technological services are supported by measures that maintain high and total customer experience. Customers need to be supported as soon as they encounter challenges in using online services. This is supported by Redlinghuis and Rensleigh [7] stating that "banks do not fully understand the way customers experience banking websites, as customers

generally do not have a platform on which to voice their frustrations with online services". It is also essential to ensure that these online services are much secured in order for customers to develop confidence in these technological based systems. "As customers increasingly rely on the internet for business, personal finance and investment, internet fraud becomes a greater threat" [8].

Customer education is also critical to the adoption of internet banking as some customers need to be aware of the benefits of these services and how to use them. Although internet banking provides a fast and convenient way to perform banking transactions, customers are still reluctant to adopt and make use of these online services. Contrary to the assertion by [2] that "online banking is a disruptive innovation in banking industry", some of the bank customers in developing countries are hesitant to adopt this innovation and are still keeping to the old paradigm of traditional branch banking. According to Kazi and Mannan [9], "in order to grow consumer internet banking adoption, banks must make key improvements that address consumer concerns". Banks also need to understand and target customer groups and categories differently, in order to obtain significant efficiencies in their operations [10]. This is supported by Munusamy, De Run, Chelliah, and Annamalah [11], stating that "the relative success of internet banking can be gauged by identifying the current and anticipated users of internet". It is therefore essential to investigate this phenomenon and to make recommendations that benefit both the banks and the customers.

Objectives of the Study

This main objective of this study is to examine the adoption and usage of internet banking in developing economies, with special emphasis on Ghana. This can be achieved with the following specific research objectives
a. To examine the extent to which bank customers have adopted internet banking
b. To find out if gender influence the adoption of internet banking
c. To identify the effect of internet banking on queues in brick and mortar branch banking
d. To measure the level of association between age, level of education and occupation on the adoption of internet banking

Research questions

In order to accomplish the above objectives, the following research questions will be asked;
a. To what extent do customers of the bank use internet banking?
b. To what extent does gender influence the adoption of internet service?
c. What effect does internet banking adoption have on queues in brick and mortar branch banking?
d. What level of relationship exists between age, level of education and

occupation on the adoption of internet banking?

Justification of the research

The usual long queues that characterized the traditional branch banking in most banks have necessitated the need to conduct this study. This is because the higher the internet banking adoption rates with other alternate channels of banking, the lesser the queues in the traditional bank branches. Furthermore, it is essential for the banks to understand the demographic factors that influence internet banking adoption to if they are to stay competitive and relevant. It is also imperative for customers to understand the benefits offered by internet banking services.

METHOD

The research seeks to identify the demographic trends of internet banking customers and to determine the relationship between customer demographics and the rate of internet banking adoption. In other words, the study seeks to measure the impact of demographic factors on adoption of internet banking. The research is cross-sectional, studying internet banking customers of a bank at one point in time. A quantitative research approach was adopted for this study. The research attempts to determine the extent of relationship between various variables of interest, by means of cross-tabulations and conducting chisquare tests. These variables of interest include demographics such as age, gender and marital and employment status. Past research suggests that there is generally higher likelihood for consumers to adopt internet banking if they are educated. In addition, past research also suggests that there is significant association between gender and age with adoption of internet banking [2]. To conduct the tests of hypothesis, secondary data was collected from one of the licensed commercial banks in Ghana. This bank opted for anonymity. For this study, the adopters were customers who subscribed to the internet banking services in the participating bank. An official request was made to the bank's manager in charge of business applications for the data on internet banking customers. The request was clearly made to ensure the data to be provided answers the research problem. Upon signing a non-disclosure agreement, the data was extracted directly from the core banking system, by the data analytics officers.

The population for this study is banking customers in developing economies. Due to the obvious limitations in accessing the population, a sample of one bank was selected from a developing economy, i.e. Ghana. Ghana was strategically chosen due to the high internet penetration rate. The sample for this study is the internet banking customers from a licensed commercial bank in Ghana. The reasons of using this bank are twofold. First, it was easier and cheaper to obtain the raw secondary data for further analysis. Second, this bank for the past three years had won awards at the Ghana banking awards for being one of the best

banks offering information and communication technology products and services. The data collected was coded and entered into the computer and subsequently subjected to statistical analysis using a statistical software package (Stata) and Microsoft Excel. The analysis conducted includes generally summarizing the data, tabulation and conducting tests of hypothesis. These actions were necessary to make it easier to describe the data and to be able to draw meaningful conclusions.

Secondary data from sources such as banks may have issues with bias. For example, the bank might want to show high internet banking service subscription levels and thereby ensuring the research doesn't find low subscription levels. To avoid these biases and to ensure consistency, the request for the data was made to two separate data analytics officials. In other words, the data was collected from multiple sources. Data from these two separate officials of the bank were compared to ensure that they were the same. The data therefore represented the bank's actual subscription of internet banking services. With this consistent and reliable data collection method, the conclusions can be regarded as valid.

LITERATURE REVIEW

The advent of internet banking has brought great change in the operations of banks and the services and products rendered to their customers. "Internet technology has brought about a paradigm shift in banking operations to the extent that banks embrace internet technology to enhance effective and extensive delivery of wide range of value added products and services"[12]. Chavoshi, Ramezanzadeh, Ahmadvand, NazariAmaleh and Rezaei [13] posited that "the customer is the only source of future growth". Due to the high costs involved in increasing the customer base, one of the main goals of banks and other financial services providers, which operate through the internet, should be to develop customer loyalty in order to improve their results" [14]. This was supported by Ahangar [15] indicating that "the primary advantage of internet banking is to save time and cost". Whilst Al- Mudimigh [16] posited that the "main purpose behind the launching of online banking services is to provide the customers with an alternative, more responsive and with less expensive options", Couto, Tiago, and Tiago [17] stated that the two main reasons why banks engage in internet banking activities include lowering of operational costs and improving consumer banking services in order to retain customers.

Banks are currently introducing a number of alternative distribution channels to effectively and efficiently serve customers. These channels are mainly introduced to reduce customer waiting time, to reduce cost of operation and more importantly to enhance customer satisfaction. One such channel is the introduction of internet banking. Internet banking has made it easier and more convenient for customers to perform some basic transactions without necessarily having to be physically present in the traditional branches. What makes these

services more attractive is the fact that these transactions can be performed from anywhere in the world and at any time of the day. This was supported by Sannes [18] indicating that "An online replica of the traditional full-service bank is best viewed as a value network since the internet does not alter any of the basic characteristics of this value configuration". "With the help of the internet, banking is no longer bound to time or geography" [19]. Some studies in developed economies revealed that internet banking users are satisfied with internet banking reliability, usability and quality. Furthermore such customers showed positive attitude regarding internet banking and were willing to recommend it to others [14]. In addition, the results of a study by Redlinghuis and Rensleigh [7] in South Africa, having a well-developed and established banking system comparable with those in many developed countries such as United State of America indicated that "internet banking is more convenient than traditional forms of banking". Contrary to the situation in developed economies, many customers in developing economies are still hesitant to sign on to these services. The technological adoption in banking operations in developing economies is a few decades behind that of developed countries" [15]. This was supported by Sannes [18] stating that "the growth in the number of personal computers and internet users has not been followed by a corresponding rapid adoption of banking services on the internet". This has raised a concern to many researchers to investigate the adoption and use of these services. Redlinghuis and Rensleigh, [7] stated that "data security and theft are still major headaches for most financial institutions".

Most studies identified security as a critical concern of most customers not adopting the internet banking services. According to Peotta, Holtz, David, Deus, and Timoteo de Sousa [20], most of the attacks directed at online banking systems target the user, focusing on obtaining authentication and identification information through the use of social engineering and compromising the user's internet banking access device in order to install malware which automatically performs banking transactions, apart from obtaining authentication data. This fact indicates that internet banking systems should provide security mechanisms, mitigating the risk of user related information leaks leading to fraud. Nasri [19] also posited that risk and security concerns are important factors influencing the adoption of internet banking. Despite these security concerns, some developed countries, however continue to register high internet banking customers. "In Australia, internet banking growth has continued despite initial consumer security fears" [21]. According to Nasri, [19] with the rapid progress internet based services; there has been increased interest in electronic banking services in Tunisia. This could be attributed to the fact that the benefits presented by these online services far outweigh the perceived security threats to customers. Although internet banking threats are ever present, technology offers its users an extensive range of benefit and opportunities. One of the greatest benefits that internet banking offers its consumers is that of convenience.

Banks need to ensure that customers are aware and educated on new innovative channels just as they educate and advertise their products and other traditional services. Awareness of these products and services were identified by some researchers as a factor for adopting electronic banking services. The adoption of self-service banking relies on effective information exchange between the bank and its customers [18]. In other words, education is a critical factor with regard to internet banking. Education should be a driving force from both parties, namely financial institutions as well as the individuals that make use of internet banking services and products [7]. Saeidipour [21] also argued that customers are unable to adopt and use internet banking as a result of unawareness of the availability of these services and the benefits they offer. The researchers also posited that banks need different strategies in targeting different group of customers in terms of gender, age and education in order to promote and encourage internet banking adoption.

The assertion by Ofori-Dwumfuo and Dankwah [22] that "one of the greatest challenges to the adoption of internet banking is the cultural reluctance to interface with business electronically", is supported by Azad, Abbaszadeh, Rikhtegar, and Asgari [23] that "building required culture is considered as the most important factor influencing internet banking for developing exports". In this study, electronic banking is considered as a good method for buying and selling goods from other countries, which is a good method for developing exports.

Beyond this cultural reluctance by customers to interface business electronically in the banking industry, banks need to focus on the customer demography trends in order to make the best out of these culturally reluctant customers. Whilst some researchers considered demographic variables to be important factors that influence the adoption of internet banking, other researchers differ on this assertion. Contrary to the assertion by Izogo and Nnaemeka [24] that "demographic factors such as gender, religion and income do not have significant effect on customers' adoption and usage of e-banking", Safeena, Date, and Kammani [25] posited that "research on consumer attitude and adoption of internet banking showed there are several factors predetermining the consumer's attitude towards online banking such as person's demography". According to Mattila, Karjaluoto, and Pento [26], mature customers with age more than 65 years are late adopters of internet banking services. The researchers further observed that married mature customers are more likely to use internet banking than unmarried or widowed ones. They also found that the level of education increases the likelihood of using internet banking. According to them, customer profession correlates positively with the mature customers' use of internet banking. This was supported by Mutengezanwa and Mauchi [27] indicating an existence of a relationship between internet banking adoption and educational level, occupation, age and income. In contrast to these assertions, some researchers argued that there are no significant differences in internet usage based on age or educational level. Whilst most researches suggested that

younger individuals are more inclined to accept an innovative information technology, other research findings do not support these suppositions. Li and Lai [28] found that age does not really matter in the acceptance and use of internet banking. Contrary to the assertion by some researchers that higher level of education increases internet banking adoption, Couto [17] found that customers with higher education are less likely to adopt internet banking as a cautious behaviour towards internet banking. Whilst [29] stated that males are more inclined to use electronic banking products and services, Hennigs, Wiedmann, Seegebarth, Pankalla, and Kassubek [30] found that females are more familiar with online banking in terms of convenience. In contrast to these assertions, gender did not correlate with internet banking adoption, meaning males and females perceived characteristics of internet banking in a similar way [5].

Theoretical model

Organizations invest in technological innovations for various reasons. Banks may invest in the deployment of internet banking services to improve service quality and reduce cost. However, these efforts to offer innovative technological financial services to their clients will not be successful if individuals prefer face-to-face interactions to virtual interactions. While there is a lot of literature on the adoption of internet banking services in both developed and developing economies, researchers widely used primary data sources to investigate customers' beliefs and attitudes and how they influence the usage or adoption of internet banking. These and other studies in social sciences and information technology utilized various models such as the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Diffusion of Innovations Theory (DOI) and the Social Cognitive Theory (SCT). In as much as it is important for banks to understand the beliefs and attitudes of customers towards the adoption of internet banking services, it is worth noting that demographics play a complementary role in helping to identify specific customer groups that may have to be targeted with the sales of online products and services.

Technology acceptance model (TAM)

According to Al-Qeisi and Al-Abdallah [31], Davis developed the Technology Acceptance Model (TAM) in 1986 to describe an individuals' acceptance of information technology. The goal of TAM is to provide an explanation of the determinants of computer acceptance among users. This model is limited by the fact that the measurement of individual acceptance is dependent of feelings of respondents. As a result, several studies expanded the base constructs to include additional determinants. The model is depicted in Figure 1 below.

Amin [32] employed the technology acceptance model (TAM) as the base model to investigate the factors influencing the online banking acceptance in Malaysia.

The model used perceived credibility, perceived enjoyment, and social norm, in addition to perceived usefulness and perceived ease of use. The results suggested that perceived usefulness, perceived ease of use, perceived credibility and social norm are statistically significant while perceived enjoyment are statistically insignificant. The study concluded that the base TAM constructs are good in predicting online banking acceptance and that the proposed measures, namely, perceived credibility and social norm were found to be significant determinants of the intention to use an online banking system. Radomir and Nistor [33] in their study to apply technology acceptance model to internet banking services extended the TAM, by the inclusion of three additional theoretically justified belief-related constructs, i.e. perceived security/privacy, perceived benefit and image. The study concluded that perceived usefulness is significantly influenced by perceived benefit and image and hence accessibility and time saving are essential benefits that can be derived from the adoption of internet banking services. This was concurred by Nikghadam Hojjati and Reza Rabi [34] indicating that customers' convenience and benefits are associated with internet banking adoption. The study therefore suggested that banks should inform customers about the benefits offered by internet banking, especially the fact that online transactions can be performed from anywhere and at any time.
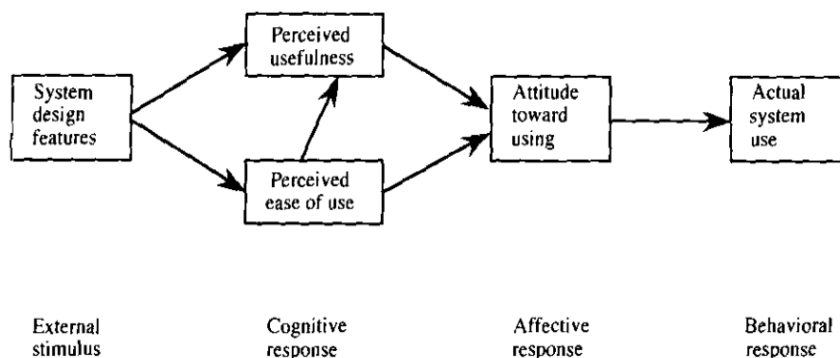

Figure 1: The Technology Acceptance Model [57].

Theory of reasoned action (TRA)

The Theory of Reasoned Action is based on the proposition that an individual's behaviour is determined by the individual's attitude toward the behaviour and subjective norm. According to Ravi, Carr, and Sagar [35] an attitude is a complex mental state involving beliefs, feelings, values and dispositions to act in certain ways towards accepting something. They also defined subjective norm as "the degree, to which people think that others who are important to them think they should perform the behavior". The theory postulates that individuals' actions are based on their perception of what others think they should do, and their intention to adopt a behaviour is potentially influenced by people close to them. The

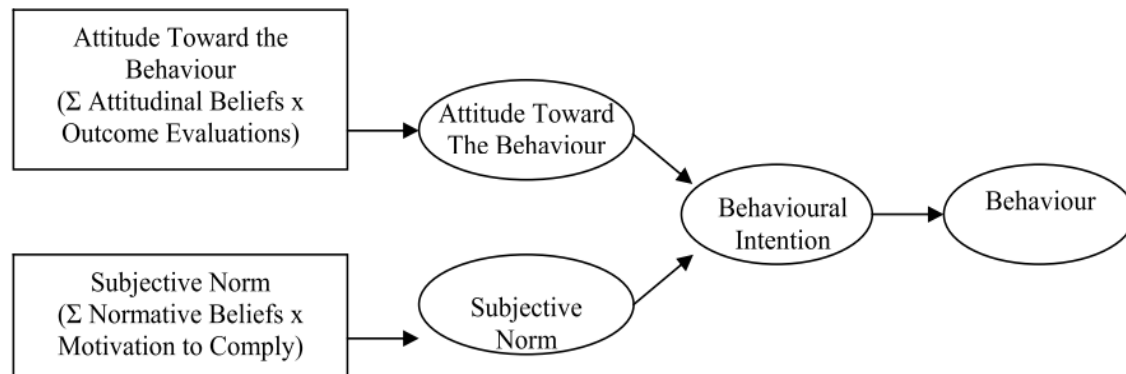relationship between the various constructs is shown in Figure 2 below.

Figure 2: Theory of Reasoned Action [56].

A study by Al-Muala, Al-Majali, and Al Ziadat [36] to examine factors that influence an individual's intention to adopt internet banking service based on the Theory of Reasoned Action (TRA) revealed a significant relationship between customers attitude, subjective norm and their intention to adopt internet banking services. The theory has been widely used in the prediction of individuals' behavioural intentions. Another study conducted by Malek [37] concluded that "TRA predicts behavioural intention to use the internet banking quite well". The Theory of Reasoned Action was utilized in 2009 by Lada, Harvey Tanakinjal, and Amin [38] in predicting the intention to choose a product among Malaysian consumers. The study concluded that attitude and subjective norm are good predictors of intention, with subjective norm being the more influential. A possible explanation for the strong presence of the subjective norm effect could be found in the societal characteristics of Malaysians. The Theory works well when applied to behaviours that are under an individual's will or volitional control. Individuals may not perform behaviours due to intervening environmental conditions if the behaviours are not fully under volitional control. The Theory of Planned Behaviour (TPB) was therefore developed to predict behaviours in which individuals have incomplete volitional control.

The Theory of planned behaviour (TPB)

The major difference between the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) is the inclusion of another determinant of behavioural intention known as perceived behavioural control. Perceived Behavioural control is determined by two factors. These are Control Beliefs and Perceived Power. The theory is diagrammatically shown in Figure 3 below.

The Theory of Planned Behaviour is one of the best sociopsychological theories used to explain human behaviour. A few researchers from various fields have

used this theory for prediction. Studies by Randall and Gibson [39] have employed the Theory of Planned Behaviour to the explanation of ethical decision making. The results revealed that attitude explained a large portion of the variance of intention while subjective norm explained a moderate amount of the variance. This theory is limited with the fact that perceived behavioural control may not necessarily predict actual behavioural control. A study conducted by Goh [40] in predicting parental intentions behind public school selection revealed that only attitudes and subjective norms significantly predicted behavioural intentions. On the other hand, Holdershaw, Gendall, and Wright [41] in a study using the Theory of Planned Behaviour concluded that the theory's belief-based measures are not useful for predicting blood donation behaviour.
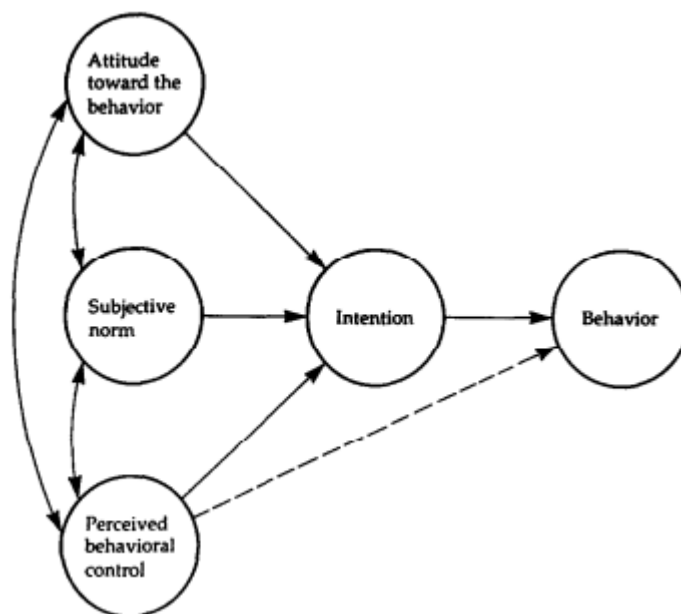

Figure 3: The Theory of Planned Behaviour (TPB) [58].

Diffusion of innovation theory (DIT)

Diffusion of Innovation Theory postulated by Everett Rogers in 1962 is still a valuable framework for research on information technologies so far as the scope of the research is adoption diffusion and account is taken of the reorientations concerning the shape of diffusion patterns, segment profiles and adoption determinants. The central assumption of the theory is that the penetration or diffusion of technology innovations follows a normal bell-shaped distribution pattern [42]. According to Abukhzam and Lee [43], this theory is one of the most widely recognized technology adoption frameworks used by most researchers to explain the process of innovation diffusion and adoption. The Diffusion of Innovation Theory (DIT) could be considered as one of the most popular theories that have attempted to explore factors affecting individuals in the adoption of an innovation or a new technology. This theory seeks to explain how, why, and at

what rate new ideas and technology spread through cultures [44]. The theory helps to provide decision support for managers in the development of marketing and advertising strategies for new products and services. Rogers [45] defines innovation as idea, practice, or object that is perceived as new by an individual or other unit of adoption. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. Diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers proposed a total of five categories of adopters in order to standardize the usage of adopter categories in diffusion research. He proposed that adopters of any new innovation or idea can be categorized as innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%) [46]. According to these authors, the categories, based on standard deviations from the mean of the normal curve, provide a common language for innovation researchers. When graphed, the rate of adoption formed what came to characterize the Diffusion of Innovations model, an "S-shaped curve" in Figure 4 below.
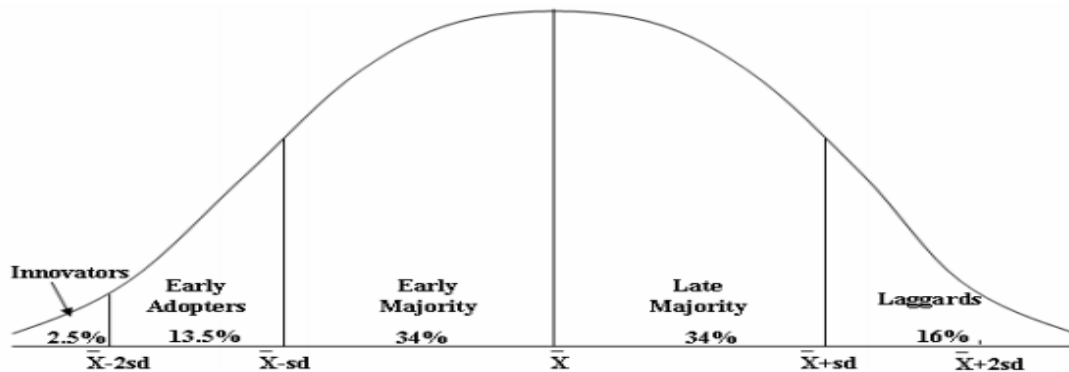
Figure 4: Diffusion of Innovation model [47].

The graph shows a cumulative percentage of adopters over time: slow at the start, more rapid as adoption increases, and then leveling off until only a small percentage of laggards have not adopted. According to Sahin [47], "only adopters of successful innovations generate this curve over time". Castrillon and Cerradelo [46] posited that diffusion theory also assumes typical demographic and psychographic profiles for each of the adopter segments proposed by Rogers. Innovators, for example, are typically males and are younger whilst laggards, on the contrary, are assumed to be older, with lower level of education as in Table1 below.

Some researchers showed that those who adopt an innovation early have different characteristics than people who adopt an innovation later. Lam and Shankar [48], in a study conducted in Singapore, found that differences exist because early and late adopters use different decisionmaking strategies and

these have important implications for managerial decisions on communication and loyalty development strategies. This study therefore focuses on demographic profiles of customers to understand the characteristics of the target population that supports adoption of internet banking innovation at a particular time.

Table 1: Profile and determinant assumptions in diffusion theory [42].

Socio-demographic profiles			Adoption determinants	
Profile Variable	**Earlier adopters profile**	**Later adopters profile**	**Perceived innovation feature**	**Assumption**
Gender	More male	More female	Relative advantage	The more an innovation is perceived as better than its alternatives or the idea it supersedes, the more innovative
Age	Younger	Older	Complexity	The more an innovation is perceived as relatively difficult to understand and use, the less innovative
Income	Higher income	Lower income	Trialability	The more there can be experimented with an innovation on a limited scale, the more innovative
Education	Higher education	Lower education	Compatibility	The more one perceives an innovation as consistent with the existing

				values, the more innovative
Household size	Two-income households	One-income households	Observability	The more the results of the (use of an) innovation are perceived to be visible to others, the more innovative
Job (status)	More job with higher status & prestige	More job with		

This theory has been applied in diverse fields of study. Fahey and Burbridge [49] in a study employed the Diffusion of Innovations models in hospital knowledge management system to address the development and implication of a staffing productivity system designed to anticipate future hospital staffing needs. Alkemade and Castaldi [50] also utilized the Diffusion of Innovation theory to investigate the spread of information in a social network consisting of agents that are exposed to the introduction of a new product. The study suggested that firms need to learn a directed-advertising strategy that takes into account both the topology of the social consumer network and the characteristics of the consumer. A research by Flight and Palmer [51] applies Diffusion of Innovation theory to intra-organisational innovation adoption using U.S. governmental agencies as a subject pool. The researchers claimed that agencies that feature decentralised leadership control favour social network effects or word of mouth channels of communication whereas agencies that have a direct, top-down, chain of leadership authority rely more on leader initiated communications leading to more rapid innovation adoption.

Chigona and Licker [52] on the other hand used the Diffusion of Innovation theory to explain the adoption of communal computing facilities operating among the urban poor in Cape Town, South Africa. Their study considered all attributes of innovation, channels of communication, the social system in which the innovation is diffusing and the consequences of innovation. They concluded that diffusion of innovation explained most of the adoption patterns of communal computing facilities. They further stated that an innovation does not necessarily have to be new, it only needs to be perceived as new by the would-be adopters.

Social cognitive theory (SCT)

Social cognitive theory is the view that people learn by watching others. This theory is grounded by some basic assumptions. One of such assumptions is that people can learn by observing others. Another assumption is that people set goals for themselves and directs their behaviours accordingly. Social cognitive theory is applied today in different areas such as education, marketing and public health. Netz and Raviv [53] employed the Social Cognitive Theory to examine the age, gender, level of education and level of activity in relation to self-efficacy, outcome expectations and self-evaluated satisfaction or dissatisfaction. The results revealed that physical activity and level of education were positively correlated with self-efficacy, and men were more efficacious than women. The implications are that interventions aimed at increasing participation in physical activity should take into consideration differences in incentives. Another study by O'Brien and Heppner [54] applies the social cognitive career theory to training career counselors. The authors proposed extending the theory to understand and influence trainee's interest, engagement and performance in career counseling. Another study by Galperin, Bennett and Aquino [55] based on social cognitive theory proposed a model that seeks to explain why high status organizational members engage in unethical behaviour. Their study argued that status differentiation in organisations creates social isolation which initiates activation of high status group identity and a deactivation of moral identity.

DISCUSSION

The data used is a secondary data on internet banking users obtained from a commercial bank in Ghana. The data is a historical data of over 8 years and has several numerical and categorical variables that can be used to answer the research questions.

The categorical variables include customer prefix, customer type, gender, date of birth, date customer signed on to the internet banking service, active flag indicating whether or not the customer is still active on the internet banking service, residential status indicating whether customer is resident in Ghana or outside the country, customer designation, employment status and educational level. Numerical variables that can be derived from the data collected include age of customers, internet banking duration indicating the number of years customers have been using internet banking and the number of years taken for customer to sign-on to internet banking since customer account was opened.

Out of a total of 506,203 bank customers, only 32,337 representing 6.4% of total customers subscribed to the internet banking services of the bank. Out of the 32,337 customers on internet services, 31,886 representing 98.61% are resident in Ghana whilst the remaining 451 representing 1.39% are non-residents, suggesting that the data represents the behavior of Ghanaians as citizens of developing economies. The relatively low figure of 6.4% shows that most

customers were not attracted to internet banking services of the bank. This could be attributed to varying reasons such as trust and security, ease of use and the stability of the platform as well as the availability and access to the internet.

This study focuses on how demographic factors relates to internet banking adoption rate. Various researchers argued that various demographic factors can impact the internet banking rates.

The scatter plot in Figure 5 shows the relationship between the years taken to adopt internet banking service and its usage. This revealed that the longer it takes for customers to adopt the internet banking service, the less it is used by the customers. Also, the shorter the time it takes to adopt the service, the more it is used by the customers. This can be presented as a model in Figure 6 below.
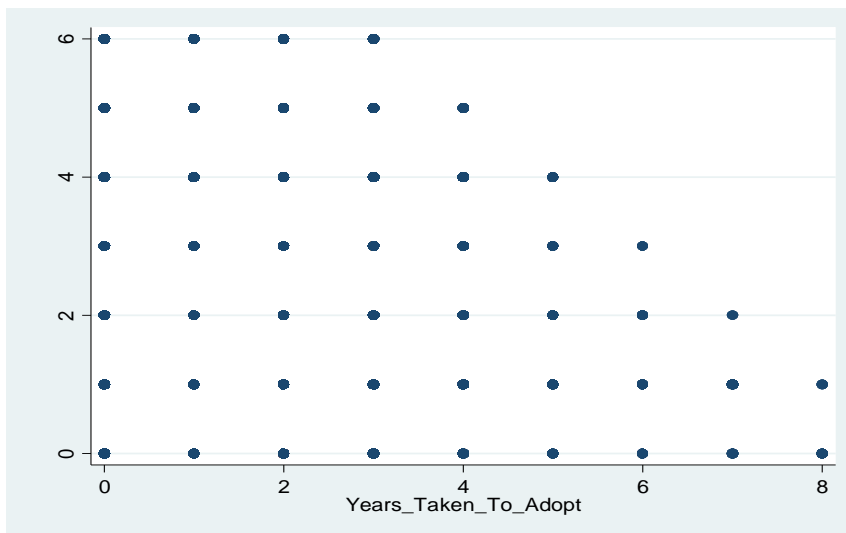

Figure 5: Relationship between internet banking service adoption and its usage.

Table 2 shows basic statistics of the variable that describes how long a customer has been using internet banking. This reveals an average of 3 years usage of internet banking services. This suggests that customer usage of internet banking is low, considering the fact that the bank has deployed these services about 8 years ago. The data shows that majority of the customers subscribed to internet banking services after several years of banking with their bank. This has shown that most customers hesitated to adopt internet banking. This result could be attributed to an unsecured and untrustworthy internet banking platform.

Table 3 also shows a summarized statistics on the data variable that describes the number of years taken by customers to subscribe to the internet banking service, ever since they first opened account with the bank. The mean of 0.545691 reveals that on average, customers take 6 months after opening accounts with the bank, to subscribe to internet banking services. This delay also

suggests that customers do not immediately get attracted to the bank's internet banking services. The data shows 27,509 individual customers representing 85.07% of internet banking users, suggesting that individual customers are more attracted to internet banking services than corporate clients. This suggests that the corporate clients prefer the brick and mortar branches and other alternate channels of banking to internet banking. This behaviour of corporate clients could be attributed to the fact that the internet banking platform does not offer corporate services such as treasury operations and trade services which are core to the functions of most corporate organizations.

Table 2: Years of using internet banking services.

Variable	Obs	Mean	Std. Dev.	Min	Max
Internet_Banking_Duration	32337	3.162755	1.374181	0	6

Table 3: Years taken to adopt internet banking services.

Variable	Obs	Mean	Std. Dev.	Min	Max
Years_Taken_To_Adopt	32337	0.545691	1.106701	0	8

Table 4: Gender distribution of internet banking customers.

Gender	Frequency	Percentage
Males	25,084	77.57
Females	7,253	22.43
Totals	32,337	100

The data presented in Table 4 reveals that males are the most dominant users of internet banking. This result is in line with what [29] found in their study and this contradicts the findings of [5] that gender did not correlate with internet banking adoption. The disparity in results could be due cultural differences or to the fact that this study is limited only to internet banking users of a commercial bank in Ghana whiles other studies considered many banks and various electronic channels of banking such as ATM, POS and mobile banking. The result of the study could also be biased because the sample does not have equal number of males and females.
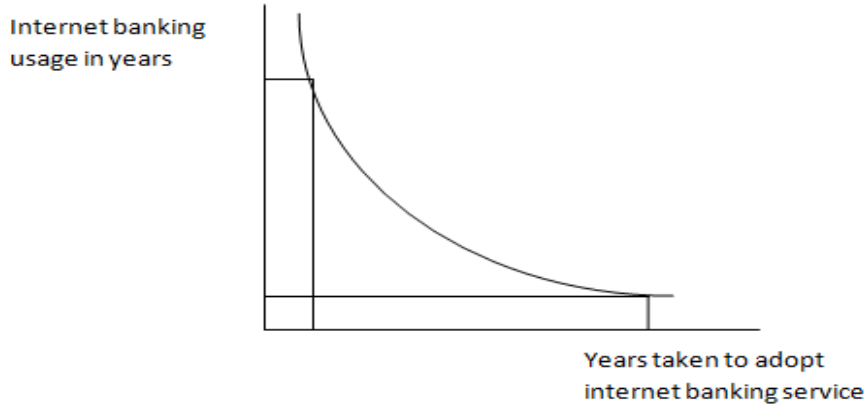
Figure 6: Internet banking usage and service adoption model.

Table 5 shows the relationship between internet banking adoption rate and gender. Out of a total of 32,337 internet banking users, 31,284 adopted the service within 3 years, 941 users adopted the service within 4 to 6 years whilst 112 users adopted the service in 7 years and beyond. Out of the 31,284 internet banking users who adopted the service within 3 years, 24,275 were males representing 75% whilst 7,009 representing 25% were females. Similar trend of more males adopting internet banking services exists with the adoption rate range of 4 to 6 years and 7 years and more.
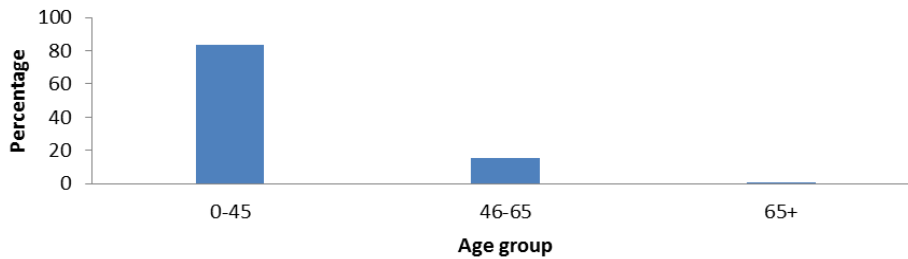

Figure 7: Age group of internet banking users.

A chi-square analysis was conducted at 5% significance level and 2 degrees of freedom, to determine the relationship between gender and the adoption rate. The hypotheses tested are as follows;

Ho: There is no relationship between gender the rate of internet banking adoption
H1: There is a relationship between gender and the rate of internet banking adoption

The observed chi-square value was 1.81 whilst the critical chi square value was 5.991. Since the observed chi-square value of 1.81 was less than critical chi-square value of 5.991, the null hypothesis was not rejected. This suggests that

there is no relationship between gender and internet banking adoption rate. It is therefore by chance that more males adopt internet banking services earlier than females. This finding is similar to that of [5] that gender did not correlate with internet banking adoption.
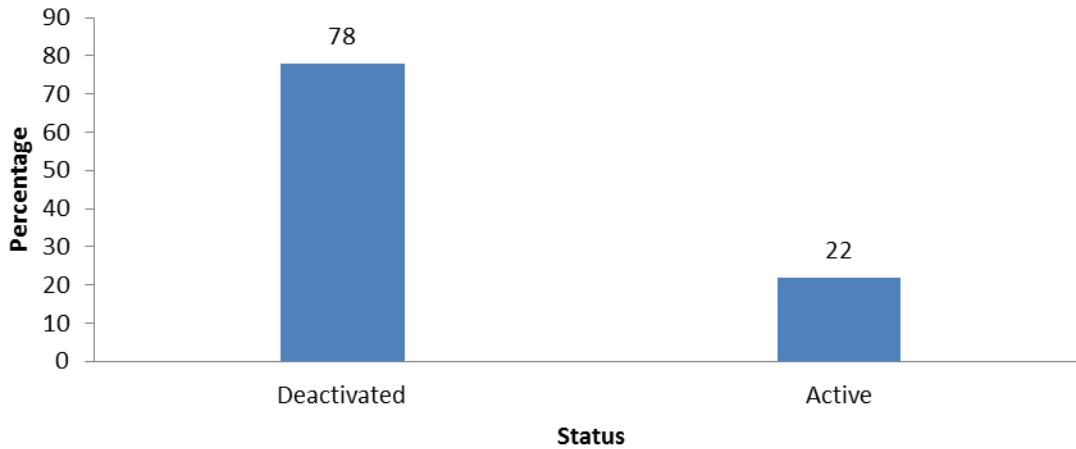

Figure 8: Internet banking status of customers.

Table 5: Relationship between adoption rate and gender.

	Gender		
Adoption Rate (Years)	**Females**	**Males**	**Totals**
0-3	7,009	24,275	31,284
4-6	213	728	941
7+	31	81	112
Totals	7,253	25,084	32,337

Figure 7 shows that 83% of the internet banking customers is below age 45, 16% between 46 and 65 years and only 1% aged above 65 years. These results indicate that the young are more attracted to internet banking services than the middle aged and the elderly. Thus, internet banking customers are relatively younger than the overall sample. This is because there are some barriers to older people adopting digital technologies. These barriers include their fears regarding technology and the fact that they are unaware of what technology can offer and therefore feel that technology is of no relevance to them.

Table 6: Relationship years taken to adopt internet banking service and age groups.

Age Group	**Years taken to adopt Internet banking Service**									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
0-45	19,316	4,289	1,762	809	397	225	86	62	18	26,964
45-65	3,486	710	388	220	116	71	34	25	6	5,056
65+	226	36	19	23	6	3	3	1	0	317
Totals	23,028	5,035	2,169	1,052	519	299	123	88	24	32,337

Table 6 shows the distribution of internet banking customers with the various age groups and the years taken by the customers to adopt the internet banking services. The data revealed that unlike the middle aged and the elderly, younger generation adopts internet banking within the shortest possible time. To determine whether there is any statistical evidence for this revelation, a chi-square analysis was conducted at 95% confidence interval with the hypotheses below;

Ho: There is no relationship between customer age group and the years taken to adopt internet banking service
H1: There is a relationship between customer age group and the years taken to adopt internet banking service

The observed chi-square value was 105.5 whilst the critical chi square value was between 24.996 and 26. Since the observed chisquare value of 105.5 is greater than critical chi-square value, the null hypothesis was rejected. This suggests that there is some relationship between age group of customers and the years it takes to adopt internet banking. It is therefore not by chance that the younger age group is more easily attracted to the internet banking services. This is in line with the findings of [5]. These researchers found out that younger people found internet banking more useful than the older people. This may be as a result of the fact that younger people are more energetic and finds it easier to learn new technologies.

Figure 8 shows the internet banking status of customers. The data reveals that 11,362 customers representing 35% of the sample requested to be unsubscribed from the internet banking services and 13,857 customers representing 43% of the sample were not actively using the system and hence became dormant. Only 7,118 customers representing 22% of the registered customers were actively

engaged in internet banking services. The high rate of deactivation from the internet banking services could result in compounding the long queue issues in the brick and mortar banking halls as well as other banking channels such as the ATMs. The disengagement from the internet banking services could be due to specific challenges being faced by end-users e.g. unfriendly user interface or high service charges.

Table 7: Educational level of internet banking users.

Educational Level	Totals	Frequency
Under-Graduate	3,945	29.59
Graduate	8,560	64.21
Post Graduate	827	6.20
Totals	13,332	100

Table 8: Relationship between educational level and internet banking usage.

Educational Level	Internet Banking Usage (Years)		Totals
	0-3	4-6	
Under-Graduate	1,074	2,871	3,945
Graduate	2,757	5,803	8,560
Post Graduate	395	432	827
Totals	4,226	9,106	13,332

Table 7 shows the educational level of internet banking users. The data collected has 14,851 missing data on customers' education levels. The data collected has educational level of Non-Student for 4,152 customers, which was the default list of values for educational data. This however was not updated for some customers by the data capturing officers and hence had to be eliminated from the data to be used for analysis. Out of the available data, 8,560 graduates representing 64.21% were the pre-dominant users of internet banking. This suggests that internet banking services have to be targeted towards the educated as the illiterates may not be able to operate computers comfortably.

In order to determine whether or not there is any relationship between educational level and the usage of internet banking services, the following

hypothesis was tested;

Ho: There is no relationship between educational level and the usage of internet banking services
H1: There is a relationship between educational level and the usage of internet banking services

Table 8 shows the distribution of internet banking users by educational level and the years of usage of internet banking services. The analysis was performed with 2 degrees of freedom and a significance level of 0.05. The observed chi-square value was 136.1 whilst the critical chi square value was 5.991. Since the observed chi-square value of 136.1 was greater than critical chi-square value, the null hypothesis was rejected. This suggests that there is a relationship between educational level and the usage of internet banking. This result is similar to that of Mattila, Karjaluoto, and Pento [26], that the level of education increases the likelihood of using internet banking. It also supports the findings of Mutengezanwa and Mauchi [27] indicating an existence of a relationship between internet banking adoption and educational level. The result suggests that highly educated people are more likely to adopt internet banking than the less educated.

Table 9: Employment status of internet banking users.

	Years of usage		
Employment Status	**0-3**	**4-6**	**Total**
Full time Permanent	14,543	643	15,186
Full time temporary	0	1	1
Others	3	0	3
Self employed	23	64	87
Unemployed	10	19	29
Total	14,579	727	15,306

Table 9 shows the employment status of internet banking users and how long they have used internet banking services. Out of the total of 15,186 full time permanent customers, 14,543 representing 96% of the internet banking users had been using internet banking for 3 years and the remaining 4% had been using it for the past 4 to 6 years. This shows that full time permanent employees were more like to adopt and use internet banking services. A statistical analysis was conducted to determine whether or not a relationship existed between

customers' employment status and internet banking usage. The following hypothesis was tested;

Ho: There is no relationship between employment status and the usage of internet banking services
H1: There is a relationship between employment status and the usage of internet banking services.

The observed chi-square value was 1176.4 whilst the critical chi square value was 9.488. Since the observed chi-square value of 136.1 was greater than the critical chi-square value of 9.488, the null hypothesis was rejected. This indicated the existence of a relationship between employment status and the usage of internet banking services. It is therefore not by chance that full time permanent customers are more attracted towards internet banking services. This could be as a result of the fact that such customers do not have the luxury of time to visit the brick and mortar bank branches. This represent one of the gaps identified in the review of related literatures as most researchers do not attempt to identify how employment status could impact the use of internet banking services.

CONCLUSION

This study aims to examine the adoption and usage of internet banking services in developing economies, with special emphasis on Ghana. This study has provided perspectives on internet banking in relation to factors that contribute to customers' adoption and usage of internet banking services. The restriction of the study to a commercial bank from Ghana may limit generalisation. The findings, however, contribute to the understanding of the demographic factors affecting the usage and adoption of internet banking services. The findings also have implications for managerial practice, particularly in marketing strategies.

The findings from the study reveal that demographic factors such as gender do not have significant effect on customers' adoption and usage of internet banking. This finding is inconsistent with the findings from some similar, past studies [24]. On the other hand however, there is a strong correlation between the findings from this study, which is consistent with [29]. Significant to this study is the evidence that employment status and education level are important determinants of customers' adoption and usage of internet banking in Ghana which is consistent with [26].

The findings from the study will help banks to develop appropriate strategies in attracting internet banking customers. The findings revealed that the earlier customers adopt internet banking services, the more they continually use the services. This suggests that banks need to focus on those factors that revealed early adoption rates. As discovered that some demographic factors such as higher levels of education, employment status and age group have a relationship

with the adoption and usage of internet banking services, banks need to adopt different strategies in targeting different group of customers in terms of age and education in order to promote and encourage the adoption and usage of internet banking services. The banks also need to focus on the younger generation as they are more likely to adopt internet banking services earlier than the middle and older age groups.

The study found that customers' employment status is significantly related to internet banking adoption and usage. This suggests that banks need to focus more on full time employees in their marketing strategies. This may be as a result of the fact that this category of customers may not have the time to visit the physical bank branches.

Banks need to consider security as a key component in developing marketing strategies for internet banking services. It is essentially to employ data confidentiality, integrity and continuous system availability. This is to manage customers' perception of risks and guarantee secured internet banking systems and improve customers trust in them. Banks also need to use robust security devices such as firewalls to prevent intrusion by unauthorized users and a two factor authentication to prevent fraud and to effectively and efficiently manage identity. It is also essential for banks to implement appropriate security controls and policies and evaluate and improve internet banking services according to customers' expectations. Banks also need to organize sensitization campaigns aimed at educating customers on the benefits of internet banking services.

The findings were obtained from a study that examined a specific commercial bank in Ghana. Thus, this study needs to exercise caution when generalizing the findings and discussion in respect to other banks in developing economies. The results of the study should therefore be viewed in the light of its limitations. These limitations pave the way for future research. First, future research can expand the scope by using multiple banks in order to enable generalization. Second, this study is limited in terms of the demographic factors considered. In addition to including other socio-economic factors such as income of customers, it will be useful to expand the context of this paper by including different options for employment status. It will also be useful to conduct a complementary study to identify why some banks have not deployed internet banking services. This is likely to reveal other factors that could be considered for future research.

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