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## Assessing Customers' Perception of Electronic Banking Services: Evidence from Ghana Commercial Banks in Kumasi Metropolis

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### Abstract

The study sought to investigate customers' satisfaction about the quality, accessibility and challenges associated with electronic banking in Ghana with the Kumasi Metropolis as Focus. Quantitative research method with descriptive research design was used. The primary data obtained through purposive questionnaire were analyzed using Statistical Package for Social Sciences (SPSS), Principal Component Factor Analysis, and Relative Importance Index. The quality of electronic banking (e-banking), additional support services, benefits to banks, risks in internet banking, prompt responses and content format were regarded satisfactory; sophisticated software, diverse features, ease of use, banking cards, support services and environmental conditions were regarded quite satisfactory; internet connection, user's ability to access, and availability of Automated Teller Machines (ATM) machines were however, unsatisfactory. The study concludes that customers have a mixed of positive and negative perceptions of e-banking services offered by commercial banks and suggests better means of raising funds to provide ATMs at vantage points and intensify their marketing to create more awareness.

**Keywords:** Accessibility, Electronic Banking, Customers, Quality, Satisfaction

### Introduction

The e-banking concept is based on distribution and communication channel which offers customers the opportunity to interact with a bank to conduct transactions economically and efficiently, mainly through electronic tools, e.g., tablets or smart phones (Singh and Srivastava, 2020). It offers several valuable services for customers such as account checking, bill payment, transferences, or mobile phone text message notifications (Mostafa, 2020). There is no doubt that banking activities in recent times have become simple and easy to undertake since it is now possible for customers to undertake transactions from cars, offices, homes and the like at their convenience. Customers now would not need to physically present themselves in banking halls to transact because electronic banking (e-banking) is giving customers competitive advantage (Chemtai, 2016; Malaquias and Hwang, 2019) over old ways of ledger cards and manual filling systems (Offei and Nuamah-Gyambrah, 2016). The

fast altering business atmosphere has created an insatiable appetite for fast tracked business, hence the introduction of electronic platforms. For this reason, John and Rotimi (2014) found that most banks have their business extended to some countries and even the most remote areas of the world. The business world and for that matter banking today is fast-tracked by technology to give customers desired satisfaction. E-banking is now in vogue because aside cash withdrawals, e-banking offers some special services which may not be available in offline banking, for example, access to banking services from anywhere and at any time (Shankar and Jebarajakirthy, 2019). Internet and technological advancement have influenced activities of financial services and their usage (Malaquias and Hwang, 2019). Many financial institutions including banks suggest innovative electronic ways for maintaining a competitive advantage and satisfying customer demands. Mobile devices are now popular tools of e-banking used by most customers to transact their businesses (Zhang et al., 2018). Thus e-banking is being valued by most financial institutions and customers (Baabdullah et al., 2019). The competitive banking arena has helped e-banking to become an important cutting- edge electronic-based and self-service distribution channel (Malaquias and Hwang, 2019). It is not surprising that banks in Ghana are currently much focused on expanding their e-banking activities. In Ghana, most banks are also adopting e-banking system which is the state - of- the art (Onuman, 2016). E-banking has extended to most banks in Ghana including micro-finance companies. Currently in Ghana, e-banking is an innovation in producing merchandise and services through electronic channels to meet customers' satisfaction (Anane and Asamoah, 2015). Many banks are making what appear to be massive technology investments to retain and update their infrastructure, not only to offer new services based on electronic information, but also to control their risk positions and pricing (Abor, 2004). The foregoing makes it imperative to investigate customer's satisfaction of e-banking in selected commercial banks in Ghana with focus on Kumasi Metropolis.

The main aim of the present study therefore was to investigate customer satisfaction with e-banking services in Ghana. Specifically, the study was to:

1. determine the extent to which the quality of e-banking services affect the satisfaction of customers of commercial banks in the Kumasi Metropolis
2. examine the factors that affect customers' accessibility to e-banking services of commercial banks in the Kumasi Metropolis
3. study the various challenges customers encounter in accessing e-banking services of commercial banks in the Kumasi Metropolis

## **Literature Review**

### **Theoretical Review**

The present study adopts theories such as Financial Intermediation Theory, Technology Acceptance Theory, Financial Intermediation Theory, Bank-Led Theory and Bank Focused Theory in support of the research topic under study.

### ***Innovation Diffusion Theory***

This theory was postulated by Rogers in 1962 and is concerned with the individual's intention to adopt a new technology in the performance of certain traditional activities. To adopt an innovation the theory considers such factors as the relative advantage, complexity, compatibility, trialability and observability of the innovation (Rogers, 2003 cited by Kaminski, 2011). Thus there may be those who adopt, continue to adopt or discontinue adoption and those who reject and continue rejection or reject and later adopt including the laggards

(Rogers, 2003 cited by Kaminski, 2011). This behavior may depend on the positive outcomes of the innovation (Rogers, 2003 cited by Kaminski, 2011). Since e-banking is a new innovation gradually spreading in our modern society, there is the need to put structures in place to encourage customers to adopt (Barnes and Corbitt, 2013). This theory is applied in the present study as it determines factors of quality e-banking services, accessibility to these services and challenges that must be overcome to enable customers to easily adopt this technology.

### **Technology Acceptance Model (TAM)**

The attitude of the consumer towards the acceptance of a new information system is necessary for the effective implementation of the information system. Therefore, TAM which was proposed by Davis (1989) and an expansion of Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) posits two theoretical constructs as fundamental determinants of the user's acceptance of a knowledge system: perceived utility (PU) and perceived ease of use (PEOU). Technology Acceptance Theory is relevant to the study since the study is anchored on the use of the technology by the customer although they would be more relevant to a study involving adoption of technology. The consistency and efficiency of a device can only be validated by its level of acceptance by users, ease and usefulness (Natarajan et al., 2018; Zhang et al., 2018) A system that meets the needs of users improves system satisfaction and is an indication of the performance of the system. Thus, the TAM applies models to study the acceptance and intention to use information system tools such as m-banking (Mostafa, 2020; Shankar et al., 2020) and e-banking (Ahmad et al., 2019; Yaseen and El Qirem, 2018). However, Mostafa (2020) argues that customers could negatively evaluate e-banking if there are several challenges associated with it.

### **Financial Intermediation Theory**

According to Greenbaum and Thakor (2007), the theory of intermediation builds on the concept that mediators are used to decrease transaction costs and asymmetry of knowledge. The theory, according to them is based on the theory of knowledge asymmetry and the theory of the agency, and its purpose is to understand why there are financial intermediaries. The financial intermediation theory is based on the economics of imperfect data that started to emerge with the seminal contributions of the 1970s (Akerlof, 1970; Rothschild and Stiglitz, 1976; Spence, 1973). Scholtens and Wensveenn (2003) pointed out that the presence of financial intermediaries is clarified by the existence of high transaction costs, the absence of full knowledge in useful time and the system of regulation, as indicated by the intermediation theory. There are financial intermediaries which can reduce the cost of information and transactions resulting from an asymmetry of information between borrowers and lenders (Claus and Grimes, 2003; Greenbaum and Thakor, 2007). This theory is centered on cost of transactions and information access by the customers. The financial institutions assist in reducing the cost of transaction and can easily access information on behalf of the customers hence the relevance of this theory to the study.

### **Bank-Led Theory**

A financial institution provides financial services through a retail agent in the bank-led theory (Lyman et al., 2006). Retail agents communicate with clients as a branch-based dealer and execute functions (Owens, 2006). As the client performs financial transactions using retail agents instead of bank branches, the bank-led model provides a separate alternative to

traditional branch-based banking (Lyman et al., 2006). This model promises the opportunity to dramatically increase the outreach of financial services by using multiple delivery platforms that could be considerably cheaper than bank-based channels (Essvale Corporation Limited, 2011). Bank-led theory, non-bank-led theory and bank-focused theory relate to the aspect of branchless banking.

### **Bank-Focused Theory**

This hypothesis is based on a conventional bank's use of non-traditional low-cost delivery platforms to provide its current customers with banking services (Essvale Corporation Limited, 2011; Kapoor, 2010). Examples vary from the use of automated teller machines (ATMs), internet banking, or cell phone banking, according to (Kapoor, 2010). While the bank-focused model provides benefits for the financial institutions involved, such as greater autonomy and branding exposure, it is not without its challenges (Kapoor, 2010). The primary concerns of the customer are the quality of experience, identity and transaction security, service reliability and usability and the level of personalization permitted. By offering a branchless banking service with an easy to use interface, banks fix these problems (Kapoor, 2010).

### **Empirical Review**

Banks often would want to satisfy its customers by providing them with opportunities to access products and services through improved technologies (Malar et al., 2019). For example, growth of Internet services, offer valuable possibilities of interaction with companies and allow customers to get involved in the development and/or improvement of their products and services. Consequently, organizations are interested in attracting customers who are willing to collaborate for such a success (Chepurna and Criado, 2018; Hosseini et al., 2020; Mostafa, 2020).

In several respects, the notion of electronic banking has been described as the provision by banks to customers of bank information and services via various distribution channels that can be utilized with various terminal devices, such as Automated Teller Machines (ATM), mobile/telephone banking, personal computer banking, internet banking and smart card banking, cell phone with browser or desktop software, telephone or digital television (Hoseini and Dangoliani, 2015; Hosseini et al., 2020; Okechi and Kepeghom, 2013).

A lot of research has been conducted in the particular field of internet banking. Over the years, researchers have dwell into internet banking and influences on customer satisfaction (Nimako et al., 2013). They indicated that customers of Merchant Bank, Ghana (MBG) were more satisfied with the Internet Banking Service Quality (IBSQ) than those of Ghana Commercial Bank (GCB) though income influenced the satisfaction of customers for IBSQ generally. However, generally, customers of the two banks were dissatisfied in terms of promptness of reception of responses regarding customer request; the ability to be guided online to resolve problems; offering of preferentially lower fees/rates and charges; and reasonability of the transaction fee for online banking transactions. Furthermore, they were less satisfied with the quickness of web pages loading when using online banking transactions. Jayawardhena and Foley (2000) discovered that website features such as speed, web site content, website design, navigation, web interactivity and security all factor in influencing user satisfaction. Broderick and Vachirapornpuk (2002) also discovered that for a customer

to experience high quality of service experience, he or she must be made to be part of the development (especially asking customers to contribute ideas to a planned project), information on issues such as customer's zone of tolerance, the degree of role understanding by customers and other responses must all be factored. Simon and Thomas (2016) studied the effect of electronic banking and customer satisfaction among 5 tier banks in Nairobi Town. They indicated amongst others that convenience of mobile banking affects customer satisfaction to some extent while user friendly ATMs, ease of access of ATMs and privacy of ATMs affects customer satisfaction to a great extent though, using ATM cards in supermarket and affordability of ATM charges had moderate effect on customer satisfaction. Addai et al (2015) used customers from three banks in Ghana to establish the relationship between customer satisfaction and e-banking services including availability, reliability and convenience in using e-banking. They realized a positive correlation between these conditions and customer satisfaction. Anane and Asamoah (2015) also conducted studies into customer satisfaction with regard to e-banking and reported that all the respondents had complete satisfaction with the use of e-banking and that the its use have increased banking service quality and established customers' satisfaction. Adams (2019) similarly conducted a study into customer satisfaction with e-banking using Ecobank Ghana Ltd and found out that there was a high level of awareness and satisfaction of customers to electronic banking products/services provided by the bank despite few challenges relating to unreliability and security issues associated to its adoption. Low patronage of e-banking may not necessarily be always customer dissatisfaction but awareness creation may also affect usage. Offei and Nuamah-Gyambrah (2016) undertook a study at Ghana Commercial Bank in Koforidua and indicated that though there was the existence of internet banking facilities at the bank, respondents of the study were not fully aware of the facilities and those who were aware also indicated that the use of internet banking was quite expensive and that though the bank was operating that facility, patronization by customers was not to the fullest.

### **Speed of Processing Information**

Hoffman and Novak (1996) identified the relationship between download speed (bandwidth) and user satisfaction. According to Jayawardhena and Foley (2000) download speed mostly depends on the nature of the site a particular content is accessed or downloaded from, the method of connection adopted for the download, and the computer hardware. Some site's demonstration is presented in a small snapshot which requires visitors of the site to download the program before they can view it. Sometimes due to the danger of importing viruses and manageable disk space, people rather not visit the site.

Jun and Cai (2001) made an important finding that very often, slow response after issuing a command on a website makes users confused as to whether or not the transaction is completed. Johnston (1995; 1997) made illustration on certain actions. Example is increasing the information processing speed, which is likely to please customers. Certain claims were pointed out. Claims that suggested that it's more important to ensure that dissatisfiers are dealt with before satisfiers directed to some activities such as improving the reliability of equipment which will lessen dissatisfaction rather than delight customers.

### **Fees and Charges in e-banking**

Service quality characteristics in the e-banking industry are significant as the key service delivery and communication medium is human-internet interaction. The potential competitive benefit of e-banking is the availability of high quality services to meet customer

needs at lower prices. It has been reported that e-banking has lowered operational and administrative costs effectively (Siriluck and Speece, 2003). Cost reductions also helped e-based banks deliver reduced to no service fees and offer higher interest rates than conventional banks on interest-bearing accounts (Gerlach, 2000; Jun and Cai, 2001).

### ***Customers' Accessibility to e-banking***

Customers' ability to gain access to information on banking services placed on the internet, thus accessibility, in order to be effective, is looked at in many ways. Factors such as content format, user hardware and software, network connections, user abilities and disabilities, and other environmental conditions are all considered (Godwin-Jones, 2001; Hackett and Parmanto, 2005). Electronic banking and the web accessibility are developed web content generally designed to aid users with disabilities conduct a smooth transaction. A suitable example is the development of a web page with a text equivalent for image content which assists readers with visual impairment with access to information through a screen reader. There are a couple of obstacles that deprives a percentage of bank customers the opportunity to engage in electronic banking services (E-banking). Thus, customers need access to the internet (uninterrupted access) in order to enjoy smooth E-banking services such as internet and other mobile banking facilities. Also, some training is required in order for users to get familiarize with its lengthy step-by-step method of usage. Customers, who often show displeasure in the use of E-banking, normally complain about the service's lack of social dimension, thus the lack of face-to-face interactions at branch site (Karjaluoto et al., 2001; Karjaluoto et al., 2002). Furthermore, security issues also make customers indecisive as to the safe use of E-banking (Ezeoha, 2005). Researchers discovered quality bank services, customer satisfaction and preferences to have had a fundamentally positive impact on the success of E-banking today. A recent study showed partly changing trend of consumer behavior due to more than enough free time (Seitz and Stickel, 2001). The method used by financial services may be influenced by individuals, mobility, independence of place, flexibility and time.

Web pages designed to aid people with disabilities, as earlier explained, have issues with techniques and approaches, such as discoverability and download speed (Godwin-Jones 2001; Hackett and Parmanto, 2005). Reliable and prompt responses, ease of use and attentiveness has a considerable amount of effect on customers' satisfaction and their perceived overall service quality (Jun et al., 2004). This shows, notably, a positive relationship between customer satisfaction and overall service quality. Yang and Jun (2002) faction a redefined traditional service quality attribute in relation to online services. They came up with an instrument comprising seven (7) online services attributes, including reliability, access, ease of use, personalization, security, credibility, and responsiveness). A study was conducted by Shamsuddoha and Alamgir (2004) on Loyalty and Satisfaction Construct in Retail Banking in India. The study was conducted to examine and prove that customer satisfaction is the most important attribute contributing to loyalty in retail banking. There has been a lot of study that proved customer satisfaction to have played a key role in the establishment of loyal customer base. Furthermore, the studies conducted revealed satisfaction and loyalty relationship combination, a very critical combination to retail banks. In terms of academic research and effective marketing in financial services, a comprehensive move towards the key factors behind loyalty as well as the causes of customer satisfaction is very critical.

Digital banking in North America is not an all-or-nothing proposition according to the North America Consumer Digital Banking Survey (Accenture Consulting, 2016). The study revealed that even though customers visit branch, online banking surpasses any banking channel. The

study included customer behavior towards the selection of banking channel which solely depends on customers specific needs at the time of the selection, while aiming to get the value they want.

Bialas et al (2017) touched on the evolving nature of online and mobile banking services in the United States of America (U.S.A). They indicated that expectations shifted from 'which bank has more branch locations' to how effective these banks deliver service to its customers as well as remote accessibility to banking transactions, thus, the anytime-anywhere mode of transaction. Kehinde et al (2015) stated that in Nigeria, the banking system has over the years operated on the manual system. They further stated that e-banking in Nigeria began in the late 1980s and today, with the improved telecommunication system, the e-banking system has come of age compared to other nations of the world. Even though customers are known to be motivated and satisfied with the bank activities, other studies conducted by Abor (2005) showed that most customers do not visit these banks' websites and also do not patronize the SMS and internet banking even though banks have these services running. Ankra (2012) in his survey conducted in the capital region of Ghana with a sample size of 360 customers and 6 banks suggested that banks which engage in internet banking had their own business websites. Further studies in Ghana by Asare and Sakoe (2015) indicated that e-banking has enabled many products and services to be offered to customers and hence the customers do not have to travel to the branch to access the banking services. They further indicated that banks have invested heavily in information technology infrastructure and hence, are able to offer a wide range of products and services including automated teller machines, internet banking and mobile banking.

### ***Challenges Associated with e-banking***

All transactions occur via the Internet on a bank's secure server. To execute the transactions, the bank has all the data and software required. Customers go to the website of the bank, log in and then take advantage of the web services of the bank. Account access and analysis, transfers of funds between accounts, bill payment, and then a widening selection of new services and goods are standard bank services. Security occupies a significant position in internet banking, so encrypted data packets have several Internet security protocols (Kolsaker and Payne, 2002; Dong-Her et al., 2004). Customers are not informed of encryption, but due to their security restrictions, only some versions of common internet browsers are suitable to certain banks (Kolsaker and Payne, 2002; Dong-Her et al., 2004). It is also hypothesized that privacy influences customer satisfaction positively. Arunachalam and Sivasubramanian (2017) describe Internet banking as a banking service where customers can access their bank account via the Internet using a PC or mobile phone and a web browser; and Ongkasuwan and Tantichattanon (2012) described Internet banking as a banking service that allows customers to access and conduct financial transactions from their Internet computers on their bank accounts. The previous studies revealed user input factors as a function of control, enjoyment and eagerness to use. Enjoyment, the perceived playfulness and inner value experienced by consumers resulting from the use of electronic banking which in turn influences the satisfaction level as Gan and Clemes (2006) indicated that consumers will adopt to the use of electronic banking when they are made aware of its availability, even though some may ignore. Lichtenstein and Williamson (2006) established a very important view about theories and converging reference domains owing to Muslims and Ramadhan suggesting a lot of significant influences on consumer adoption to internet banking as well as theories of



consumer behavior in the choice and use of mass media, technological adoption, online service adoption, internet banking adoption, gratification theories, innovation diffusion, online consumer behavior and service switching costs. Customers' attitude towards the use of internet banking poses a huge influence on their intention to engage in the use of the internet banking. Lichtenstein and Williamson (2006) indicated that customers are more likely to adopt internet banking when they portray positive attitude towards the service and the reverse is true. Eriksson et al (2005) deemed customer's attitude as very critical and significant factor to accepting or rejecting technology. Notable among the theory is the significance of relationship between attitude shown towards using and usage. Saha and Zhao (2005) defined customer satisfaction as the putting together results from evaluations, psychological responses and perceptions to a consumption experience pertaining to a product or service. They added that customer satisfaction occurs as a result of evaluation through cognitive and effective means, where standard is compared to actually perceived performance. From the explanation, it can be proved that customers will only get dissatisfied if the performance perceived is less than expected, and customers will be satisfied if perceived performance exceeds expectations.

Boateng and Molla (2006) postulated a theory to support that in order to encourage the objective of introducing electronic banking services and even better, going on to influence the usage experience, operational constraints which points to customer location, efficiency of the bank's main software and the need to maintain customer satisfaction will be very keen factors to consider. Jiaqin et al (2007) conducted a study through a web-based questionnaire survey to collect data on the challenges and new issues rural areas in Kenya encounter with the use of E-banking. The study revealed various trends and development of the application of E-banking in rural areas and its economic effect on the local financial institutions. The survey was to reveal the ability of those local financial institutions attempt in adopting the E-banking as compared to the others in the larger cities, taking into consideration, emerging issues and challenges. The study revealed lack of internet service availability and know how as some of the challenges faced by local financial institutions in rural areas. Raman et al (2008) stated that a certain level of service should be achieved since service, as intangible goods appeal differently to each customer and level of service correspond perfectly to the level of satisfaction, and that customer satisfaction is a critical indicator of the resulting customer commitment, loyalty and retention.

Amoako (2012) conducted a study to know the impact of ICT on banking operations in Ghana. The research showed (in terms of provision of banking services, growth of the Ghanaian banking services, growth of the Ghanaian banking industry as a whole) that ICT has contributed positively to the mentioned cause. The study also revealed that in order to develop internet banking and E-banking in Ghana, the government and banks have to play a contributory role in enhancing ICT infrastructure, introduce some tax reduction incentives and ensure availability of personal computers to every Ghanaian home. Other financial institution including banks should also play a role in reassuring customer's safety by offering ICT related programs through sensitization, workshops and training personnel to support the skill of being a central monitoring unit permanently mannered by these skilled personnel to the operations of all the bank's ATMs in order to ensure that shortage of funds, seizure of electronic cards, occasional shut downs are all handled with dispatch. Finally, in order to reduce turnaround time of customers, banks should work on introducing more electronic products and services that can effectively support this cause. Introducing such products was

revealed to give customers the opportunity to stay at the comfort of their homes and workplaces and still manage to conduct smooth transactions with their banks.

### Conceptual Framework

The conceptual framework for the study dwells on the premise that the issues customers encounter in e-banking for example quality services, accessibility to e-banking and challenges faced (independent variables) could determine the level of customer satisfaction (dependent variable) as indicated in figure 1.



Figure 1. Conceptual Framework (Adopted from Ho and Lin, 2010)

### Methodology

#### Research Design

The present study adopted the quantitative research method in fulfilling its objectives. The descriptive survey research design was used in this study. This design summarizes an existing phenomenon via the use of numbers to characterize individuals or groups and examines the nature of existing conditions (McMillan and Schumacher, 2010).

#### Target Population, Sample Size and Sampling Technique

The target population for this study included all commercial bank clients in Ghana. The sampling frame was made up of commercial bank customers in the Kumasi Metropolis estimated to be 2124 participants from selected commercial banks in the Kumasi Metropolis. The customers of selected commercial banks formed the target population of this study. Thus those customers who had subscribed and are on the various e-banking platforms were considered the population for the study (Igwenagu, 2016; Ghana Banking Survey, 2019). The sample size for participants was 161. This represented about 7.6% of the sampling frame appropriate according to (Babbie and Button, 2001). Purposive sampling technique was used in identifying and reaching the sample for this study. This is because the study sought to find views of participants who had better knowledge of e-banking and could comment better on customer satisfaction.

#### Data Sources, Instrument and Procedure of Data Collection

Primary data was gathered from selected participants (customers) through the use of questionnaires (Appendix) for the analysis and discussion section with reference to the specific objectives of the study. Thus, findings for the study were arrived at by the use of

primary data. The views of respondents were generated in such areas as customers' perceptions about the quality of electronic banking in commercial banks of Ghana; customers' accessibility to electronic banking facilities in commercial banks of Ghana, and the various challenges associated with electronic banking in Ghana. Structured questionnaires were used to collect primary data for this study. The obtained variables from literature review were strategically compounded into close-ended questionnaires and served to the target population in person and electronically. The questionnaires were designed so as to provide answers to the objectives of the study after analysis. Questionnaire surveys have been proposed by Chen and Jin (2013) as most broadly adopted approach in quantitative research. The structured questionnaires were largely closed ended to ensure uniformity in responses. The questionnaire was designed to address the research aim, objectives and questions of this study. The questionnaire comprised five main sections. Section A of the questionnaire covered the demographic data of the respondents whilst section B covered customers' perception on the quality of electronic banking in commercial banks, section C investigated customers' accessibility to electronic banking in commercial banks, and section D covered the various challenges associated with electronic banking in Ghana. Five-point Likert scale questions were mainly used on a scale of 1-5. Customers' perception on the quality of e-banking was rated on a scale of 1 to 5: where 1= very unsatisfactory; 2= unsatisfactory; 3= quite satisfactory; 4= satisfactory; 5= very satisfactory (Alston and Miller, 2001). Similarly for customers' accessibility to e-banking the satisfaction levels were rated on a scale of 1 to 5: where 1= very unsatisfactory; 2= unsatisfactory; 3= quite satisfactory; 4= satisfactory; 5= very satisfactory (Alston and Miller, 2001). Challenges to e-banking were rated on a scale of 1 to 5: where 1 = heavy disagreement, 2 = disagreement, 3 = some disagreement, 4 = compromise, and 5 = strong agreement. The Relative Importance Index approach was used to assess the relative importance of the problems faced by customers when accessing electronic banking. The Relative Importance Indices (RII) were obtained for each of the variables using the below equation according to Chan and Kumaraswamy 1997 cited by Gunduz et al. 2013; 
$$RII = \frac{\sum W}{A \times N}$$
 Where W indicates the weighting (1-5) assigned by the respondent to each component, A represents the highest weight (5 in this study) assigned and N denotes the total number of respondents. The RII value varies from 0 to 1 without the addition of zero (0). The greater the importance of RII, the more the element is influential, and vice versa, with this method. From the transformation matrix, the comparison of RII with the corresponding influence level is calculated. The derived rates of significance from RII according to Raja et al. (2018) are; High (H)=  $0.8 \leq RII \leq 1.0$ ; High to Medium (H-M)=  $0.6 \leq RII \leq 0.8$ ; Medium (M)=  $0.4 \leq RII \leq 0.6$ ; Medium to Low (M-L)=  $0.2 \leq RII \leq 0.4$ ; Low (L)=  $0.0 \leq RII \leq 0.2$ .

### Data Analysis Technique

The primary data retrieved from the study were analyzed using several tools of analysis like the Descriptive Statistics (Percentages, Means, Frequencies and Standard Deviations), Mean score ranking, Principal Component Factor Analysis, and Relative Importance Index. The Cronbach's Alpha Coefficient test was used to check the reliability of the scale and internal consistency of the variables. Internal and external validity of the study were also attained through content-related validity measurement. Software applications used for the analysis of quantitative data were the Statistical Packages for Social Sciences (SPSS), and Ms. Excel.

## Results and Discussion

### Cronbach's Alpha Coefficient Test

The alpha coefficient of Cronbach specifies the reliability of the internal accuracy of the measuring scale adopted (Santos, 1999). The questionnaire was built on a five-point Likert scale only, so it was imperative to use the Cronbach alpha coefficient to evaluate the internal accuracy of the data in order to assess the reliability of the five-point Likert scale. The alpha coefficient of Cronbach ranges from zero (0) to one (1), where one (1) means the maximum degree of quantitative input validity and reliability (Santos, 1999). In this research, the alpha coefficients of the Cronbach range from 0.84 to 0.91 (Table 1) for all objects, all of which were above the 0.7 threshold (Norusis, 2011), reflecting high data reliability.

Table 1

*Cronbach's statistical test results*

	Cronbach's Alpha	No of items
<b>Section B</b>		
Customers' perception of e-banking in selected commercial banks	0.87	22
<b>Section C</b>		
Customers' accessibility of e-banking facilities in selected commercial banks	0.84	11
<b>Section D</b>		
Challenges encountered by customers in respect of e-banking	0.91	11

Source: Field data, (2022)

### Respondents Background Information

To achieve any meaningful quantitative analysis the significance of demographic information cannot for any reason be undermined. Hence, during the empirical survey in this study, background and general information about the respondents were enquired. This part of the questionnaire was designed to solicit for basic information regarding the respondents so as to provide detailed characteristics of the respondents in this study to validate their credibility as responsive participants. The demographic data collected on the respondents encompass gender, age, employment status, years of relationship with bank, and educational level. Knowing the profile of the respondents will enhance the validity and reliability of the data collected. Mishra et al (2019) opines that descriptive statistics are employed to recapitulate a set of observations to communicate a large quantity of information in a simplest manner. Barde and Barde (2012) maintains that sample mean has to do with the center of distribution of observations (central tendency), and standard deviation explains how individual observations are dispersed about the mean.

Figure 2 is a graph of the distribution of respondents by gender. The results indicates that 79 males and 82 females were interviewed suggesting that females dominated the participants interviewed. This gives a male to female distribution of 1:1.04, not necessarily indicating gender bias but the fact that the study had a balanced view.

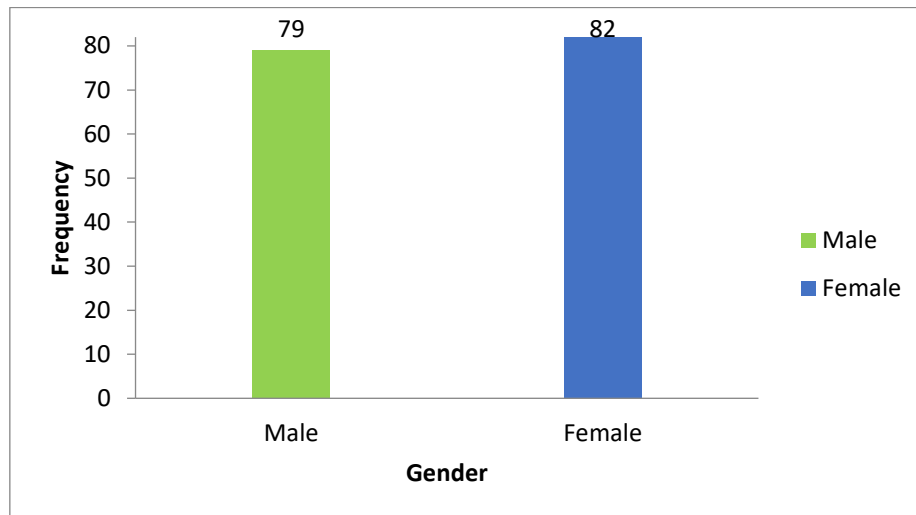


Figure 2. Gender distribution of respondents

The aim of investigating the employment status of customers was to verify whether selected participants had source of income to save with banks under study, and which category of workers dominated the market size of selected banks. Maximum frequency of 49 (30.43%) from Figure 3 suggests that self employed people formed larger part of the customer base of commercial banks. From the information gathered about the employment status of customers, it is obvious that participants are capable of providing reliable data for reliable findings.

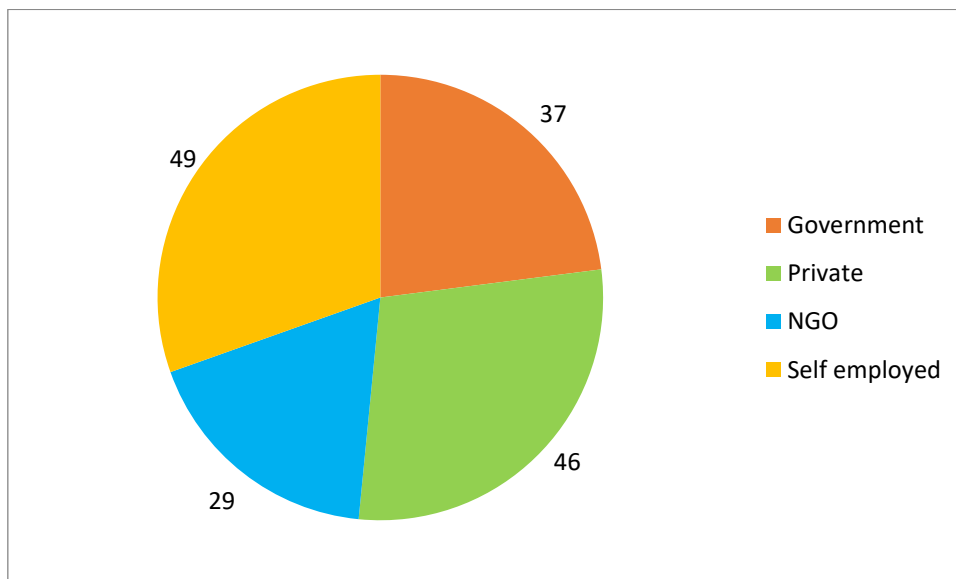


Figure 3. Distribution of employment status of respondents

Ages of respondents were investigated to determine the maturity level of customers in terms of expressing fair and reliable views about the state of affairs of E-banking in Ghana. Figure 4 exhibit that maximum frequency (mode) of 66 falls within the modal class of 31 to 40 years, indicating that more matured people were selected for the study and that the youth dominated the customer base of commercial banks.

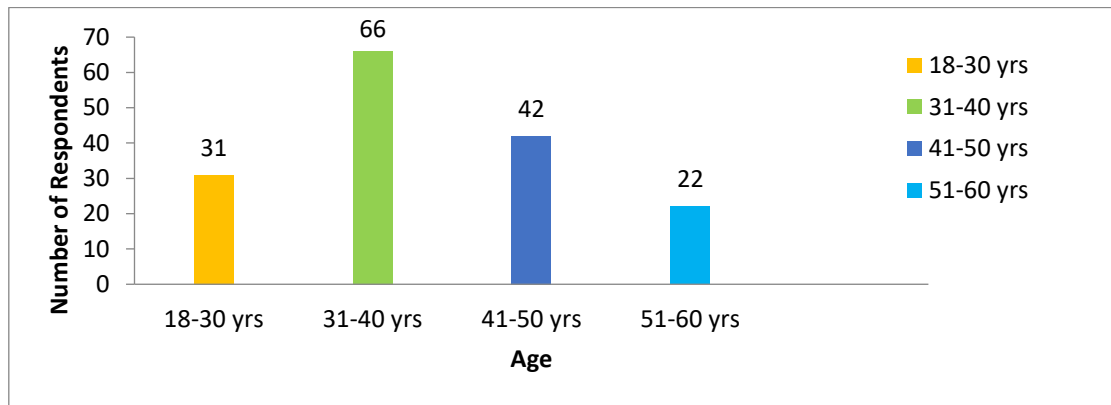


Figure 4. Distribution of Age of respondents

The reason for the inclusion of years of relationship with the bank was to determine the years of customers’ relationships with selected banks and to determine the ability of banks to retain customers for long period. This information will give relevance to the kind and quality of information that will be given out regarding the e-banking situation of banks. Hence, by virtue of customer relationship, logically the maximum frequency of 36 falling within the class of above 20 years (Figure 5) clearly indicates that commercial banks are able to retain customers for long period and respondents in this survey have the capacity to provide the desired quality results.

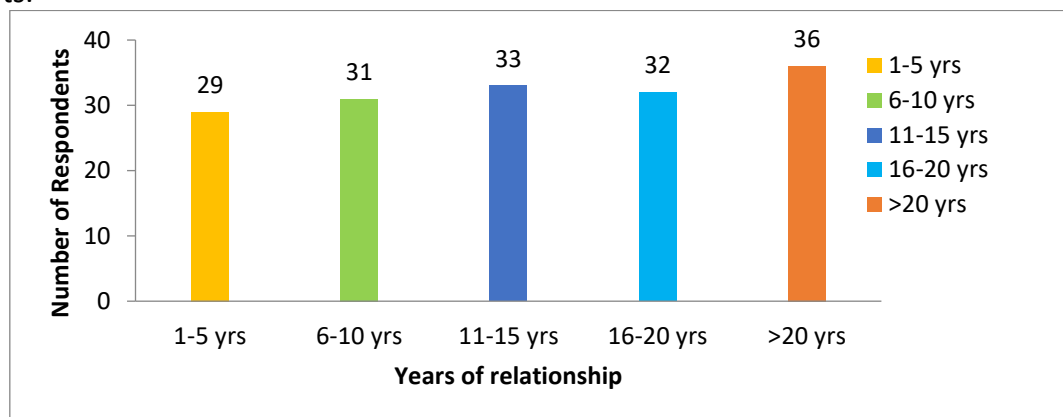


Figure 5. Distribution of respondents according to year of relationship with the banks

Assessment of educational background of respondents is essential in that it will help identify their ability to read and interpret questions. Maximum frequency of 67 (Figure 6) associated with bachelor’s degree indicates that highly educated people were selected for the study and that they dominate the customer base of commercial banks. One can argue that the educational background of customers has the propensity to ensure easy provision of e-banking services. Educational background is also a predictor of the level of understanding of customers about e-banking. Examination of educational level is important as it enriched data generated for the study.

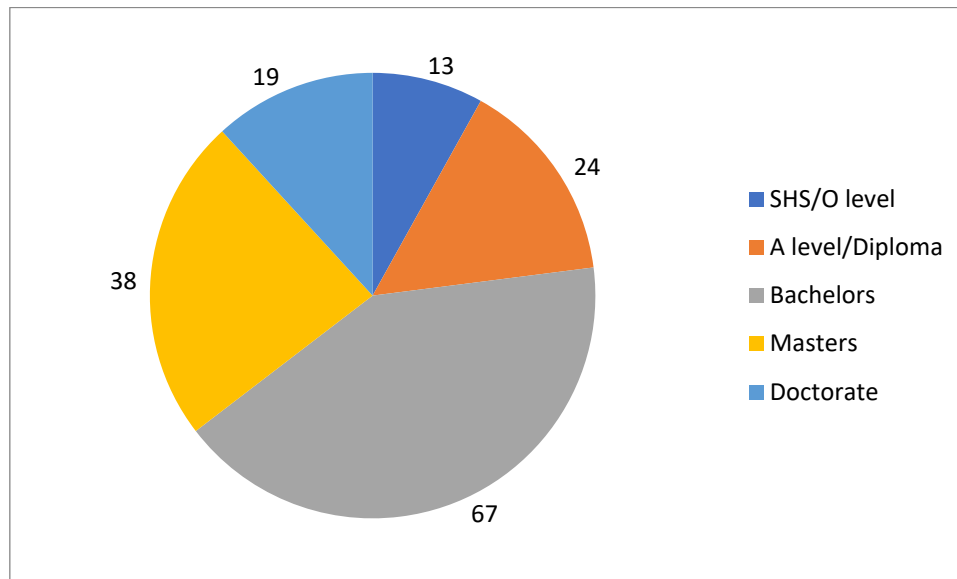


Figure 6. Distribution of number of respondents according to their Educational level

### Factor Analysis of Perceptions of Customers' about the Quality of E-Banking

In this study, factor analysis was introduced as a technique of data reduction to condense a vast volume of data gathered in the study and identify variables with similar characteristics. This is achieved by searching for classes of a set of variables among the intercorrelations. The suitability of the data for factor analysis must be determined prior to implementing factor analysis as an analytical technique in a sample. The sample size and the strength of the relationship between the variables are the two key issues to consider in deciding whether or not a specific data set is sufficient for factor analysis. While there is some degree of agreement between authors as to how big a sample should be, it is normally suggested that the larger the better (Babbie and Mouton, 2002). According to Po-Yi and Chen (2004) cited by Chen et al. 2010, for factor analysis to be suitable, the number of variables in a study must be in the range of 20 to 50. The variables that were analysed in this study was 23 and therefore suitable in this regard. In using factor analysis, the second problem to be discussed has to do with the frequency of the inter-correlations between the variables. For proof of coefficients greater than the threshold of 0.3, Tabachnick and Fidell (2001) suggest a correlation matrix inspection. Bartlett's sphericity test (Bartlett, 1954) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy are the two statistical tests used in determining the factorability of the data obtained for factor analysis (Kaiser, 1970, 1974). For factor analysis to be deemed acceptable, Bartlett's sphericity test should be relevant ( $p < .05$ ). And in the case of the KMO index, it ranges from 0 to 1, with the minimum value suggested for successful factor analysis being 0.6 (Tabachnick and Fidell, 2001). As shown in Table 2 the Kaiser-Meyer-Olkin (KMO) value was 0.905 with regard to customer satisfaction with e-banking in commercial banks, which is a superb value indicating acceptable sampling adequacy (Field, 2009; Cattell, 1966). Similarly, Bartlett's sphericity test provided an estimate of  $\chi^2 = 2070.904$  ( $p < 0.001$ ) (Table 2).

Table 2

*KMO and Bartlett's Test*

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Adequacy	Sampling		0.905
Bartlett's Test of Sphericity	Approx. Chi-Square		2070.904
	Df		231
	Sig.		P<0.001

Source: Field data (2022)

**Techniques in Determining the Factors to Retain**

The criteria, scree test and parallel analysis of Kaiser are the methods that can be used to help decide on the number of variables to be maintained in factor analysis. One of the most widely used techniques for evaluating the factors to be extracted is the Kaiser criterion or the eigenvalue law. Using this law, for further investigation, only variables with an individual value of 1.0 or more are retained. A factor's eigenvalue reflects the sum of the total variance explained by that factor. Only the first four components reported eigenvalues above 1 (9.67, 1.71, 1.37, 1.12) (Table 3). These four components have each obtained the following percentage of variance as indicated in Table 3 below: Component one (1) obtained the highest variance of 43.96%. Component two (2) also accounted for 7.79% of variance which is the second highest among the four components. The third and fourth components respectively obtained 6.23% and 5.10% of the variance. Cumulatively, these four components explain a total of 63.07% of the variance (see Cumulative % column in Table 3) which has fulfilled the requirement affirmed by Field (2009), that the extracted components should together explain at least 50% of the variation.

Table 3

*Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.671	43.957	43.957	9.671	43.957	43.957	4.144	18.835	18.835
2	1.713	7.787	51.744	1.713	7.787	51.744	3.858	17.536	36.371
3	1.370	6.228	57.972	1.37	6.228	57.972	3.076	13.982	50.353
4	1.122	5.099	63.071	1.122	5.099	63.071	2.798	12.718	63.071

Extraction Method: Principal Component Analysis; Source: author's calculation, SPSS, 2022

***Using Catell's Scree Test to Determine Factors to Extract***

Another technique that can be used to evaluate the factors to be maintained in performing factor analysis is the scree test of Catell (Catell, 1966 cited in Kanyongo, 2005) . This can be achieved by the use of SPSS, which requires plotting each of the variables' own values and examining the plot to find a point at which the path of the curve vicissitudes becomes horizontal. It is recommended that all variables above the elbow be maintained, according to



Catell (1966) cited in Kanyongo, 2005), as these factors contribute the most to the interpretation of the variance in the data set. It is evident from figure 7 that four (4) components were recommended to be retained by applying this extraction technique.

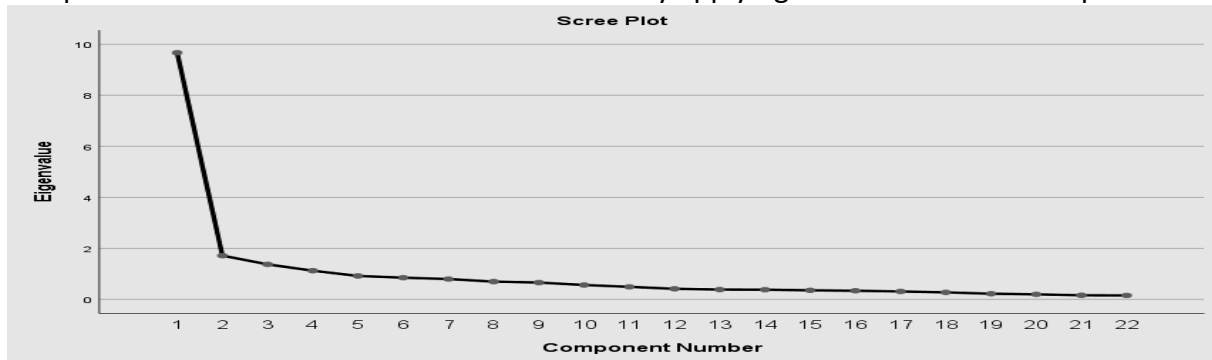


Figure 7. Catell’s Scree Test of Factor Analysis

Source: Author’s development, SPSS, 2022

### Extracted Components

Varimax with Kaiser Normalization rotation was performed to assist in the interpretation of the four extracted components. All four components showed a number of heavy loadings from the rotated component matrix, as seen in Table 4. Via inspection, the researcher found the highest loading variables on each of the four components that are used to help identify the existence of the underlying latent variable described by each component. It was observed that component one contained large strong loadings. A total of 63.07 percent of the twenty-two (22) variance was clarified by the four component solution, with Component 1 contributing 18.84 percent and Component 2 contributing 17.54 percent and Components 3 and 4 contributing 13.98 percent and 12.72 percent respectively as shown in Table 5.

Table 4

*Component Transformation Matrix*

Component	1	2	3	4
1	0.575	0.527	0.449	0.437
2	-0.505	0.778	-0.362	0.097
3	-0.44	0.133	0.794	-0.397
4	-0.471	-0.315	0.193	0.801

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Source: Field data (2022)

Table 5

*Component profile of customers' perceptions*

<b>Description of Components and Variables</b>	
<b>Component 1: Quality of E-banking</b>	<b>Factor Loading</b>
1. Moderate quality service	0.736
2. Higher cost and charges	0.643
3. Moderate speed of the internet	0.636
4. ATM machines are scarce in the system	0.621
5. Good website content and design	0.603
6. Mobile money transactions are convenient	0.596
7. Service is credible	0.590
8. Service is reliable	0.579
9. Long queing is minimised	0.409
<b>%Variance Explained</b>	<b>18.84</b>
<b>Component 2: Additional support services</b>	<b>Factor Loading</b>
1. Customers do not have to purchase additional software	0.764
2. Customers are able to back up any data	0.708
3. Software upgrades are available	0.660
4. Customers are able to store data on their phones and computers	0.648
5. Banking cards are easily replaced when damaged or stolen	0.603
6. Banks reimburse money quickly for customers when money is locked up due to technical fault	0.529
<b>%Variance Explained</b>	<b>17.54</b>
<b>Component 3: Benefits to banks</b>	<b>Factor Loading</b>
1. It helps banks to increase customer base	0.773
2. It extents marketing and communication channels	0.720
3. It provides up to date information	0.563
<b>%Variance Explained</b>	<b>13.98</b>
<b>Component 4: Risks in internet banking</b>	<b>Factor Loading</b>
1. Security is quite assured	0.739
2. It minimises risk of carrying cash	0.675
3. Downloading imports unwanted virus	0.541
4. Downloading consumes hard disk	0.527
<b>%Variance Explained</b>	<b>12.72</b>

Source: Field data (2022)

**Discussion and Interpretation of Output (Varimax with Kaiser Normalization Rotation)*****Component 1: quality of E-banking***

Component one (1) explains 18.84% of the variance and consists of nine factors being the component with the highest number of retained factors among the four components. Hence, the nine factors under this Component could be summed as quality e-banking. It is the

component with the highest percentage of variance explained. Observation from Table 5 revealed that *moderate quality service* had the highest factor loading among all the nine factors under component one (1). This indicates that *moderate quality service* which had the highest factor loading of 0.736 was a critical factor with regards to the quality of e-banking. *Higher cost and charges* had the second highest factor loading of 0.643 and *moderate speed of the internet* was observed to have obtained the third highest factor loading of 0.636 under Component one (1). In the study of Felix (2014), 20% of respondents indicated that charges attracted for using e-banking products were very high. *Customers are able to store data on their phones and computers* and *banking cards are easily replaced when damaged or stolen* had respective factor loadings of 0.621 and 0.603 making them the fourth and fifth highest loaded factors under component one. *Banks reimburse money quickly for customers when money is locked up due to technical fault* ranked sixth with factor loading of 0.596. One can, therefore, deduce that if all commercial banks in Ghana strictly adhere to all the perceptions in Component one, e-banking would be considered to be encouraging and sustainable.

### **Component 2: Additional Support Services**

This component is made up of six retained factors explaining 17.54% of variance being the component with the second highest percentage of variance explained. Considering all the factors extracted and grouped under this component, it was named as *additional support services*. *Customers do not have to purchase additional software* as one of the factors in this component with factor loading of 0.764% was ranked first. The second highest rated factor in this component was *customers are able back up any data* whose factor loading was 0.708. *Software upgrades are available, customers are able to store data on their phones and computers, banking cards are easily replaced when damaged or stolen, banks reimburse money quickly for customers when money is locked up due to technical fault* were respectively ranked as the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> position with the following respective factor loadings; 0.660, 0.648, 0.603 and 0.529. In fact, considering these factors in selecting additional support services would not only ensure sustainable e-banking services for banks and their customers but also develop the banking system of the country.

### **Component 3: Benefits to Banks**

Component three comprises three (3) factors and ranked as the 3<sup>rd</sup> highest component with a percentage variance explained to be 13.98%. The name of the component was driven from the factors that made up the component. The three factors were centered on benefits of e-banking to banks. *It helps banks to increase customer base* and had a factor loading of 0.773 making it the highest ranked factors in this component. *It extends marketing and communication channels* also scored 0.720 as the factor loading. Third on the rank is provision of up to date information with factor loading of 0.563. These first two factors have to do with marketing, and the third factor has to do with customer service, which are unavoidable activities in the banking industry. Thus, it is advisable to perform them with more care and attention. The results are in line with Offei and Nuamah-Gyambrah (2016) who realized that low patronage of customers to e-banking could be attributed to lack of awareness of such facility. Thus, extensive education of customers will be very helpful in this area.

### **Component 4: Risk in Internet Banking**

E-banking carries risks and challenges which are recognized and need to be managed by the banking institution in a prudent manner (Basel Committee on Banking Supervision, 2001). The

final component accounted for 12.72% of the total variance. This component was titled *risk in internet banking* which explains that the factors in this component sought to identify customers' perceptions about inherent risk of E-banking. *Security is quite assured* had a factor loading of 0.739 being the highest among the four (4) factors in this component. *Minimising the risk of carrying cash* which had a factor loading of 0.675 was ranked the second in this component. *Downloading imports unwanted virus*, and *downloading consumes hard disk* respectively secured the 3<sup>rd</sup> and 4<sup>th</sup> position with factor loadings of 0.541 and 0.527 respectively.

In all four components (categories) some perceptions are derived namely: the quality of e-banking, additional support services, benefits to banks, and risk in internet banking. The quality of e-banking encompasses, in order of importance, the following factors: *moderate quality service, lower cost and charges, moderate speed of the internet, ATM machines are scarce in the system, good website content and design, mobile money transactions are convenient, service is credible, Service is reliable and long queing is minimised*. Additional support services encompass the following factors: *customers do not have to purchase additional software, customers are able back up any data, software upgrades are available, customers are able to store data on their phones and computers, banking cards are easily replaced when damaged or stolen, and banks reimburse money quickly for customers when money is locked up due to technical fault*. Benefits to banks as third classification is made up of three factors, including in order of importance, the following factors: it helps banks to increase customer base: it extends marketing and communication channels and it provides up to date information. The fourth category (risk in internet banking) comprises in order of importance the following four factors: *security is quite assured, it minimises risk of carrying cash, downloading imports unwanted virus, Downloading consumes hard disk*.

Quality satisfaction in the present study was similar to what was obtained by Nimako et al. (2013) where there was mixed opinions regarding quality satisfaction in internet banking by customers. While customers in one bank were satisfied the others were not. Their dissatisfaction reasons were just similar to what was observed in this present study and was more influenced by the promptness of reception of responses to customer request, the ability to be guided online to resolve problems, offering of preferentially lower fees/rates and charges, and reasonability of the transaction fee for online banking transactions, the quickness of web pages loading when using online banking transactions. The results obtained in the present study is in agreement with Addai et al (2015) who found positive correlations with availability, reliability and convenience in e-banking and these could improve customer satisfaction. However, an earlier study by Anane and Asamoah (2015) of customer satisfaction and e-banking using some selected commercial banks in the Kumasi metropolis indicated that all the respondents had complete satisfaction with the use of e-banking and quality of services as opposed to the present study where some customers were not satisfied with e-banking services. This might be due to the fact that the former study considered few variables including manual vrs e-banking services while most of the indicators that could affect the customers' satisfaction were not studied. It was indicated from the study that the use of e-banking services could increase banking service quality and establish customers' satisfaction.

### **Customers' Accessibility to Electronic Banking Facilities of Commercial banks in the Kumasi Metropolis**

The important question that is often posed is 'what is the level of customers accessibility to electronic banking in commercial banks?' In finding an answer to this question, the

respondents in the study were asked to rate the satisfaction level of customers accessibility as listed in the questionnaire on a scale of 1 to 5: where 1 (1.00-1.49)= very unsatisfactory; 2 (1.50-2.49)= unsatisfactory; 3 (2.50-3.49)= quite satisfactory; 4 (3.50-4.49)= satisfactory; 5 (4.50-5.00).= very satisfactory/full compliance (Table 6). Table 6 comprises the ranking of 11 variables representing customers' accessibility to e-banking in commercial banks of Ghana e-banking involves programs that allow clients, individuals or businesses of financial institutions to access accounts, perform business transactions or obtain information about financial products and services via a public or private network, including the Internet (Federal Financial Institutions Examination Council, 2003). *Prompt responses to requests* ranked first in terms of how satisfied customers are with accessibility to e-banking with mean score of 3.55. This is followed by *content format* with mean score of 3.55 but relatively higher standard deviation of 0.498. The third most satisfied accessible facility is the sophisticated softwares and their settings with a mean score of 3.42. This is followed by *diverse features, ease of use, banking cards are easily accessible, support services are easily accessible, environmental conditions* with respective mean scores of 3.22, 3.22, 3.17, 3.17 and 2.95. Next on the list in order of satisfaction are *internet connection, user's ability to access, availability of ATM machines* with mean scores of 2.40, 2.29 and 2.15 respectively. Internet connection which linked the systems together could easily fail resulting in collapse of the e-banking network system (Felix, 2014). In all, *prompt responses and content format* were regarded satisfactory because they were the most easily accessible functions enjoyed by customers.

Table 6  
*Mean Score Ranking of Accessibility to e-banking*

No.	Variables	Mean	Std. Deviation	Rank	Satisfaction Level
1.	Prompt responses	3.55	0.021	1 <sup>st</sup>	Satisfactory
2.	Accessibility to content format	3.55	0.498	2 <sup>nd</sup>	Satisfactory
3.	Quality of software and settings	3.42	1.004	3 <sup>rd</sup>	Quite satisfactory
4.	Diverse features	3.22	1.018	4 <sup>th</sup>	Quite satisfactory
5.	Ease of use	3.22	1.066	5 <sup>th</sup>	Quite satisfactory
6.	Banking cards are easily accessible	3.17	1.007	6 <sup>th</sup>	Quite satisfactory
7.	Support services are easily accessible	3.17	1.026	7 <sup>th</sup>	Quite satisfactory
8.	Environmental conditions	2.95	1.356	8 <sup>th</sup>	Quite satisfactory
9.	Internet connection	2.40	1.274	9 <sup>th</sup>	Unsatisfactory
10.	User's ability to access	2.29	1.25	10 <sup>th</sup>	Unsatisfactory
11.	Availability of ATM machines	2.15	1.263	11 <sup>th</sup>	Unsatisfactory

Source: Field data, (2022): Satisfaction Level Scale of 1 to 5: where 1= very unsatisfactory; 2= unsatisfactory; 3= quite satisfactory; 4= satisfactory; 5= very satisfactory

Third to eighth ranked variables were recognised by customers as quite satisfactory suggesting that they are relatively not as enjoyable as the first two variables in terms of accessibility. The last three variables, namely, *internet connection, user's ability to access, and availability of ATM machines* are recognised unsatisfactory because they are deemed as not easily accessible as was also observed by (Simon and Thomas, 2016).

Customers's view that they are able to generate quick responses to their request through e-banking may be justified by the fact that their request are responded to within the time frame such responses are useful, which hitherto longer period was taken to respond to request because of paper dominated banking system. It is therefore the most satisfied function enjoyed by customers when using e-banking facilities. Coupled with this, content format of applications are in commensurate with the desires of customers.

Softwares and their settings are essential parts of e-banking as they work in tandem to produce results. In the same way as the physical facilities are important in ensuring the success of e-banking, software components and their quality level are inevitable if banks and customers can enjoy associated benefits. Customers are interested in diverse features of this software programmes so that their divergent needs can be satisfied. Applications should be as simple as possible to allow more customers irrespective of their educational background to access and use them easily. This is a sure way of influencing customers to participate in the use of e-banking facilities. Accessibility to banking cards are regarded quite satisfactory probably due to the fact that, generally speaking, it takes quite some time to be delivered on request. Customers look forward to getting replacements as quick as possible in situations where cards are damaged or stolen. Support services such as directions from banking personnels on standby to assist struggling customers to access e-banking facilities play important role in sustaining customers interest. The state of internal and external environment is a great predictor of e-banking sustainability in Ghana. Whereas favourable environmental conditions impacts positively on e-banking, unfavourable environmental conditions negatively influences e-banking.

The speed of the internet determines the time and energy expended on a particular e-banking activity. The opportunity cost of waiting for a response has an influence on a customer's determination to wait in banking halls and their trust in a bank's e-banking services. Faster internet connection in the face of user's inability to access the internet still renders e-banking goals uphill to achieve. ATM machines for banks in Ghana are generally scarce, and they easily break down. This accounts for the reason why it is regarded unsatisfactory by customers (Simon and Thomas, 2016).

### **Challenges Customers Encounter in Accessing E-Banking in Commercial Banks in the Kumasi Metropolis**

The Relative Importance Indices (RII) are indicated in Table 7. The RII value varies from 0 to 1 without the addition of zero (0). The greater the importance of RII, the more the element is influential, and vice versa. The derived rates of significance from RII according to Raja et al 2018 are; High (H)=  $0.8 \leq RII \leq 1.0$ ; High-Medium (H-M)=  $0.6 \leq RII \leq 0.8$ ; Medium (M)=  $0.4 \leq RII \leq 0.6$ ; Medium-Low (M-L)=  $0.2 \leq RII \leq 0.4$ ; Low (L)=  $0.0 \leq RII \leq 0.2$ . As indicated, four of the eleven challenges were rated at "High" importance level which means they are the most influential challenges regarding e-banking activities of commercial banks. These high-ranking factors are *limited availability of machines, machines easily breaks down, Customers have low internet experience, and procedure to deal with complains is very difficult* with their respective RII of 0.83, 0.82, 0.80 and 0.80. The second highest ranked influential challenges

are *low awareness of internet banking, restricted legal and regulatory framework, unfavourable environmental conditions, e-banks privacy policy not trusted, e-banking is expensive to customers, security is poor, and electricity cuts interferes in E-banking services.* Despite the differences in their influences on e-banking, all challenges were deemed as influential on e-banking taking place of commercial banks as indicated by (Adams, 2019).

In spite of the benefits customers derive from e-banking, it has its challenges (Felix, 2014). It can be deduced from Table 7 that all challenges were rated important with RII ranging from 0.73 to 0.83, suggesting that much attention should be focused on them if e-banking in Ghanaian commercial banks can be uplifted. Limited availability of machines such as ATMs and computers, among others, has been a big challenge for both customers and banks. Customers residing far from banking centers have to travel any time it becomes necessary to access ATMs. The cost involved in mounting such machines at vantage points for customers all over to easily access them is a great challenge to commercial banks. Coupled with this is the rate at which ATMs break down and in some instances how long it takes to repair them. In Ghana, more customers, especially those with very low or no educational background are unable to use the internet as a result of their inability to read and understand. Procedure to deal with complains such as stolen or damaged cards take long period is complicated in Ghana. Other e-banking transactions such as transfer of money especially outside the country takes longer period and more complicated process compared to transferring from outside into the country as a result of disparity in the quality of e-banking. Low awareness of internet banking is attributable to commercial banks inability to mount intensive education for customers. Legal backing of e-banking transactions in Ghana is not strong – as a result, many customers have lost huge sums of money without knowledge of how they can get such monies back. Unfavourable environmental conditions pose serious threat to e-banking in Ghana. E-banking privacy policy is not trusted by some customers and this makes it difficult to enter into e-banking contracts. Complains about high banking charges have been increasing as a result of e-banking. In some cases, customers would like to have clarity on some of the charges. The general view is that the security of e-banking is poor citing instances of stolen codes, illegally breaking into peoples account without knowledge of how such criminals broke into such account. One popular aspect of e-banking in Ghana having higher risk and has received numerous complains of stolen is MTN mobile mobile. This finding contradicts that of Felix (2014) where respondents felt that security features of ebanking were good which made it very difficult for fraudsters and hackers to operate and therefore was safe to use. The effectiveness of e-banking is highly contingent on the stability of electricity supply. This explains the reason why some banks have alternative power supply in place.

Table 7

*Relative Importance Index of Challenges*

Challenges	1	2	3	4	5	Total weight	Total number (N)	A* N	Me an	RII	Ra nk
Limited availability of machines	5	2 6	48	19 2	39 5	666	161	80 5	4.1 4	0. 83	1 <sup>st</sup>
Machines easily breaks down	7	2 6	48	18 4	39 5	660	161	80 5	4.1 0	0. 82	2 <sup>nd</sup>
Customers have low internet experience	6	2 4	72	19 6	35 0	648	161	80 5	4.0 2	0. 80	3 <sup>rd</sup>
Procedure to deal with complains is very difficult	6	1 6	93	21 6	31 0	641	161	80 5	3.9 8	0. 80	4 <sup>th</sup>
Security is poor	5	1 4	11 4	20 4	30 0	637	161	80 5	3.9 6	0. 79	5 <sup>th</sup>
Low awareness of internet banking	6	2 4	81	25 2	26 5	628	161	80 5	3.9 0	0. 78	6 <sup>th</sup>
Restricted legal and regulatory framework	8	2 6	90	24 4	24 5	613	161	80 5	3.8 1	0. 76	7 <sup>th</sup>
Unfavourable environmental conditions	9	2 0	10 5	23 6	24 0	610	161	80 5	3.7 9	0. 76	8 <sup>th</sup>
E-banks privacy policy not trusted	7	3 4	10 5	19 6	26 5	607	161	80 5	3.7 7	0. 75	9 <sup>th</sup>
E-banking is expensive to customers	9	3 0	96	22 4	24 5	604	161	80 5	3.7 5	0. 75	10 <sup>t</sup> h
Electricity cuts interferes in E-banking services	1 1	4 2	10 2	18 4	24 5	584	161	80 5	3.6 3	0. 73	11 <sup>t</sup> h

Source: author's calculation, XL Stats, 2022. Scores: 1 = heavy disagreement, 2 = disagreement, 3 = some disagreement, 4 = compromise, and 5 = strong agreement.

**Conclusions**

The subject of customers' satisfaction of e-banking was subjected to thorough scrutiny with the focus on commercial banks in the Kumasi Metropolis. To achieve this, the study investigated customers' perceptions about the quality of electronic banking in some selected commercial banks of Ghana; explore customers' accessibility to electronic banking facilities in these banks and to examine the various challenges associated with electronic banking in Ghana. The study concludes that customers have a mixed of positive and negative perceptions of e-banking services offered by commercial banks. Though e-banking was generally satisfactory with most customers, in terms of quality of e-banking services, accessibility and challenges, there were certain areas which were limiting and could affect customer satisfaction. For example, poor internet connectivity identified could affect patronage by customers. Some customers are unable to access e-banking probably due to lack of knowledge and experience in information technology. It was observed from the study that non availability of ATM machines in most locations was a serious concern. In areas where they were available, they were often broken down or the system might be down or under repairs. Customers become disappointed and resort to going to the bank physically. Surprisingly, Electricity cuts did not interfere with e-banking services. Probably most of the transactions are done on phone and most of the banks have stand by generators to assist in case of power cuts.



### **Recommendations & Suggestions for Future Research**

Management of banks should upgrade their systems for easy connectivity. more education is needed to enable the populace whether literates, semi-literates or illiterates to gain knowledge in the usage of e-banking. There is the need for management to invest more into the ATM machines, its operations and maintenance. Albeit Ghana has witnessed a massive advancement in e-banking especially when it comes to commercial banks, a lot more needs to be done as the services are still surrounded by challenges. The study was restricted to Kumasi Metropolis aside the fact that sample size could have been larger than that which was chosen, had it not been the constraint of time and finance. Hence, it is hoped that further study would be conducted in other banking sectors and financial institutions. Subsequent studies could also encompass data from other countries to augment generalization.

### **Limitation and Delimitation of the Study**

This study was faced with some unavoidable constraints in its conduct as well as scope. For example, the difficulty of having certain respondents to facilitate the provision of the necessary information was one key constraint that was anticipated to be encountered when conducting this research work. In order to respond to the questionnaires, most respondents would have very busy working schedules that will most likely affect the distribution and retrieval of the questionnaires. The review and conclusion of this study will be focused on data obtained from respondents using the method for data collection. However these restrictions would not nullify the results of this survey.

### **Theoretical and Contextual Contribution of this Research to Existing Knowledge**

The empirical literature review offers evidence-based and factual reviews of similar works performed in or outside the country and in the same or related field of research. Limited research work on the influence of electronic banking on financial services in Ghana has been reported with the work of Asare and Sakoe (2015) linked to the accessibility of commercial bank financial services. In the study by Kehinde et al (2015), it was established that the introduction of the electronic banking services will improve provision of financial services but there were issues of knowledge and security that cast doubt on the application of electronic banking. The studies on electronic banking and accessibility of financial services are therefore very few. Moreover, the few studies have varying results hence there is still a dilemma on customer satisfaction regarding the use of e-banking and hence the need for this study.

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**APPENDIX**

**QUESTIONNAIRES FOR CUSTOMERS**

<b>SECTION A: DEMOGRAPHIC DATA OF THE RESPONDENTS</b>
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1. **Gender** a. Male  b. Female
2. **Age** a. 18 to 30  b. 31 to 40  c. 41 to 50   
d. 51 to 60
3. **What is your employment status?**  
a. Employment by government  b. Employed by private company   
c. Employed by NGO  d. Self Employed   
b. Other (please, specify).....
4. **How many years have you been a client of this bank?**  
a. 1 to 5 years  b. 6 to 10 years  c. 11 to 15 years  d. 16 to 20   
e. Above 20 years
5. **Kindly indicate your level of education?**  
a. SHS/O level  b. A level / diploma  c. Bachelor's degree   
d. Master Degree  e. Doctorate

<b>SECTION B: CUSTOMERS' PERCEPTION ON THE QUALITY OF ELECTRONIC BANKING</b>		
No	Sources of Finance	Ranking
1	Banks reimburse money quickly for customers when money is locked up due to technical fault	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
2	Software upgrades are available	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
3	Banking cards are easily replaced when damaged or misplaced	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
4	Customers are able to back up any data	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
5	Customers do not have to purchase additional software	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
6	Downloading consumes hard disk	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
7	Customers are able to store data on their phones, computers etc.	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
8	Long queing is minimised	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
9	It helps banks to increase customer base	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
10	It extends marketing and communication channels	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
11	It provides up to date information	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
12	Service is reliable	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
13	Security is quite assured	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
14	Downloading imports unwanted virus	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
15	Good website content and design	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
16	ATM machines are scarce in the system	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
17	Moderate speed of the internet	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
18	Minimising negative visual impact	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
19	Moderate quality service	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
20	Service is credible	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
21	Mobile banking transactions are convenient	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
22	lower cost and charges	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5



<b>SECTION C: CUSTOMERS' ACCESSIBILITY TO ELECTRONIC BANKING IN COMMERCIAL BANKS</b>		
<b>No</b>	<b>Access constraint</b>	<b>Ranking</b>
1	Prompt responses	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
2	Accessibility to content format	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
3	Quality of software and settings	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
4	Diverse features	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
5	Ease of use	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
6	Banking cards are easily accessible	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
7	Support services are easily accessible	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
8	Environmental conditions	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
9	Internet connection	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
10	User's ability to access	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
11	Availability of ATM machines	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5

<b>SECTION D: THE VARIOUS CHALLENGES ASSOCIATED WITH ELECTRONIC BANKING IN GHANA.</b>		
<b>No</b>	<b>Strategies</b>	<b>Ranking</b>
1	Limited availability of machines	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
2	Machines easily breaks down	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
3	Customers have low internet experience	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
4	Procedure to deal with complains is very difficult	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
5	Low awareness of internet banking	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
6	Restricted legal and regulatory framework	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
7	Unfavourable environmental conditions	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
8	E-banks privacy policy not trusted	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
9	E-banking is expensive to customers	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
10	Security is poor	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5
11	Electricity cuts interferes in E-banking services	<input type="checkbox"/> 1; <input type="checkbox"/> 2; <input type="checkbox"/> 3; <input type="checkbox"/> 4; <input type="checkbox"/> 5

**THANK YOU!!**