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Online Banking Services and Customer Satisfaction in Rwanda: A Case Study of the Bank of Kigali

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ABSTRACT

The rapid digitalization of banking services, fuelled by advancements in information and communication technologies, signifies a shift from paper-based transactions to online platforms. Although Rwanda's financial sector is expanding, e-banking is still in its early stages, with limited information available. This study aims to evaluate the relationship between the online banking services of the Bank of Kigali and customer satisfaction. The study targeted 388 individuals, including Bank of Kigali customers using online banking and bank staff. A sample of 201 respondents was selected using random and purposive sampling techniques. Data were collected through questionnaires, structured interviews, and document reviews. Quantitative data were analysed using SPSS, while qualitative data were examined through content analysis. Results indicated that 72.6% of respondents strongly agreed that ATMs impact user satisfaction, and 66.7% acknowledged mobile banking as a key factor in customer satisfaction. Meanwhile, 7.0% strongly disagreed that debit and credit transactions affect satisfaction. The main challenges identified were technical issues, trust, user knowledge, accessibility, and connectivity. Adjusted R Square results showed that online banking services and mitigation strategies contribute 69.1% to customer satisfaction. The study concluded that effective online banking and targeted solutions to user challenges significantly enhance customer satisfaction, while unresolved issues contribute to dissatisfaction. It recommends that digital banking providers address technical issues, improve system reliability and user experience, and collaborate with organizations to enhance digital literacy.

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1. Introduction

Over the past two decades, the banking sector has operated in a highly challenging and competitive environment, shaped by rapid economic changes. With the development of information and communication technologies (ICT), businesses can now create value in the digital world, and the accessibility and use of banking services have evolved significantly (Malaquias & Hwang, 2019). To stay competitive and meet customer expectations, banks and financial institutions are increasingly adopting innovative digital platforms. The rise of e-banking has led customers to frequently use smartphones and desktops for financial transactions (Zhang et al.,

2018), allowing users to manage their finances remotely and reducing the need for physical visits to bank branches or ATMs (Malaquias & Hwang, 2019). ICT plays a central role in the global transformation of banking systems, with the online banking market valued at \$11.43 billion in 2019 and projected to reach \$11.81 billion by 2027 (Allied Market Research, 2020).

In 2020, approximately 2 billion people actively used internet banking, a figure expected to rise to 2.4 billion by 2024 (Safeatlast, 2022). A Deloitte study (2022) found that customers perceive online banking as a safer, more resource-efficient alternative to traditional banking, significantly reducing wait times. Secure and effective online banking services are now essential for financial institutions worldwide, including those in Europe, America, Asia, and Africa (Alexan, 2015). The COVID-19 pandemic further accelerated the shift towards digital payments, increasing consumer preference for online banking due to its convenience and efficiency.

Key emerging technologies, such as cloud computing, APIs, robotic process automation, machine learning, and block chain, are expected to drive the growth of online banking (Allied Market Research, 2020). The increasing use of smartphones also contributes to the expansion of digital banking services. However, developing countries with limited access to formal banking services face financial exclusion and transaction barriers. Mobile banking has facilitated quick, cost-effective transactions, significantly expanding financial inclusion. In 2017, 35% of Africans had access to banking services, a figure projected to rise to 48% by 2022 (Ngoga, 2022). Governments in East Africa have supported digital banking adoption, as seen in Kenya, where 84% of internet users frequently transferred money via mobile platforms in 2021 (WEF, 2022). Despite progress, challenges such as poor internet access, low awareness, unemployment, poverty, and security concerns continue to hinder widespread adoption (Richard, 2018). To promote a cashless economy, Rwanda's National Bank and the Ministry of Finance and Economic Planning introduced the Rwanda National Payment System (RNPS) Strategy (2018–2024), aiming to develop a secure, efficient, and innovative payment system that fosters financial inclusion (BNR, 2018).

The adoption of digital financial services in Rwanda has grown significantly, with 7.1 million adults using these services by 2020, up from 46% in 2016, primarily due to mobile banking (91%) and online banking services (9%) (Access to Finance Rwanda, 2020). The National Bank of Rwanda (BNR) reported a sharp increase in internet banking users, from 3,411 in December 2016 to 99,810 in 2020, while overall banking access rose from 14% in 2008 to 36% in 2020 (International Trade Administration, 2021). Rwanda's financial sector includes 16 commercial banks and 460 financial institutions, such as microfinance institutions and SACCOs (FinScope, 2021). With growing internet penetration, Rwanda had 3.54 million internet users by January 2022, representing 26.3% of the population, with an increase of 3.7% in internet users and 4.1% in mobile connections between 2021 and 2022 (Kemp, 2022; GSMA Intelligence, 2022). The expansion of mobile money services, driven by liberal economic policies, has stimulated entrepreneurship, job creation, and state revenue generation, positioning online banking as a key driver of financial inclusion and economic growth. The COVID-19 pandemic further accelerated digital banking adoption, with ICT and accounting information systems (AIS) providing banks with a competitive edge by reducing costs, enabling faster transactions, and ensuring business continuity (Bank of Kigali, 2020). Online banking enhances efficiency by reducing travel and wait times while improving data security and management (Azure, 2020). By shifting routine transactions to digital platforms, banks have lowered operational costs and improved service delivery (Omar, 2011). However, customer perceptions of e-banking vary based on age and employment status (Fozia, 2013), necessitating tailored digital solutions for different demographics. Despite the benefits, challenges such as cybersecurity

threats, fraud, and technical failures persist (Mutai, 2021). While most Rwandan banks have embraced internet banking, limited research exists on customer experiences and adoption challenges. The internet has transformed banking by offering digital solutions such as bill payments, fund transfers, and loan applications, minimizing access issues in remote areas and enhancing financial inclusion (Jeannine, 2015). The shift toward digital banking, intensified by COVID-19, has increased reliance on online services, yet research gaps remain regarding public perceptions of e-banking in Rwanda. While studies by Bizimungu (2010) and Nyiranzabamwita (2019) explored e-banking's effects on financial institutions, further research is needed to address challenges and improve adoption.

Problem Statement

Internet banking is gradually replacing traditional banking, yet challenges persist. According to the National Bank of Rwanda (2021), delays in payment settlements, long queues, manual errors, and fraud remain concerns, leading to customer dissatisfaction. While digital banking offers numerous benefits, issues such as cybersecurity risks, technical difficulties, and customer reluctance to transition online hinder adoption (Singh, 2020). A key factor in e-banking success is understanding customer needs. However, Rwanda's low digital literacy (Anitha, 2019) complicates this shift, as many customers continue relying on cash transactions and in-person banking. Despite investments in digital services like ATMs, Easy Banking, and money transfers, long queues persist, indicating that many struggle to adapt. Customers still travel long distances to access banking services, suggesting limited acceptance of online platforms. Given these challenges, this study seeks to assess whether Bank of Kigali's online banking services provide true convenience and explore customer suggestions for improving the service.

Objectives of the Study

The study was guided by the following specific objectives:

- i. To assess the role digital banking on customer satisfaction in Rwanda;
- ii. To identify the challenges facing customers to use digital banking services in Rwanda;
- iii. To determine strategies to overcome the risks and challenges facing customers to effectively use digital banking in Rwanda.

2. Literature Review

Theoretical Literature

Online banking

In the second half of the 1990s, as the World Wide Web (WWW) and the internet expanded, banks began using electronic channels to accept orders and provide goods and services to customers online. Definitions of online banking vary among researchers, partly due to the various ways bank clients can use computers or mobile phones to request information and complete retail transactions (Drigă, 2014). Mousaveian et al. (2016) define online banking as an electronic connection between a banking institution and a consumer for the planning, administration, and control of financial activities. The growth of internet services has expanded consumer options for interacting with companies, enabling them to participate in the production or enhancement of goods and services. As a result, businesses face challenges in attracting customers who seek to engage in the collaboration process. According to Singh and Srivastava (2020), e-banking serves as a production and communication channel that allows customers to quickly and affordably execute transactions. Online banking offers a range of

services, such as account verification, bill payments, transfers, and SMS notifications, which enhance customers' lives and give them a competitive advantage (Mostafa, 2020).

Key Concepts in Online Banking

Several key concepts define online banking and its role in enhancing customer satisfaction.

Digital Banking Services

Digital banking services encompass various digital platforms, including mobile banking apps, ATMs, and electronic fund transfers, which enhance accessibility, efficiency, and convenience for customers. These services enable users to perform financial transactions without visiting physical bank branches, saving time and reducing operational costs. The integration of digital platforms in banking operations significantly increases customer satisfaction by providing round-the-clock access to financial services (Malaquias, 2019; Zhang, 2018).

Customer Satisfaction

Customer satisfaction in online banking refers to the extent to which digital banking services meet or exceed customers' expectations. Key factors influencing satisfaction include ease of use, security, transaction speed, cost-effectiveness, and the availability of customer support. In online banking, service quality is often assessed based on the perceived convenience and reliability of digital platforms. Additionally, user-friendly banking interfaces and the ability to complete transactions quickly and securely contribute to higher satisfaction levels (Parasuraman, 1988; Mostafa, 2020).

Service Accessibility

Digital banking allows customers to access financial services anytime and from any location, reducing the need to visit physical branches. This is particularly beneficial in regions with limited banking infrastructure, where digital banking helps bridge the gap between traditional financial services and underserved populations. Mobile banking solutions have played a crucial role in expanding financial inclusion by enabling individuals without access to traditional banking services to manage their finances. The ability to conduct transactions remotely enhances customer satisfaction, particularly among tech-savvy users (Klapper, 2012; Malaquias, 2019).

Security and Privacy

Financial institutions implement multiple security measures, including encryption, two-factor authentication, and fraud detection systems, to protect customer data and build trust in online banking platforms. Perceived security is a key driver of customer trust and satisfaction in digital banking, as users are more likely to adopt and continue using these services if they feel confident in the protection of their personal and financial information. Furthermore, transparency regarding security protocols and clear communication about data protection policies further enhance customer trust and satisfaction (Ahmad, 2019; Shankar, 2019).

Financial Inclusion

Mobile banking solutions have provided financial services to previously unbanked populations, allowing them to participate in the formal financial system. Digital banking plays a vital role in bridging the financial exclusion gap by offering affordable and accessible financial services to low-income individuals and those living in remote areas. The ability to access banking services via mobile devices has been particularly transformative in developing countries, where traditional banking infrastructure is often insufficient (Klapper, 2012; Ngoga, 2022).

Challenges in Online Banking

Despite its convenience, online banking faces several challenges that affect customer satisfaction. Technical issues such as system downtimes, network failures, and software glitches frequently disrupt transactions, causing frustration among users (Singh, 2020). Security concerns, including cyber fraud, hacking, and identity theft, pose significant risks, making customers hesitant to fully embrace digital banking (National Bank of Rwanda, 2021). The fear of data breaches and unauthorized access undermines trust in online platforms. Additionally, digital literacy remains a barrier, as some customers lack the necessary skills to navigate banking apps and online platforms effectively (Anitha, 2019). Limited familiarity with digital banking can lead to transaction errors, delays, and dissatisfaction. Trust and reliability are also key concerns, as some users remain skeptical about the safety of online transactions, with fears of fraud, unauthorized deductions, and the absence of personalized customer support discouraging adoption (Singh, 2020). Although financial institutions continue to invest in secure and user-friendly digital banking solutions, these challenges persist, hindering customer confidence and satisfaction. Addressing these issues through enhanced cybersecurity measures, user education, and improved system reliability is crucial for increasing online banking adoption. Strengthening trust, ensuring seamless digital experiences, and providing better customer support will help banks maximize the potential of online banking while improving user satisfaction (National Bank of Rwanda, 2021).

The contribution of digital banking tools to customer satisfaction

Online banking is expanding globally, with developed nations leading its adoption. A strong banking sector, as noted by Salehi (2008), is crucial for economic growth and financial stability. In Bangladesh, the banking industry has transformed from basic automation to advanced online solutions (Salehi, 2008). Perceived usefulness is a key factor influencing e-banking adoption (Malaquias & Hwang, 2019), with e-banking offering round-the-clock access to financial transactions (Yoon & Steege, 2013; Shankar & Jebarajakirthy, 2019). The convenience of internet and mobile technology drives user adoption, especially when the system is easy to use (Riquelme & Rios, 2010; Zhang et al., 2018). A user-friendly interface enhances adoption, while complex systems discourage it (Ahmad et al., 2019; Mostafa, 2020). Studies from the USA, Japan, and Europe (Roco et al., 2021; Estrella Dáz, 2021) show positive customer adaptation, while emerging economies like India and South Korea are also experiencing rapid growth in e-banking, with other studies in Zimbabwe, China, Tunisia, Nigeria, and Iran highlighting the global shift toward digital financial services.

Challenges facing online banking users

According to Ali (2021), individuals invest their financial resources in banks for future needs and assets, seeking reassurance of security, making the safety of e-banking transactions crucial. Despite many customers using online banking, challenges stem from a lack of promotional efforts rather than user awareness. Security concerns are the primary obstacle to adoption, as bank accounts can be compromised, and personal information exploited. Technological proficiency is essential for engaging in e-banking, yet those unfamiliar with digital tools such as computers, ATMs, or mobile phones often struggle to access services (Sanita, 2021). High banking costs, low literacy rates, and limited infrastructure in remote areas further hinder digital banking adoption. In Nepal, the projected growth of digital banking faces challenges due to low credit and debit card usage, limited adoption of digital payments, and restrictive regulations with low transaction limits (Sanita, 2021). Gerrard and Cunningham (2013) found that inadequate online banking infrastructure deters users, with banks facing high costs for networking, equipment, and software development, along with a shortage of skilled personnel. Other risks

include unstable security systems, intellectual property concerns, legal uncertainties, and unclear payment methods. The success of online banking depends on a company's technological capabilities, management efficiency, and competitiveness, with barriers like high ICT investment costs, lack of expertise, limited business collaboration, and concerns about technology reliability (Chircu & Kauffman, 2020). Despite these challenges, banks now offer both online and offline services, but digital banking adoption still faces significant obstacles. This research aims to explore the key issues Rwandans face with online banking.

Strategies to overcome challenges facing digital banking users

Shah (2016) emphasizes that policymakers should enhance consumer trust in e-banking by improving security features, enforcing regulations, and providing electronic receipts or guarantees for transactions. Many Nepalese remain unfamiliar with online banking, requiring training sessions and workshops to boost digital literacy. User-friendly apps alone are insufficient to build trust; financial institutions must actively educate customers on security measures. E-commerce developments influence buyer decisions, payments, and customer service. Despite competition among financial institutions, most of Nepal's rural population lacks access to modern banking services due to the concentration of banks in urban areas (Sanita, 2021). Singh (2012) highlights the need for banks to promote online banking and educate customers on its security to alleviate safety concerns. Ingle and Pradesh (2014) similarly stress that uninformed customers often perceive online banking as insecure. Banks should improve promotional efforts through seminars, newspapers, and print media to increase awareness and dispel misconceptions about e-banking (Ingle & Pardeshi, 2012).

3. Methodology

Research Design

This study employed a correlational research design to assess the relationship between digital banking and customer needs at the Bank of Kigali. This design was chosen for its effectiveness in analysing interactions between variables without manipulation. The research focused on evaluating how digital banking services influence customer satisfaction and adoption. Aligned with the study's general and specific objectives, the target population comprised clients from the Bank of Kigali's head office who actively use online banking services, as well as staff from the digital services department. A total of 388 individuals participated in the study, providing diverse perspectives on the effectiveness and challenges of digital banking services.

Sample Design

The study employed a structured sampling design to ensure a representative selection of participants. The sample size was determined using a granular formula to achieve statistical accuracy. A simple random sampling technique was applied to select customers using Bank of Kigali's online banking services, ensuring that every individual had an equal probability of selection. This method minimized bias and provided a fair representation of online banking users. Additionally, purposive sampling was used to select staff members from the bank's digital services department. This technique was appropriate as these individuals were intentionally chosen based on their expertise and direct involvement in digital banking operations. By combining these sampling approaches, the study ensured a comprehensive analysis of the relationship between digital banking and customer needs while maintaining methodological rigor.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size

N = population size (388)

e = margin of error (5% or 0.05)

$$n = \frac{388}{1+388(0.05)^2} = 195$$

This calculation resulted in a sample of 195 customers using online banking. Additionally, six respondents were selected from the digital banking staff, bringing the total sample size to 201.

Table 1: Sample size distribution

Categories of respondents	Total population	Sample size	Sampling method
Customers of BK using online banking from head office	382	195	Simple random
Staff of digital department	6	6	Purposive
Total	388	201	

Source: Bank of Kigali (2023)

Data Collection Methods

This research utilized two primary data collection tools: a questionnaire and interviews. The questionnaire, designed to gather data from customers using Bank of Kigali's online services, included questions aligned with the study's objectives. Interviews were conducted with employees from the bank's digital banking department to gain insights from their expertise. Prior to data collection, the researcher obtained a recommendation letter from Mount Kenya University and permission from Bank of Kigali to conduct the study. Once permission was granted, questionnaires were distributed to customers, and interviews were scheduled with staff. Informed consent forms were provided to all participants. To ensure the reliability and validity of the instruments, Cronbach's alpha was used to assess consistency, with a threshold of 0.7 considered acceptable (Tavakol & Dennick, 2011). The results indicated that all constructs exceeded the 0.7 threshold, confirming internal consistency. For validity, content validity was established through expert reviews (Haynes et al., 1995), while construct validity was confirmed through factor analysis (Field, 2018), with results showing significant loading of items on their respective constructs.

Data Analysis and Procedures

Both qualitative and quantitative data were collected to address the specific objectives of the study. Quantitative data were analysed using Statistical Package for the Social Sciences (SPSS) version 20, while qualitative data were assessed through content analysis. SPSS version 20 was also utilized for data entry and cleaning. Descriptive statistics, including frequencies, percentages, means, standard deviations, and standard errors of the estimate, were used to characterize the quantitative data. However, it is important to note that generalizations and inferences were drawn from the sample rather than the entire population.

4. Findings

4.1 Demographic Characteristics of the Respondents

Users of digital banking and Bank of Kigali employees were the intended respondents for this study. In order to connect the results with the respondents' characteristics, the demographic characteristics of the respondents were examined for the purposes of this study.

Table 2. Demographic Characteristics of respondents and General Questions

Demographic Characteristics of respondents		Frequency	Percent
Gender distribution	Males	145	72.1
	Females	56	27.9
Age of respondents	Between 21 and 30 years old	76	37.8
	Between 31 and 40 years old	68	33.8
	Between 41 and 50 years old	47	23.4
	51 and above years old	10	5.0
Educational levels	No formal education	7	3.5
	Primary	66	32.8
	Secondary	76	37.8
	University	52	25.9
Categories of the respondents	Customers	195	97.0
	Staff	6	3.0

Source: Primary data (2023)

The survey examined the gender distribution of respondents, revealing that men represented the majority at 72.1%, while women accounted for 27.9%. This gender representation highlights the inclusivity of the study, contributing significantly to its overall analysis. In terms of age, 37.8% of respondents were between 21 and 30 years old, followed by 33.8% aged 31 to 40. Respondents aged 41 to 50 made up a smaller portion, with the least represented group being those over 51 years old. The age distribution enhances the study's credibility by offering a diverse range of perspectives. Regarding educational background, the majority of respondents had completed secondary education (37.8%), followed by those who completed primary education (32.8%). University graduates represented 25.9%, while the smallest group had no formal education. This educational diversity is significant as it provides varied viewpoints, aligning with the study's objectives. As shown in Table 2, the largest participant group comprised Bank of Kigali customers using online banking services, while the smallest group consisted of staff from the bank's digital banking department. The demographic characteristics of the respondents align well with the study's objectives, ensuring a comprehensive and relevant data set for analysis.

Contribution of digital banking tools on customer satisfaction in Rwanda

The impact of internet banking tools on addressing consumer needs in Rwanda is covered in this section. By examining how much mobile banking, ATM use, debit and credit card use, and interbank transfer contribute significantly to Rwandans who use digital banking, the specific purpose attempted to determine the impact of digital banking on customer satisfaction. The data gathered from Bank of Kigali employees and clients was analyzed.

Table 3: Contribution of digital banking on customers’ satisfaction in Rwanda

Statements	SD	D	N	A	SA	Mean	Std
Mobile banking contributes to customers’ satisfaction	15(7.5%)	12(6.0%)	15 (7.5%)	25(12.4) %	134(66.7%)	4.25	1.264
ATM contributes to customers’ satisfaction	10 (5.0%)	4 (2.0%)	20(10.0%)	21(10.4%)	146(72.6%)	4.44	1.080
Use of debits and credits cards influence customers’ satisfaction	7 (3.5%)	4(2.0%)	7(3.5%)	162(80.9 %)	28(13.9%)	4.11	1.737
Inter – banking transfer contribute to customer satisfaction	14(7.0%)	18(9.0%)	30(14.9%)	25(12.4%)	114(56.7%)	4.03	1.307

Source: Primary data (2023)

Table 3 highlights customer views on the contribution of digital banking services to customer satisfaction in Rwanda. Regarding mobile banking, the majority (66.7%) strongly agreed that it significantly enhances customer satisfaction, citing its convenience, 24/7 access, and time-saving features. Mobile banking allows customers to manage finances anytime and anywhere, reducing the need for physical bank visits and avoiding potential transaction fees. However, some respondents pointed out limitations such as the reliance on internet connectivity, technological proficiency, and security concerns, which could hinder satisfaction. Additionally, mobile banking might not meet the needs of customers who prefer face-to-face assistance or find it difficult to navigate digital platforms, especially older customers or those with disabilities.

The survey also assessed the influence of ATMs on customer satisfaction, with 72.6% of respondents strongly agreeing that ATMs contribute positively by offering easy access to banking services anytime, including outside normal hours. ATMs reduce dependency on bank tellers, offering privacy and convenience. However, issues such as technical malfunctions, limited services, security risks, and accessibility for people with disabilities were identified as drawbacks. Additionally, the use of debit and credit cards was found to improve customer satisfaction by providing convenience, rewards, and emergency access to funds. However, transaction fees and other charges associated with cards could negatively affect satisfaction. Lastly, the study found that inter-bank transfers, while convenient and quick, can be costly and require specific knowledge, which could lead to dissatisfaction for some users.

Challenges facing digital banking users in Rwanda

The second aim of this study was to assess the challenges facing digital banking users in Rwanda. Under this objective, the study sought to examine whether technical issues, trust, knowledge, skills, access, and connectivity may interfere the effective use of digital banking methods in Rwanda.

Table 2: Challenges facing digital banking users in Rwanda

Statements	SD	D	N	A	SA	Mean	Std
My first challenge in the use of digital banking lies in technical issues	47(23.4%)	23(11.4%)	18 (9.0%)	22(10.9%)	91(45.3%)	3.43	1.672
The problem I face with online banking lies in trust	49(24.4%)	27(13.4%)	20(10.0%)	32(15.9%)	73(36.3%)	3.26	1.633
I face the challenge of knowledge and skills regarding to digital banking use	0	11(5.5%)	0	24(11.9%)	166(82.6%)	4.72	0.731
Access and connectivity	44(21.9%)	33(16.4%)	10(5.0%)	51(25.4%)	63(31.3%)	3.28	1.575

Source: Primary data (2023)

Table 4 highlights the challenges faced by digital banking users in Rwanda, focusing on technical issues, trust, knowledge and skills, and access and connectivity. Technical issues were the most significant concern, with a mean of 3.43 and a standard deviation of 1.672; 45.3% of respondents strongly agreed that interruptions and connectivity issues hinder transactions, causing frustration and inconvenience. Trust was also a key challenge, with 36.3% strongly agreeing that users worry about the safety of their personal and financial information. The study further found that 82.6% of respondents agreed that lack of digital literacy, including basic computer and internet skills, was a barrier to effectively using online banking platforms. Additionally, financial literacy challenges, such as understanding banking terms, were noted, especially with platforms primarily in English. Regarding access and connectivity, while less of a concern, 31.3% of respondents felt it was a problem, citing issues such as the inaccessibility of ATMs for people with disabilities and the costs of mobile data. Overall, the study identifies these key barriers as significant in limiting the effectiveness of digital banking in Rwanda.

Strategies to overcome challenges facing digital banking users in Rwanda

The third goal of this study was to propose strategies of overcoming challenges facing digital banking users in Rwanda. Table 5 shows the proposed strategies that should be implemented in order to deal with the problems facing online banking users.

Table 5: Strategies to overcome challenges facing digital banking users in Rwanda

Statements	SD	D	N	A	SA	Mean	Std
Ensure privacy and security	0	0	0	18(9.0%)	183(91.0%)	4.91	0.286
Regular awareness campaign	0	0	0	67(33.3%)	134(66.7%)	4.67	0.473
Ensure digital software inclusively	0	0	0	73(36.3%)	128(63.7%)	4.64	0.482
Customer support and assistance	0	0	0	82(40.3%)	119(59.7%)	4.60	0.492

Source: Primary data (2023)

From the data collected, respondents highlighted that ensure privacy and security, regular awareness campaign, ensure digital software inclusive and customer support and assistance should be among the overcome the challenges facing digital banking users. About, 91.0%, 66.7%, 63.7% and 59.7% respective strongly agreed that ensure privacy and security, regular awareness campaign; ensure digital software inclusively, customer support and assistance were the major strategies that should address to overcome challenges facing digital banking users in Rwanda.

For the respondents, privacy and security measures build trust and confidence among digital banking users. Individuals are more likely to involve in online banking services when they believe their personal information is being handled safely and their privacy is respected. Awareness campaigns can remind users about the significance of online banking operating systems, and online banking applications up to date as well as inform users the effective use of existing online banking services for their familiarity purposes. There is a need to make digital banking software inclusive whereby both educated and disabled people can feel convenience with these new banking welcomed and be ready to use themselves.

Indicators of digital banking customer satisfaction

There is no doubt that, the main reasons for introducing digital banking were to make customers satisfaction. The dependent variables under this study were satisfaction of digital banking users. Therefore, table 12 indicates the indicators of making digital banking users satisfied. Researcher was interested to notice whether time saving, convenience, ease to use and privacy as well as security should be the main indicators of customers’ satisfaction who use online banking.

Table 6: Indicators of digital banking customers' satisfaction

Statements	SD	D	N	A	SA	Mean	Std
Time saving	0	0	0	12(6.0%)	189(94.0%)	4.94	0.238
Convenience	0	0	0	23(11.4%)	178(88.6%)	4.89	0.319
Ease to use	0	0	0	11(5.5%)	190(94.5%)	4.95	0.228
Privacy and security	0	0	0	14(7.0%)	187(93.0%)	4.93	0.255

Source: Primary data (2023)

In terms of time saving, the majority of the respondents were in agreement with the related indicators, showing a strong mean of 4.94 and a standard deviation of 0.238. Approximately 94.0% of respondents strongly agreed with these indicators while 6.0% simply agreed. As for convenience, respondents strongly favoured this indicator, with a robust mean score of 4.89 and a strong deviation of 0.319. Around 88.6% of respondents strongly agreed with this statement, while 11.4% agreed with it. In relation to the ease of use of online banking platforms, respondents were in alignment with indicator, showing a strong mean of 4.95 and a standard deviation of 0.228. Approximately 94.5% of respondents strongly agreed with this indicator, and 5.5% agreed with the statement. Lastly, regarding privacy and security, respondents expressed agreement with this indicator, with a strong mean of 4.93. Approximately 93.0% of respondents strongly agreed with this indicator, while 7.0 simply agreed. In summary, these findings suggest that banks should invest in digital banking solutions that offer time saving benefits, prioritize convenience, are user friendly, and secure privacy and security for their customers.

Correlation between digital banking and customer satisfaction

Correlational analysis was performed to evaluate the relationship between independent variables and dependent variables. Independent variables were summarized in conceptual framework as well as dependent variables. Table 7 shows the correlation between digital banking and customer satisfaction.

Table 7: Correlation between digital banking and customer satisfaction

		Online bank- ing services	Challenges facing online banking	Strategies to overcome online bank- ing	Customer satisfac- tion
Online banking ser- vices	Pearson Correla- tion Sig. (2-tailed) N	1 201			
Challenges facing online banking	Pearson Correla- tion Sig. (2-tailed) N	.314** .000 201	1 201		
Strategies to over- come online banking	Pearson Correla- tion Sig. (2-tailed) N	-.043 .547 201	.108 .127 201	1 201	
Customer satisfaction	Pearson Correla- tion Sig. (2-tailed) N	.717** .000 201	-.500** .000 201	.692** .000 201	1 201

Source: Primary data (2023)

** . Correlation is significant at the 0.01 level (2-tailed).

Table 7 illustrates the relationship between independent variable and dependent variable; the results showed that there is high positive relationship between online banking services and strategies to overcome challenges facing online banking services. Online banking services including mobile banking, ATMs, debits and credits cards and inter banking transfer has 0.717 correlations with customer satisfaction. Strategies to address problem facing online banking users including to ensure privacy and security, regular awareness campaign, ensure digital software inclusive and customer support and assistance has 0.692 correlations with customer satisfaction. Contract, correlation analysis showed that there is a negative correlation between challenges facing online banking users with customer satisfaction.

Regression analysis

To identify the influence of the independent and dependent variables, regression analysis was performed using regression linear. In addition, the findings are illustrated in table 14

Table 8: Regression analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.849 ^a	.761	.691	1.552

Source: Primary data (2023)

a. Predictors: (Constant), Online banking services, strategies to overcome problem facing online banking uses

The findings demonstrate that R Square is high, indicating that independent variables contribute significantly to dependent variables. Adjusted R Square shows that combination of online banking services and strategies to overcome problem facing online banking users contribute up to 69.1% to the satisfaction of customers who use digital banking services.

Analysis of variance

Table 9: Analysis of variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	204.890	3	68.297	28.338	.000 ^b
Residual	474.791	197	2.410		
Total	679.682	200			

Source: Primary data (2023)

- a. Dependent Variable: Customer satisfaction
- b. Predictors: (Constant), Online banking services and strategies to overcome problem facing online banking services

Table 9 shows that the P-value of 0.000 is less than the present level, indicating that the independent variables are statistically significant to the dependent variable.

Coefficient of determination of independent variables to dependent variables

Table 10: Coefficient of determination of independent variables to dependent variables

Model	Coefficients ^a				t	Sig.
	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta			
(Constant)	12.265	1.790			6.852	.000
Online banking services	.515	.057	.429		6.228	.000
1 Challenges facing online banking users	-.123	.069	-.107		-1.781	.076
Strategies to overcome challenges facing online banking users	.470	.061	.192		2.792	.000

Source: Primary data (2023)

The regression analysis reveals significant relationships between online banking services, challenges, and strategies, and customer satisfaction. The equation, Customer Satisfaction = 12.265 + 0.515x1 - 0.123x2 + 0.470x3, shows that online banking services (x1) positively affect customer satisfaction, with a coefficient of 0.515, indicating that 51.5% of satisfaction is driven by the services provided. This aligns with respondents' feedback in Section 4.2.1, where 66.7% strongly agreed that mobile banking and 72.6% agreed that ATMs enhance satisfaction, confirming that digital tools improve convenience and efficiency. On the other hand, online banking

challenges (x2) have a negative impact, with a coefficient of -0.123, decreasing satisfaction by 12.3%. This is supported by 45.3% of respondents pointing out technical issues and 82.6% citing lack of digital literacy as major barriers. Finally, strategies to overcome challenges (x3) have a positive impact on satisfaction, with a coefficient of 0.470. Strategies such as ensuring privacy, conducting awareness campaigns, and improving digital inclusivity were strongly supported by 91.0% and 66.7% of respondents. The model's Adjusted R Square of 0.691 indicates that 69.1% of customer satisfaction variation is explained by online banking tools and the strategies to overcome challenges, highlighting their importance in improving customer satisfaction.

5. Conclusion And Recommendations

Conclusion

This research assessed the contribution of digital banking tools, the challenges faced by users, and strategies to overcome these challenges. The correlation analysis revealed a strong positive relationship between the use of digital banking tools and customer satisfaction, as well as between strategies proposed to address user challenges and satisfaction. In contrast, challenges faced by digital banking users were negatively correlated with customer satisfaction. The study concluded that the effective use of online banking tools and the implementation of strategies to address user challenges significantly contribute to higher customer satisfaction, while the challenges users face lead to greater dissatisfaction.

Recommendations

Based on the findings, several recommendations aim to enhance the online banking experience. Customers should compare fees, interest rates, and terms across banks to align digital transactions with their financial goals, while actively engaging with their accounts. Digital banking providers should improve system reliability, enhance user interfaces, and invest in robust security measures to address technical issues and trust concerns. Financial institutions must ensure user-friendly platforms and offer educational resources to improve digital literacy. Additionally, banks should maintain ATMs regularly, provide accessible customer support, and collaborate with organizations to offer digital literacy training, ensuring continuous improvement and customer satisfaction.

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