

The Impact of Digital Banking on Customer Satisfaction in Commercial Banks in Tanzania: A Case of NMB Bank in Kigoma Region

Nasimire Kokusiima Eglu

Assistant Lecturer- Faculty of Business Administration at the Catholic University of Mbeya, Tanzania.

Abstract:

Almost all banks in Tanzania have adopted electronic banking as a means of enhancing service quality which leads increasing customer satisfaction. However, Tanzania's commercial banks have not satisfied their customers enough due to a number of problems hindering the smooth delivery of digital banking services. This study therefore examined the impact of digital banking services on customer satisfaction in the banking sector of Tanzania by taking a case study of NMB Bank in Kigoma Region. Specifically, the study aimed to assess how Internet Banking contributes to customer satisfaction, to evaluate the impact of ATM services on overall customer satisfaction, and to analyze the effect of Mobile Banking on customer satisfaction. Factors that were considered are convenience, accessibility, speed, and security. Quantitative research approach was used in which primary data were collected using a 5-point Likert scale questionnaire. 256 NMB Bank customers were involved and data were analyzed through SPSS software program. Multiple linear regression analysis was used to explain the findings on specific objectives. The findings indicated that digital banking has an impact on customer satisfaction in commercial banks in Tanzania. In particular mobile banking affected customer satisfaction to the largest extent as compared to other digital banking services as far as convenience, accessibility, speed, and security are concerned. The second was ATM and lastly was internet banking. The study recommends on the need for various stakeholders in the banking sectors to improve the technological infrastructure by putting more efforts on the digital banking services and products as this will enable them reach and satisfy a large number of customers compared to conventional banking. Other studies should be done by focusing on other regions especially big cities of Tanzania where there are many digital banking users and experts who can provide a complete picture of the impact of digital banking usage in relation to satisfaction.

Keywords: Digital Banking, Customer Satisfaction, Commercial Banks, NMB Bank, Kigoma Region

1.0 INTRODUCTION

Digital banking can be defined as a vast system of big data, analytics, and financial processes. This process relies on the digitization of all traditional banking activities and programs that were historically only available to customers when they are physically inside of a bank branch Darryl (2019). It is a system that encompasses all programs, activities and services undertaken by financial institutions especially banks and their customers. It is done through digital platforms where all banking activities are available online. It enables customers to freely access and perform all traditional banking activities

through a laptop, tablet or mobile phones. This system has permitted to save costs for banks (Choudary, 2013).

1.1 Context of Digital Banking Globally and in Tanzania

1.1.1 Global Context

Across the globe, digital technologies are mushrooming in all areas, including the banking sector (Ganguli & Roy, 2011). Especially, newly developed implemented technologies are changing people's lifestyle and consumption habits which impacts considerably the nature of companies-customer relationship. This is due to the evolution of the expectations of today's tech-savvy digital customers who are looking forward to the delivery of digital solutions by their banks (Sreejesh, Anusree, & Mitra, 2016).

Business environment in developed and developing countries has changed due to globalization and free trade and global competition is increasing with exploding. Because of these reasons, to stay in a competitive environment and deliver acceptable financial returns, managers must know how to handle changes which are unexpected by cementing on customers' satisfaction (Naseem et al., 2011).

Banking institutions across the globe have recognized the importance of customers' satisfaction and developing and maintaining enduring relationship with their customers as two crucial parameters leading to increased business profits. At the same time, several banking institutions are experiencing increasing level of retail customers' dissatisfaction (Mistry, 2013). The causes of dissatisfaction are not well known empirically however from rational point of view, the probable causes may include low technology, low responsiveness from bank employees and unreliable service (Mistry, 2013). However, whether any of these really holds true and the extent to which they impact on customer satisfaction is not known. Moreover, there may be other causes which are out of the above list of possible causes but none has been established.

1.1.2 Tanzania Context

In developing countries customer's satisfaction has become important to business success of banking institutions. Suggested reasons for this apparent trend include flexible employment, higher mobility and competition in banking industry (Panda, 2003). In this context one may wonder how banking institutions in Tanzania survive in the mentioned environment by cementing on customer's satisfaction. Thus, understanding customer's satisfaction in banking institutions is important not only from economic perspective but also from creation of good image of banking institutions for organizational and staff development.

Tanzania banking sector has gone into significant changes after the liberalization of the banking system. The reforms removed barriers to the entry of commercial banks and supported the improvement of institutional framework and more efficiently the performance of banks which increased banking competition (Qin & Pastory, 2012). The liberalization increased the banking sector and shift the markets from the government owned banks to private owned banks. Recently, there are 49 licensed banking institutions in Tanzania (BOT, 2024).

Banks in Tanzania have been working hard to establish mobile banking to facilitate the provision of financial service to their customers. This included mobile banking services such as NMB mobile (NMB), SIM banking (CRDB) and TPB POPOTE (TPB) Mol's et al. (1999) stated that the diffusion of electronic banking is more determined by customer acceptance than by offerings. Not enough is known as regarding how customers perceive and evaluate electronically delivered services. Therefore, the study

sought to explore the impact of digital banking establishment on customer satisfaction in terms of customers perception on reliability, convenience and security of the services.

1.2 Importance of Digital Banking in Enhancing Customer Satisfaction

Kennedy and Jacky (2013) noted that the digital banking technology has greatly advanced there by playing a major role in improving the standards of service delivery in the financial institution sector. Those days are long gone when customers would queue in the banking halls waiting to pay their utility bills, school fees or any other financial transactions. They can now do this at their convenience by using their ATM cards or over the internet from the comfort of their homes. Banks prefer their customers to be more oriented towards the use of digital banking or automation of services in order to use the staff more efficiently through their branches, instead of performing routine operations.

Consequently, it is very important for banks to have the knowledge that customers consider important for their operations, as well as to know what/if they are satisfied with in the operations of their home bank. A satisfied customer comes back again and recommends the company to his friends and colleagues. Banking is becoming more and more a part of people's lives, for example, the use of cash is decreasing, and the number of card payments is increasing, and high-quality customer service is also important, and therefore this topic is topical at the moment.

1.3 Overview of NMB Bank PLC and its Digital Services

NMB Bank is the leading retail bank in Tanzania, with over 231 branches, 7.1 million customers and close to 715 ATMs. NMB Bank pioneered major innovations in the Tanzanian financial market including mobile banking and Pesa Fasta, an ATM based remittance product targeted at the unbanked. The Bank is also making inroads in corporate banking, treasury, and transactional services such as corporate payments, collections and trade finance. NMB Bank plays an important role in the agricultural value chain and pioneered warehouse receipt financing for the country's Saccos and Amcos. London Based Super Brand council that runs research across 84 countries has named NMB among top 10 brands in Tanzania (NMB, 2021). Euro money awards for excellence selected NMB as the "Best Bank in Tanzania" for 10 times in eleven years (2013-2023). The bank has also been named the safest Bank in Tanzania for the year 2023 by Global Finance magazine.

Since its establishment, the bank has remained a bank of choice for urban and rural dwellers, rich and poor, ordinary and privileged, and active workers and pensioners. It is of little wonder that the bank has a presence in virtually every district of the country. These numerous branches coupled with its predisposition and the needs of the poor in particular have increased exponentially its customer base throughout the country. So big is the customer base of the NMB Bank that daily visits to the bank's banking halls reveal long winding queues of people waiting to transact business of all kind (NMB, 2021).

The launching of e-banking system by NMB Bank was strategy of so many target including customers; it a enables the customers to perform different banking services from their NMB Bank accounts 24-hours, access to cash through an ATM or direct deposit of pay checks into checking or saving accounts. Also, it provides enormous benefits to consumers in terms of ease and cost of transaction either through internet, telephone or other electronic delivery (mobile). Furthermore, it helps the clients to do their real-time transfer and get the feedback of money transfer processes wherever they are (NMB, 2021). It was expected that, provision of electronic banking services should result in cost reduction, performance

improvement, wider coverage, revenue growth, and customer convenience and profit maximization (Bradley & Stewart, 2002; Chau & Lai, 2003).

Notwithstanding the described benefits of establishing e-banking system at NMB Bank, but dissatisfaction of customers is what attracted the desires to conduct this study.

1.4 Problem Statement

Indeed, when any business organizations full-fill customers need through technology advancement aided service not only the customers satisfy but also the organization achieves higher sales, profit, market share and competitive advantage in the competitive market environment. So that it is vital for business companies to satisfy their customers using any one of the mechanisms which is applying technology aided channels consistently. Likewise, banks as a business organization should give intense attention to the reason behind the means of satisfying customers based on the impact of banking technology. However, Tanzania's commercial banks have not satisfied their customers enough due to a number of problems hindering the smooth delivery of digital banking services. The specific problems that hindering the smooth delivery of digital banking services in Tanzania include digital banking fraud, network interruption, lack of sufficient technician in all banks, lack of alternative system, lack of convince of e-banking, and frequent breakdown of ATM. Others are machine out of order, machine out of cash, no printing statements, cards get blocked, unreliability of ATM service, lack of extended mobile banking services, resistance to change in technology among customers and services providers, and customer perception on the risk of failure. Also, complexity, security, lack of personalized services, customers inability to quickly adopt to the new technology, under development of technological infrastructure and low level of relevant knowledge creation and innovation as it is. It is also limited to the challenges of e-banking such as digital literacy, security concerns, and technical issues need to be addressed. These problems were also observed in Ethiopia by Bultum (2014) who studied the factors that affects adoption of electronic banking in Ethiopia banking industry.

According to the study of Yitbarek (2015) dimensions of service qualities like ease of use, reliability and transaction efficiency have impact on customer satisfaction in digital banking in which it stated other variables could have an influence. In addition to this, commercial banks are on the track of adopting and applying interoperability and striving for creating cashless society in using e-payment in various market centers in Tanzania though different challenges have also been observed. As studies of Shittu (2010) revealed almost all banks in Ethiopia have adopted electronic banking as a means of enhancing service quality which leads increasing customer satisfaction but it was limited to adoption of e-banking in the country without including service quality dimensions.

According to the findings of Assefa (2013) the impact of e-banking on customer satisfaction in Gonder city, about 62.19% of the respondents know what e-banking means and also 66.42% of respondents underlined on the direct relationship of e-banking and their banking service satisfaction and the study was considered only on ATM which was the only form of e-banking in the area.

Therefore, the present study bridges the literature and methodology gaps that has been identified. The literature gap of using only ATM as the only form of digital banking is filled by including other forms of digital banking such as internet banking and mobile banking. On the other hand, the present study fills the methodology gap by using a combination of statistical methods such as multiple regression analysis, ANOVA, and correlation analysis. This study therefore examined the impact of digital banking services

on customer satisfaction in the banking sector of Tanzania by taking a case study of NMB Bank Plc in Kigoma Region.

1.5 Research Objectives

The main goal of this research was to examine the impact of digital banking services on customer satisfaction in banking sector in Tanzania by taking a case study of the NMB Bank in Kigoma region. This research was guided by the following specific objectives:

1. To assess how Internet Banking contributes to customer satisfaction in the context of convenience, accessibility, speed, and security.
2. To evaluate the impact of ATM services on overall customer satisfaction, considering the factors of convenience, accessibility, speed, and security.
3. To analyze the effect of Mobile Banking on customer satisfaction, with a focus on convenience, accessibility, speed, and security.

2.0 LITERATURE REVIEW

2.1 Theories Related to Digital Banking of Information Technology

2.1.1 Innovation Diffusion Theory

This was developed by Roger in 1983 explaining individuals' intention to adopt a technology as a modality to perform a traditional activity. The critical factors that determine the adoption of an innovation are such as relative advantage, compatibility, and complexity of trial ability. It is concerned with the manner in which a new technological idea, artefact or technique, or a new use of an old one, migrates from creation to use. According to this theory, technological innovation is communicated through particular channels, over time, among the members of a social system. The stages through which a technological innovation passes are: knowledge (exposure to its existence, and understanding of its functions); persuasion (the forming of a favorable attitude to it); decision (commitment to its adoption); implementation (putting it to use); and confirmation (reinforcement based on positive outcomes from it).

2.1.2 Technology Acceptance Model Task-Technology Fit model

Dishaw and Strong (1999) indicate that the Technology Acceptance Model (TAM) and the Task-Technology Fit model (TTF) have been used extensively to explain the adoption of e-banking. The models provide quite different but sometimes overlapping perspectives on the utilization behavior of these electronic channels. The TTF model (Irick, 2008) links technology to performance and posits that performance will be increased when a given technology provides features and support that correspond with the requirements of the task. Thus, for banks, they will adopt e-banking technologies if it helps deliver better services to customers.

Technology Acceptance Model (Davis et al., 1989) however stands out as the most effective theory underpinning technology adoption by customers. It was developed to explain and predict computer-usage behavior and has its theoretical foundation in the Theory of Reasoned Action by Ajzen and Fishbein (1980). The TAM posits that the adoption of any technology is influenced by two related factors of perceived usefulness and perceived ease of use. The TAM thus examines the manner in which factors such as system characteristics ensure user friendliness of the technology. Here, the user utilizes information in a systematic way in order to decide whether or not to use the technology in question (Al-Hajri, 2008). In addition, it also postulates that users will adopt the technology if they find it useful. TAM has been described as a well-established and robust (Yuttapong et al., 2009). According to

Yuttapong et al. (2009), the model consistently explained a significant proportion of the differences between usage intentions and actual behavior.

2.2 Empirical Literature Review

2.2.1 Impact of Internet Banking on Customers Satisfaction

Özdemir (2009) mentioned that countries across the globe have been practicing internet banking and that it is simple and common in some countries. Another article has shown the same idea, Hernández-Ortega (2007) found that this concept facilitates services for customers in forms of transferring funds, paying bills and shopping through internet. However, Hernández-Ortega (2007) states that the usefulness, self-efficacy, and ease of use have a strong presence on internet banking.

Mukhtar (2014) in his article about the perceptions of customers toward internet banking in the United Kingdom it was suggested that this concept is developing with the development of technology and internet. In addition, security features are very critical while conducting monetary operations. Mukhtar (2014) found that some customers perceived internet banking a secure, convenient and reliable technique of transactions. However, for customers with few understandings of technological devices, internet banking is not convenient. Briefly, it was found that privacy, security, reliability, trust, and convenience are the most important factors that customers care about. According to Chou (2000), internet banking is important for checking account balances and transaction summaries, paying invoices, transferring funds between accounts, requesting credit cards for example, paying taxes, monitoring foreign exchange trading and exchange rates, facilitating opening accounts procedures, etc. According to Suh and Han (2002), trust is also an important factor to be considered regarding the customer point of view in combination with the perceived advantages, compatibility, security and privacy, experience as well as accessible and convenient delivery channels.

Two models were defined by Nath et al. (2001) of internet banking. The first one which is called “e-bank” represents banking institutions on internet platforms, the second one which is called “e-branches” refers to brick-and-mortar banks offering services through internet to customers.

H1: Internet Banking has a positive relationship with Customer Satisfaction in the context of convenience, accessibility, speed, and security.

2.2.2 Automated Teller Machine

Steve (2002) has clarified that Automated Teller Machines (ATMs) are placed in different public spaces not only near to the banks, but also shopping centers, airports, gas stations, restaurants, or any other place where large number of customers can be. Steve (2002) has shown that there are two types of ATM installations. The first one is an “on premise ATMs”, those are advanced ATMs, multi-function machines and more expensive. The second one is an “off premise” that are provided only for the need for cash.

Christolav (2003) stated that ATM services bring profits for banks. However, the second type of ATM, the off-bank premises are usually more profitable, it attracts non-bank customers and they are imposed to pay fees for any service. ATMs generally improve the efficiency and effectiveness of banks, decrease the costs for both users and banks as well as the time.

Referring to Choudary (2013), ATMs build great relationships between customers and banks. Instead of creating branches around cities, banks have settled up ATMs with local and other different languages. Moreover, the priority of banks is to keep the security high for all ATMs because they have higher risks for customers.

H2: ATM has a positive relationship with Customer Satisfaction considering the factors of convenience, accessibility, speed, and security.

2.2.3 Mobile Banking

According to Laforet and Li (2005) a study of Chinese population has shown that users of mobile banking are generally males not necessarily young and well educated. For Chinese customers, security concern is the most important factor that motivate them to adopt online banking. Lack of awareness and understanding different benefits provided by mobile banking represent the main barriers.

Mobile banking enables customers to benefit from banking services simply via mobile devices without the need of visiting a branch or an ATM, reduce the cost and the time of visiting branches, and offer services to customers at any time and every day. Moreover, mobile banking enables customers to check balances, account transactions, payments, credits and many other services via any mobile devices.

Baptista and Oliveira (2015) defined the mobile banking as a type of realizing financial transactions. Customers are connected to banks through mobile devices and communication networks. Devices keep the interaction between banks and customers through applications that can be downloaded and connected to the system for sending and receiving information. Other studies referring to Gomachab and Maseke (2018) used the SERVQUAL model to understand the relationship between customer satisfaction and mobile banking. Reliability, empathy, and tangibility are positively related to customer satisfaction.

H3: Mobile Banking has a positive relationship with Customer Satisfaction with a focus on convenience, accessibility, speed, and security.

2.3 Conceptual Framework

This section contains a conceptual study framework based on a literature review to achieve the objectives of this study. The conceptual framework shows the relationship between variables. This study focused on the impact of digital banking services (as independent variable) on customer satisfaction (as dependent variable). Figure 1 shows the connections and relationships of the variables of the study.

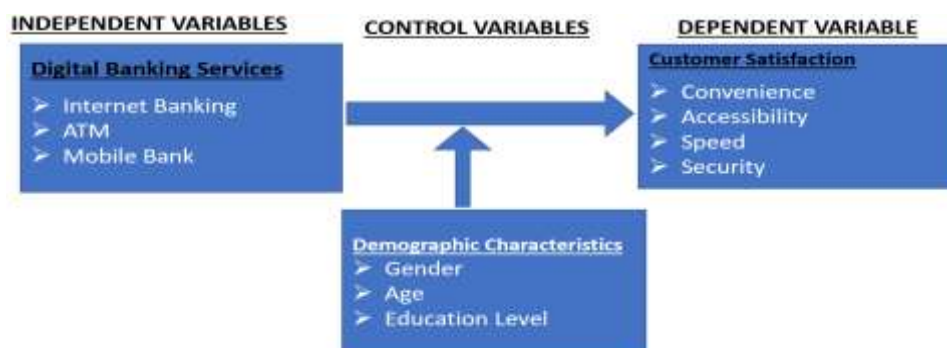


Figure 1: Conceptual Framework of the Study

Figure 1 shows the relationship between the main variables of this study. Digital banking services is the independent variable which was measured by internet banking, Automated Teller Machine (ATM) and mobile banking services. On the other hand, customer satisfaction is the dependent variable which was measured by convenience, accessibility, speed, and security of the digital banking service used by customers. The study also added control variables measured by demographic characteristics whose indicators are gender, age, and education level of customers (respondents).

3.0 RESEARCH METHODOLOGY

3.1 Research Philosophy

This study used positivist research philosophy to study a causal relationship between digital banking services and customer satisfaction in the banking sector in Tanzania.

3.2 Research Approach

The study relied on quantitative approach which aligns with positivism philosophy. This approach guided the researcher in the process of collecting, analyzing and interpreting the data.

3.3 Research Design

This study adopted explanatory research design because it was suitable to explain the correlation and relationship between variables as stated by Philip and Adrien (2009).

3.4 Population and Sample Size

3.4.1 Population

This study was conducted in the six NMB Bank Branches in Kigoma region. These branches involved Buhigwe, Kakonko, Kasulu, Kibondo, Kigoma, and Uvinza. Therefore, the population of the study involved currently active electronic banking customers of the six selected branches of NMB bank who have been using digital banking and the service has been provided. The total study population was 47,035 which was obtained from the sum total of electronic banking users of the aforementioned six NMB Bank branches in Kigoma region.

3.4.2 Sample Size

The total sample size composed of 256 respondents from all NMB Bank branches in Kigoma region were obtained using Yamane (1967) formula. Based on the general guidelines by prior researchers on the sample size (Boomsma, 1985; Kerlinger, 1986; MacCallum et al., 1999) the sample size of 256 respondents met the minimum requirements from the statistical perspective. 256 respondents participated in this study through filling of questionnaires.

3.5 Sampling Techniques

The researcher used purposive sampling to select the six bank branches and simple random sampling to distribute the questionnaires to 256 customers.

3.6 Data Type and Sources

The study used primary data which were obtained from respondents who participated in this study.

3.7 Method of Data Collection

The basic method that the researcher used to collect data is 5-point Likert Scale questionnaire which was distributed to 256 customers of the six NMB Bank branches.

3.8 Data Analysis Method

The researcher analyzed data by using quantitative analysis with the help of Statistical Packages for Social Sciences (SPSS) software. Correlation analysis, analysis of variance, and multiple regression analysis were conducted to explain the relationship and impact of the independent variables and the dependent variable.

3.8.1 Research Model

The purpose of this study was to examine the impact of digital banking services on customer satisfaction. The researcher used multiple regression model to determine significance level of the variables towards digital banking induced customer satisfaction.

Customer satisfaction in digital banking = f (internet banking, ATM, mobile banking, gender, age, education level). Econometrically,

$$CUS = \alpha + \beta_1 IB + \beta_2 ATM + \beta_3 MB + \beta_4 GN + \beta_5 AG + \beta_6 EDUC + \varepsilon \dots\dots\dots (1)$$

Where; CUS=Customer Satisfaction, IB=Internet Banking, ATM=Automated Teller Machine, MB=Mobile Banking, GN=Gender, AG=Age, EDUC=Education level. Moreover, α (alpha) is constant, β (beta) is coefficient of estimate, and ε is the error term.

4.0 FINDINGS AND DISCUSSION

4.1 Findings on Digital Banking Services Factor Analysis in terms of Convenience, Accessibility, Speed, and Security

The digital banking services that were involved in this study are internet banking services, ATM services, and mobile banking services. These services were examined in terms of convenience, accessibility, speed, and security in order to gain their understanding in impacting customer satisfaction in commercial banks in Tanzania, particularly the NMB Bank. The findings are discussed below.

4.1.1 Findings on Internet Banking Services in terms of Convenience, Accessibility, Speed, and Security

The first objective of this dissertation aimed at assessing how internet banking contributes to customer satisfaction in the context of convenience, accessibility, speed, and security. Respondents were asked to indicate to what extent they agree to the statement regarding the internet banking services in the context of convenience, accessibility, speed, and security. This was done by choosing one aspect in Likert scale. The results are presented in Table 1.

Table 1: Results of the Internet Banking Factors

Response Statement	SD		D		N		A		SA		Mean	Std. Dev.
	F	%	F	%	F	%	F	%	F	%		
Convenience	46	18.0	42	16.4	38	14.8	86	33.6	44	17.2	1.494	.5012
Accessibility	42	16.4	65	25.4	43	16.8	62	24.2	44	17.2	1.896	.8141
Speed	34	13.3	48	18.8	40	15.6	82	32.0	52	20.3	1.974	.8107
Security	45	17.6	45	17.6	70	27.2	52	20.3	44	17.3	2.077	3.8962

Key: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Source: Field Data, 2025

As shown in Table 1, majority (50.8% = 17.2 + 33.6) agreed that convenience is the most influential factor that influenced the use of internet banking as compared to a total of 34.4% who disagreed. Moreover, 14.8% were neutral about convenience as a factor. The findings agreed with Lee and Marshal (2014) who found that convenience was among the factors amid the choice of internet digital banking. The convenience determines the power, and part desires for every part (Lawson et al., 2016).

About accessibility, the findings above reveal that a good number of respondents (41.8%) disagreed on it being an influential factor leading to internet banking. However, almost the same number of respondents (41.4%) agreed on it as being an influential factor. These results are against those of Lamb, Hair and Daniel (2011) who asserted that accessibility is the key determinant of a man’s use of internet banking while Kotler (2010) asserted that accessibility is the essential determinant.

More than half of respondents (52.3%) agreed that speed was one of the factors which influenced their use of internet banking services (Table 1). While only 32.1% of them disagreed on speed as being influential factor for them to use internet banking.

Lastly, the findings in Table 1 indicate that 50.1% of the total respondents agreed that security was a factor that influenced them to internet banking. However, 33.1% of them disagreed. At the same time, 16.8% didn't know whether security is an influencing factor towards using internet banking services.

Generally, the results show that speed was the major factor that influenced the use of internet banking in Kigoma region. This was termed as the ability to complete many banking transactions at a time in one place. Next was security, then followed by convenience and lastly was accessibility.

4.1.2 Findings on ATM Services in terms of Convenience, Accessibility, Speed, and Security

The second objective of this study sought to evaluate the impact of ATM services on overall customer satisfaction, considering the factors of convenience, accessibility, speed, and security.

Respondents involved in this study were asked to rate these indicators by choosing one aspect in Likert scale. The results are presented in Table 2.

Table 2: Results of the ATM Factors

Response Statement	SD		D		N		A		SA		Mean	Std. Dev.
	F	%	F	%	F	%	F	%	F	%		
Convenience	57	22.3	86	33.6	50	19.5	33	12.9	30	11.7	2.097	.9794
Accessibility	0	0	58	22.6	0	0	62	24.3	136	53.1	1.809	.75475
Speed	11	4.3	34	13.3	40	15.6	62	24.2	109	42.6	1.8144	.7173
Security	35	13.6	55	21.3	14	5.4	82	32.0	70	27.3	1.6907	.7800

Key: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Source: Field Data, 2025

Convenience of ATM machines accounted for a total of 77.4% as a factor that influenced customers towards using an ATM banking services. Moreover, the findings agreed with Parasuraman, Zeithaml and Berry (2016) who established that convenience contributes to a repeat in use of ATM machines While only 22.6% remained neutral on whether convenience is a contributing factor towards their use of these machines.

The findings in Table 2 further indicate that accessibility was not considered as a factor influencing customers towards using ATM banking services, because more than 55% (33.6 + 22.3) of the total respondents disagreed on it. These findings are not in line with Ross and Harradine, (2014) who indicated that the accessibility towards an ATM determines whether the customer will use it or not. They added that accessibility towards an ATM is critical in process of making decision on whether to use it or not. However, only 24.6% of the total respondents thought accessibility contributed to their use of ATM machines. Lastly, 19.5% of the respondents were neutral on this factor.

Majority of respondents (66.8%) agreed that speed was the factors that contributed to their use of an ATM machine in Kigoma region. On the other hand, 17.6% of respondents disagreed that speed influence their decision towards use of ATM. A small percentage of respondents (15.6%) remained neutral.

Moreover, security influence the use of ATM machine by 59.3% as compared to 34.9% of the total respondents who disagreed. Only 5.4% were found to be neutral regarding security as being a factor for use of an ATM machine.

4.1.3 Findings on Mobile Banking Services in terms of Convenience, Accessibility, Speed, and Security

The last objective of this study sought to analyze the effect of Mobile Banking on customer satisfaction, with a focus on convenience, accessibility, speed, and security. Respondents involved in this study were asked to rate these indicators by choosing one aspect in Likert scale. The results are presented in Table 4.3.

Table 3: Results of the Mobile Banking Factors

Response Statement	SD		D		N		A		SA		Mean	Std. Dev.
	F	%	F	%	F	%	F	%	F	%		
Convenience	5	2.0	36	14.1	0	0	126	49.2	89	34.7	1.8402	.7820
Accessibility	62	24.3	98	38.3	61	23.8	28	10.9	7	2.7	2.1134	3.9026
Speed	54	21.1	48	18.8	40	15.6	83	32.4	31	12.1	1.7526	.70573
Security	10	3.9	10	3.9	28	10.9	68	26.6	140	54.7	2.0103	1.08207

Key: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Source: Field Data, 2025

Table 3 above shows that convenience was the major factor that counted most in influencing customers toward using mobile banking services by a total of 83.9%. This is in line with Kotler’s (2010) findings who found that convenience influences mobile banking use. This also agreed with Lawson et al. (2016) who established that convenience induces an incentive to use digital banking services. On the other hand, majority of respondents accounting for about 62.6% disagreed that accessibility influences mobile banking use. These results imply that accessibility is the main determinants of using mobile banking while speed and security were not much counting in influencing mobile banking use as shown in Table 3.

4.1.4 Findings on Customer Satisfaction in terms of Convenience, Accessibility, Speed, and Security

The study, lastly, sought to determine customer satisfaction in terms of convenience, accessibility, speed and security. Respondents were asked to indicate disagreement or agreement to these indicators by choosing one aspect in a Likert scale from strongly disagree, disagree, neutral, agree, and strongly agree. The study analysed the descriptive statistics based on the mean and the standard deviation to examine the most influencing factors as well as the least influencing factors in terms of convenience, accessibility, speed and security. The descriptive statistics shows the measure of the central tendency in terms of the mean and also the measure of dispersion in terms of standard deviation. The mean is the most used descriptive statistics measure of the central tendency while the standard deviation is the most used measure of dispersion. Both the mean and the standard deviation leads to easy understanding of the initial behaviour of the data set. Table 4 shows the results of the descriptive statistics analysis on customer satisfaction.

Table 4: Descriptive Analysis Results

Factors	Mean	Std. Deviation	No. Observation
CONVENIENCE FACTORS			
1. CV1	3.8957	0.74616	256
2. CV2	3.7913	0.78184	256
3. CV3	2.8435	1.10253	256
Average	3.5102	0.87684	
ACCESSIBILITY FACTORS			
1. AC1	3.2957	1.06942	256
2. AC2	3.5217	1.10456	256
Average	3.4087	1.08699	
SPEED FACTORS			
1. SP1	4.4565	0.65772	256
2. SP2	4.2348	0.70346	256
3. SP3	4.5043	0.59655	256
4. SP4	3.5957	1.02245	256
Average	4.1978	0.745045	
SECURITY FACTORS			
1. SC1	4.8957	0.74616	256
2. SC2	3.4087	0.78184	256
3. SC3	2.2893	1.10253	256
Average	3.5312	0.87684	

Source: Field Data, 2025

A complete picture of different factors that influence customer satisfaction is shown in table 4 above. The results reveal that, in average, speed factors were the most influencing factors for customer satisfaction with an average score of 4.1978 mean and least dispersion of 0.745045 standard deviation. The second most influencing factor was security factors (Mean = 3.5312 and std. deviation of 0.87684), followed by convenience factors and lastly accessibility factors as shown in Table 4.

4.2 Inferential Statistical Analysis

The purpose of the study is to examine the impact of digital banking services on customer satisfaction by commercial banks. The researcher used multiple regression model to determine significance level of the variables towards digital banking induced customer satisfaction. Multiple linear regression models are frequently used in the social sciences to examine data that is ordinal in nature, despite having been acquired using a Likert scale. This strategy is supported by the fact that strong and relevant linear regression results can be obtained from Likert scale data if sufficient conditions are met. According to Pimentel (2019) contends that parametric tests, such as linear regression, are suitable for use with Likert scale data because in general, they are resistant to deviations from the requirements of homoscedasticity, multicollinearity and normality, particularly when large sample sizes are involved.

The multiple linear regression model was employed to examine the association of the independent variables (internet banking, ATM, and mobile banking) with the dependent variable, which is customer

satisfaction. Gender, age, and education level variables were used as control variables in this study for the results to be valid, reliable, and robust.

This section therefore presents the multiple linear regression model analysis and it begins by presenting the correlation analysis, then the model summary, analysis of variance (ANOVA), and lastly the multiple regression model results according to objectives of this study.

4.2.1 Correlation Analysis

The correlation analysis was performed to identify the association among the variables influencing customer satisfaction. Pearson correlation was employed and the results are displayed in Table 5.

Table 5: Correlation Matrix Results

	CUS	IB	ATM	MB	GN	AG	EDUC
CUS	1.00						
IB	.038	1.00					
ATM	.605	.038	1.00				
MB	.114	.605	.645	1.00			
GN	.115	-.11	.654	.876	1.00		
AG	-.142	.456	.942	.543	-.721	1.00	
EDUC	.755	.783	.345	.732	.654	.099	1.00

Source: Field Data, 2025

Table 5 indicates that there is a correlation/association between all independent variables and the dependent variable. ATM and EDUC seems to have a very strong positive relationship with CUS. AG is having a weak negative relationship with CUS among all the variables.

4.2.2 The Multiple Regression Model Analysis

This study sought to identify the digital banking services that impact customer satisfaction in terms of convenience, accessibility, speed and security. The multiple regression model was used to identify the causal-effects of these variables so as to meet the specific objectives of this study. Below are the results obtained from the multiple regression model analysis.

4.2.2.1 The Multiple Regression Model Summary

The model summary shows the relevance of the independent variables that were included in the multiple regression model of this study. This tells whether the study included the right variables or not. The results of the R-Square, F-Statistics, and the p-values are normally used to confirm the relevance of the independent variables in explaining the dependent variable. The analysis results are presented in Table 6.

Table 6: Model Summary Results

Model	R	R-Square	Adjusted Square	R-Std. Error of the Estimate	F	Sig.
1	0.874	0.701	0.719	1.6751	19.763	0.000
a. Predictors: (constant), IB, ATM, MB, GN, AG, EDUC						

Source: Field Data, 2025

Table 6 shows that the model is significant at 0.05 significant level since the p-value is less than 0.05 significant level. Furthermore, the R value is 0.874 (87.4%) which confirms the relevance of the

independent variables (predictors) in the multiple regression model of this study. The results indicate that the predictors (IB, ATM, MB, GN, AG, EDUC), taken together, can explain the dependent variable (CUS) at 70.1% as determined by the R-Square value of 0.701. The Standard Error of the Estimate value is 1.6751 and the F-Statistics value is 19.763 which are significant at 0.000 p-value (Sig.). These results affirms that the 6 predictor variables are acceptable to be used in the multiple regression model specified in the previous chapter.

4.2.2.2 The Analysis of Variance (ANOVA)

The Analysis of Variance (ANOVA) is normally conducted to check/test for the goodness-of-fit of the model. The F-Statistics and the significance level are used to confirm whether the model fit is assured or not. The results of the ANOVA analysis are displayed in Table 7.

Table 7: ANOVA^a Results

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	29.851	6	3.731	8.186	.000 ^b
Residual	100.740	221	.456		
Total	130.591	227			

Source: Field Data, 2025

Table 7 represents that multiple regression analysis was conducted to analyze the relationship between dependent variable and independent variables used in this study. The F-statistics is 8.186 (F = 8.186) and significance level is 0.000 which is less than 0.05 and for regression analysis of this study, the model fitness is assured.

4.2.2.3 Multiple Regression Model Results

The multiple regression model analysis was conducted to identify the impact of digital banking services on customer satisfaction. The regression analysis identifies not only the association between the variables but also shows the causal-effect of the independent variables on the dependent variable. This analysis helped to analyze the specific objectives and answering the research questions by identifying how digital banking services impact customer satisfaction. The results are presented in Table 8.

Table 8: Coefficient Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
α	1.480	.604		2.452	.015
IB	.169	.076	.146	2.226	.027
ATM	.282	.112	.166	2.510	.032
MB	.466	.035	.340	2.545	.000
GN	.034	.057	.038	.604	.546
AG	.288	.101	.194	2.864	.005
EDUC	.172	.062	.174	2.763	.006

Source: Field Data, 2025

From Table 8, the estimated multiple regression model can be extracted as shown below.

$$CUS = 1.480 + 0.146IB + 0.166ATM + 0.340MB + 0.038GN + 0.194AG + 0.174EDUC$$

..... (2)

Information that is contained in Table 8 and equation (2) was interpreted and discussed according to the specific objectives of this study. The general objective of the study was to examine the impact of digital banking services (internet banking, ATM, and mobile banking) on customer satisfaction in terms of convenience, accessibility, speed, and security. The study was conducted in banking sector in Tanzania by taking a case study of the NMB Bank in Kigoma region.

Research Objective 1: How Internet Banking Contributes to Customer Satisfaction

The first objective of this study sought to assess how internet banking contributes to customer satisfaction in the context of convenience, accessibility, speed, and security. The results of multiple regression model presented in Table 8 and equation (2) indicates that, internet banking (IB) had a positive and statistically significant contribution to customer satisfaction since the Sig. value is 0.027 which is less than 0.05 significant level. This implies that, holding other factors/variables (ATM, MB, GN, AG, EDUC) constant, a 1 unit increase in internet banking (IB) in the context of convenience, accessibility, speed, and security increases customer satisfaction (CUS) by 0.146 units and vice versa.

Research Objective 2: The Impact of ATM Services on Customer Satisfaction

The second objective aimed at evaluating the impact of ATM services on overall customer satisfaction, considering the factors of convenience, accessibility, speed, and security. Results from Table 8 reveals that, ATM banking services had a positive relationship with customer satisfaction. This relationship is statistically significant at 5% significant level since its Sig. value is 0.032 which is less than 0.05. This imply that, a 1 unit increase in ATM services leads to an increase in customer satisfaction by 0.166 units and vice versa, other variables being constant.

Research Objective 3: The Effect of Mobile Banking on Customer Satisfaction

The last objective in this study was to analyze the effect of Mobile Banking on customer satisfaction, with a focus on convenience, accessibility, speed, and security. The results presented in Table 8 show that the significant values (Sig. of 0.000) of mobile banking is less than 0.05 indicating that mobile banking is statistically significant in influencing customer satisfaction. Mobile banking standardized coefficient is positive indicating that there is a positive relationship between mobile banking services and customer satisfaction. This result implies that, a 1 unit increase in mobile banking services, holding other factors constant, increases customer satisfaction by 0.340 units and vice versa.

Therefore, in general, internet banking, ATM, and mobile banking were positively and statistically significant in impacting customer satisfaction in terms of convenience, accessibility, speed, and security during the period of study.

On the other hand, the findings on the control variables shows that gender (GN) was not statistically significant implying that it has no any impact on customer satisfaction. Age and education level are statistically significant and have a positive relationship with customer satisfaction.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

5.1.1 General Summary

The specific objectives that were considered in this study were sought to examine the impact of internet banking, ATM, and mobile banking services on customer satisfaction in terms of convenience,

accessibility, speed, and security. Data were collected through questionnaire. The response rate showed that 256 questionnaires out of 274 distributed questionnaires were returned fully filled and they were used for analysis. This was equivalent to 93.4% rate of response.

Descriptive analysis on demographic characteristics findings indicated that, majority of the respondents were female as compared to male respondents. Also, the 28 – 37 years was the leading age group which comprised many respondents and it was followed by 18 – 27 age group. The marital status findings revealed that majority of the digital banking customers who were involved in the study were married, followed by others who comprised separated, widow and divorced while those who were single accounted for only 23.8%. Furthermore, it was discovered that, majority of the customers were educated people having tertiary education followed by secondary school leavers. At least all of them had a formal education. Regarding the occupation of respondents, the findings indicated that majority were employed followed by self-employed. However, the not employed were also influenced to digital banking services according to the findings of this study. Moreover, those who had monthly personal income of above 1 million were the largest group during the period of study, followed by those with personal monthly income of between TZS 600,000 to TZS 1,000,000. No one was having personal monthly income of below TZS 100,000 among those who participated in this study.

It was further discovered that many of the respondents involved in this study were found to be coming from Kasulu NMB Branch, followed by Kibondo, then Kakonko, and few as compared to other NMB Bank branches in Kigoma region were from Uvinza NMB Bank branch. Majority of these respondents have stayed with NMB Bank for 1 to 5 years (46.88%), followed by 30.86% 6 to 10 years, and those who had used NMB Bank services for less than a year accounted for 10.55%. Furthermore, many respondents were using ATM followed by mobile banking, while internet banking was least. The most NMB Bank service used by customers was current account, followed by loan services.

5.1.2 Summary of the Key Findings

The factor analysis showed that security was the main factor for using internet banking, while convenience was the main factor for using ATM services. Furthermore, accessibility was found to be the main factor for using mobile banking. In terms of customer satisfaction, speed was the main consideration, followed by security, convenience, and lastly accessibility.

Regression analysis found that mobile banking affected customer satisfaction to the largest extent as compared to other digital banking services. The second was ATM and lastly was internet banking.

5.2 Conclusion

The study concludes that, generally, digital banking has an impact on customer satisfaction in commercial banks in Tanzania, as all the digital banking services were found to be statistically significant in explaining customer satisfaction. Specifically, mobile banking is the main digital banking service that influence customer satisfaction, followed by ATM banking services. Speed and security are the main factors towards digital banking services usage and hence provide satisfaction to customers.

5.3 Recommendations

Basing on the research findings, this study provides the following recommendations;

There is need for various stakeholders in the banking sectors to improve the technological infrastructure on the banking industries by putting more efforts on the digital banking services and products as this will enable them reach a large number of customers, flexibility, interactivity and greater accessibility

compared to conventional banking. There is need for commercial banks to heavily invest in technology as this will highly encourage the use of e-banking technologies and this will influence the financial performance of commercial banks.

The study recommends NMB Bank to increase society's understanding of the issue of digital banking services offered by the bank. To provide digital banking services to its clients, the bank must develop policies that improve the ICT infrastructure while offering secure and long-term technologies to both existing and new clients. As a result, greater coordination between the NMB Bank, communications providers, and the government is required to improve ICT services for customer satisfaction.

The necessity of NMB bank to consolidate all ATM information and SMS: The place of Information Technology (IT) in the financial sector cannot be over stated. It is thus paramount that the management of NMB Bank invests massively in IT in order to further promote efficient and smooth service delivery. Furthermore, there is the need to educate customers extensively on the use of internet banking services which is not well utilized in Kigoma region. It is also important that, commercial banks create digital banking unit that will monitor progress and challenges of such services. This will ensure effective and efficient digital banking services.

In order to maintain the noted high level of customer satisfaction and retention there is need to maintain the quality of financial services offered by the bank. This can be done by institutionalizing quality control and assurance measures as well as a strong monitoring and evaluation system for the services quality within the bank. In addition, the monitoring and evaluation system should also include feedback mechanism from the customers so as to inform decisions. Through these measures, the level of satisfaction of the customers with the welcoming attitude of the NMB Bank staff will be further improved.

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