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Abstract

This study examined the effect of cashless payment systems on the financial performance of Small and Medium Enterprises in Nyarugenge District, Rwanda. Specifically, the research assessed the influence of internet banking, mobile card payments, and mobile wallets on SME financial performance. The study was guided by the Diffusion of Innovations Theory and the Technology Acceptance Model. A descriptive survey and correlational research design were adopted, targeting 100 respondents comprising managers and employees from selected SMEs. Data were collected using questionnaires and analyzed using SPSS Version 28 through descriptive and inferential statistics, while thematic analysis was used for qualitative data. The findings revealed that internet banking positively and significantly influences financial performance ($r = 0.742$; $\beta = 0.621$, $p < 0.05$), enhancing transaction efficiency and cost management. Mobile card payments also demonstrated a significant positive effect ($r = 0.689$; $\beta = 0.547$, $p < 0.05$), contributing to improved revenue collection, customer satisfaction, and financial security. Mobile wallets showed the strongest relationship with financial performance ($r = 0.781$; $\beta = 0.642$, $p < 0.05$), promoting transparency, sales efficiency, and operational cost reduction. The study concluded that cashless payment systems significantly improve SME financial performance by increasing efficiency, profitability, and competitiveness. It recommends wider adoption of digital payment technologies, improved financial service reliability, enhanced digital infrastructure, and strengthened financial literacy programs to support sustainable growth of Small and Medium Enterprises in Rwanda.

Keywords: Cashless Payment Systems, Internet Banking, Mobile Card Payments, Mobile Wallets, Financial Performance, Small and Medium Enterprises, Digital Financial Services.

1. Introduction

1.1 Background to the Study

Small and Medium Enterprises (SMEs) are widely recognized as key drivers of economic growth, employment creation, and innovation across the world. According to Gherghina et al. (2024), SMEs contribute significantly to national economies by stimulating entrepreneurship, generating income, and supporting sustainable development. In developing countries, the financial performance of SMEs is particularly important because it determines their ability to survive, expand operations, and contribute to economic transformation (Vîrjan et al., 2023). However, many SMEs continue to face challenges arising from their heavy reliance on cash transactions, which often result in inefficiencies, increased operational costs, limited financial transparency, and heightened exposure to theft and fraud (Bakare et al., 2024).

Globally, governments and financial institutions have increasingly promoted cashless payment systems as a means of improving business efficiency and financial inclusion. In countries such as the United States, the United Kingdom, Canada, and Sweden, digital payment solutions have enhanced transaction speed, record keeping, and access to financial services, although some challenges related to transaction costs and technological accessibility remain (Oloke et al., 2024; HM Treasury, 2023). Across Africa, however, the transition to cashless payments has been slower due to infrastructural limitations, high transaction costs, inadequate internet connectivity, and low levels of digital literacy (Maloumby-Baka & Kingombe, 2023). Digital channels are widely recognized as key innovations reshaping how transactions and customer relationships are managed by financial institutions (Naira & Akims, 2026).

In East Africa, SMEs in Kenya, Tanzania, and Uganda continue to experience operational inefficiencies associated with cash-based transactions, including delayed payments, poor financial tracking, and limited access to credit facilities (Jumba & Wepukhulu, 2023; Kimuli et al., 2023). In Rwanda, despite government efforts to promote a cashless economy, many SMEs still depend heavily on cash transactions. Nevertheless, the COVID-19 pandemic accelerated the adoption of digital payment solutions, enabling businesses to improve cash flow management, operational efficiency, and customer satisfaction (Justin et al., 2023). Consequently, understanding the effect of cashless payment systems on SME financial performance remains essential for enhancing business competitiveness and sustainability in Rwanda.

1.2 Problem Statement

Small and Medium Enterprises contribute significantly to economic activities which serve as important sources of growth and employment opportunities (Pyoko, Akims, Nyachae & Mbugua, 2023). Small and Medium Enterprises contribute 41% of gross domestic product while employing a significant share of the workforce (MINICOM, 2023). In recent years, Rwanda has made notable progress in promoting a cashless economy, with digital payment adoption increasing significantly. According to the National Bank of Rwanda (BNR, 2024), mobile money subscriptions exceed 80% of the adult population, and electronic payment transactions have grown by more than 30% annually. Despite this progress, many SMEs, particularly in urban commercial hubs such as Nyarugenge District, continue to experience challenges related to financial performance, including low profitability, poor record-keeping, and limited access to formal credit. While cashless payment systems such as internet banking, POS/card payments, and mobile wallets are expected to improve transaction efficiency, transparency, and revenue tracking, their actual impact on SME financial

performance remains unclear and under-researched in the Rwandan context. Existing studies provide mixed findings, with some indicating positive effects on business growth, while others highlight barriers such as transaction costs, technological literacy, and limited infrastructure. In light with the above considerations, this research examining effect of cashless payment systems on financial performance of SMEs in Nyarugenge District. Specifically, it investigates how internet banking, mobile card payments, and mobile wallet transactions influence profitability and operational efficiency.

1.3 Purpose of the Study

This study examined impact of cashless payment on financial performance of selected Small and Medium Enterprises operating in Nyarugenge district, Rwanda.

1.4 Specific Objectives

- i. To assess effect of internet banking usage on financial performance of selected Small and Medium Enterprises in Nyarugenge District, Rwanda.
- ii. To determine effect of mobile card payments (POS/Swipe cards) on financial performance of selected Small and Medium Enterprises in Nyarugenge District, Rwanda.
- iii. To evaluate effects of mobile wallets transactions on financial performance of selected Small and Medium Enterprises in Nyarugenge District, Rwanda. District, Rwanda.

2. Literature Review

2.1 Empirical Review

The relationship between cashless payment systems and the financial performance of Small and Medium Enterprises has attracted considerable scholarly attention globally, regionally, and locally. Researchers have consistently examined how digital payment solutions improve business efficiency, revenue generation, cost reduction, and financial management. This review is organized according to the study objectives: internet banking, mobile card payments, and mobile wallets.

2.1.1 Internet Banking and SME Financial Performance

Empirical studies conducted across different countries indicate that internet banking positively influences SME financial performance. In Germany, Müller and Schmidt (2022) found that internet banking improved sales revenue, reduced transaction costs, and enhanced cash flow management among SMEs. Similar findings were reported in France by Dupont et al. (2021), where internet banking reduced banking fees and improved transaction efficiency, leading to increased turnover. In Brazil, Silva and Oliveira (2020) observed that internet banking enhanced access to credit and reduced transaction processing time, thereby improving profitability. In Africa, studies conducted in South Africa, Ethiopia, Kenya, Tanzania, and Rwanda similarly revealed that internet banking contributes to improved financial control, faster payment processing, enhanced liquidity management, and increased sales performance (Ndlovu, 2019; Tsegaye & Gebremariam, 2021; Mwangi, 2022; Mtema, 2020; Uwimana, 2023). These findings suggest that internet banking strengthens SME financial performance through operational efficiency and improved financial management.

2.1.2 Mobile Card Payments and SME Financial Performance

Evidence from previous studies demonstrates that mobile card payments significantly improve SME financial outcomes. In Belgium, Dupont et al. (2022) reported that SMEs adopting mobile card payments experienced substantial growth in sales volume due to faster transactions and improved customer satisfaction. Similarly, Smith and Taylor (2023) in England found that mobile card usage increased revenue while reducing cash-related theft and improving financial transparency.

In developing economies, Almeida et al. (2022) established that mobile card payments enhanced profitability by minimizing cash handling errors and reducing security risks. Comparable results were reported in South Africa, Senegal, Kenya, Uganda, and Rwanda, where mobile card systems improved record keeping, turnover, liquidity management, and operational efficiency (Nkosi & Mthembu, 2023; Diop et al., 2022; Otieno & Wanjiru, 2023; Kasozi & Ndugwa, 2023; Niyonzima et al., 2022). Overall, the literature confirms that mobile card payments contribute positively to SME financial performance by improving convenience, transparency, and business efficiency.

2.1.3 Mobile Wallets and SME Financial Performance

Mobile wallets have emerged as one of the most transformative digital payment solutions for SMEs. In the United States, Smith and Johnson (2022) reported that mobile wallet adoption increased revenue, reduced cash handling costs, and enhanced customer loyalty. Likewise, Williams et al. (2023) in England found improvements in sales volume, profit margins, and financial transparency following mobile wallet implementation.

Studies from Africa further support these findings. Research conducted in Tunisia and Senegal showed that mobile wallets improved sales, cash flow management, operational efficiency, and financial inclusion among SMEs (Ben Ammar et al., 2022; Ndiaye et al., 2023). Similar evidence from Kenya, Tanzania, and Rwanda revealed that mobile wallets increased sales, improved record accuracy, facilitated access to financial services, and reduced operational costs (Mwangi & Otieno, 2023; Mlay et al., 2022; Niyonzima et al., 2023; Hakizimana, 2023). However, most studies examined these payment methods independently and within different geographical contexts. Limited empirical evidence exists on the combined effect of these cashless payment systems on SME financial performance in Nyarugenge District, Rwanda. This study therefore seeks to fill this contextual and empirical gap.

2.2 Theoretical Framework

The increasing use of cashless payment systems is reshaping SMEs by influencing efficiency, financial transparency, and growth potential. To understand the factors driving the adoption of cashless payments and their influence on SMEs' financial success in Rwanda, this research was anchored in two theoretical models: technology organization environment and unified theory of acceptance. These theories describe technology adoption, organizational readiness, external pressures, and how internal firm capabilities translate into improved financial performance.

2.2.1 Technology–Organization–Environment

This theory was advanced by Tornatzky and Fleischer (1990), describes how technology innovation was used in firms based on three contexts: technology context such as availability, usefulness, and complexity of technology. Organization context including firm size, skills, assets,

managerial support. Moreover, environment context including competition, customer pressure, government regulations, and industry trends. In context of cashless payments among SMEs in Rwanda, the TOE framework was relevant because: Technological factors influence adoption decisions. Organizational readiness determines the ability to implement the systems effectively. Environmental forces accelerate adoption. The framework helps explain how internal and external conditions jointly effect of using cashless payment systems, which subsequently affects SMEs financial performance through improved transaction efficiency, reduced operational costs, and enhanced financial records

2.2.2 Unified Theory of Acceptance and Use of Technology

This theory was advanced by Venkatesh et al (2003) was widely used to understand how individuals and organizations adopt digital technologies. The theory assesses four key factors of behavioral intention and actual usage: Performance expectancy such as belief that using cashless payments improves business performance: Effort expectancy, ease of using digital payment tools, social influence from customers, suppliers, or competitors, facilitating conditions like availability of support, training, and infrastructure. For Small and Medium Enterprises, UTAUT is highly relevant because: Owners and staff are more willing to adopt cashless payments when they perceive clear benefits, such as faster transactions and increased revenue. Businesses adopt cashless solutions more easily when they are simple to use and require minimal technical skills. Social influence, including customer demand for mobile money or card payments, encourages adoption. Supporting factors like digital literacy, government incentives, and the availability of telecom networks sustain usage. UTAUT helps explain how user perceptions and environmental expectations determine the acceptance of cashless payment technologies, which ultimately improves financial performance.

2.3 Conceptual Framework

This study examines the relationship between three independent variables—internet banking, mobile card payments, and mobile wallet payments—and the dependent variable, financial performance of SMEs. It assumes that increased use of digital payment systems improves efficiency, transparency, and sales while reducing costs and cash risks. Financial performance is measured through revenue growth, profitability, cost control, operational efficiency, and customer satisfaction among SMEs in Nyarugenge District, Rwanda.

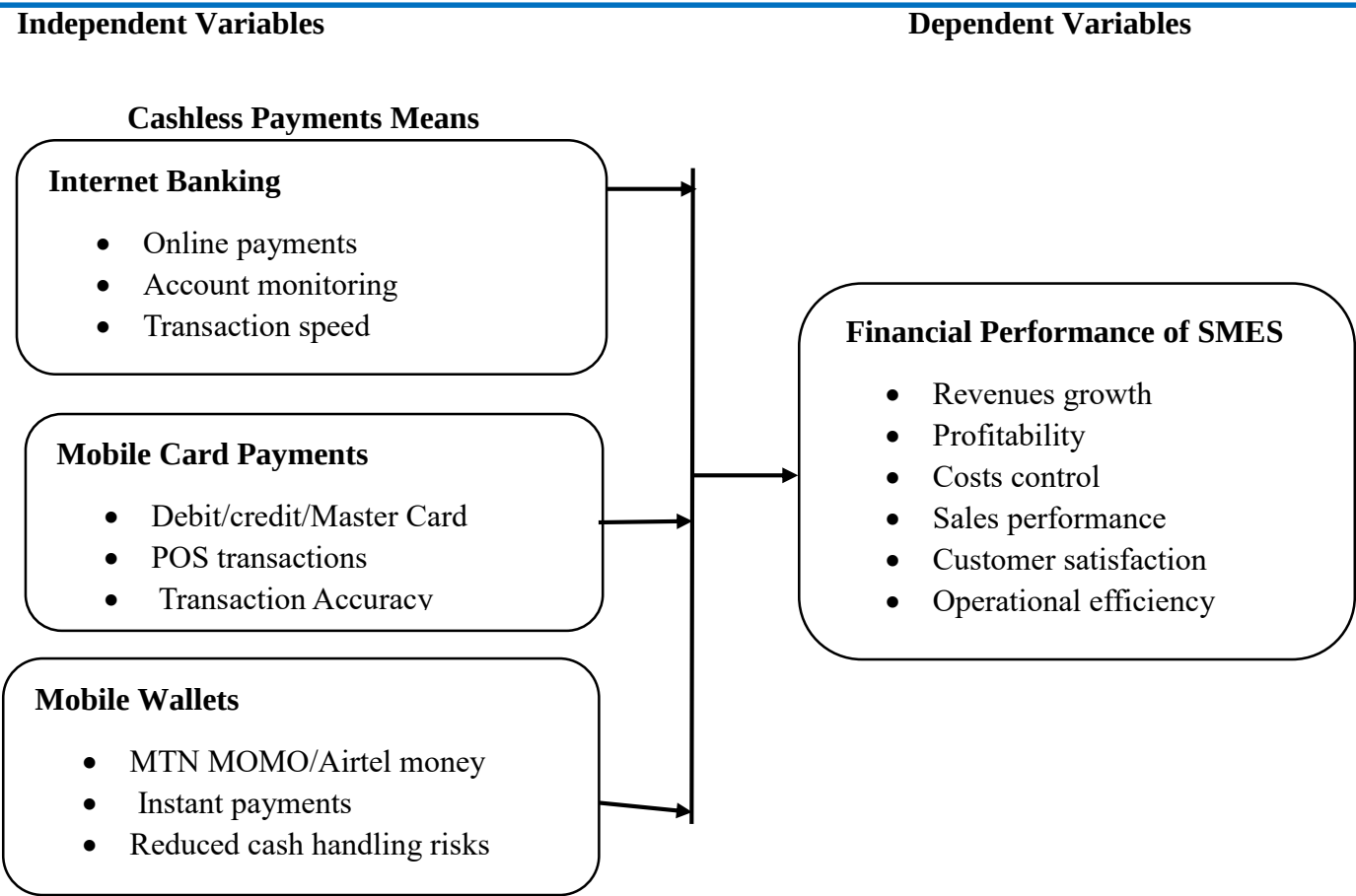


Figure 1 Conceptual Framework

Source: Researcher (2026)

The conceptual framework illustrates the relationship between cashless payment systems as independent variables and the financial performance of Small and Medium Enterprises (SMEs) as the dependent variable. It is grounded in the premise that digital payment technologies are reshaping business operations, particularly in emerging economies such as Rwanda. The framework explains how internet banking, mobile card payments, and mobile wallet systems influence SME financial outcomes.

On the dependent side, SME financial performance is represented by key indicators, namely customer satisfaction and revenue collection. Customer satisfaction reflects the extent to which digital payment convenience, speed, and reliability enhance the customer experience and encourage repeat business. Revenue collection measures the effectiveness of cashless systems in improving payment accuracy, reducing leakages, and ensuring timely receipt of funds.

On the independent side, the framework includes internet banking, mobile cards, and mobile wallets. Internet banking enables SMEs to perform online transactions, monitor accounts, and access real-time financial information. Mobile cards, such as Visa and MasterCard, facilitate secure and efficient payments through point-of-sale systems, reducing transaction delays. Mobile

wallets, including MTN Mobile Money and Airtel Money, provide instant payment solutions that enhance convenience and financial accessibility. The directional arrows in the framework indicate that each cashless payment method positively influences SME financial performance by improving efficiency, reducing operational costs, and strengthening financial transparency. Overall, the framework demonstrates that adoption of digital payment systems enhances both operational effectiveness and financial outcomes for SMEs in Rwanda.

2.4 Research Gap Identification

A review of existing literature on cashless payment systems and SME financial performance reveals important theoretical, methodological, and contextual gaps. Although numerous studies have been conducted globally across Europe, the Americas, and parts of Africa, limited attention has been given to the specific context of Rwanda, particularly SMEs operating in Nyarugenge District. Most available studies emphasize general benefits such as increased revenue, reduced transaction costs, and improved operational efficiency, but they rarely examine how these outcomes are shaped by Rwanda's unique economic and institutional environment.

Studies such as those conducted in Germany and the United Kingdom highlight strong positive relationships between digital payment systems and financial performance using predominantly quantitative approaches. However, these studies often overlook contextual factors such as regulatory frameworks, financial literacy levels, cultural attitudes toward digital payments, and infrastructural limitations, all of which are critical in developing economies like Rwanda. This creates a contextual gap that limits the applicability of their findings to the Rwandan SME sector.

Methodologically, most existing research relies heavily on cross-sectional quantitative designs and large-scale econometric models used in advanced economies. While these approaches provide robust statistical evidence, they often fail to capture the lived experiences and operational challenges faced by SMEs in developing countries. There is therefore a need for a mixed-method approach that integrates both quantitative and qualitative data to provide a more comprehensive understanding of cashless payment adoption in Rwanda.

Furthermore, the literature shows a lack of longitudinal studies examining the long-term effects of cashless payment adoption on SME financial sustainability. Most studies focus on short-term financial gains, leaving a gap in understanding whether these benefits are sustained over time. Additionally, studies conducted in countries such as Kenya and South Africa may not be fully generalizable to Rwanda due to differences in digital infrastructure, market structure, and policy environments. Therefore, this study addresses these gaps by focusing specifically on SMEs in Nyarugenge District, Rwanda, using a contextualized approach to better understand how internet banking, mobile cards, and mobile wallets influence financial performance in a developing economy setting.

3 Research Methodology and Design

3.1 Research Methodology

The methodology outlines the procedures and techniques applied. This study adopts a mixed-methods approach, combining quantitative and qualitative techniques to ensure comprehensive and reliable findings. The quantitative component enables measurement of relationships between variables such as internet banking, mobile card payments, mobile wallets, and SME financial performance. It provides statistical evidence on the strength and direction of these relationships.

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The qualitative component, on the other hand, offers deeper insights into SME experiences, challenges, and perceptions regarding the adoption and use of cashless payment systems. The integration of both approaches enhances the validity, richness, and interpretability of the findings.

3.2 Research Design

This study adopts a mixed research design combining descriptive and correlational approaches. The descriptive design is used to describe the current status of cashless payment adoption and financial performance among SMEs, particularly bars, restaurants, and grocery businesses (Oso & Onen, 2023; Creswell, 2023). It helps identify commonly used payment methods, frequency of usage, and key financial indicators such as revenue levels, cost structure, and customer satisfaction.

The correlational design is used to examine the relationship between cashless payment systems (internet banking, mobile card payments, and mobile wallets) and SME financial performance. This design allows the researcher to determine the strength and direction of relationships between variables without manipulation (Simon, 2023). Regression analysis is further applied to measure the extent to which cashless payment systems explain variations in financial performance. This provides a more precise understanding of the contribution of each independent variable to the dependent variable.

3.3 Location of the Study

The study was conducted in Nyarugenge District, Kigali City, Rwanda. The district is one of the most important commercial hubs in the country, hosting a large concentration of SMEs, particularly in the hospitality and retail sectors, including bars, restaurants, and grocery businesses. Nyarugenge was selected due to its high level of digital financial service adoption, including mobile money, POS systems, mobile banking, and internet banking. Its diverse and dynamic business environment provides a suitable context for studying the relationship between cashless payment systems and financial performance.

3.4 Target Population

The target population refers to the entire group of individuals or units that meet the criteria for inclusion in a study (Fricker, 2006; Alvi, 2023). In this research, the population consisted of 100 respondents drawn from selected SMEs operating in bars, restaurants, and grocery businesses in Nyarugenge District. These respondents are directly involved in the use of cashless payment systems. The population was categorized into two groups: 35 managers and 65 waiters. Managers provide strategic, financial, and administrative insights, while waiters are directly involved in daily transactions and customer interactions.

3.5 Sampling Techniques and Sample Size

A sample is a subset of the population selected for analysis (Ary, Jacobs, & Sorensen, 2006). Sampling allows researchers to draw conclusions about a population without studying every member. This study used a structured sampling approach combining both probability and non-probability techniques.

The sample size was determined using Yamane's formula:

$$n = N / (1 + N(e^2))$$

Where:

n = sample size

N = population size (100)

e = margin of error (0.05)

Therefore: $n = 100 / (1 + 100(0.05^2)) = 80$

The final sample consisted of 80 respondents, proportionally distributed into 28 managers and 52 waiters. Purposive sampling was used to select SMEs that actively use cashless payment systems in Nyarugenge District. Stratified sampling was then applied to divide respondents into managers and waiters to ensure proportional representation. Finally, simple random sampling was used within each stratum to reduce bias and ensure equal participation opportunities. This combination improved representativeness and reliability of findings.

3.6 Research Instruments

Data were collected using structured questionnaires and interview guides (Oso & Onen, 2023). Questionnaires were administered to waiters to gather quantitative data on the use of cashless payment systems and perceived financial performance outcomes. The questionnaire included both demographic and Likert-scale questions covering internet banking, mobile cards, and mobile wallets. Interview guides were used with managers to obtain qualitative insights into financial management, customer satisfaction, operational efficiency, and challenges associated with digital payment systems. This allowed deeper exploration of managerial perspectives.

3.7 Pilot Study, Reliability and Validity

A pilot study involving 20 respondents was conducted to test the clarity, relevance, and reliability of the research instruments. The pilot helped identify unclear questions, assess time required for completion, and improve question structure. Feedback from respondents was used to refine and improve the final instruments, ensuring they effectively captured study variables. Validity refers to the extent to which a research instrument measures what it is intended to measure (Johnson & Christensen, 2024). Content validity was ensured through expert review of the instruments. Reliability refers to consistency of results over time (Mugenda, 2008). Cronbach's Alpha was used to test internal consistency, with $\alpha \geq 0.70$ considered acceptable. Clear and simple language was used in questionnaires to reduce misunderstanding and improve response accuracy.

3.8 Data Analysis Techniques and Presentation

Data were analyzed using SPSS version 21. Quantitative data were analyzed using descriptive statistics (frequencies, percentages, means, standard deviation) and inferential statistics (Pearson correlation and regression analysis). Qualitative data from interviews were analyzed using thematic analysis. Findings were presented using tables and charts for clarity and interpretation.

3.9 Ethical Considerations

Ethical standards were strictly followed to ensure protection of participants and integrity of the study. Permission to access SMEs in Nyarugenge District was obtained from relevant authorities and business owners. Participants were fully informed about the study and participated voluntarily through informed consent. Confidentiality and privacy were maintained, and data were used only

for academic purposes. Anonymity was ensured by using codes instead of personal names. All sources were properly cited to avoid plagiarism. Participation was free from coercion or pressure. Data were securely stored in protected files for five years. The researcher maintained professionalism, respect, and ethical conduct throughout the study.

4 Results

4.1 Response Rate

This section outlines the response rate obtained from the questionnaires and interviews conducted among the selected participants.

Table 1 Response Rate

Category	Sample Size	Responses Received	Response Rate (%)
Managers	28	26	92.9%
Waiters	52	48	92.3%
Total	80	74	92.5%

Source: Field Data (2026)

The results presented in Table 4 show that, among the 80 questionnaires distributed to respondents, 74 were properly filled out and returned, giving a response rate of 92.5%. Based on accepted research benchmarks, a response rate exceeding 70% is regarded as highly satisfactory and adequate for producing dependable findings. Managers recorded a response rate of 92.9%, while waiters recorded 92.3%, indicating strong participation across both groups.

4.2 Socio-Demographic Information

This section includes attributes including gender profile, age, educational profile as well as role in enterprise. These characteristics help in understanding the composition of respondents and provide context for interpreting findings on cashless payment systems and financial performance in SMEs.

Table 1 Gender of Respondents

Gender	Frequency	Percentage (%)
Male	44	59.5%
Female	30	40.5%
Total	74	100%

Source: Field Data (2026)

Results indicate that majority of respondents were male, accounting for 59.5% (44 respondents), while female respondents represented 40.5% (30 respondents). The results demonstrated that male

and female participants were actively included in SME operations and are familiar with cashless payment systems, making their responses relevant to the study.

Table 2 Age of Respondents

Age (Years)	Frequency	Percentage (%)
18–25	18	24.3%
26–35	32	43.2%
36–45	16	21.6%
Above 45	8	10.9%
Total	74	100%

Source: Field Data (2026)

Results demonstrate that respondents are aged between 26–35 years (43.2%), followed by those aged 18–25 years (24.3%). Respondents aged 36–45 years accounted for 21.6%, while those above 45 years represented the smallest proportion at 10.9%.

Table 3 Level of Education of Respondents

Education Level	Frequency	Percentage (%)
Primary education	10	13.5%
Secondary education	28	37.8%
Diploma	20	27.0%
Bachelor's degree	16	21.7%
Total	74	100%

Source: Field Data (2026)

Findings demonstrated that many participants had secondary education (37.8%), followed by diploma holders (27.0%) and bachelor's degree holders (21.7%). A smaller proportion (13.5%) had only primary education.

Table 4 Position of Respondents

Position	Frequency	Percentage (%)
Managers	26	35.1%
Waiters	48	64.9%
Total	74	100%

Source: Field Data (2026)

The results indicate that many respondents were waiters (64.9%), while managers accounted for 35.1% of total sample. On the other hand, managers contribute strategic and financial perspectives regarding business performance, revenue trends, and operational efficiency.

4.3 Financial Performance of Selected Small and Medium Enterprises in Nyarugege District

The study focuses on respondents’ perceptions regarding profitability, revenue collection, operational costs, customer satisfaction, and accuracy of financial records following the adoption of cashless payment systems.

Table 5 Financial Performance of Selected Small and Medium Enterprises

Statement	SD	D	N	A	SA	Mean	Std. Dev
Profitability has improved due to cashless payments	4(5.4%)	6(8.1%)	8(10.8%)	32(43.2%)	24(32.4%)	3.89	1.08
Revenue collection has increased in our business	3(4.1%)	5(6.8%)	10(13.5%)	30(40.5%)	26(35.1%)	3.96	1.02
Operational costs have reduced	5(6.8%)	7(9.5%)	9 (12.2%)	28(37.8%)	25(33.8%)	3.82	1.14
Customer satisfaction has improved	2(2.7%)	6(8.1%)	8 (10.8%)	34(45.9%)	24(32.4%)	3.98	0.98
Financial records are more accurate	3(4.1%)	4(5.4%)	7 (9.5%)	35(47.3%)	25(33.8%)	4.01	0.95

Source: Field Data (2026)

Findings demonstrated that participants agreed that cashless payment systems have improved profitability, with 75.6% selecting Agree or Strongly Agree. However, some respondents remained neutral or disagreed, indicating that profitability gains may not be uniform across all SMEs due to differences in adoption levels. A strong majority (75.6%) agreed that revenue collection has improved. The higher standard deviation indicates slightly more variation in responses compared to other items. Most respondents (78.3%) agreed that customer satisfaction has improved due to cashless payment systems.

Key informants consistently emphasized improvements in profitability, revenue collection, operational efficiency, customer satisfaction, and financial record accuracy.

One key informant (KI 1, SME Manager) explained that: *“Since we started using mobile money and card payments, our daily sales have become more stable and easier to track. We no longer lose money through cash handling mistakes, and this has improved our overall profitability.”* This statement supports the quantitative findings that profitability has improved due to cashless payment systems. Another informant (KI 2, Restaurant Supervisor) noted that: *“Revenue collection has become more transparent because every transaction is recorded automatically. We can now easily reconcile sales at the end of the day, unlike before when we relied only on cash.”* This reflects the high agreement among respondents that cashless systems improve revenue tracking and reduce leakages. Similarly, (KI 3, Grocery Shop Owner) stated that: *“Customers prefer paying through mobile money because it is faster and more convenient. This has increased customer satisfaction and even attracted more clients to our business.”* This supports the finding that cashless payments enhance customer satisfaction and business performance. In addition, another informant (KI 4, Accountant) highlighted improvements in financial management by stating: *“Our financial records are now more accurate and easier to audit because all transactions are automatically recorded in the system. This has reduced errors and improved accountability.”* This aligns with the highest-rated quantitative finding on financial record accuracy.

4.4 Findings for Effect of Internet Banking on Financial Performance of Selected Small and Medium Enterprises in Nyarugenge District, Rwanda

The study examines how internet banking influences efficiency, revenue generation, cost reduction, and operational performance.

Table 6 Internet Banking

Statement	SD	D	N	A	SA	Mean	Std. Dev
Internet banking improves financial performance	3(4.1%)	5(6.8%)	7 (9.5%)	33(44.6%)	26(35.1%)	3.99	0.97
Internet banking reduces transaction time	2(2.7%)	6(8.1%)	8(10.8%)	32(43.2%)	26(35.1%)	3.98	0.96
Internet banking reduces financial errors	3(4.1%)	4(5.4%)	9(12.2%)	31(41.9%)	27(36.5%)	4.01	0.95
Internet banking improves cost efficiency	4(5.4%)	5(6.8%)	8(10.8%)	30(40.5%)	27(36.5%)	3.96	1.00

Source: Field Data (2026)

Results show that 44.6% (33 respondents) agreed and 35.1% (26 respondents) strongly accepted. It provides a total of 79.7% positive responses, while only 10.9% (8 respondents) disagreed and 9.5% (7 respondents) remained neutral. The results indicate that 43.2% (32 respondents) agreed and 35.1% (26 respondents) strongly agreed that internet banking reduces transaction time, totaling

78.3% agreement. Only 10.8% (8 respondents) were neutral, while 10.8% (8 respondents) disagreed. The mean score of 3.98 reflects a strong level of agreement among respondents, while the standard deviation of 0.96 shows that the responses were fairly consistent, with most views closely grouped around the average. The results show that 41.9% (31 respondents) agreed and 36.5% (27 respondents) strongly agreed that internet banking helps reduce financial errors, giving a total agreement level of 78.4%. In contrast, 12.2% (9 respondents) remained neutral, while 9.5% (7 respondents) disagreed. The item recorded the highest mean score of 4.01, indicating a very strong level of agreement among respondents. Additionally, the standard deviation of 0.95 suggests that the responses were relatively consistent, with minimal variation around the mean.

The findings indicate that 40.5% (30 respondents) agreed and 36.5% (27 respondents) strongly agreed that internet banking enhances cost efficiency, resulting in a combined agreement level of 77.0%. On the other hand, 12.2% (9 respondents) disagreed or strongly disagreed, while 10.8% (8 respondents) remained neutral. The mean score of 3.96 suggests a generally high level of agreement, although slightly lower than other measured indicators. The qualitative findings provide deeper insights. Key informants highlighted improvements in efficiency, transaction speed, accuracy, and cost management as major benefits of internet banking adoption.

One key informant (KI 1, SME Manager) stated that: *“Internet banking has made it easier to monitor our daily transactions and manage finances without needing to physically go to the bank. It has improved our financial control and overall business performance.”* This supports the quantitative finding that internet banking improves financial performance.

Another informant (KI 2, Restaurant Accountant) explained that: *“We used to waste a lot of time processing payments manually, but now transactions are completed quickly through internet banking, which has reduced delays and improved service delivery.”* This reflects the high agreement that internet banking reduces transaction time and enhances operational efficiency.

Similarly, (KI 3, Grocery Business Owner) noted that: *“Errors in financial records have reduced significantly because internet banking automatically records all transactions, making it easier to track income and expenses accurately.”* This aligns with the finding that internet banking reduces financial errors and improves record accuracy.

In addition, (KI 4, Financial Officer) emphasized cost-related benefits by stating: *“Although there are some transaction charges, internet banking has generally reduced operational costs related to cash handling, transport to banks, and manual record keeping.”* This supports the moderate agreement on cost efficiency improvements.

Table 72 Correlation Analysis

Variable	Financial Performance
Internet Banking	0.742**

Source: Field Data (2026)

Table 11 presents the Pearson correlation analysis between internet banking and financial performance of SMEs in Nyarugenge District, Rwanda. The results show a correlation coefficient of $r = 0.742$, showing a significant positive link between internet banking and financial

performance. This relationship is further supported by statistical interpretation standards, where values between 0.70 and 0.89 are considered strong positive correlations. Therefore, the obtained value (0.742) confirms that internet banking contributed pertinently to improve SME financial outcomes.

Table 8 Model Summary

Model	R	R Square	Adjusted R Square
1	0.742	0.551	0.538

Source: Field Data (2026)

Table 8 presents the model summary results illustrating the relationship between internet banking and the financial performance of Small and Medium Enterprises (SMEs) in Nyarugenge District, Rwanda. The results comprise the correlation coefficient (R), the coefficient of determination (R Square), and the Adjusted R Square. The findings reveal an R value of 0.742, indicating a strong positive relationship between internet banking and SME financial performance. The R Square value of 0.551 suggests that internet banking accounts for 55.1% of the variation in financial performance among SMEs. The remaining 44.9% is attributed to other influencing factors not captured within the model, such as managerial skills, market conditions, business size, access to credit, and other forms of digital payment systems. The adjusted R Square value of 0.538 shows that after adjusting for sample size and model complexity, internet banking still explains 53.8% of the variation in financial performance.

Table 9 Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig
(Constant)	—	—	—	—	—
Internet Banking	0.621	0.075	0.621	8.28	0.000

Source: Field Data (2026)

Table 9 presents the regression coefficients showing the relationship between internet banking and the financial performance of SMEs in Nyarugenge District, Rwanda. The findings indicate that internet banking has a positive and statistically significant influence on financial performance (B = 0.621, t = 8.28, p < 0.05). The standard error value of 0.075 suggests a low margin of estimation error, reflecting the reliability and stability of the coefficient. This implies that a one-unit increase in the adoption of internet banking is associated with a 0.621 increase in financial performance, assuming other factors remain constant. Furthermore, the p-value of 0.000 confirms that the relationship is statistically significant and not attributable to random variation.

4.5 Effect of Mobile Card Payments on Financial Performance of Selected Small and Medium Enterprises in Nyarugenge District, Rwanda

The study assessed effect of mobile card payments (POS/swipe cards) on financial performance of SMEs in Nyarugenge District, Rwanda.

Table 10 Mobile Card Payments

Statement	SD	D	N	A	SA	Mean	Std. Dev
Card payments improve financial performance	4(5.4%)	6(8.1%)	9(12.2%)	31(41.9%)	24(32.4%)	3.85	1.07
Card payments improve revenue collection	3(4.1%)	5(6.8%)	10(13.5%)	30(40.5%)	26(35.1%)	3.96	1.02
Card payments increase customer satisfaction	2(2.7%)	6(8.1%)	8 (10.8%)	34(45.9%)	24(32.4%)	3.98	0.98
Card payments reduce financial risks	3(4.1%)	5(6.8%)	9 (12.2%)	32(43.2%)	25(33.8%)	3.92	1.01

Source: Field Data (2026)

The findings show that 41.9% (31 respondents) agreed and 32.4% (24 respondents) strongly agreed, representing a total of 74.3% positive responses. However, 12.2% (9 respondents) were neutral, while 13.5% (10 respondents) disagreed or strongly disagreed. The results indicate strong agreement that card payments improve revenue collection, with 40.5% (30 respondents) agreeing and 35.1% (26 respondents) strongly agreeing. This gives a combined 75.6% agreement level. Only a small proportion disagreed (10.9%) or remained neutral (13.5%). The mean value of 3.96 confirms a strong perception that card payments help businesses collect revenue more effectively.

The findings reveal that 45.9% (34) agreed and 32.4% (24 respondents) strongly agreed that card payments increase customer satisfaction, giving a total of 78.3% agreement. Meanwhile, 10.8% (8) were neutral and 10.8% (8 respondents) disagreed. The mean score of 3.98 shows strong agreement, while the low standard deviation of 0.98 indicates that respondents have similar views.

The results show that 43.2% (32) agreed and 33.8% (25) strongly accepted that card payments reduce financial risks, totaling 77.0% positive responses. However, 12.2% (9 respondents) were neutral and 10.9% (8 respondents) disagreed. The mean score of 3.92 reflects a strong agreement that card payments enhance financial security by reducing risks such as theft, cash loss, and fraud.

Key informants highlighted improvements in revenue collection, customer satisfaction, financial security, and overall business efficiency.

One key informant (KI 1, SME Manager) stated that: “Card payments have made it easier to track all sales because every transaction is recorded automatically. This has improved our financial performance and reduced mistakes associated with cash handling.” This supports the quantitative finding that card payments improve financial performance. Another informant (KI 2, Restaurant Supervisor) explained that: “We collect revenue more efficiently now because customers can pay using cards instead of cash. This has reduced delays in payments and improved daily revenue collection.” This reflects the strong agreement that card payments improve revenue collection.

Similarly, (KI 3, Grocery Shop Owner) noted that: “Customers appreciate the convenience of using card payments, especially when they do not have cash. This has increased customer

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satisfaction and even encouraged repeat purchases.” This aligns with the finding that card payments enhance customer satisfaction. In addition, (KI 4, Finance Officer) emphasized risk reduction by stating: “Using card payments has reduced risks such as theft and cash loss because we handle less physical cash in the business.” This supports the quantitative results showing that card payments reduce financial risks.

Table 11 Correlation Analysis

Variable	Financial Performance
Mobile Card Payments	0.689**

Source: Field Data (2026)

The results show a correlation coefficient of $r = 0.689$, indicating a strong association between mobile card payments and financial performance. In statistical interpretation, a correlation value between 0.60 and 0.79 is considered strong. Therefore, the value of 0.689 confirms a strong positive association, meaning that mobile card payments play an important role in enhancing SME financial results like revenue collection, customer satisfaction, and financial security.

Table 12 Model Summary

Model	R	R Square	Adjusted R Square
1	0.689	0.475	0.461

Source: Field Data (2026)

The results show an R value of 0.689, which felt a strong association between mobile card payments and financial success. The R Square value of 0.475 indicates that mobile card payments explain 47.5% of the variation in SME financial performance. The remaining 52.5% of variation in financial performance is explained by other factors not included in this model, such as managerial efficiency, market conditions, access to credit, digital literacy, and other cashless payment methods like mobile wallets and internet banking. The adjusted R Square value of 0.461 indicates that after adjusting for sample size and model complexity, mobile card payments still explain 46.1% of the variation in financial performance.

Table 133 Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	0.198	0.058	—	3.41	0.001
Mobile Card Payments	0.547	0.070	0.547	7.81	0.000

Source: Field Data (2026)

The results indicate that mobile card payments exert a positive and statistically significant influence on the financial performance of SMEs in Nyarugenge District ($B = 0.547$, $t = 7.81$, $p < 0.05$). The standard error (0.070) indicates a high level of precision in the estimation.

4.6 Effect of Mobile Wallets on Financial Performance of Selected Small and Medium Enterprises in Nyarugenge District, Rwanda.

The study determined effect of mobile wallet transactions (such as MTN Mobile Money and Airtel Money) on financial performance of SMEs in Nyarugenge District, Rwanda.

Table 14 Mobile Wallets

Statement	SD	D	N	A	SA	Mean	Std. Dev
Mobile wallets improve financial performance	3(4.1%)	5(6.8%)	8(10.8%)	33(44.6%)	25(33.8%)	3.97	0.98
Mobile wallets reduce operational costs	4(5.4%)	6(8.1%)	9(12.2%)	30(40.5%)	25(33.8%)	3.89	1.05
Mobile wallets increase sales efficiency	2(2.7%)	5(6.8%)	8(10.8%)	34(45.9%)	25(33.8%)	4.01	0.94
Mobile wallets improve transparency in transactions	3(4.1%)	4(5.4%)	7 (9.5%)	35(47.3%)	25(33.8%)	4.03	0.92

Source: Field Data (2026)

Results show that participants agreed that mobile wallets improve performance. Specifically, 44.6% (33 respondents) accepted and 33.8% (25 respondents) strongly agreed, giving a total of 78.4% positive responses. However, 10.8% (8 respondents) were neutral, while 10.9% (8 respondents) disagreed. The results indicate that 40.5% and 33.8% show agreement that mobile wallets reduce operational costs, representing a total of 74.3% agreement. Meanwhile, 12.2% (9 respondents) were neutral, and 13.5% (10 respondents) disagreed. The mean value of 3.89 shows general agreement, although slightly lower than other indicators. The standard deviation of 1.05 indicates moderate variation in responses, suggesting that some SMEs still face costs such as transaction charges or network fees. The findings reveal strong agreement that mobile wallets increase sales efficiency, with 45.9% (34 respondents) agreeing and 33.8% (25 respondents) strongly agreeing. This gives a combined 79.7% agreement level, making it one of the strongest indicators. The mean score of 4.01 confirms a very high level of agreement, while the low standard deviation of 0.94 shows consistency among respondents. The results show that 47.3% (35 respondents) agreed and 33.8% (25 respondents) strongly agreed that mobile wallets improve transparency in financial transactions, totaling 81.1% agreement. The mean score of 4.03, the highest among all items, indicates very strong agreement. The standard deviation of 0.92 shows the lowest variation, confirming strong consensus among respondents.

Key informants consistently highlighted improvements in sales efficiency, transparency, cost management, and overall business performance. One key informant (*KI 1, SME Manager*) stated

that: “*Mobile money has made our business operations smoother because payments are received instantly, and we can easily track all transactions without confusion.*” This supports the quantitative finding that mobile wallets improve financial performance.

Another informant (KI 2, Restaurant Cashier) explained that: “*Customers prefer using mobile money because it is fast and convenient. This has increased the speed of service delivery and improved our daily sales.*” This reflects the high agreement that mobile wallets increase sales efficiency. Similarly, (KI 3, Grocery Shop Owner) noted that: “*Before mobile money, we relied only on cash, but now we can serve more customers quickly and even reduce time spent handling money physically.*” This aligns with the finding that mobile wallets improve operational efficiency and customer convenience. In addition, (KI 4, Finance Officer) emphasized transparency by stating: “*Every mobile money transaction is automatically recorded, which has improved transparency and made it easier to reconcile accounts at the end of the day.*” This supports the strong quantitative results on improved financial transparency.

Table 15 Correlation Analysis

Variable	Financial Performance
Mobile Wallets	0.781**

Source: Field Data (2026)

The findings reveal a correlation coefficient of $r = 0.781$, indicating a very strong positive relationship between mobile wallet usage and financial performance. Statistically, a correlation coefficient ranging between 0.70 and 0.89 is regarded as very strong. Accordingly, the value of 0.781 confirms a substantial and meaningful association, implying that mobile wallets significantly contribute to improved financial outcomes for SMEs.

Table 16 Model Summary

Model	R	R Square	Adjusted R Square
1	0.781	0.610	0.598

Source: Field Data (2026)

The findings reveal an R value of 0.781, reflecting a very strong positive relationship between mobile wallet usage and SME financial performance. The R Square value of 0.610 indicates that mobile wallets account for 61.0% of the variation in financial performance among SMEs. The remaining 39.0% is attributed to other influencing factors not included in the model, such as managerial competencies, access to credit, firm size, market conditions, and other cashless payment methods like internet banking and mobile card payments. Furthermore, the Adjusted R Square value of 0.598 shows that even after adjusting for sample size and model complexity, mobile wallets still explain 59.8% of the variation in financial performance.

Table 17 Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	0.176	0.055	—	3.20	0.002
Mobile Wallets	0.642	0.073	0.642	8.80	0.000

Source: Field Data (2026)

Results reveal that mobile wallets have the strongest positive effect on financial performance among all cashless payment systems ($B = 0.642$, $t = 8.80$, $p < 0.05$). The standard error (0.073) indicates high reliability and precision of the coefficient estimate.

5.Discussion of Findings

The discussion compares the results with existing empirical literature and links them to relevant theoretical frameworks including technology acceptance model, and innovation diffusion theory.

5.1 Effect of Internet banking Usage on Financial Performance of Selected Small and Medium Enterprises

The study established that internet banking significantly improves the financial performance of SMEs in Nyarugenge District. Specifically, it enhances transaction efficiency, reduces errors, improves cost control, and strengthens financial management practices. The study is relevant since it concurs with global studies, which shows that internet banking improves operational efficiency and reduces transaction costs by eliminating manual cash handling and enabling real-time financial processing (Ong & Chong, 2022). Similarly, studies indicate that digital banking systems enhance business productivity by improving speed and accuracy of financial transactions. In Africa, empirical evidence also supports these results. For example, research conducted in East African SMEs shows that adoption of internet and mobile banking significantly improves financial reporting accuracy and business performance due to increased transparency and reduced cash leakages (Kinyua et al., 2023). In Rwanda, recent studies confirm that internet banking adoption has increased due to financial sector reforms and digital inclusion strategies promoted by the National Bank of Rwanda. These reforms have improved SME access to formal financial services and strengthened financial performance (BNR, 2024). The findings are supported by Technology Acceptance Model, which explains its pertinence as its usage significantly influence adoption behavior.

5.2 Effect of Mobile Card Payments on Financial Performance of Selected Small and Medium Enterprises

Globally, studies show that POSsystems increase sales efficiency and improve financial transparency by providing real-time transaction records and reducing cash dependency (Smith & Williams, 2021). These systems also enhance customer convenience, which leads to increased sales volume and customer loyalty. In Africa, similar findings have been reported, where card-based payment systems are increasingly adopted in urban SMEs to improve service delivery and reduce cash handling risks. However, challenges such as transaction fees and infrastructure limitations remain common barriers (Adebayo & Musa, 2023). In Rwanda, POS adoption has increased significantly in urban commercial centers such as Kigali and Nyarugenge District, driven

by government efforts to promote a cashless economy. However, SMEs still face challenges such as network instability and service charges (BNR, 2024). The POS systems are adopted because they offer improved efficiency and security despite some operational challenges.

5.3 Effects of Mobile Wallets Transactions on Financial Performance of Selected Small and Medium Enterprises

This research established that mobile wallets have strongest impact on SME financial success in comparison to other cashless payment methods. They significantly improve sales efficiency, transparency, customer convenience, and cost reduction. Globally, mobile wallet systems such as Apple Pay, Google Pay, and PayPal have transformed SME transactions by enabling fast, secure, and contactless payments (Dahlberg et al., 2021). In Africa, mobile money system including M-Pesa in Kenya have been widely recognized as key drivers of SME growth by increasing accessibility to financial services, increasing transaction speed, and reducing operational risks (Jack & Suri, 2021). Similar trends are observed across East Africa, where mobile money dominates digital payment systems. In Rwanda, mobile wallets such as MTN Mobile Money and Airtel Money are widely used and have significantly improved financial inclusion and SME performance. Recent data shows that over 80% of adults use mobile money services, making it the most dominant cashless payment system in the country (NISR, 2024). The findings align with financial innovation theory, which argues that financial technologies improve efficiency, reduce transaction costs, and enhance access to financial services, thereby improving business performance.

6 Conclusion and Recommendations

The study concludes that internet banking positively influences the financial performance of SMEs by improving transaction efficiency, reducing operational delays, and strengthening financial management systems. It enables SMEs to conduct financial transactions more effectively, minimizes dependence on manual banking processes, and enhances overall productivity and competitiveness. The study further concludes that mobile card payments have a significant positive effect on SME financial performance. They improve revenue collection, increase customer convenience, and strengthen financial security. Despite challenges such as transaction fees and occasional network interruptions, the benefits of mobile card systems outweigh the limitations, making them an essential tool for modern SME operations. Finally, the study establishes that mobile wallets are the most influential cashless payment system in enhancing SME financial performance. Their ability to facilitate instant transactions, reduce operational costs, improve transparency, and increase customer satisfaction makes them a key driver of business success. Overall, the adoption of cashless payment systems significantly enhances SME financial sustainability, operational efficiency, and long-term growth within Rwanda's digital economy.

Based on study findings, the following recommendations are drawn: SME owners are encouraged to fully integrate cashless payment systems into their daily operations. The consistent use of internet banking, mobile card payments, and mobile wallets will improve efficiency, reduce cash-handling risks, and enhance customer satisfaction. Managers should also ensure continuous staff training on digital payment technologies.

Banks and mobile money providers should improve the affordability, reliability, and accessibility of digital financial services. Reducing transaction costs, enhancing system stability, and offering user support and training will encourage wider adoption among SMEs. The government should

strengthen digital financial infrastructure, including internet connectivity and payment systems. It should also promote digital literacy programs and implement policies that support financial innovation and inclusion among SMEs.

Policymakers should develop strong regulatory frameworks that support the secure, affordable, and widespread use of cashless payment systems. Collaboration between financial institutions, telecom companies, and SMEs should be encouraged to strengthen the digital payment ecosystem and ensure sustainable financial inclusion and economic growth. Future research should compare the impact of cashless payment systems across different districts in Rwanda to identify regional variations. Further studies should focus on specific sectors such as hospitality, retail, and manufacturing to understand sector-based differences in adoption and performance. Long-term studies are recommended to assess the sustained impact of cashless payment systems on SME growth, resilience, and financial sustainability over time.

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