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Determinants of Mobile Banking Adoption in the Ghanaian Banking Industry: A Case of Access Bank Ghana Limited

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Abstract

The study examined the determinant of mobile banking adoption among bank customers in Ghana, with specific emphasis on Access Bank. In line with literature, the study applies theoretical frameworks which have been developed from existing literatures on innovation and adoption to collect responses from one hundred and fifty (150) sampled customers of Access Bank in order to investigate the determinants of mobile banking adoption in the Ghanaian banking industry. The results from the study revealed that, each factor measured had some level of significant effect on consumer intention to adopt and use mobile banking services provided by Access Bank. Additionally, the study unveiled that, perceived credibility and perceived financial cost were the major setback with regards to customers adoption of mobile banking services provided by Access Bank, and as a result of this, Ghanaians have formed a negative behavioural pattern towards mobile banking. In addition, the findings showed that, perceived credibility and perceived financial cost have a stronger effect on consumer intention to adopt and use mobile banking service than perceived usefulness and perceived ease of use. It was, therefore, recommended that banks in Ghana should create more awareness through personal interaction with customers, develop quality initiatives in order to build customer's confidence. Equally, banks should also review the cost of their mobile banking service.

Keywords

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1. Introduction

The world has become a global village and almost everything is being done through technology. The growth of information technology (IT) in the world is becoming a crucial factor in the future development of businesses and industries around the world. The traditional method of banking is gradually paving way for modern method of banking in the 21st century. Traditional banking has being in existence for many decades now and is the most common method of carrying out bank transactions in different countries, both developed and undeveloped [1]. Over the past few years now, there has been continuous development of information technology (IT) to help smoothen business operations around the world especially in the banking industry where the use of Automated Teller Machine (ATM) was developed to make withdrawing of money easier for customers. The development of internet banking followed and eventually the emergence of mobile phone banking. Both the developed and undeveloped countries have benefited and still benefiting from this new technology. Customer's satisfaction holds the potential for increasing an organization's customer base, increase the use of more volatile customer mix and increase the firm's reputation [2] [3]. An organization must know what their customers want and must be able to satisfy their demands. The use of mobile banking in Ghana is not well pronounced like other developed countries of the world and the banking industry should have a larger part to play in this. Today, the incorporation of IT have change many ways businesses are been carried out in all over the world, and it has subsequently changed the way businesses are been conducted and managed [4]. Today in Africa, Ghana is regarded as one of the fastest growing telecommunication nation. The fast growth of mobile phones in a developing economy such as Ghana which is most likely have caused the increase in the number of mobile users to exceed the numbers of banks [5]. The mobile commerce involves such applications like mobile banking, mobile payment, mobile marketing [6] [7]. Mobile banking involves mini-statements and checking of account history; alerts on account activity or passing of set thresholds; monitoring of term deposits; access to card statements; mutual funds/equity statements; insurance policy management; pension plan management; access to loan statements; status on cheque, stop payment on cheque; ordering check books; balance checking in the account; PIN provision, change of PIN and reminder over the internet; domestic and international fund transfers; recent transactions; due date of payment; micro-payment handling; mobile recharging; commercial payment processing; bill payment processing; peer to peer payments; and deposit at banking agent [8]. Mobile banking is allowing customers to receive a text message showing their account balance. It is been claimed that mobile banking has spread around the world and it has brought about positive change from the customers perception, could this be concluded about Ghana as well? In the case of Ghana the subject matter has gain little or no attention in literature, therefore, this research will bridge the gap. It is in this light that the researchers seek to examine mobile banking adoption as a communication tool on customer behaviour in the banking industry with specific focus on Access Bank Ghana Limited.

1.1. Statement of the Problem

Research in the field of mobile banking and the analysis of variables connected, has almost entirely been done in the developed countries. However, in their analysis of innovation in developing countries, the authors in [9] pointed out the need to investigate the concept of mobile banking adoption and consumer behaviour in the developing countries such as Ghana. Generally, it is believed that, mobile banking has brought about a positive shift in customers perception but could this be true about Ghana? Again, much attention has not been given to the subject matter and there is a lack of empirical research on the adoption of mobile banking in Ghana, so this research aims to bridge the gap in the subject matter.

1.2. Objective of the Study

The main objective of the study is to examine the determinants of mobile banking adoption as a communication in the banking industry with specific emphasis on the Access Bank Ghana Limited.

Further, the study seeks to:

1) Investigate consumer's knowledge about mobile banking in Access Bank and its comparison with the current adoption rate;

2) Ascertain the factors influencing consumer behaviour adoption of mobile banking in Access Bank;

3) To examine how customers perceive mobile banking initiative to be functioning in Access Bank.

1.3. Research Questions

In the quest to achieve the research objectives, the research team seeks to find answers to the following questions:

1) What is the level of consumer's knowledge about mobile banking in Access Bank and its comparison with the current adoption rate?

2) What are the factors influencing consumer behaviour adoption of mobile banking in Access Bank?

3) How do customers perceive mobile banking initiative to be functioning at Access Bank?

1.4. Significance of the Study

The findings from this research work are expected to contribute to the adoption literature in the area of mobile banking and in the developing nations. More specifically, to bridge the gap that exists for Ghana by serving as a starting point for further research. The findings from this research study can be used by banks to improve mobile banking facilities and to identify those factors that can either contribute to the failure or success of the mobile banking services and this could be further used for decision making. To academia, the research would serve as a source of academic reference for further studies.

2. Literature Review

This section seeks to analyze relevant documentation and findings that are essential to improve the research and its capacity to analyze the concerns it seek to accomplish, that is, the theoretical literature and the empirical literature. The theoretical literature presents and attempts to explain theories that relate to the subject matter that is mobile banking adoption. The empirical literature describes what has been practically observed and validated objectively in relation to the subject matter.

2.1. Theoretical Literature

2.1.1. Mobile Banking in the Banking Sector

Mobile Banking allows consumers to perform banking services (*i.e.* alerts, banking transactions and balance enquiries) with the use of their mobile devices [10]. It is very important to understand what banking business is all about. Banks are businesses that deal in money according to the author in [11], therefore banking involves any service given and received from the bank, people open accounts with banks to save money and other people go to the bank to borrow money [12]. Mobile banking could be defined as a facility which provides banking services such as balance enquiry, funds transfer, bill payment, and transaction history via a user's mobile phone [13]. The author in [14] defines mobile banking as an occurrence "when customers access a bank's networks using cellular phones, pagers, personal digital assistants, or similar devices through telecommunication wireless networks". Mobile banking (m-banking) could also be defined as an application of mobile commerce that enables customers to bank virtually at any convenient time and place [15]. The authors in [16] [17] believes that "a cornerstone of m-commerce is built by m-banking"; many banks are taking advantage of this innovation in order to increase customer satisfaction, manage cost, increase profits and bring positive transformation of payment system in the economy [18]. In 2004, Finland-based Nordea bank experiences a high growth of 30% from the utilization of transaction-based mobile financial services [19]. Mobile Banking as the term connotes is banking "on the move" with the aid of a mobile telecommunication device according to the author in [20], this can be used for a different purpose at anytime and anywhere. Mobile Banking (M-Banking) allows customers to receive short message (SMS) through their phone, wireless application protocol (WAP) and Java enables phone support other banking activities using GPRS (General Packet Radio Service) such as direct payments confirmation and funds transfer [21]. From research 30 per cent of households in the United Kingdom use their mobile phones to perform banking operations [21]. Research also shows that, internet has only a penetration rate of 6 % in a population of 140 million in Nigeria but mobile technology is close to 50 percent penetration with prospects for growth according to the author in [20]. Mobile devices show a promising way to the future which can reach larger population of customers irrespective of their location and this can lead to customer's loyalty. Many researchers have given proof of the advantages that can be derived from using mobile banking services [10], which consumers can derive when there is willing to adopt the facility of the services. Over the years there has been several challenges which the banks have been facing over poor information technology system and the new

technological development such as the introduction of Universal Mobile Telecommunication System (UMTS), banks can fully take advantage of this new platform for realistic mobile applications which have been made available [16] [17].

2.1.2. Mobile Banking Adoption

Much research has focus on developed countries and, innovation and adoption have attracted so much attention in various literatures, and this has generated many models and theories which are believed to affect the adoption of an innovation. These theories have been used in many research and is been used in developed countries. Parts of the innovation studied are mobile banking, electronic banking [22] [23]. Such studies are very few in developing countries such as Ghana [24] [25].

1) Theories and Model of Innovation Adoption

Many theories have been developed to study the framework of innovation adoption, however, with regards to present studies theories such as innovation diffusion theory, technology acceptance model (TAM), and theory of reasoned action (TRA) have been widely used.

a) Innovation Diffusion Theory

The author in [43] defines diffusion as the process of communicating an innovation through certain channels over a certain period of time among the group of a social system. He also defines the communication as a process where people create and share information among one another to reach a mutual understanding. Again, the author in [5] argued that, there are four stages in innovation diffusion process: invention, diffusion (or communication) through the social system, time and consequences. The easiness of use and newness (in terms of persuasion, knowledge and the decision to adopt) of an innovation can determine the way an individual will respond to an innovation. Some factors have been highlighted to be a determinant of adoption of an innovation and they are: complexity, relative advantage and compatibility. This is believed that, an innovation with relative advantage, with less complexity and compatible will be adopted easily and faster by an individual. According to the author in [5], relative advantage and compatibility are very important factors when discussing the issue of innovation adoption pattern and this believe is said to have lack concern for social economic consequences [26]. The original diffusion research was carried out in the early 1900's by a French sociologist Gabriel Trade who brought about the original S-shaped of diffusion curve [27].

b) Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was developed by the author in [27] in his doctoral thesis at the MIT Sloan School of Management. The author suggested that, users' motivation can be in three factors: perceived ease of use, perceived usefulness and attitude toward using the system. Davis proposed that the readiness of a user to use or not to use a new technology or information system is determined by his or her attitude, and this attitude is influenced by two beliefs which are perceived usefulness and perceived ease of use. This model is the most widely used and widely accepted model among researchers due to its usefulness according to the authors in [28] [29] and its usage has captured the attention of IS community attested by the authors in [30]. Though the model has captured the attention of Information Systems community in predicting user's acceptance of technologies, the authors in [31] [32] believes that it has its weaknesses and cannot be fully used to understand factors that affect users acceptance [33]. As a result of this many other models of extension have been suggested by the authors in [1] [23]. The perceived credibility, perceived financial cost and perceived self-efficacy has been adopted based on the literature, as an extension of Technological Acceptance Model (TAM) to investigate and understand the behavioural intention of users of mobile bankers [1].

c) Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) was developed in 1967 and was later revised and expanded in the middle 1970s by Ajzen and Fishbein. The authors in [35]-[37] proposed that, a person's actual behaviour can be determined by looking at his formal intention together with the beliefs that the person would have for the given behavior. The intention that a person has before the actual behaviour is referred to the behavioural intention of a person and this could be defined as a measure of one's intention to perform the behavior. Theory of Reasoned Action according to Fishbein and Ajzen, also suggest that, a person's behavioural intention could be determined by his attitude towards the actual behaviour together with the subjective norm that is associated with the behaviour [35]. The theories have been used to study human behavior and develop appropriate interventions in the 1980s.

2.1.3. Consumer Behaviour towards Mobile Banking

The authors in [38] define consumer behaviour as the acts of decision-making which directly involve the obtaining and using need-satisfying products and services, which includes the decision-making process which precedes and determines these acts. According to the author in [39], consumers are people who use products and services and who make payment for those things which are bought. There are two kinds of consumers according to the authors in [40]; we have personal and business (organizational consumers). The buying of equipment, products, services, etc. just to facilitate their business is called business consumers while personal consumers are those individuals who buy goods and services for their own consumption. The act of obtaining and using economic goods and services is also referred to as consumer behaviour according to the authors in [41]. Consumers involve in decision making process when they are making purchases either online or in store and banks can study these customers profile to have a better understanding of who their customers are, which will help them know the factors influence their purchasing behaviour and the challenges face during an online transaction. There are several predetermining factors that influence consumer attitude towards mobile banking and researchers have found out that motivation, demography and individual acceptance of new innovation or technology are some of the major causes. In developed countries, consumer's attitude may be influence by previous experience in related technology and it has help to increase the adoption rate due to previous experience but, this may be slightly different in the developing countries were technology is just taking its stand. According the authors in [42], many bank customers have to consider the issue of hacking, the integrity of the password been used, data encryption and personal protection of information when it comes to adoption of electronic banking. This and many more are the challenges faced by bank customers and this has either affected their decision positively or negatively.

2.1.4. Modes of Operation by Providers

A wide range of mobile/branchless banking ideas are currently been established now. Three models have been identified and developed, and they are primarily different from one another based on who established the relationship (Banks or the Non-Bank/Telecommunication Company) of account opening, deposit or withdrawer, borrowing, etc., with the customers. There are differences in the Bank-Led Model, Bank Focused Model and Non-Bank-Led Model [5] [43].

1) Bank-Led Model

This is when customers perform transaction with the use of their phones, which is different, from the branch-base with the help of a trade partners. This is an alternative to conventional branch-based banking. This method could be created by joint venture between banks and telecommunication companies. This system allows customers account relationship to be established and managed by the bank.

2) Bank-Focused Model

The bank focus model is when a traditional banks decides to use the low-cost delivery channels, which is a non-traditional banking system to provide banking services to its customers such as the use of M-Banking facilities, automatic teller machine (ATMs), internet banking, etc., The bank-focus model is additive in nature and is an extension of the conventional branch-based banking [43].

3) Non Bank-Led Model

The non-bank-led does not get involve unless required to do so when the need arises as a safe keeper of surplus funds, and this allows the telecommunication company handle all the functions. However, mobile banking services that are focused on low income earners of the population size which are regularly found in the rural area will need to reply on retail outlets. A lot of telecommunications agents operate through their airtime resellers while banks muses bakeries, pharmacies, etc. which can be found in some countries such as Colombia.

2.1.5. Technologies Employed to Provide Mobile Banking Services

Mobile banking services could be used through more than one channel such short messaging service/messaging and application download (client-based) [44].

1) SMS-Short Messaging Service

This is where the customers communicate with the bank through their mobile devices by sending an SMS (short messaging service) to the bank. The short messaging service (SMS) works in two ways, and it can be either a pull mode or a push mode. In the push mode, the mobile customer send a text message to the bank which contains a service command with a predefined request code to the bank's specific number. The bank also reply

with SMS containing the specific information requested from the bank while the pull mode is when the banks sends a text message to the subscriber (customer) to inform the customer about certain transaction that have just taken place over the account. The message could be in the form of an MMS (multimedia message service) or SMS (short message service) they both work similarly even though the use of SMS is more popular [44]. This is commonly used in Nigeria by mobile banking customers.

2) Client-Based

This method requires the customers to use software installation, and this will serve as a user interface that can allow customers to use the mobile device while offline to access some basic transactions before going online. Typing details before connecting to the internet could reduce cost. This client based application is particularly useful because it allows customers to stay offline and while preparing transaction such as entry of account details and afterwards the transmission is made by sending out the data, this banking process conducted offline reduces online connection time and cost [44].

3) Browser-Based

Brower-based customer needs to be connected to the internet to use this service. The interface is generated from the server which is transported to mobile device, and this allows the content to be displayed through the browser. This method is extremely fast depending on the server that the customer is connected to but one its disadvantages is that, it requires the subscriber (customer) to stay online all through the transaction process and could lead to higher cost for the customers [44].

2.1.6. Theoretical Framework for the Study

With regards to existing theories and ideas on the literature examined, it is evidence that there are certain factors responsible for the adoption of mobile banking. Base on the existing theories and ideas in literature, the research team formulated a comprehensive research framework (**Figure 1**).

1) Awareness

The level of information consumers have on mobile banking is one of the major factors impacting the adoption and usage of online banking according to the author in [45]. The adoption rate of an innovation could be determined by level of awareness of the customers [9] [45]. The use of mobile banking services is new to many customers and the banks need to create enough awareness to capture the attention of the customers.

2) Perceived Usefulness

The author in [37] defines Perceived usefulness as the degree to which an individual believes that using a particular system would enhance his or her job performance. Hence, it is believed that an innovation perceived to be useful is more likely to be adopted and customers will take advantage of the innovation such as mobile banking which they find useful to them [1]. Perceived usefulness is one of the two most important factors affecting the acceptance of new technologies or information system.
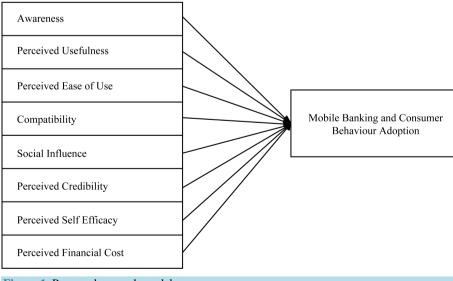

Figure 1. Proposed research model.

3) Perceived Ease of Use

The author in [37] further defines perceived ease of use as the degree to which an individual believes that using a particular system or innovation would be free of physical and mental effort. It is believed that a customer will adopt an innovation or a particular system if it is easy to learn and use. An innovation perceived to be difficult to use by customers will be less adopted according to the author in [46].

According to the authors in the author in [63], ease of use of an innovation is one the most important characteristics for adoption of an innovation. Adoption of mobile banking is more likely to occur if the process of usage is easy for customers.

4) Compatibility

It is believed that the adoption of mobile banking service would be made possible if it's compatible with the customer's bank transaction needs [23]. Compatibility of an innovation is more likely to be adopted, if it is compatible with job responsibilities, customer's needs and value system according to the author in [28].

5) Social Influence

The adoption of mobile banking facilities would be possible if individual behavioural intention of a customer is influenced by what people around believe about it [36]. Social influence such as the opinions of friends, parents, relatives is said to affect the customer's intention to adopt and use mobile facilities according to the author in [64].

6) Perceived Credibility

The customer's intention to use an innovation or mobile device can be influenced by security and privacy [1]. According to the author in [14] security is a major problem facing customers whenever they make online transaction. In a similar study conducted on internet users by the authors in [48], it was found that 81% of users are concerned about privacy when they are online. In a research conducted by the authors in [49] it was found that, consumers are always reluctant to share their information online due to fear that their financial life will be open to the internet universe. Gaining the confidence of customers is of paramount important to service providers and if not well managed could discourage users and could encourage negative spread of information which could pullback intending customers.

7) Perceived Self-Efficacy

Self-efficacy is defined as the judgments of how well one can execute courses of action which is required in dealing with prospective situations. It is believed that there exist positive relationship between technological experience and the effects which it has on computer usage.

8) Perceived Financial Cost

This believes show that the cost of using mobile banking facilities could influence the intention to use mobile banking service [1] [30]. Innovation is always associated with many costs such as operation cost, utilization cost, investment cost [50]. The cost of using an innovation is very important especially when it comes to the use of mobile device in mobile banking and the price of using such technology should be affordable by the customers [51]. By lowering the cost of using an innovation such as mobile banking, customers who are price conscious will be more likely to adopt the innovation.

2.2. Empirical Literature

The author in [23] conducted a research in order to evaluate the factors influencing the adoption of mobile banking services in the innovation theory and, to also, formulate a model to describe the behaviour pattern of users. Out of the 800 customers included in the study 710 responses were retrieved. Simple random sampling technique was adopted for the selection of customers included in the study. Results were analyzed by the use of SPSS and presented in the tables and charts. In this research, it was found that access to internet facilities, perceived risk, compatibility issue, relative advantage, complexity, observability and interest to technological advancement all this affect the consumer adoption decision of mobile banking users. Additionally, the author in [52] carried out a research to examine the online mobile banking in China. Purposive sampling technique was adapted to a sample of five hundred (500) customers who transact their banking business online. Analysis was done quantitatively through a regression model. Base on this research it was established that lack of understanding and awareness of m-banking benefits are the main factors hindering the adoption of mobile banking usage in China though perceived risk, culture and technological skills are also barriers to online banking in China. The author in [53] looked at the factors which are responsible for mobile banking adoption and its usage across dif-

ferent countries by focusing on low income earners and the low literate. The researcher adapted the purposive and convenience sampling technique. Using the SPSS to generate results, the research focused on non-bank model which uses the agents in its operation. It was observed that variations along parameters such household type, services adopted, frequency of usage, ease of use and pace of uptake. Factors which are responsible includes pricing, trust, reliability on informal channels, transaction turnaround time, interface design (mobile phone), needs, agent proximity, pricing, and level of human intervention (agent's support). The author in [1] carried out a research in order to understand user's behavioural intention to use mobile banking service based on the extension of technology acceptance model (TAM). It was observed that the financial cost, perceived usefulness, self-efficacy, credibility and perceived ease of use were the factors influencing the behavioural intention to use mobile banking. In this finding, it was also observed that credibility was a major issue, which has a stronger influence on user's behavioural intention than the technology acceptance model (TAM) of perceived ease of use and perceived usefulness. The authors in [54] carried out a research to analyze the adoption usage of mobile banking of the student willing to use mobile banking in the future. Questionnaires were administered to 250 respondents in two universities. The researcher used the quota sampling technique to select respondents. The researchers adopted both the qualitative and quantitative technique in analyzing results obtained from respondents. From the analysis, it was observed that attitude and expectation were the factors which are useful to predict the wiliness of the under graduate student to adopt mobile banking in the future. In an empirical study conducted in Taiwan by the authors in [55] revealed the factors responsible for the hindrance and the adoption of mobile banking facilities among university students in Taiwan. Three hundred (300) students were selected for the study using the stratified sampling technique. Results were analysed with the aid of SPSS specifically regression model. The research found out that, security and cost of connection to the internet was a hindrance to the adoption of mobile banking facilities among students in Taiwan. Conducted by the authors in [47] their study integrated the unified theory of use and acceptance of technology (UTAUT) and task technology fit (TTF) in explaining the adoption behaviour of mobile banking user. Results obtained from the questionnaires administered for the study was analysed using the regression model. From the investigation of the research, they found social influence, performance and task technology fit to be the factors which have a significant impact on the consumer adoption behaviour of mobile banking. A study conducted in Singapore by the authors in [56] examined the factors that could influence the adoption of mobile banking usage among the current users of internet banking facilities considering gender as a supporting variable. Respondents were selected purposively and analysis was done using the regression model. According to this research social risk, perceived usefulness and social influence are the most important factors that influence consumer intention to use and adopt mobile banking facilities among male and the influence on each factors also differs among male users.

3. Methodology

This section looks at the methods used to achieve the objectives of the study. It highlights research design, the sources of data and the methods that were used in the data collection for the research. It also identifies the target population for the study, the sample size and frame, sampling technique and how data obtained from the study were analyzed.

3.1. Research Design

This research is an explanatory and a cross-sectional study that is mainly aimed at examining mobile banking adoption as a communication tool on customer behaviour in the banking industry at Access Bank. Explanatory research seeks to establish relationship that exists between variables, that is, to identify how one variable affects the other; it also seeks to provide an explanation to the causes and/or effects of one or more variables [57]. Again, it's cross-sectional because it focuses on a particular phenomenon at a specific period of time as opposed to longitudinal research which focuses on the phenomenon successive time interval [57]. The study used structured questionnaire as the primary data collection instrument to gather information. Data analysis was done qualitatively.

3.2. Population and Sampling

3.2.1. Target Population
The population of interest for the study comprised all customers of Access Bank in Ghana.

3.2.2. Sample Frame
The sample frame for the study was:
- All customers of Access Bank who have been patronizing the services of the bank for at least one year.

3.2.3. Sample Size
The author in [50] indicated that, the size of the sample and the way in which it is selected will definitely have implication for the confidence you can have in your data and the extent to which you can generalize. Owing to the fact that, the population of all customers of Access Bank in the Accra Metropolis was too large and was unknown to the researchers at the time of the study, one hundred and fifty (150) sampled customers were selected from three branches of the bank, with 50 each selected specifically from branches at Madina, Airport and Achimota. These branches were selected due to the fact that, they were the busiest branches. The choice of this sample size was based on purposive sampling.

3.2.4. Sampling Techniques
Purposive sampling technique as a non-probability sampling was used as the technique for the research. This method was selected to enable the researchers to target specific customers of Access Bank who were in position to provide the information needed for the study.

3.3. Data Collection Instruments

3.3.1. Primary Data Collection
The research team designed questionnaire for customers of the sampled Access Bank branches in the Accra metropolis. Both closed and opened ended questionnaires were used for the study. The close-ended questions were developed on a five point Likert scales ranging from 5 (strongly agree) to 1 (strongly disagree).

3.3.2. Secondary Information
Secondary sources of data collection were obtained for additional information. The study relied on both unpublished and published data such as, articles from journals and the internet which is related to the topic. Sources of all secondary data were duly acknowledged at the reference section of the research.

3.4. Analysis of Data

Descriptive statistics such as frequency distribution was used to assess the demographic profile of the respondents to make the analysis more meaningful, clear and easily interpretable. Descriptive statistics allow the researchers to present the data acquired in a structured, accurate and summarized manner. The analysis of data was done with the help of the statistical software of Statistical Package for Social Sciences (Version 20).

3.5. Validity and Reliability

To ensure the validity and reliability of the questionnaire used for the collection of primary data, prior to the real administration of the questionnaire, a pre-testing of the questionnaire using thirty (30) respondents from the sample size was undertaken within the study area to find out whether the instrument would meet the needed responses to ascertain it reliability.

4. Results and Discussion

The main purpose of this section is to present the analysis and discussion of the findings of the study. The analysis is done in line with the objectives. The first part of the chapter presents the demographic characteristics of the respondents. Secondly, the mobile banking usage of respondents was also discussed. The last part discussed the determinants of mobile banking usage of customers in Access Bank Ghana Limited.

4.1. Respondents Demographic Characteristics

Questionnaires were distributed to bank customers of Access Bank. The demographic details showed the gender, age, occupation and these were shown in the tables.

4.1.1. Gender of Respondents

As reflected in **Table 1** above, ninety three (93) of the entire respondents were males and fifty seven (57) were females. This indicated that there were more male respondents than female.

4.1.2. Age Distribution of Respondents

Table 2 below unveiled the age groups of the respondents included in the study. Three (3) respondents fell within the lowest age group which was below 20 years while the majority of the respondents (64) were between the ages of 21 - 30, with forty six (46) respondents indicating 31 to 40 as their age group range. Another set of thirty (30) respondents fell within the age group between 41 to 50 and only seven (7) of the respondents were over 51 age group. The study showed that, respondents between the ages of 21 - 30 were in the dominant group.

4.1.3. Occupation

The occupation distribution of the respondents included in the study deferred from one another. The study revealed that, the highest respondents were office worker with ninety-eight (98) respondents, followed by the students with thirty-two (32) of respondents, the remaining twenty (20) were business persons (**Table 3**).

4.2. Level of Consumer Knowledge about Mobile Banking and Its Comparison with Current Adoption Rate of Customers of Access Bank

As shown in **Table 4**, majority of the customers of Access Bank included in the study, thus, 66.7% (100) have

Table 1. A cross-tabulation of gender & mobile banking usage.

Gender	Respondents		Total
	Users	Non Users	
Male	41	52	93
Female	14	43	57
Total	55	95	150

Source: Field data, 2015.

Table 2. A cross-tabulation of age of respondents & their mobile banking usage.

Respondents	Age of Respondents					Total
	Below 20 Years	21 - 30 Years	31 - 40 Years	41 - 50 Years	51 Years and above	
Mobile Banking Users	1	18	24	10	2	55
Mobile Banking Non-Users	2	46	22	20	5	95
Total	3	64	46	30	7	150

Source: Field data, 2015.

Table 3. A cross-tabulation of occupation & mobile banking usage.

Respondents	Occupation of Respondents				Total
	Student	Office Worker	Business Person	Others	
Users	10	35	10	0	55
Non-Users	22	63	10	0	95
Total	32	98	20	0	150

Source: Field data, 2015.

Table 4. Consumers' knowledge and usage of mobile banking.

Consumers knowledge and usage of mobile banking	Frequency	Percentage
Have you heard of mobile banking before?		
Yes	100	66.7
No	50	33.3
Total	150	100.0
Do you own a mobile phone?		
Yes	150	100
No	0	0
Total	150	100
Do you use mobile banking services?		
Yes	55	36.7
No	95	63.3
Total	150	100.0

Source: Field data, 2015.

heard of mobile banking facility as well as the benefits they could derive from using this innovation. Customers indicated that Access Bank has used different means of advertisement such as radio, bill boards, newspapers and even TV in conveying their messages to their customers but it is rather unfortunate that innovation is yet to be well embraced by the banks customers.

The high rate of consumer knowledge about mobile banking indicated that, Access Bank is making possible effort to inform their customers about mobile banking services. Though a lot of people claim to have heard of mobile banking services, when compared to the rate of adoption of current users of the services this was rather very low. And this results obtained by the researchers is similar to the finding of the authors in [22] in their research on internet banking in Nigeria. This shows that, consumer's attitude towards mobile banking in Access Bank is low with the way the innovation is embraced.

4.3. Factors Influencing Consumer Adoption of Mobile Banking Service at Access Bank

In finding out the level of consumer knowledge about mobile banking services provided by Access Bank, the investigation conducted showed that, the level of consumer knowledge is high (**Table 5**). From responses gathered through the questionnaires administered, the researchers found out that, One hundred and twenty-five (125) of the respondents constituting the majority, acknowledged that awareness about mobile banking services will contribute to their decision to use the service. However, only twenty-five (25) of the respondents disagreed to the fact that awareness of the mobile banking services has no link to their usage decision of the service.

4.3.1. Usefulness of Mobile Banking Service and Its Impact on Usage

From the results above (**Table 6**), responses elicited from the Access Bank customers sampled for the study unveiled that, majority of them (114) confirmed that, the usefulness of mobile banking service is very important to their decision to use the service while the thirty-six (36) said, the usefulness of the self-service was not likely to influence their decision to use it.

These respondents were skeptical about the reliability of the usefulness of mobile banking service having considered the issue of security.

This research finding is also consistent with that of the authors in [1] [23], after conducting a regression analysis from results obtain from 300 customers of thirty (30) banks in Nigeria found out that, the issue of security of a technology has an impact on the perceived usefulness of customers.

Table 5. Awareness of mobile banking service and its impact on usage.

Responses	Respondents		Total
	Users	Non Users	
YES	50	75	125
NO	5	20	25
Total	55	95	150

Source: Field data, 2015.

Table 6. A cross-tabulation of usefulness & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	49	65	114
NO	6	30	36
Total	55	95	150

Source: Field data, 2015.

4.3.2. Simplicity of Mobile Banking Service and Its Impact on Usage

From the descriptive analysis above (**Table 7**), the results obtained from the sampled customers of Access Bank included in the study showed that, majority (119) confirmed that ease of use is important for their decision to adopt mobile banking service. These respondents acknowledged that, their perception about the ease of use of this device helped their decision to use this service having been informed about its advantages and disadvantage while thirty-one (31) of the respondents strongly testified against the statement.

Findings from this study are consistent with that of the authors in [1] finding on behavioural intention to use mobile banking and also with the findings of the authors in [24] on electronic banking in Nigeria. The researchers concluded that, when an innovation is easy to use consumers will adopt it. This finding therefore shows that, perceived ease of use has a positive effect on consumer intention to adopt and use mobile banking services.

4.3.3. Compatibility of Mobile Banking Service and Its Impact on Usage

In measuring the compatibility of customers against mobile banking service usage at Access Bank, the results showed that, majority of the respondents, thus, one hundred and eleven (111) believed that, the services provided through their banks using a mobile device must be compatible with their important transaction needs before they can use the self-service. This is therefore saying that, when an innovation is not compatible with an individual's need then, there might be no need to use it. Nevertheless, another set of respondents summing up to thirty-nine (39) testified against the issue being discussed (**Table 8**).

Results obtained from this finding are similar to the findings of the authors in [1] [47] in their research which showed that, compatibility with important transaction needs leads to the thought of usefulness. The researchers therefore supported that compatibility has a positive effect on consumer intention to adopt and use mobile banking.

4.3.4. Social Influence of Mobile Banking Service and Its Impact on Usage

In the quest to find out the impact of social influence on customer adoption of mobile banking services in Access Bank, the responses obtained from the questionnaires revealed that, one hundred and three (103) of the entire respondents included in the study considered the importance of social influence with regards to their adoption of mobile banking services provided by Access Bank. However, forty-seven (47) respondents saw it in the negative direction and took a stand that, social influence could not in any way have an impact on their usage of mobile banking services Access Bank renders. This finding showed that, consumers can be influenced by people they know after finding out the benefits they could derive from using a particular service. Results obtained from this research attest to the findings of the authors in [47] [56] that, social influence has a significant

effect on consumer adoption of mobile banking (**Table 9**).

4.3.5. Self-Efficacy of Mobile Banking Service and Its Impact on Usage

Analysis with regards to self-efficacy of mobile banking service and its impact on usage revealed that, as many as one hundred and fifteen (115) of respondents indicated that, their previous use of electronic device could make develop interest in using mobile banking facilities (**Table 10**).

Negatively, thirty-five (35) of another set of respondents believed that, this would not influence their decision to use mobile banking services. From the results it could be seen clearly that, majority of the respondents strongly affirm to the issue being investigated. The conclusion therefore drawn by the researchers was that, self-efficacy of a mobile banking service could have an influence on customers' decision towards the adoption of the service. This result is therefore in agreement with the authors in [1] [24] in their research finding that

Table 7. A cross-tabulation of simplicity & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	39	80	119
NO	16	15	31
Total	55	95	150

Source: Field data, 2015.

Table 8. A cross-tabulation of compatibility & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	43	68	111
NO	12	27	39
Total	55	95	150

Source: Field data, 2015.

Table 9. A cross-tabulation of social influence & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	35	68	103
NO	20	27	47
Total	55	95	150

Source: Field data, 2015.

Table 10. A cross-tabulation of self-efficacy & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	42	73	115
NO	13	22	35
Total	55	95	150

Source: Field data, 2015.

4.3.6. Financial Cost of Mobile Banking Service and Its Impact on Usage

Results from the questionnaires administered revealed that, a total numbers of one hundred and thirty (130) respondents strongly testified that, financial cost of using mobile banking service would have no impact on their decision towards the adoption and use of the service provided by Access Bank. This means that, some customers were willing and would not mind the stress of going for branch-base transaction if the cost is high. On the contrary, another set of twenty (20) respondents were discouraged by the cost of using mobile banking services and to them it was too high, even if it is useful they will still not adopt the innovation. Where the costs are low, this will encourage greater usage of the service [51]. The researchers deduced from the results obtained that, most of the respondents who were office workers who did not see cost as an issue could probably mean that, they earn substantial or above the minimum wage which could have made it possible for them to afford the service. Basically, this research finding shows that perceived financial cost has a negative effect on consumer intention to adopt and use mobile banking services of Access Bank which again attests to the findings of the authors in [1] [22] [55]. This is also similar to the findings of the author in [58] in a similar self related technology (internet banking) that high Internet access cost have hinder the growth of internet banking in South African due to the high cost of staying connected for longer hours (**Table 11**).

4.3.7. Credibility of Mobile Banking Service and Its Impact on Usage

Finding from the responses gathered from the questionnaires administered to the sampled customers of Access Bank revealed that, as many as one hundred and twenty (120) respondents do consider security and privacy as an issue before applying to use mobile banking service. Surprisingly, thirty of another set of respondents do not consider security and privacy as an issue before applying to use mobile banking service. The result from this research is in support with the findings of the authors in [24] [55]. The researchers concluded that, credibility of an innovation, such as the mobile banking service rendered by Access Bank do have an impact on the customer adoption of a mobile banking services (**Table 12**).

5. Summary, Conclusions and Recommendations

This section shows the conclusion of this study and their relationship with relevant theories, and draws a conclusion on the entire findings. The contributions and recommendation given in this research work can be used for future research and enhance further development in the banking sector. The limitations of the study are also discussed within this section.

Table 11. A cross-tabulation of self-efficacy & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	52	78	130
NO	3	17	20
Total	55	95	150

Source: Field data, 2015.

Table 12. A cross-tabulation of self-efficacy & mobile banking usage.

Responses	Respondents		Total
	Users	Non Users	
YES	50	70	120
NO	5	25	30
Total	55	95	150

Source: Field data, 2015.

5.1. Summary

This research seeks to answer two questions in line with the research objectives. Looking at the research question for this study, which was to assess the level of consumer knowledge about mobile banking in Access Bank in comparison with the present or current adoption rate, it clearly showed that, there was a high level of consumer knowledge about mobile banking in Access Bank but presently, the current rate of mobile adoption in Access Bank was very low when it is compared with the number of bank customers that have heard about mobile banking facilities. This showed that, consumers were yet to embrace this innovation due to many factors which have been described in the research. This also showed that, being informed alone is not enough to persuade customers to use the self-service but this had to do with their behavioural intention to adopt the service. The awareness created by Access Bank to persuade customers was very important and the level of knowledge gained through various means of advertisement could not be over emphasized in helping to facilitate their decision in the self-service and this has been equally stated in the findings of researchers in the past [22] [52]. Secondly, the research question also looked at the factors which influence the consumers to adopt the use of mobile banking services and the framework was used to analyze this. The proposed research framework developed were perceived financial cost, social influence, perceived credibility, perceived usefulness, perceived ease of use, perceived self-efficacy, compatibility and awareness. All this factors had some level of significant effect on consumer adoption rate in Access Bank. Looking at the research framework which is eight in numbers, it was observed that, two serve as a major drawback for consumer adoption of mobile banking services in Access Bank. From this research finding, perceived credibility (security and privacy) and perceived financial cost were the major drawbacks while social influence, perceived usefulness, associated reward, perceived self-efficacy, compatibility, awareness and perceived ease of use are seen as determinants of mobile banking adoption in Access Bank. The perceived credibility (security and privacy) and perceived financial cost were the major drawbacks to the adoption of mobile banking in Access Bank. The research finding was consistent with the findings of other researchers of the past [1] [23] [52] [55]. This research was able to confirm that, there exist a relationship between compatibility and perceived usefulness because the perception that an innovation (mobile banking) is compatible with an individual's need lead to the thought of its usefulness. Perceived credibility (security and privacy) was seen as a major challenge for providers as this was asserted by the author in [59]. This findings showed that, perceived credibility had a stronger effect on consumer's behavioural intention to use mobile banking than Technology Acceptance Model (TAM) variables (perceived usefulness and perceived ease of use) as claim by the authors in [1], and this was also in line with the critical success factor pointed out for mobile commerce which was highlighted by the author in [59] that, credibility can be a setback for the system. The research showed that, for customers of Access Bank who have previous experience in using related technological device (internet banking) must have gained more confidence in their past usage of similar services and could have been the reasons for their decision to use the service and equally, few customers (users) are were willing to overlook the issues of security & privacy and financial cost and to take advantage of the benefit associated with mobile banking service. And the majority of the non-users were able to confirm that, security and privacy and the cost were their major concern for not using the service. From the research findings, it was observed that, there exist a positive relationship between compatibility and perceived usefulness. When an innovation is seen as been compatible with an individual transaction or business needs then it leads to the thought of its usefulness by the customers. This research work is valid, useful and could arguably be used by other researchers and mobile banking operators in Ghana to improve the rate of adoption on the usage of mobile banking in Ghana.

5.2. Conclusion

From the study it can be concluded that, mobile banking service adoption rate is very low with customers of Access Bank. However, when it come to all the factors that can influence the adoption and usage of mobile banking services, majority of the respondents included in the study attested to the findings that all the factors as reviewed from the analysis such as awareness, usefulness, simplicity, compatibility, self efficacy and creditability of mobile banking service can have an influence on their adoption and usage of the service.

5.3. Recommendation

This research work has shown that mobile banking adoption in Ghana is low as compared to developed coun-

tries of the world despite the high level of consumer knowledge in the country. This study can be used by banks to realize the benefits that could be derived if the innovation is well managed by the banks as well as taken drastic steps to address the issues militating against its growth. Ghanaian banks need to increase and improve the level of awareness, as customers of banks said they had not been persuaded individually by the banks officials. The banks need to build the confidence of their customers which will lead to more patronage. There were evidences that many customers have seen the advert but were still skeptical about its usage. There is a need to change the customer's perception through a well structured advertisement and staff interaction in order to make them realize that the service is safe to use. The customers wanted to know the advantages and disadvantages associated with the service and as a result of this, they could weigh the costs and the benefits of using the self-service which in turn will reduce unnecessary worries and anxiety. This will also help customers to get clarification over confusing issues. The banks should also ensure that the cost of mobile banking service is reasonable and affordable for students, officer workers, business person, etc in order not to discourage current users and the intending users. It is therefore necessary for banks to improve the level of awareness and build customer confidence as this will help change customers attitude towards the system; this is supported by the author in [60] that, sufficient effort are not been made to increase customers confidence in online facilities. Due to fear of fraud and uncertainty many Ghanaians have kept a distance from this innovation and they will rather go to the banks to carry out their banking transaction. Customers will be more willing to accept the innovation if the regulatory body Central Bank of Ghana, takes the initiative to tackle the security issues of online bank transaction in the country. The horrible experience of Ghanaian on the use of ATM machine is still very much present and up till now the regulatory body is yet to achieve success in this area though banks are currently replacing the old ATM cards and the old machines with more secure once and equally, the bank should constantly remind their customers on how to keep their pin and password safe for security purpose.

Attention should be given to students in educational institutions as they consist of a larger population of the country due to their favourable attitude towards new innovation and this is also evident that the majority of them are ATM [61]. Equally, the banks staff should be trained and be knowledgeable about how to use the self-service so as to provide support for customers. The effectiveness and efficiency of mobile banking service in the bank will reduce man power labour and reduce the congestion at the banking hall. The higher the number of customers that use mobile banking services at a reduced price, the higher the return on investment for banks. Banks needs to visit tertiary institutions and make the benefit known to students through seminars, conference, etc, which is likely to increase their customer base and also activate intending users to use mobile banking service since there is high significant number of mobile phone users in this category [62]. Equally, more attention should be given to the office workers having shown a positive attitude towards the innovation which gives them access to the service anytime and anywhere [34]. It is also suggested that, banks should channel their attention towards this categories of customers in order to increase mobile banking adoption in Ghana.

5.4. Limitation and Future Research

The further research of this study's frame work can be useful to advance knowledge about factors which influence consumers' behaviour towards mobile banking in Ghana. This research work has two limitations. Firstly, in order to have a wider range of customer's perspective a larger population size could be considered and be increased in order to have a more generalised view and also the research could be expended to reach more states in Ghana, nevertheless this research is still valid having analysed the available sample size with close-ended questions. Secondly, it would be desirable if this research could have extensively use other statistical model such as linear regression, exponential and polynomial regression model as this will helped to identify the highest degree of change in consumers behaviour within Ghana. Equally, further research could be conducted by looking at the consumers' demographic characteristics and the adoption of mobile banking in Ghana. This research work has been able to contribute to the existing literature on consumer adoption of mobile banking in Ghana and has also, bridge the gap which exists between developed countries and developing countries with particular reference to Access Bank. Equally, this research has been able to examine the determinants that influence the consumer adoption of mobile banking in Ghana.

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