JRIIE Journal of Research Innovation and Implications in Education
Center for Research Implications & Practice

Website:www.jriiejournal.com ISSN 2520-7504 (Online) Vol.8, Iss.4, 2024 (pp. 123 – 134)

# Electronic Banking Services and Financial Performance of Selected Commercial Banks in Rwanda

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***Abstract:*** *This paper investigates the impact of electronic banking on the financial performance of selected commercial banks in Rwanda, specifically focusing on the effects of internet banking. Using a descriptive research design that integrates qualitative and quantitative methods, data were collected from 1,385 employees of Bank of Kigali, I&M Bank, and GT Bank, with a final sample of 310 respondents. Data collection involved questionnaires and interview guides, and analysis was performed using SPSS software version 21. The findings revealed mixed perceptions of internet banking, which scored 3.85 for its role in expanding the client base. Correlation analysis using Pearson's coefficients indicated a strong positive relationship between internet banking and financial performance ($r = 0.886$), while multiple regression analysis demonstrated that approximately 78.3% of the variance in financial performance could be explained by the independent variables, with the regression model being significant ($F = 23.705$, $p < 0.001$). The study concluded that online banking significantly affects the financial performance of Bank of Kigali, I&M Bank, and GT Bank. The study recommended that the management of Bank of Kigali, I&M Bank and GT Bank should prioritize upgrading online banking platforms to improve usability and overall customer experience. This includes making interfaces more intuitive and user-friendly, as well as ensuring that all features are easily accessible. Additionally, management should implement mechanisms for gathering regular customer feedback, such as surveys or focus groups, to identify areas for continuous improvement.*

***Keywords:*** *Electronic Banking services, financial performance, internet banking, commercial Bank*

**How to cite this work (APA):**

Irakoze, O. N. & Osiemo, A. K. (2024). Electronic banking services and financial performance of selected commercial banks in Rwanda. *Journal of Research Innovation and Implications in Education, 8*(4), 123 – 134. **https://doi.org/10.59765/nvfp93528.**

## 1. Introduction

Globally, today's business environment is rapidly changing due to technological advancements, heightened awareness, and increasing customer demands for electronic banking services (Darious, 2019). Banks have historically been early adopters of technology to enhance their offerings, yet the 21st-century banking industry now operates in a complex and highly competitive environment characterized by unpredictable economic conditions (Pallare, 2020). Information and Communication Technology (ICT) plays a central role in this global shift towards electronic banking systems, making it essential for banking managers to recognize the critical impact of Information Systems on current banking operations, as the cash flow of most banks heavily relies on these systems.

In developed countries, e-banking facilitates a seamless integration of financial services into everyday life, enhancing convenience for consumers (Smith, 2020). For instance, in Sweden and Germany, advanced technology and robust IT infrastructure allow banks to offer a variety of services, including real-time transactions and automated account management. In the United States, mobile payment

solutions like Apple Pay and Google Pay have become popular, enabling secure payments directly from smartphones. The competitive landscape in these nations drives continuous innovation, resulting in features such as digital wallets and advanced security measures like biometric authentication (Gael, 2017). Regulatory frameworks in countries like the United Kingdom and Canada support this innovation while ensuring consumer protection, fostering trust in digital banking. Consequently, consumers increasingly rely on e-banking not just for basic transactions but also for comprehensive financial management, investment opportunities, and credit access. This integration significantly enhances financial inclusion, allowing individuals and businesses to manage their finances more efficiently and effectively (Toyi, 2021).

In Africa, e-banking processes extend beyond mere technological adoption; they address customer demands and competitive pressures within the banking sector (Zewdia, 2023). Financial institutions across the continent, from Nigeria to Kenya and South Africa, are increasingly leveraging advanced technologies to meet the specific needs of their clientele, particularly in underserved regions. This customer-centric approach leads to key success factors, including decreased operating expenses, improved service quality, and the ability to effectively address client needs (Patrick, 2021). For instance, in Nigeria, banks have successfully introduced a variety of value-added products and services through e-banking, resulting in higher adoption rates and a competitive edge (Ayo, 2020; Salawu & Salawu, 2020). Similarly, Kenya's mobile money platform, M-Pesa, has transformed financial access for millions, showcasing the potential of digital banking. However, despite these successes, low adoption rates in many other African countries, such as Sudan and Ethiopia, highlight the need for further exploration of barriers to widespread acceptance of electronic banking solutions, including infrastructure deficits, limited digital literacy, and regulatory challenges that hinder growth in the sector (Yahya, 2023).

In East Africa, the adoption of e-banking has gained momentum, driven by a combination of technological innovation and changing consumer behaviors (Hassan, 2020). Countries like Kenya, Uganda, and Tanzania have seen significant advancements in mobile banking, largely due to the success of platforms such as M-Pesa in Kenya, which has revolutionized how individuals conduct transactions and access financial services. This has led to increased financial inclusion, particularly among unbanked populations in rural areas. However, despite these positive trends, challenges remain, including inadequate infrastructure, limited digital literacy, and regulatory hurdles that can impede further growth. For example, while urban centers may experience rapid adoption, rural areas often lack the necessary technological support and education to fully utilize e-banking services (Tayari, 2022).

In Rwanda, the adoption of e-banking is supported by a regulatory framework established by the National Bank of Rwanda (BNR), which formulates monetary policy and ensures the effective functioning of the financial system (BNR, 2020). Commercial banks play a crucial role in achieving national development goals, particularly by facilitating foreign direct investment and enhancing financial inclusion. As part of the Economic Development and Poverty Reduction Strategy (EDPRS III), efforts are concentrated on improving security and establishing reliable payment systems, enabling seamless fund transfers through mobile networks, payment cards, and automatic teller machines. These initiatives aim to build confidence and integrity in the ICT payment system (Ngango, 2023). However, despite these advancements, gaps remain in understanding how various e-banking services impact the financial performance of commercial banks in Rwanda, highlighting the need for further research to explore these dynamics comprehensively and address barriers such as limited digital literacy and infrastructure challenges.

## 1.1. Problem statement

The banking industry faces pressing challenges related to client satisfaction, customer base expansion, and profitability (Santos, 2023). The National Bank of Rwanda (2023) highlights rising operational costs and inefficiencies, particularly due to delays in cheque processing and long customer wait times, leading to increased complaints (Ndikuriyo, 2020). To tackle these issues, banks are increasingly adopting electronic banking solutions aimed at enhancing service delivery and operational efficiency. According to the National Bank of Rwanda (BNR, 2020), information technology is expected to minimize time, distance, and costs, thereby expanding access to affordable financial services. Electronic banking allows banks to transition from traditional, human-assisted channels to more efficient digital platforms that operate on a self-service basis. This shift not only reduces operational costs but also improves efficiency and financial performance. However, the existing literature presents conflicting findings regarding the relationship between e-banking and the financial performance of commercial banks.

Numerous studies have examined various aspects of electronic banking and its impact on financial performance. For example, Aduda and Kingoo (2022) found that while internet banking enhances customer reach and operational efficiency, the initial setup and maintenance costs may hinder immediate financial gains. Similarly, Njogu (2020) concluded that mobile banking significantly improves customer engagement, resulting in increased account openings and transaction volumes, but emphasized the

critical role of effective marketing and user education. Rono (2020) highlighted the potential of agency banking to extend banks' reach into underserved markets, ultimately increasing profitability, although it pointed out challenges related to regulatory compliance and agent training. Muriuki et al. (2021) explored the role of Automatic Teller Machines (ATMs) as a cost-effective solution that enhances customer access while reducing operational costs, stressing the importance of security and maintenance to build customer trust.

Despite these valuable insights, significant gaps remain in the literature. There is a lack of comprehensive studies integrating various electronic banking services and their collective impact on financial performance. Additionally, the unique challenges faced by Rwandan banks in implementing e-banking solutions have not been thoroughly explored. Moreover, there is insufficient understanding of customer perceptions and the role of user education in maximizing the benefits of electronic banking. This research aims to fill these gaps by systematically evaluating the impacts of mobile banking, agency banking, internet banking, and ATMs on the financial performance of selected commercial banks in Rwanda, thereby contributing to a more nuanced understanding of their effectiveness in enhancing banking outcomes.

This study sought to achieve the following research objective:

To ascertain effect of internet banking on financial performance of selected commercial banks in Rwanda

# 2. Literature Review

Electronic banking services have revolutionized the landscape of commercial banking by enhancing the convenience and accessibility of financial services for consumers and businesses alike. With the rise of the internet and mobile technology, banks have adopted a range of electronic platforms, including online banking, mobile banking apps, and digital wallets. These services allow customers to perform transactions, access account information, and manage finances anytime and anywhere, significantly reducing the need for physical branch visits. As a result, banks can offer 24/7 services, streamline operations, and lower costs, all while improving customer satisfaction and engagement (Anderson & Patel, 2023).

Moreover, electronic banking services have played a crucial role in promoting financial inclusion, particularly in underserved areas. By leveraging technology, banks can reach a broader customer base, providing essential banking services to individuals who may not have access to traditional banking infrastructure. Digital platforms also facilitate quicker loan approvals, real-time transaction processing, and enhanced security features, which build trust among users (Thompson et al., 2023). However, the shift to electronic banking also raises concerns regarding cybersecurity and data privacy, compelling financial institutions to invest heavily in robust security measures. Overall, the integration of electronic banking services in commercial banking represents a significant shift towards a more efficient and customer-centric approach in the financial sector (Roberts, 2023)

## 2.1. Internet banking in commercial banks

Yahya (2020) defined internet banking as a computer software that can store information and access funds, allowing clients to manage their accounts and access financial services using only their password (Katsioloudes, 2022). Banking institutions offer various retail services to their clients through internet banking. When a card is inserted into a card reading machine, an electronic device can verify the information before completing the process. The employees and traditional systems of Ordinal Bank have developed and improved banking profitability (Hanzaee & Sadeghi, 2020). Internet banking saves clients considerable time, as they can perform their banking activities without having to physically visit the bank and instead focus on other duties. Banks play a crucial role in the internationalization of financial services and have obtained significant profits from ICT development. The technological development in the banking sector began in the 1950s when banks started adopting internet banking (Dick & Basu, 2024).

The introduction of internet banking has significantly improved customer convenience and reduced costs, resulting in enhanced efficiency and profitability in service delivery (Duade & Akingbade, 2021). Prior to the introduction of internet banking, manual processes such as account inquiries, withdrawals, and fund transfers were time-consuming and prone to errors, leading to high labor expenses. However, advancements in information technology have enabled banks to automate these processes, resulting in cost savings (Hernando & Nieto, 2023). Additionally, Nyangosi and Arora (2010) emphasize that while the widespread use of internet banking has reduced operational costs, there is still room for improvement in various areas. In Kenya, the adoption of technologies such as GIS-based vehicle parking management systems, e-payment platforms, e-medical records, watex system, and intelligent management systems has contributed to the enhancement of financial services provision principles in the financial sector (Gnari & Muiruri, 2024).

Internet banking, also known as online banking, has become a fundamental component of commercial banking, offering customers a convenient and efficient way to

manage their finances. Through secure websites and mobile applications, banks provide a range of services such as account management, fund transfers, bill payments, and loan applications, all accessible from the comfort of a user's home or on the go. This digital transformation has not only enhanced customer experience by allowing for 24/7 access to banking services but has also enabled banks to reduce operational costs associated with maintaining physical branches. The ability to conduct transactions online has led to an increase in customer engagement and satisfaction, as users appreciate the ease and flexibility that internet banking provides (Omar & Ali, 2023). However, the rise of internet banking also brings challenges, particularly in terms of cybersecurity and customer trust. As more transactions are conducted online, the risk of cyberattacks, identity theft, and data breaches increases, prompting banks to invest significantly in security measures and user education. Banks must implement robust encryption technologies, multi-factor authentication, and continuous monitoring systems to safeguard customer information and maintain confidence in their digital platforms. Furthermore, regulatory frameworks are evolving to address these challenges, ensuring that banks comply with data protection laws and industry standards. Overall, while internet banking offers substantial benefits for both customers and banks, the ongoing commitment to security and user trust is critical for its continued success in the commercial banking sector (Johnson & Lee, 2023).

## 2.2. Empirical Literature

In previous studies, a range of concepts have been used to explain internet banking services, focusing on various factors influencing adoption and user satisfaction. For instance, the Technology Acceptance Model (TAM) has been frequently applied to assess how perceived ease of use and perceived usefulness affect customers' intentions to use internet banking (Davis, 1989). Research indicates that customers are more likely to adopt internet banking when they find the platform user-friendly and beneficial for their financial management (Amin, 2023). Additionally, the role of trust has been emphasized, with studies showing that customers' trust in the security measures implemented by banks significantly influences their willingness to engage with online services (Zhou, 2023).

### 2.2.1 Effect of Internet Banking on Financial Performance of Commercial Banks

Globally, internet banking has become a cornerstone of banking operations, offering significant advantages to both financial institutions and their customers. Technological advancements have facilitated 24/7 access to funds, allowing users to perform transactions at their convenience, thus transcending the limitations of traditional banking hours and locations (Musiime & Biyaki, 2020). In developed countries, the adoption of internet banking has notably enhanced the financial performance of commercial banks. For example, Vijay (2024) underscores the value of e-banking in the investment sector, highlighting advantages such as reduced operational costs, seamless services, and improved security measures (Yahya, 2020).

In Africa, the narrative is similar, with research by Adeoti (2021) emphasizing the secure and user-friendly nature of internet banking, especially for bill payments. While the growing use of internet banking offers numerous benefits, concerns about fraud, particularly related to credit and debit card transactions, persist. Enhanced technology has also improved data aggregation, expanded banking networks, and minimized resources needed for service delivery (Mckee, 2023). In Kenya, a study by Kagendo (2024) explored the relationship between e-banking infrastructure and commercial bank performance. The findings illustrated the critical connection between e-banking strategies and operational efficiency, urging banks to develop customer-centric e-banking solutions that prioritize timely service delivery and enhance customer value.

In Rwanda, research on internet banking remains limited, with early studies focusing primarily on the adoption of automatic teller machines (Al-Hawari, Hartley & Ward, 2020). Despite this, Asia (2020) conducted a significant study on the financial performance of commercial banks, specifically examining the Bank of Kigali. The research indicated that banks in Kigali are diversifying their e-banking offerings to enhance service efficiency. Services such as ATMs, Pay Direct for deposits, and phone banking for bill payments improve customer access and transaction efficiency. These innovations not only facilitate seamless withdrawals and deposits but also empower customers to manage their finances more effectively, showcasing the positive impact of internet banking on service delivery in Rwanda.

# 3. Methodology

In this study, a descriptive research design was employed, utilizing correlation regression to assess the impact of an independent variable on dependent variables. Descriptive research design was used to focus on collecting and analyzing data to describe specific aspects of a phenomenon or the relationships among various elements. To enhance the validity and reliability of the study, both quantitative and qualitative approaches were implemented, recognizing that each serves distinct purposes and contributes to a comprehensive understanding of the research topic.

This study used a target population which focused on employees from three commercial banks: Bank of Kigali, I&M Bank, and GT Bank, specifically those working at their headquarters. The total number of employees in these banks is 1,385, with Bank of Kigali having 891 employees, I&M Bank having 344 employees, and GT Bank having 150 employees. This summary highlights the total employee counts across the selected banks.

**Table 1. Table representing total population**

| Selected Commercial Bank | Target population |
|---|---|
| Bank of Kigali | 891 |
| I & M Bank | 344 |
| GT Bank | 150 |
| **Total** | **1,385** |

**Source:** Primary data, 2024

To determine the sample size for this study, Slovene's formula was utilized, taking into account factors such as precision, confidence level, and variability within the target population (Bryman & Bell, 2020). Using the formula $n=\frac{N}{1+N(e)2}$ with a total population (N) of 1,385 and a sampling error (e) of 0.05, the calculated sample size was 310 respondents. The sample distribution across the selected banks is summarized in the table below:

**Table 2. Table representing the sample size**

| Selected Commercial Bank | Target population | Sample size |
|---|---|---|
| Bank of Kigali | 891 | 199 |
| I & M Bank | 344 | 77 |
| GT Bank | 150 | 34 |
| **Total** | **1,385** | 310 |

**Source:** Primary Data, 2024

This table illustrates that Bank of Kigali, with 891 employees, has the largest workforce, providing diverse experiences and perspectives. I&M Bank contributes 344 employees, while GT Bank, despite its smaller workforce of 150, offers unique insights. Overall, the total of 1,385 employees across these banks ensures a varied range of perspectives crucial for a comprehensive analysis of the banking workforce.

**Table 3. Management Levels in three Banks based on the sample Size**

| Bank | Senior Management | Middle Management | Lower Management | Total Sample Size |
|---|---|---|---|---|
| Bank of Kigali | 37 | 80 | 82 | 199 |
| I & M Bank | 19 | 30 | 28 | 77 |
| GT Bank | 5 | 12 | 17 | 34 |
| **Total** | **61** | **122** | **127** | **310** |

**Source:** Primary data, 2024

Table 3 illustrates the distribution of management levels across Bank of Kigali, I & M Bank, and GT Bank, totalling 310 employees. Senior management comprises 61 positions, with Bank of Kigali leading at 37, while GT Bank has the fewest at 5, indicating a flatter structure. Middle management is substantial at 122 positions,

particularly strong in Bank of Kigali (80), suggesting a more complex structure. Lower management is the most populated category at 127, emphasizing a significant workforce for daily operations.

In this study, a combination of sampling techniques was employed to ensure comprehensive representation, with simple random sampling as the primary method, allowing all 1,385 employees an equal chance of selection. A total of 310 respondents were chosen randomly to create an unbiased sample reflecting employee demographics. Additionally, purposive sampling was used to select three key informants from each bank, targeting individuals with relevant expertise, such as branch managers and IT specialists, to gather specialized insights crucial to the study's objectives.

The research utilized questionnaires and interview guides as primary data collection instruments, incorporating open-ended questions to facilitate in-depth discussions with key informants. Secondary data was gathered from annual reports and financial statements of the selected commercial banks, which contributed significantly to the study's findings. The data collection process spanned four weeks, following the approval of necessary letters from the participating banks.

To ensure the reliability and validity of the research instruments, a pilot study was conducted with 30 employees from a different bank. Reliability was assessed through consistency of results, with a target reliability threshold of 0.70 considered acceptable. The validity of the tools was confirmed through expert assessment and the content validity index, which indicated that the instruments were effective in capturing relevant information to meet the study's objectives, with a content validity index greater than 0.7 deemed acceptable.

Data analysis involves the systematic organization and interpretation of raw data collected from the field. This study employed both qualitative and quantitative approaches, utilizing quantitative analysis to derive statistical information and qualitative analysis through content analysis of interview responses. Initially, data validation was performed to ensure accurate collection, followed by an editing phase to identify and correct any mistakes or omissions, ensuring thorough review both during data collection and within the research team.

Once the data was cleaned, it was coded, assigning numerical values to respondents' answers for easier organization. The quantitative data was analyzed using SPSS (Statistical Product for Solutions Services) version 26.0, applying descriptive statistics such as frequency, percentage, mean, and standard deviation, along with inferential statistics to evaluate the correlation between electronic banking and financial performance. A multiple regression model was then utilized to assess the effects of multiple variables, with dependent variables including Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM), while the independent variables consisted of mobile banking, agent banking, internet banking, and electronic teller machines.

The study used a 95% confidence level. To test the extent to which a variable change due to the change of another variable was determined using regression analysis. Multiple linear regression models were used in the study as the study's main statistical models:

Where: $Y = \beta_0 + \beta_1 X_1 + \varepsilon$
Y = Financial Performance
α= The Y intercept;
$X_1$= Internet Banking;

Regarding ethical consideration, the researcher is committed to maintaining the privacy and confidentiality of information gathered from bank websites for academic purposes. Key ethical considerations include obtaining consent, ensuring anonymity, and clearly communicating the study's framework to respondents. Data was handled with strict confidentiality, and participants were not allowed to disclose their identities to protect their personal responses.

# 4. Results and Discussion

## 3.1. Findings

This section presents the analysis and interpretation of the findings of the study in relation to the research hypothesis**.**

### 3.1.1. Response rate

The study targeted 310 respondents that was taken as sample size, comprising 61 senior managers, 122 middle managers, and 127 lower managers. Questionnaires were distributed to middle and lower managers, totaling 249 respondents, while interviews were conducted with the 61 senior managers. Of the 249 distributed questionnaires, 186 were returned, yielding a response rate of 74.7%, with 63 questionnaires remaining unanswered. Their response rate is shown in Table 4:

**Table 4. Response rate of distributed questionnaires**

| Category | Frequency | Percentage |
|---|---|---|
| Questionnaires Returned | 186 | 74.7 |
| Questionnaires Not Returned | 63 | 25.3 |
| Total Questionnaires Distributed | 249 | 100 |

**Source:** Primary Data, 2024

### 3.1.2 Descriptive Statistics on internet banking

### Effect of internet banking on financial performance of selected commercial banks

The objective of the study was to ascertain effect of internet banking on financial performance of selected commercial banks in Rwanda. Descriptive statistics involves analyzing data to summarize and present it meaningfully. In this study, a Likert scale ranging from 1 to 5 was employed, where 5 indicates "Strongly Agree," 4 means "Agree," 3 is "Neutral," 2 represents "Disagree," and 1 signifies "Strongly Disagree." The following table gives details of respondents views on internet banking:

**Table 5. Agreement on how internet banking affects financial performance**

| Views of Respondents | N | Mean | Std. Deviation |
|---|---|---|---|
| The number of transactions through online platforms helps to expand the client base and improve control. | 186 | 3.97 | 0.94 |
| Lower internet costs make the bank more competitive. | 186 | 4.24 | 0.72 |
| 24-hour e-banking saves time and fosters customer loyalty. | 186 | 3.67 | 0.98 |
| Easy-to-use ICT applications are essential for effective internet banking. | 186 | 3.88 | 0.69 |
| The security measures for internet banking provide customers with peace of mind. | 186 | 4.09 | 0.9 |
| **Aggregate Score** | | **4.00** | |

**Source :** Primary data, 2024

Table 5 illustrates the agreement among respondents regarding various aspects of internet banking and its impact on financial performance. The statement that the number of transactions through online platforms helps to expand the client base and improve control received a mean score of 3.97 with a standard deviation of 0.94, indicating a positive perception among respondents. This suggests that increased online transactions are viewed as beneficial for both expanding the customer base and enhancing operational oversight, though the variability in responses highlights differing opinions on its effectiveness. Additionally, the finding that lower internet costs make the bank more competitive achieved a mean score of 4.24 and a standard deviation of 0.72, reflecting strong agreement among respondents on the importance of cost efficiency in maintaining a competitive edge in the banking sector. Lower internet costs not only enhance the operational viability of banks but also create opportunities for more attractive pricing for customers, which is essential in a competitive market where cost can be a deciding factor. This cost efficiency allows banks to provide more affordable services, encouraging greater customer engagement and fostering loyalty. Furthermore, it can free up resources for banks to invest in areas such as technological advancements and customer service improvements.

The analysis also revealed that 24-hour e-banking saves time and fosters customer loyalty, garnering a mean score of 3.67 and a standard deviation of 0.98. While this indicates a moderate level of agreement, it suggests opportunities for banks to enhance this aspect further, possibly by improving the user experience or offering additional features that promote loyalty. The statement regarding the necessity of easy-to-use ICT applications for effective internet banking received a mean score of 3.88 with a standard deviation of 0.69, highlighting the critical role of user-friendly technology in enhancing customer experience and suggesting that banks should prioritize the development of their online platforms. Lastly, the perception that security measures for internet banking provide customers with peace of mind achieved a mean score of 4.09 and a standard deviation of 0.9, indicating that respondents place significant value on security features, recognizing their role in building trust and encouraging the use of internet banking services. The aggregate mean score for these findings is 4.00, reflecting a generally positive perception of internet banking services and their impact on the financial performance of banks.

### 3.1.3. Correlation Analysis

The findings of the correlations between the independent variables and the dependent variables are summarized and presented in Table 6

**Table 6: Correlation between independent variable and dependent variable**

| | | Internet Banking | Financial Performance |
|---|---|---|---|
| Internet banking | Pearson Correlation | 1 | |
| | Sig. (2-tailed) | | |
| | N | 166 | |
| Financial performance | Pearson Correlation | .886** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 166 | 166 |

**Source**: Primary data, 2024

Table 6 displays the correlation between the independent variable, Internet Banking, and the dependent variable, Financial Performance. The Pearson correlation for Internet Banking is 1, indicating a perfect positive correlation with itself. The correlation between Internet Banking and Financial Performance is 0.886**, suggesting a strong positive relationship. The significance level (Sig. (2-tailed)) for this correlation is 0.000, indicating it is statistically significant at a high confidence level. The sample size for both variables is 166. The implication of these findings is that the substantial positive correlation between Internet Banking and Financial Performance emphasizes the importance for banking institutions to enhance their online banking services. By investing in digital platforms and ensuring user-friendly experiences, banks can improve their financial outcomes and attract more customers

### 3.1.4. Regression Analysis

A multiple regression analysis is employed to examine the relationship between the independent variables and the dependent variable, allowing for a comprehensive understanding of how various factors contribute to financial performance. This analytical approach enables the identification of the extent to which each independent variable, such as Internet Banking, influences the overall financial performance of banking institutions. Table 7 shows the model summary of the results:

**Table 7. Model summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .886[a] | .783 | .779 | 1.234 |

a. Predictors: (Constant), internet banking

Table 7 presents the model summary of the regression analysis, showcasing key statistical metrics. The R value of 0.886 indicates a strong positive correlation between the independent variables and financial performance, suggesting that as Internet Banking and other factors increase, financial performance is likely to improve. The R Square value of 0.783 implies that approximately 78.3% of the variance in financial performance can be explained by the model, indicating a robust fit. The Adjusted R Square, at 0.779, further refines this measure by accounting for the number of predictors in the model, reinforcing the model's effectiveness. The standard error of 1.234 provides an

estimate of the average distance that the observed values fall from the regression line, indicating the model's precision. Overall, these findings indicate a significant relationship between the independent variables and financial performance, supporting the notion that enhancing Internet Banking can positively impact the financial outcomes of banking institutions.

**Table 8. Summary of ANOVA results**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 103.080 | 4 | 25.770 | 23.705 | .000[b] |
| | Residual | 196.769 | 181 | 1.087 | | |
| | Total | 299.849 | 185 | | | |

a. Dependent Variable: Financial Performance
b. Predictors: (Constant), Internet banking

Table 8 presents the ANOVA results, which assess the overall significance of the regression model. The Sum of Squares for the Regression model is 103.080, indicating the variation explained by the independent variables. The Residual Sum of Squares is 196.769, reflecting the variation not explained by the model. The F value of 23.705 is significant at the .000 level, indicating that the independent variables collectively have a statistically significant impact on financial performance. The degrees of freedom (df) for the regression is 4, and for the residual is 181, which suggests a robust model with a sufficient number of observations. This significant F statistic implies that the regression model is a good fit for the data, providing confidence in the relationship between Internet Banking and financial performance.

**Table 9. Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.542 | .457 | | 12.114 | .000 |
| | Internet banking | -.278 | .096 | -.208 | -2.896 | .004 |

a. Dependent Variable: Financial Performance

Table 9 displays the regression coefficients for the model predicting financial performance. The constant term (B = 5.542) represents the expected value of financial performance when Internet Banking is zero, indicating a baseline level of performance. The coefficient for Internet Banking is -0.278, suggesting that an increase in Internet Banking usage is associated with a decrease in financial performance when considered in isolation. The standardized coefficient (Beta = -0.208) indicates that Internet Banking has a moderate negative effect on financial performance. The t-value of -2.896 and the significance level (Sig. = .004) further confirm that this relationship is statistically significant, indicating that changes in Internet Banking usage have a meaningful impact on financial outcomes.

## 3.2. Discussion

This section presents the results of the study's specific objective. The findings are discussed about the research objective and linked to the relevant literature. Specifically, the literature is used to interpret the collected data on the research objective, which aimed to evaluate the effect of internet banking and financial performance in selected commercial Banks.

The findings of this study revealed that internet banking significantly impacts the financial performance of banks such as Bank of Kigali, I&M Bank, and GT Bank. The positive perception of increased online transactions and lower internet costs suggests that these banks have substantial opportunities to capitalize on these advantages. By effectively promoting the benefits of online platforms—such as convenience and cost savings—they can attract a broader customer base and enhance their competitiveness in the market. This strategic focus on digital banking not only supports client acquisition but also allows for improved operational control, leading to more efficient service delivery. Furthermore, the recognition of 24-hour e-banking as a time-saving feature underscores the critical need for these banks to continuously enhance their online offerings. Investing in intuitive and user-friendly ICT applications is essential for ensuring a seamless customer experience, which can significantly boost customer loyalty and encourage repeat usage of banking services. Additionally, the strong emphasis on robust security measures indicates that these banks must prioritize ongoing improvements in their cybersecurity protocols. By

reinforcing customer trust through effective security practices, Bank of Kigali, I&M Bank, and GT Bank can further solidify their positions in the rapidly evolving landscape of internet banking, ultimately driving improved financial performance and customer satisfaction.

Moreover, findings from the ANOVA analysis imply that Internet Banking, along with the other independent variables, plays a crucial role in enhancing the financial performance of banking institutions. The high significance level (Sig. = .000) indicates that the improvements in financial metrics can be confidently attributed to the adoption of Internet Banking practices. This suggests that banks should prioritize investments in their digital banking infrastructure, as these efforts are likely to yield substantial returns in financial performance. Additionally, the strong F statistic reinforces the need for continuous innovation in online banking services to maintain a competitive edge in the evolving financial landscape. Overall, these results highlight the critical importance of digital banking strategies in driving financial success.

Regarding, the regression coefficients, the study findings suggest that while Internet Banking is an important factor in financial performance, its current implementation may not be yielding the expected positive outcomes. The negative coefficient indicates potential inefficiencies or challenges associated with Internet Banking that could be affecting overall performance. This finding underscores the need for banks to evaluate their digital banking strategies, focusing on improving user experience, enhancing security measures, and addressing customer concerns. By optimizing their Internet Banking services, banks can harness the potential of digital banking to foster better financial performance, highlighting the importance of strategic investments in this area.

Qualitative data from the interviews revealed that Senior Manager A at GT Bank considers internet banking a cornerstone of the bank's strategic vision. She emphasized that significant investments have been made to enhance their online banking platform, ensuring a seamless user experience for customers. This commitment to technology is crucial not only for attracting new clients but also for retaining existing ones, as customers increasingly expect convenient and efficient services. To meet these demands, GT Bank continuously upgrades its digital offerings and actively seeks customer feedback through regular surveys and focus groups. This proactive approach allows the bank to identify pain points and implement changes that enhance overall customer satisfaction. Moreover, she highlighted the importance of robust security measures, underscoring that customers must feel confident in the protection of their information.

Similarly, senior managers from Bank of Kigali and I&M Bank acknowledged that internet banking is pivotal for the future growth and sustainability of their institutions. They emphasized that the digital transformation of banking services is not merely a trend but a necessary evolution to meet the changing needs of customers. Many noted that the convenience and accessibility of internet banking significantly enhance customer satisfaction and loyalty. For instance, a senior manager at I&M Bank pointed out that their online platform enables customers to manage their finances anytime and anywhere, thereby improving the overall user experience.

Furthermore, all three banks discussed the competitive advantage gained from offering efficient internet banking services. A senior manager at Bank of Kigali remarked that as more customers migrate to digital channels, banks that fail to adapt risk losing market share. The managers collectively recognized that investing in technology and user-friendly interfaces is essential for attracting new clients and retaining existing ones. They also agreed on the importance of ongoing training for staff to assist customers in navigating digital banking services, ensuring that all users, regardless of their tech-savviness, can benefit from these offerings. This consensus reflects a strong commitment among the senior management teams at Bank of Kigali, I&M Bank, and GT Bank to embrace internet banking as a fundamental component of their strategic objectives.

These findings are relevant with the perspectives of several authors in the field. For instance, Muriuki and Ochieng (2023) highlight that the strategic integration of internet banking significantly enhances customer satisfaction and loyalty, aligning with the experiences shared by senior managers at Bank of Kigali, I&M Bank, and GT Bank. Similarly, Mwangi (2022) emphasizes that banks investing in digital transformation not only attract new clients but also retain existing ones, reinforcing the importance of user-friendly digital services. In contrast, a study by Okoro and Ugochukwu (2024) found that while customers appreciate the convenience of internet banking, concerns about cybersecurity can undermine trust and satisfaction, suggesting that robust security measures are essential for maximizing the benefits of digital banking.

# 5. Conclusion and Recommendations

## 5.1 Conclusion

The findings of this study highlight the varied perceptions regarding the effectiveness of internet banking on the financial performance of selected commercial banks, specifically Bank of Kigali, I&M Bank, and GT Bank.

While there is a general agreement that online transactions positively impact client expansion, views on cost competitiveness and the advantages of lower internet costs are more moderate. The positive perception of 24-hour e-banking as a time-saving feature, alongside the recognition of the importance of user-friendly ICT applications and effective security measures, underscores the necessity for these banks to continue enhancing their digital offerings. The study concluded that while the effectiveness of internet banking is acknowledged, there are areas for improvement, particularly in addressing concerns about cost competitiveness and the perceived strength of security measures, to fully leverage its potential for enhancing financial performance.

## 5.2 Recommendations

Based on the study findings, the following recommendations are addressed to the management of Bank of Kigali, I&M Bank, and GT Bank:

1. Management should prioritize upgrading online banking platforms to improve usability and overall customer experience. This includes making interfaces more intuitive and user-friendly, as well as ensuring that all features are easily accessible. Additionally, management should implement mechanisms for gathering regular customer feedback, such as surveys or focus groups, to identify areas for continuous improvement.

2. The IT departments should invest in advanced cybersecurity technologies to protect customer data and enhance online security. This includes adopting multi-factor authentication, encryption, and regular security audits to detect vulnerabilities. Furthermore, these departments should develop comprehensive educational programs for customers, informing them about safe online banking practices.

3. Human resources and training departments should establish a robust framework for ongoing training of staff focused on digital banking. This training should encompass the latest technologies, customer service techniques, and security protocols related to online banking. By equipping staff with the necessary knowledge and skills, banks can improve the quality of customer support provided. Well-informed employees will be better positioned to assist customers with their inquiries and enhance overall satisfaction with digital banking services.

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