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Abstract

The study sought to assess the impact of e-banking adoption on customer satisfaction and loyalty in commercial banks in Rwanda. The study specific objectives were: to identify the relationship between using of electronic banking and customer satisfaction in Bank of Kigali Bank; to determine whether the e-banking adoption can affect customer satisfaction or at Bank of Kigali; to identify the opportunities that can increase customer satisfaction by using electronic banking adoption at Bank of Kigali; to identifies the major challenges of electronic-banking on customer satisfaction at Bank of Kigali. The study adopted a descriptive cross-sectional study design. The study involved collection of data at a single point in time in the target population. Descriptive means that the study described phenomenon as it is without doing any form of manipulation. The study used a sample size 400 respondents from staff and customers (clients) of Bank of Kigali. Sampling techniques for this study were both simple random and purposive random. Purposive sampling was used to obtain Bank of Kigali official, simple random was used because when sampling population all were having equal probability of being selected. The source of data was primary and secondary data. To get primary data, the researcher went to the field and collected raw data from respondents, in this study, questionnaires, interviews and observations were used to collect primary data. Secondary data was collected by way of document reviews. Based on correlation analysis among the explanatory variables reliability, empathy and responsiveness are good predictors of level of customer satisfaction in electronic banking due to their higher correlation coefficient in relation to assurance and tangibility. The independent variables those are the five e-banking adoption dimensions, have a positive relationship with customer satisfaction in e-banking. Beside for the response of question in reliability, responsiveness, assurance, Reliability on customer Satisfaction in Bank of Kigali. 67.8% of respondents strongly agreed that the bank performs its Electronic banking adoptions without errors, 23.3% agreed with the statement, none of respondents were undecided, 6.4% disagreed with the statement while 2.5% strongly disagreed with the statement. Also 18.9 % of respondents strongly agreed that Electronic banking adoptions are performed within the promised time; 20.6 % agreed with the statement, 23.9% were undecided, 31.1% disagreed with the statement while 5.6 % strongly disagreed with the statement. Moreover, 45.8% of respondents strongly agreed that Bank shows sincere concern in solving my problems, related to electronic banking business operations, 14.4% agreed with the statement, 23.9% were undecided, 10.6 % disagreed with the statement while 5.3% strongly agreed with it. The study findings also showed that 11.7 % of respondents strongly agreed that the bank performs electronic banking adoption exactly as promised. 75.8 % agreed with the statement none of respondents were undecided. The study recommended that Bank of Kigali

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E-banking Service requires integrated and collaborative approach with all stakeholders. Bank of Kigali should collect customer experience data in real-time across all channels and touch points.

Key words: *E-Banking Adoption, Customer Satisfaction, Loyalty, Commercial Banks, Electronic Banking.*

1. Introduction

Today's fast paced and increasingly competitive global market requires effective and efficient strategies to survive and to make profits which can contribute toward the growth of the organization. The contemporary world is faced by a rapid development in technology; such advancement (ICT) has introduced a number of new systems in all the aspect of life and the economy in general. Science has lately joined the world through the use of internet systems which were in the early 20th century used for mail communication and advertisement plans by several companies in the world. The 21st Century, shaped by the Technological Revolution, is the age of globalization. The Internet massively impacts all aspects of business. In the 21st century, electronic business is no longer an option for businesses; it is a need. Steven, 2002 cited by Wisdom, (2012). It is obvious that the customers are very essentials stakeholders in many organizations and their satisfaction is a priority in marketing management. Customer satisfaction and adoption quality has been an interest to researchers and organizations as it has been proven by some researchers that adoption quality is related to it (Wilson, Zeithaml, Bitner, & Gremier, 2021).

Moreover, understanding and meeting customers 'expectations and subsequently being different from competitors are important in order to survive in the today world of globalization. Technology is having a lot of impacts upon adoption companies in general and the financial adoptions sector is not an exceptional. The imposition of information and communication technology concepts, techniques, policies and use of implementation strategies to banking adoptions has become a subject of great importance and concerns to all banks and indeed a criterion for local and global competitiveness in banking industry.

In recent times electronic banking has been adopted in various commercial activities, advancing adoptions such as sell and purchase of items through the use of internet systems. Despite the risks associated with this technology, market economy, and the need to make the world a one village has necessitated commercial and financial institutions adopting electronic banking to link banking activities or affairs more easily than it was in the past. This is to say with electronic banking it is even easier for a holding bank to control its subsidiary bank allocated at a distant as a result of technological improvement. (2003) cited by Wisdom, (2012). As a result of this technological improvement business environment in financial sector is extremely dynamic and experience rapid changes and demands banks to serve their customer electronically. The gradual change of e-banking started from the use of Automatic Teller Machine (ATM) and Finland is the first in the world to have taken a lead in e-banking (Mishra RK, Kiranamai, 2009).

E-banking has been globally used in developed countries and in developing economies; however, the spread of e-banking is much limited. As indicated by Claessens, Glaessner and Klingebiel, developing nations in general have an advantage as they can learn from the experience of advanced economies (Claessens S, Glaessner T, and Klingebiel D, 2000). Today, almost all banks are adopting electronic banking as a means of improving adoption quality of a bank. They are providing electronic banking to their customers to improve customers 'satisfaction in relation to banking adoption. According to Hansemark OC, Albinson M (2004), Satisfaction is an accumulation of customer attitude towards a adoption provider, or an

emotional response to the difference between what customers expect and what they receive, regarding the fulfillment of some need, goal or desire.

Therefore, the background of the study is further discussed from global, regional and Local contexts.

In China, according to Chang (2020) e-banking contributes significantly to the distribution channels of banks such as automated teller machine (ATM), Phone –banking, Tele- banking, PC-banking and now internet banking. These financial electronic technologies are in differing stages of development. ATMs, a mature e-banking product, have existed for approximately 30 years and have been widely accepted among consumers. On the other hand, telephone banking, electronic bill payment, online banking and mobile banking represent more recent additions to e-banking adoptions. (Chang, 2020). The use of e-banking varies, especially in developed and developing countries. E-banking Internet connectivity is very important and essential in the use of banking. Compared to countries like Singapore and Malaysia, internet usage is low compared to those countries, and the ability to operate devices such as computers and telephones is important in electronic banking. Computer literacy is 32.3 %.(Chang, 2020).

In the United Kingdom (UK) the Barclays Bank, ensured financial E-adoptions whereby clients practice their movable devices when receiving and sending the value of money or additional just put, money transmission electronically from one individual to another person through electronic devices. Together national transfers as well as worldwide. (Barclays Bank, 2013). The EU elaborated practice and implementation of electronic money from 2000, considering the example in Germany, France and England, adopted E-banking greatly extended than numerous further nations of the similar area, wherever mobile adoptions they are used a comprehensive term that denotes a choice of financial adoptions that can access to the mobile phone transversely, mobile money transfer is one of the three leading procedures of financial adoption by using electronic facilities like mobile.

In Malaysia, Mohamed H. states that; E-banking is a product designed for the purposes of online banking that enables you to have easy and safe access to your bank account. E-banking is a safe, fast, easy and efficient electronic adoption that enables you access to bank account and to carry out online banking adoptions, 24 hours a day, and 7 days a week. (Mohamed H 2021). E-banking enables the following elements: accurate statement of all transactions processed in your bank account, Statement of current account, credits, overdrafts and your deposits, execution of national and international transfers in various currencies, execution of all types of utility bill payments (electricity, water supply, telephone bills, etc..) carrying out customs payments, electronic confirmation for all transactions executed by E-banking and management of your credit cards (Singh K, 2006).

In Jordan, (Shafiq 2014) highlights several factors that have helped Jordan facilitate their banking and increase customer satisfaction due to the recent introduction of e-banking. According to him, Jordan Banking has seven key factors in enhancing customer satisfaction in banking: reliability, flexibility, security, accessibility, ease of use, efficiency and privacy. In this study, approximately 360-400 customers and the data were collected using approximately Jordanian existing banks. Ali Bank, union bank, HSBC Bank, Capital Bank, and so on. The two main factors that contribute to the upliftment are privacy and ease of access. The Jordanian financial framework is currently going through a time of basic change that is upsetting the manner by which financial adoptions are conveyed, with movement to fuse an improved augmentation in the amount of choice channels open for the conveyance of adoptions, with e-banking shaping the center vehicle for these new items. Meanwhile, banks in Jordan are hoping to upgrade their activities and reduce their costs through the e-banking framework. Notwithstanding this observation, to expand the adoption of e-banking by clients, Jordanian

banks and other e-commerce firms should address purchaser concerns and grasp the key factors that hinder customer e-banking adoption in order to overcome any limitations to such changes (Mullan, Bradley & Loane 2017).

In Africa, Nigeria and other countries in general electronic banking is starting to pick up its roots over the mainland. For instance, Madueme (2020) compose that with globalization, Nigerian banks must choose the option to embrace electronic banking adoptions to upgrade successful adoption conveyance that rises above to customer satisfaction. Until recently, in Nigeria most banking transactions were paper based however with the introduction of electronic payment systems, for example SWIFT; transactions for multinationals have gone electronic. With the new innovations in the technology, both corporate and ordinary individuals can do banking transactions electronically through E- Banking. E-Banking delivery channels include telephone banking, online banking, SMS Banking, Mobile Banking and Interactive TV Banking which however expose the commercial banks and their customers to various risks though there are some benefits. (Madueme (2020).

In Ethiopia, banking system is underdeveloped compared to the rest of the world and hence the introduction of electronic banking also too late in the country. Cash is still the most dominant medium of exchange. The modern e-banking methods like Automated Teller Machine (ATM), Internet banking, Mobile banking and others are new to the Ethiopian banking sector. Information and communication technologies are playing a very important role in the advancement of banking by introducing electronic banking to ease the banking activities. These banking activities may include viewing account balance, creating payment requests, transferring funds in a simple and efficient manner, retrieving an account history, paying bills etc. (Gikandi and Bloor, 2020). Financial institutions in Ethiopia among 15 banks, very few of them are engaged with the diffusion of e-commerce. Moreover, among several adoptions of e-banking, they are limited to ATM adoption. The e- business, e-commerce is about using electronic techniques to create opportunities, create new markets, new processes, and growth in the formation of wealth using electronic mediums. The banking system in Ethiopia has largely been affected by the dominance of cash. In Ethiopia, cash is king since the bulk of personal consumption is done by the intermediate of cash (Abraham, 2020).

Tanzania and East Africa at large introduced Banks, and the earlier banks were a product of the Germany regime in Tanganyika. A great deal of banking regulations were made by the British regime in 1919s in Tanzania, apart from introducing more banks than ones held by Germans, enacted a number of laws to regulate banking activities in Tanzania. After independence banks carried colonial banking legacies, the Arusha declaration of 1967 nationalized all the banks owned privately. Come early 1990s a report on the inquiry into Monetary and banking systems in Tanzania by the Nyirabu Commission was delivered. Its major contribution in banking development is substantial; it is the cause of the various laws on banking business such as the Banking and Financial Institution Act, 1991. Despite its remarkable contribution the latter did not point out a thing on electronic banking, the same is because ICT had not ventured into use by most Financial Institutions in the country though its impacts were felt already by the developed countries such as USA and the UK. (Robert, 2011).

In Rwanda, financial institutions are making substantial technological investments in improving their setups in a bid to ensure the provision of new and essential electronic financial adoptions. Some of these electronic web-based retail banking adoptions are making small firms adopt the use of technology at relatively favorable costs. Also, links have been developed between cell phones and bank accounts of corporations and individuals. It has allowed clients to implement the practice of their cell phones as another banking channel. The adoptions they enjoy through the use of mobile phones include deposits, withdrawals, fund transfers from one record to the other, settlement of bills, and also balance inquiry. Most of these mobile financial

settlement adoptions are additive in that they provide new delivery channels to their existing bank clients (NBR, 2018).

Problem statement

Despite the usage of computerized innovation in the financial division, banks continue to recognize the long queues as their clients are still using different branches of banks at a vast rate compared to the previous one before the implementation of e-banking. Public awareness and willingness to adopt e-banking impacts its adequacy. Also, the speed of internet connection and its availability in different areas of the country affects the selection of web-based financial adoptions. Despite the effort of banks to ensure that customers reap the benefits of e-banking, the bank is meets with complaints from customers as regards, machine out of order, machine out of cash, no printing statements, cards get blocked, frequent breakdown of ATM adoption, payment of hidden cost of electronic banking like short message adoption (SMS), lack of sufficient technicians in all banks who solve break down of ATM machine, lack of sufficient alternative system which substitute ATM adoption for the customer when temporary problem happen in the machine, lack of credit card adoption, under development of technological infrastructure, low level of relevant knowledge creation and innovation, interruption of network, lack of suitable and regulatory frame work for e-commerce, resistance to changes in technology among customers and adoption providers as result of fear of risk, lack of fair distribution of E-banking adoption in all over Rwanda. One of the most common ATM errors is when the card reader fails to recognize, accept, or eject a customer's card. This can be caused by a dirty or damaged card, a faulty or jammed card reader, or a network or software glitch. All these worldwide and national findings show the existence of a research gap that concerns the appropriate use of financial inclusion, especially electronic banking, in the delivery of adoption in the banking sector that can be enhanced if E-banking usage is used effectively and efficiently. Therefore, it is from previous issues that has motivated the researcher to find out how the impact of e-banking adoption on customer satisfaction and loyalty in commercial banks in Rwanda.

Research objectives

The general objective of this study was to assess the impact of e-banking adoption on customer satisfaction and loyalty in commercial banks in Rwanda. Specifically, the study aimed to:

- To identify the effect of Reliability on customer Satisfaction in Bank of Kigali.
- To determine whether the Responsiveness affects customer satisfaction or at Bank of Kigali.
- To establish the effect of Assurance on customer Satisfaction in Bank of Kigali.
- To assess the effect of Tangibility on customer Satisfaction in Bank of Kigali.

2. Literature Review

A lot of related studies were conducted by different researchers in different countries. Nevertheless, there are limited numbers of studies that were conducted in Rwanda on the e banking customer satisfaction. Some of the study includes:

In Jordan the study conducted by Ahmed, and Hassan (2020) on e-banking functionality and outcomes of the customer's satisfaction: an empirical investigation in commercial banks industry in Jordan found out that the role of the e-banking in enhancing customer satisfaction and loyalty. Factors that pertaining to the accessibility, convenience, security, privacy speed, fees and charges were the study focus and has found enhancing customers satisfaction the empirical conclusion made by the study were multifaceted and as a result, it is vitally that banks managers pay attention to the influence of customers satisfaction. The researchers are therefore

encouraged to place more focus on the impact influences stemming from the e-banking functionality and its impact on customer satisfaction with Jordanian commercial banks.

In Spain, Vasya and Patrick conducted a study on the adoption of e-banking on customer's satisfaction and finally stated that: Taking into consideration the huge investments banks make in internet infrastructure, customer satisfaction and retention are turning into the crucial factors for success in e-banking meaning that the generation of positive customer values on the internet requires the establishment of long-term customer relationships. On the way ways to achieve high customer satisfaction and gaining the loyalty of customers is for banks to offer the high quality adoption. Based on the performed evaluation mentioned above, the following conclusion can be made. First of all, most customers have shown dissatisfaction or indifference with the following aspects of the e-banking adoptions: prompt responses of the bank to the customer request; design of the bank websites quickly solution of the customer's problems the easiness to reach the bank by telephone and the easiness to find what the customer's needs on the websites. Secondly banks seems to perform very well on the adoption performance and efficiency dimension of the offered online adoptions as those dimension rank highest on satisfaction on customers. Finally the aspects of consistently ranking highest on dissatisfaction are communication and websites characteristics which should be considered from bank managers for immediate amendment. The study on quality of on lining banking adoption: quantitative analysis by (Vasya and Patrick, 2020) .

In Estonia, Kerem (2021), adoption of electronic banking: underlying customer behavior and critical success factors: a case of Estonia qualitative approach found that factors which fasten the success of electronic banking at Estonia were such as enabling environment, ICT usage promotion initiatives markets characteristics and management aspects as well as the availability of broad range of electronic adoptions. The study concluded that the reason behind the success of electronic banking in general and more specifically on internet banking are complex. It is clear that banks activities alone may not be sufficient in achieving growth if general infrastructure, economic environment and government initiatives are not supportive.

In Ghana, Wisdom (2012), the impact of electronic banking on adoption delivery to customers of Ghana commercial bank limited: a descriptive analysis the study discovered that after the establishments of electronic banking at Ghana commercial banking the negative perception of customers about bank has significantly changed many Ghana see the Ghana as the most business entity which respects and value of time over 76% of the respondents agreed strongly to this assertion while the rest do not. Also the finding significantly indicates that electronic banking products have impacted positively on the adoption delivered of Ghana commercial bank and customer perception has greatly changed as a result of these products.

In Tanzania, Oswald (2021), Liberalization of the banking industry in Tanzania: a critical examination study had analyzed the banking sector and the impacts of banking industry to the economy. It has argued the positive part of the liberalization process. For example the number of projects that were approved, and the number of people who were able to gate employment has been shown. The study emphasizes that the need for regulatory authority not to relax the criteria for entry and suggested that the authority must keep its eyes open to ensure smooth and stable banking system. Ishengoma (2021), Analysis of mobile banking for financial inclusions in Tanzania: a quantitative approach study found out that most respondents registered with the adoption could find the technology saving them from bank charges (affordable charges with M-banking), time serving the perceived ease use of M-banking was not the same to every respondents, who could read and write seems to find the technology simple and understandable ease to use compared to those who did not go school (illiterate population). The study concludes that there is a close relationship between the problems of not having access to an m-money agent where network agents are on the ground of the representative.

In Rwanda, financial institutions are making substantial technological investments in improving their setups in a bid to ensure the provision of new and essential electronic financial adoptions. Some of these electronic web-based retail banking adoptions are making small firms adopt the use of technology at relatively favorable costs. Also, links have been developed between cell phones and bank accounts of corporations and individuals. It has allowed clients to implement the practice of their cell phones as another banking channel. The adoptions they enjoy through the use of mobile phones include deposits, withdrawals, fund transfers from one record to the other, settlement of bills, and also balance inquiry. Most of these mobile financial settlement adoptions are additive in that they provide new delivery channels to their existing bank clients (NBR, 2018).

2.1 Theoretical framework

For this study, theoretical framework is a thorough look at and evaluation of the existing theories and ideas about the topic under study. It is the process of systematically analyzing and putting together information from different sources in order to get a full picture of issue.

Technology Acceptance Model (TAM)

Eija (2011) claims that Davis (1989)'s TAM is one of the most quoted theories for predicting and explaining ICT use behavior, which leads prospective adopters to acknowledge or dismiss use of IT. TAM has two theoretical concepts according to Davis (1989), which are perceived as being useful (the advantage for the users to use the tool for the intended task) and perceived as ease of use i.e. competence (being efficient in dealing with the environment where it has been used). These are the key determinants for system usage and predict the user's readiness to use the system (Davis, 1993). These are the basic determinants for the system use. TAM has been used as a template for supporting underlying concepts within E- banking along with other models through powerful theoretical bases, established empirical assistance and applicability to a broad spectrum of information system innovations. John (2021) created a structure that shows how successfully the e- commerce drivers are exploited by TAM. While TAM has considerable explanatory authority, its main weakness is the small descriptive richness to draw conclusions from scholars and managers. This theory was adopted in this study to link the efficient use of e-banking adoptions to the satisfaction of customers. The theory claims that, an individual's acceptance of technological adoptions is influenced mainly by perception and attitudinal behavior. This was a helpful idea for analysis of the connection between the factors, which explains how banking clients view the use.

The Decomposed Theory of Planned Behavior (DTPB)

The second reviewed theory is the decomposed theory of planned behavior (DTPB). The theory was developed by Taylor and Todd (1995). The theory postulates that the intention to use a certain technology is influenced by attitude, subjective norm and perceived behavior control. An attitude is defined as an individual's positive or negative feeling about performing the targeted behavior. It's related to behavioral intention because people form intentions to perform behaviors toward which they have positive feeling. Subjective norms refer to the person perception that most people who are important to him think he should or should not perform the behavior in question. It's has been found to be more important prior to, or in the early stages of innovation implementation when user have limited direct experience from which to develop attitudes. Perceived behavior control is concerning with difficulty- especially as its related to internal constraints is a most important factors. (Moga, 2021).

The IDT theory explain the necessity of adopting technology in an organization to replace the traditional system of management and administration as well as model of adoption provision if

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is adoption orientated company a theory is normative in nature as it aims to establishes structures while DTPB concentrate on the behavioral aspects of adopting certain technology such those of perceiving, attitudes, satisfactions, subjectivity and behavior control of people i.e. training, experience motivations, incentives and awards. The study will be guided by DTPB theory.

Theory of Reasoned Action

Fishbein (1967) originally developed the Theory of Reasoned Action, later, Fishbein and Ajzen (1975) extensively refined and tested the theory. Reasoned Action Theory describes links between convictions, attitudes, standards, intentions and conduct. The Theory of Reasoned Action predicts and understands the behavior of a person, by considering the impact of private emotions (attitude). The theory suggests that, beliefs affect behavior, which leads to intent and then creates behavior. The Theory Reasoned Action is one of the fundamental concepts in psychology that was widely used to forecast behavior (Fishbein and Ajzen, 1975). TRA is widely recognized for its strengths on strong predictive force for the behavior of customers, shown by a multitude of consumer products. In addition, TRA is an advanced theory that explains nearly every human conduct. However, the theory is criticized on the fact that, under certain circumstances, consumers do not have full control of their behavior. Also, it is hard to separate the subjective standards directly from the indirect impacts of attitudes. The approval of this theory in this study is based on the fact that, it links effective use to the customer's behavior and attitude of electronic banking adoptions and expands TAM theory.

3. Research methodology

The study adopted both census inquiry and correlation design in order to collect and interpret data. Therefore, both quantitative (questionnaire) and qualitative (interview) research techniques were used by the researcher in order to collect data (information) related to the objectives of the study and for data analysis.

The study targeted 253.256 populations. In this study, Bank of Kigali was selected as the case study of this research. Respondents included senior management officials, supporting staffs and bank clients. Purposive sampling procedure was used to cover senior management officials at Bank of Kigali and simple random sampling procedure was employed to cover supporting staff and clients in the organizations. The study applied the formulation of Taro Yamane to control the sample size of this study. Based on the above formula, the study had 400 respondents and gathered data through questionnaire. Based on the calculated sample size, the study assigned the number of respondents for each branch proportionally.

Both primary and secondary data sources were utilized, with primary data collected through questionnaires and key informant interviews. Secondary data were obtained through a documentary review process.

The research instruments were tested for validity and reliability. Questionnaires, as a primary data collection method, were designed to align with the research objectives, utilizing a mix of close-ended and open-ended questions, primarily based on a Likert scale. Documentary review supplemented the primary data collection process, enhancing the depth of information acquired. For reliability, the Cronbach's alpha values for various variables were calculated, all surpassing the acceptable threshold of 0.7, indicating strong internal consistency. Editing, coding, and tabulation processes were employed to ensure data quality, consistency, and organization.

Data analysis involved Statistical Package for Social Science (SPSS V 21.0) for quantitative analysis. Inferential statistics, including Pearson correlation analysis and multiple regression analysis, were conducted to establish relationships between e-banking adoption on customer satisfaction and loyalty in commercial banks in Rwanda. Ethical considerations were a priority, ensuring confidentiality by avoiding the disclosure of respondents' identities and maintaining strict confidentiality of sensitive information throughout the study.

4. Findings

This section shows the findings of this research by presenting it from analysis. Where this is required, interpretations are provided after each table, always taking into consideration the initial research questions. This section thus establishes the ground up on the research questions were answered before drawing conclusion. The analysis was made on the responses obtained from 400 respondents of Bank of Kigali.

Regression Analysis

The study also wanted to establish the relationship between e-banking adoption on customer satisfaction and loyalty in commercial banks in Rwanda. Multiple regression analysis was used to identify the coefficient of model, the analysis of variance (ANOVA) of the model, The section also presents the coefficient of determination.

Table 1: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615 ^a	.378	.369	15.129

a. Predictors: (Constant), Reliability, Responsiveness, Assurance, Tangibility

b. Dependent Variable: CUSTOMER SATISFACTION

Table 1 presents the results of the regression analysis examining the relationship between several predictors (Reliability, Responsiveness, Assurance, Tangibility) and the dependent variable (customer satisfaction) at Bank of Kigali. The R value of .615 indicates a moderate positive correlation between the predictors and the dependent variable. The R Square value of .378 signifies that approximately 37.8% of the variance in customer satisfaction at Bank of Kigali can be explained by the predictors included in the model. The Adjusted R Square value of .369 adjusts the R Square value to account for the number of predictors in the model, providing a more conservative estimate of the proportion of variance explained.

Overall, the model suggests that the predictors (Reliability, Responsiveness, Assurance, Tangibility) collectively have a moderate influence on customer satisfaction at Bank of Kigali, explaining a significant portion of its variability.

Table 2: Anova

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49252.813	5	9850.563	43.037	.000 ^b
	Residual	81025.176	354	228.885		
	Total	130277.989	359			

a. Dependent Variable: CUSTOMER SATISFACTION

b. Predictors: (Constant), Reliability, Responsiveness, Assurance, Tangibility

Table 2 presents the results of the analysis of variance (ANOVA) for the regression model assessing the relationship between predictors (Reliability, Responsiveness, Assurance,

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Tangibility) and the dependent variable (customer satisfaction) in Bank of Kigali. The F-statistic of 43.037 is a ratio of the Mean Square for Regression to the Mean Square for Residuals, indicating the overall significance of the regression model. The associated significance level (Sig.) of .000 ($p < .05$) indicates that the regression model is statistically significant.

Overall, the ANOVA results suggest that the regression model, which includes predictors such as Reliability, Responsiveness, Assurance, and Tangibility, significantly predicts customer satisfaction in Bank of Kigali ($p < .05$).

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.451	5.255		6.175	.000
	E-BANKING ADOPTION	.291	.044	.367	6.587	.000
	Reliability	.177	.153	.170	1.157	.248
	Responsiveness	-.108	.160	-.102	-.678	.498
	Assurance	-.028	.111	-.020	-.249	.804
	Tangibility	.280	.047	.297	5.942	.000

a. Dependent Variable: CUSTOMER SATISFACTION & ROYALTY

The coefficients in Table 3 represent the relationships between predictors (E-Banking Adoption, Reliability, Responsiveness, Assurance, Tangibility) and the dependent variable (Customer Satisfaction) at Bank of Kigali. Significant predictors with $p < .05$ include E-Banking Adoption ($B = 0.291$, $t = 6.587$), Tangibility ($B = 0.280$, $t = 5.942$), indicating their substantial impact on customer satisfaction. Reliability, Responsiveness, and Assurance show non-significant effects. However, The coefficients for Assurance ($B = -0.028$, $t = -0.249$), Reliability ($B = 0.177$, $t = 1.157$), and Responsiveness ($B = -0.108$, $t = -0.678$) indicate non-significant effects on customer satisfaction, as their associated p-values are greater than 0.05.

These variables do not significantly influence customer satisfaction at Bank of Kigali. This suggests that while E-Banking Adoption and Tangibility play crucial roles in enhancing customer satisfaction, the other factors examined in the study do not have significant effects.

5. Conclusion

The major purpose of this study was to assess the effect of e-banking adoption on customer satisfaction and loyalty in Rwandan commercial banks. Specifically, it aimed to concentrate on the role of responsiveness, reliability, assurance, and tangible aspects at Bank of Kigali. Regression and ANOVA results showed that these factors were significantly related to consumer satisfaction. Firstly, the predictors (Reliability, Responsiveness, Assurance, and Tangibility) were shown to have a moderate positive association ($R = .615$) with customer happiness. These predictors accounted for about 37.8% of the variation in customer satisfaction. Additionally, the regression model was shown to be statistically significant according to the ANOVA findings, which exhibited an F-statistic of 43.037 and a significance level (Sig.) of .000 ($p < .05$). Customers' happiness with Bank of Kigali is predicted by the reliability, responsiveness, assurance, and tangibility components of the regression model. Last but not least, the regression analysis's results showed that, with p-values of .000, E-Banking Adoption and Tangibility effect consumer happiness substantially. Since the p-values for

Reliability, Responsiveness, and Assurance were all higher than 0.05, we may conclude that these factors had no significant impact on customer satisfaction. This research shows that when it comes to E-Banking Adoption and Tangibility, specifically, e-banking has a big impact on how satisfied customers are with Bank of Kigali. These results show that commercial banks in Rwanda might benefit from putting an emphasis on these areas in their e-banking strategy if they want to increase customer happiness and loyalty.

6. Recommendations

In the data analysis and interpretation as shown in above discussion, the study sought to come up with the following recommendations in line with the research objectives as given below.

The study recommended that Bank of Kigali E-banking Service requires integrated and collaborative approach with all stakeholders. Bank of Kigali should collect customer experience data in real-time across all channels and touch points.

Bank of Kigali should implement measures to ensure consistent and reliable service delivery, such as regular maintenance of banking systems and infrastructure, ensuring uptime of online banking platforms, and providing timely resolution of customer queries and issues. Optimize communication channels between customers and the bank to facilitate prompt responses to customer inquiries, complaints, and feedback.

Moreover, Bank of Kigali is recommended to provide comprehensive training programs to bank employees to enhance their skills in delivering reliable and efficient services, emphasizing the importance of reliability in fostering customer satisfaction. Establish feedback mechanisms to gauge customer satisfaction levels and identify areas for improvement in responsiveness.

7. Acknowledgement

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