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FinTech-Led Cash Flow Management and SME Growth in Kitui County, Kenya

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Abstract
This study explored the role of FinTech-enabled cash flow management in SME growth in Kitui County, Kenya, with an emphasis on access to liquidity, cash flow transparency, and real-time transaction monitoring. Guided by the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) Theory, and Institutional Theory, it employed a quantitative correlational research design. Using a stratified random sampling procedure, data were gathered from 344 SME owners through structured questionnaires. It was analysed using descriptive statistics, correlation, ANOVA, and multiple regression in IBM SPSS Version 27. Results indicated that liquidity for SMEs ($\beta = 0.497$), cash flow visibility ($\beta = 0.428$), and real-time transaction tracking ($\beta = 0.409$) had positive and significant effects on SME sales margins ($p < 0.001$). The study recommends enhancing digital infrastructure, improving financial literacy, and promoting affordable FinTech solutions for SMEs. Overall, the findings contribute to the growing body of knowledge on FinTech adoption and SME development, and provide evidence to guide policymakers, financial service providers, and SME support agencies in designing interventions to enhance business growth and financial sustainability in Kenya.

Key words: Cash flow management, cash flow visibility, FinTech, liquidity, real-time transaction tracking.

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INTRODUCTION

Small and medium-sized enterprises (SMEs) are vital to the global economy, making up over 90 per cent of all businesses and playing key roles in creating jobs, fostering innovation, and reducing poverty (Abu et al., 2025). In Kenya, SMEs account for nearly 98 per cent of all enterprises, contribute around 30 per cent to 40 per cent of the Gross Domestic Product (GDP), and employ about 80 per cent of the workforce (FSD Kenya, 2024). Nevertheless, many face financial difficulties, especially poor cash flow management, which hampers their liquidity, ability to meet operational costs, and business growth. According to Otieno et al. (2023), limited access to efficient financial services and weak financial systems have led to stagnation and failure in many SMEs.

The rise of Financial Technology (FinTech) has revolutionised how financial services are delivered, boosting efficiency, accessibility, and affordability (Tarek & Daaboul, 2026). By using mobile money, digital banking, and online financial platforms, FinTech helps SMEs automate payments, track transactions in real time, and manage liquidity better (Karim et al., 2022). In line with Berg et al.'s (2021) observation, these digital platforms also promote greater financial transparency and reduce transaction delays, thereby enhancing operational efficiency and overall business performance.

In Kenya, the swift rise of FinTech has been fuelled by widespread mobile phone usage and the success of services like M-Pesa, Airtel Money, Tala, Branch, and KCB M-Pesa (Misati et al., 2020). These platforms help SMEs access working capital, make instant payments, and enhance bookkeeping and financial tracking (Mwangi, 2021). Better financial visibility allows SMEs to make timely decisions about expenses, investments, and inventory, boosting operational efficiency and growth.

Despite the rapid expansion of FinTech services and their documented benefits for SMEs, evidence regarding their effectiveness in improving cash flow management and business growth remains mixed. Studies conducted in different contexts generally agree that FinTech solutions enhance financial inclusion, liquidity management, and operational efficiency among SMEs (Berg et al., 2021; Karim et al., 2022). For example, Karim et al. (2022) found that FinTech tools improved cash flow visibility and liquidity management among SMEs in ASEAN countries, while Berg et al. (2021) reported that digital financial technologies strengthened financial resilience and business continuity. Similarly, Mwangi (2021) observed that mobile-based financial platforms in Kenya improved bookkeeping, payment processing, and SMEs' access to working capital.

However, the existing evidence presents several limitations. First, many studies have concentrated on broad outcomes such as financial inclusion, operational efficiency, or financial resilience rather than examining specific dimensions of FinTech-driven cash flow management, including liquidity management, cash flow visibility, and real-time transaction tracking. Second, most studies have been conducted in urban areas or at national and regional levels, making it difficult to generalise their findings to counties characterised by different socioeconomic and infrastructural conditions. For instance, studies by Berg et al. (2021) and Karim et al. (2022) focused on cross-country and international contexts, while Kenyan studies have largely concentrated on major urban centres where digital infrastructure and financial service accessibility are relatively advanced.

Furthermore, methodological differences among existing studies have produced varying conclusions. While some studies report a strong positive relationship between FinTech adoption and SME performance, others suggest that the benefits are moderated by factors such as digital literacy, financial management capabilities, and access to technological infrastructure. For example, although FinTech platforms offer opportunities to improve liquidity and transaction management, Musamali et al. (2024) argued that limited financial literacy and inadequate digital skills constrain SMEs' ability to fully utilise these technologies. Similarly, Musangi (2023) noted that many SMEs operating in rural and semi-urban settings continue to experience inconsistent cash flows, delayed customer payments, and limited access to formal financial services despite the growing availability of digital financial platforms. These findings suggest that the mere availability of FinTech solutions does not automatically translate into improved business performance.

The limitations of prior studies are particularly evident in counties such as Kitui, where SMEs are predominantly small, owner-managed enterprises operating in retail trade, agriculture, transport, and informal sectors. Unlike larger urban-based firms, these enterprises often face unique challenges related to liquidity constraints, limited financial management skills, inadequate digital literacy, and uneven access to financial infrastructure. Yet

empirical studies that specifically examine how FinTech-enabled liquidity management, cash flow visibility, and real-time transaction tracking influence SME growth in Kitui County remain scarce.

Therefore, the existing literature leaves an important contextual and empirical gap. While previous studies have established the general benefits of FinTech adoption, they provide limited evidence on how specific FinTech-driven cash flow management practices affect SME growth within rural and semi-urban Kenyan counties. This study addresses this gap by examining the relationship between liquidity management, cash flow visibility, and real-time transaction tracking and SME growth in Kitui County, thereby providing context-specific evidence that can inform policy and practice aimed at enhancing SME performance through FinTech adoption.

LITERATURE REVIEW

Theoretical Literature

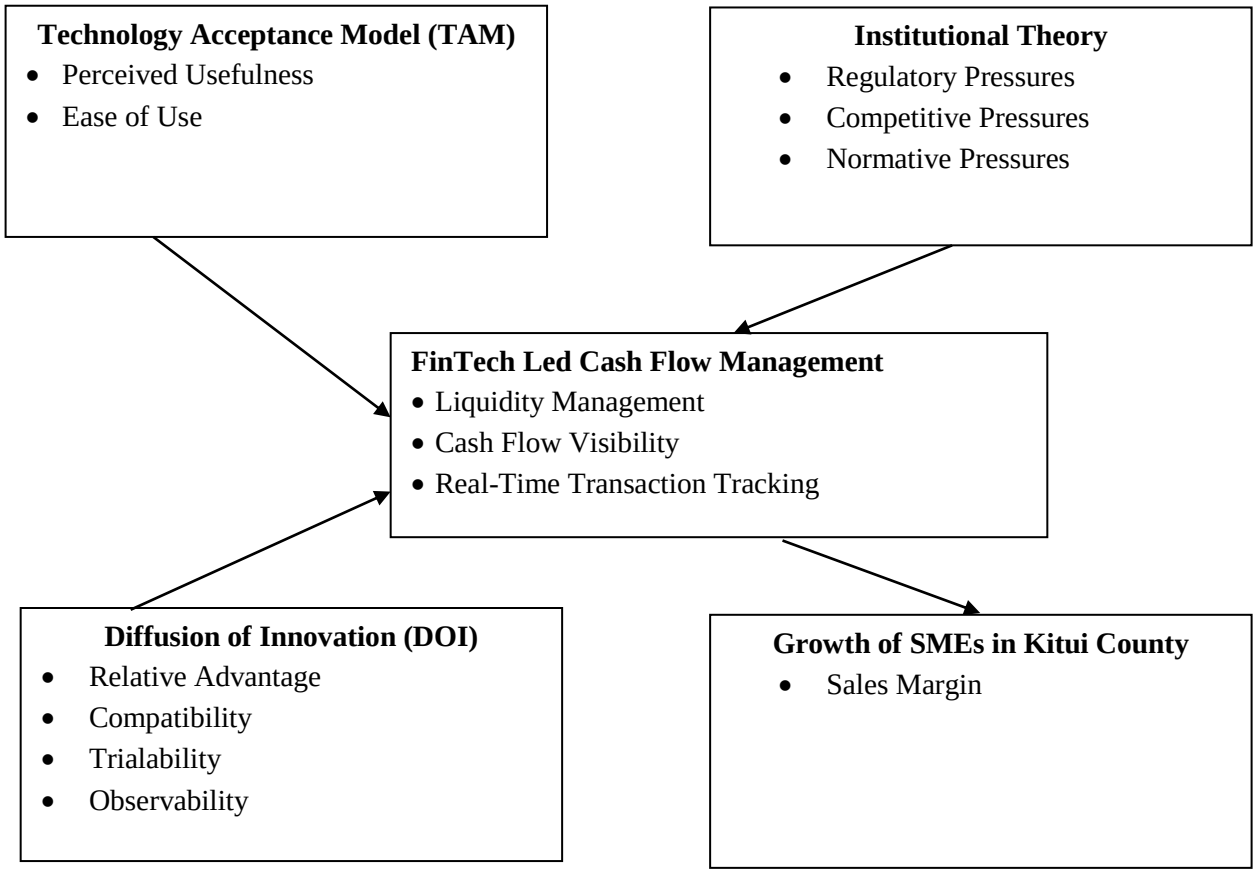
Various theoretical perspectives jointly explain how FinTech-driven cash flow management influences SME growth in Kitui County. Rather than operating independently, the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) Theory, and Institutional Theory provide complementary explanations for the adoption and utilisation of FinTech solutions that enhance liquidity management, cash flow visibility, and real-time transaction tracking.

The Technology Acceptance Model (TAM) posits that an individual's willingness to adopt a technology is determined primarily by perceived usefulness and perceived ease of use (Nurqamarani et al., 2021; Rokhim et al., 2018). In the context of SMEs, FinTech solutions are more likely to be adopted when business owners perceive them as useful in improving liquidity management, enhancing visibility of cash inflows and outflows, and facilitating real-time monitoring of transactions. Digital financial platforms that simplify payment processing, automate record keeping, and provide timely financial information enable SMEs to improve operational efficiency and financial decision-making. Consequently, TAM provides a behavioural explanation for why SME owners adopt FinTech-enabled cash flow management practices.

The Diffusion of Innovation (DOI) Theory complements TAM by explaining how FinTech innovations spread among SMEs over time (Rogers, 1995). According to the DOI, adoption is influenced by the perceived relative advantage, compatibility, complexity, trialability, and observability of an innovation. SMEs are more likely to adopt FinTech solutions for liquidity management, cash flow visibility, and real-time transaction tracking when they observe clear benefits, compatibility with existing business operations, and successful experiences among peer enterprises. Through social interaction and observation of early adopters, FinTech-driven cash flow management practices become increasingly accepted and integrated within the SME sector. DOI therefore explains the process through which FinTech innovations become widespread among SMEs.

Institutional Theory further broadens the explanation by highlighting the role of external environmental forces in shaping FinTech adoption (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Coercive pressures from government policies, financial regulations, and financial institutions, mimetic pressures arising from successful competitors, and normative pressures from industry associations and digital literacy programs encourage SMEs to adopt FinTech solutions. These pressures drive SMEs to adopt technologies that improve liquidity management, enhance cash flow transparency, and enable real-time transaction monitoring. Institutional Theory, therefore, explains how the external environment creates conditions that support or constrain FinTech adoption.

Collectively, the three theories provide an integrated framework for understanding the study variables. TAM explains why SME owners perceive FinTech solutions as useful and easy to use, DOI explains how these solutions diffuse across the SME sector, and Institutional Theory explains the environmental pressures that encourage adoption. The interaction of these factors promotes the use of FinTech-enabled liquidity management, cash flow visibility, and real-time transaction tracking. Improved liquidity management enhances the availability of working capital, cash flow visibility strengthens financial planning and control, while real-time transaction tracking improves efficiency and accountability. Together, these outcomes contribute to improved SME growth through increased sales, profitability, business expansion, and sustainability in Kitui County.



Empirical Literature

Effective cash flow management remains vital for SME survival and growth, particularly in developing economies where liquidity constraints, limited access to credit, and unstable financial environments are common (Otoo, 2024). Poor cash flow management can hinder an enterprise's ability to meet operational expenses, maintain inventory levels, pay suppliers on time, and invest in business expansion. Consequently, inadequate cash management is frequently associated with reduced competitiveness and a higher risk of business failure. The emergence of Financial Technology (FinTech) has transformed the financial landscape by providing SMEs with innovative tools that streamline financial transactions, enhance cash flow monitoring, and support informed decision-making (Caselli & Negri, 2021).

FinTech solutions such as mobile money platforms, digital banking services, automated payment systems, and cloud-based financial management applications have been credited with improving liquidity management and operational efficiency among SMEs. Studies by Berg et al. (2021) and Karim et al. (2022) suggested that FinTech adoption strengthens SMEs' financial resilience by enabling better cash flow monitoring and reducing transaction-related inefficiencies. While these studies generally agree that FinTech contributes positively to SME financial management, they differ in the extent to which such improvements translate into tangible growth outcomes. Berg et al. (2021) emphasised enhanced resilience and financial stability, whereas Karim et al. (2022) focused on liquidity improvements during periods of economic uncertainty. This variation suggests that although FinTech improves financial management processes, its direct contribution to SME growth remains insufficiently explored.

Research from both developed and developing economies consistently demonstrates that FinTech enhances liquidity management and financial performance among SMEs. Karim et al. (2022) found that FinTech tools improved cash flow visibility and liquidity management among SMEs in ASEAN countries, particularly during periods of economic disruption. Similarly, Migozzi et al. (2024) reported that FinTech ecosystems in India enhanced SMEs' access to real-time financial information, thereby improving operational efficiency and strengthening liquidity

positions. These findings support the argument that digital financial technologies enable SMEs to manage resources more effectively and sustain operations during challenging economic conditions. However, some studies offer broader perspectives, linking FinTech adoption to overall financial resilience rather than specifically examining cash flow management mechanisms.

For example, while Karim et al. (2022) attributed improved liquidity directly to FinTech tools, Migozzi et al. (2024) emphasised the broader role of FinTech ecosystems in fostering operational efficiency. This difference in focus creates uncertainty regarding which specific FinTech-enabled cash flow practices contribute most significantly to business growth. Furthermore, most studies focus on financial performance indicators such as liquidity and resilience, while paying limited attention to growth indicators such as sales margin, job creation, market penetration, and profitability. Consequently, there remains insufficient empirical evidence explaining how FinTech-driven cash flow management translates into measurable SME growth outcomes.

Cash flow visibility has emerged as a critical component of effective cash flow management and SME sustainability. It refers to the ability of businesses to accurately monitor and understand cash inflows and outflows in real time. FinTech solutions, particularly mobile money services and digital financial management tools, have enhanced this capability by enabling SMEs to track transactions, monitor account balances, and generate financial records efficiently. In Kenya, mobile money services have significantly improved transaction convenience and financial inclusion among SMEs (Githaiga, 2024). Similarly, Lashitew et al. (2019) found that platforms such as M-Pesa facilitate efficient transaction processing and support better day-to-day cash flow management. These studies agree that digital financial platforms increase financial transparency and improve the ability of SMEs to make informed financial decisions. Nevertheless, differences emerge regarding the broader implications of enhanced cash flow visibility. While Githaiga (2024) highlighted the role of mobile money in promoting financial inclusion, Lashitew et al. (2019) focused on transaction efficiency and cash management effectiveness. Such differences indicate that cash flow visibility may influence SME performance through multiple pathways, including improved financial planning, reduced operational inefficiencies, and enhanced decision-making. However, existing studies largely examine adoption rates and financial inclusion outcomes, with limited investigation into whether improved cash flow visibility directly contributes to SME growth in terms of revenue generation, business expansion, or long-term sustainability. This represents a significant gap in the literature.

Real-time transaction tracking has also become a key feature of FinTech-enabled cash flow management. Allowing SMEs to monitor financial transactions in real time improves accountability, reduces payment delays, and supports timely financial decision-making. Slazus and Bick (2022) demonstrated that branchless mobile banking enhanced transaction speed, accessibility, and operational efficiency among businesses in South Africa. Similarly, Khorow (2023) found that mobile payment systems improved working capital management and liquidity among SMEs in Garissa County, Kenya. Both studies support the view that real-time transaction tracking strengthens financial control and enhances cash flow management. However, their findings differ in emphasis. Slazus and Bick (2022) primarily associate transaction tracking with operational efficiency and accessibility, while Khorow (2023) focuses on liquidity management and working capital improvements.

These differences suggest that the benefits of real-time transaction tracking may vary across contexts and business environments. Moreover, despite widespread agreement on its positive effects on financial management, there is limited empirical evidence examining whether real-time transaction tracking directly influences SME growth outcomes. Most existing studies focus on immediate financial benefits, such as reduced transaction costs and improved liquidity, rather than long-term growth indicators. As a result, further research was needed to establish whether enhanced transaction tracking contributes significantly to sustainable SME growth and to identify the mechanisms through which this relationship occurs.

Based on these insights, this study defines FinTech-led cash flow management as a multidimensional concept that includes liquidity for SMEs, cash flow visibility, and real-time transaction tracking. It also assesses how these factors influence SME growth. Therefore, the study is guided by the following null hypotheses: there is no significant relationship between liquidity for SMEs and SME growth in Kitui County; there is no significant relationship between cash flow visibility and SME growth in Kitui County; and there is no significant relationship between real-time transaction tracking and SME growth in Kitui County.

METHODOLOGY

Research Design

This study employed a quantitative correlational research design to assess the impact of FinTech-driven cash flow management on SME growth in Kitui County, Kenya. It concentrated on liquidity, cash flow visibility, and real-time transaction tracking as essential aspects of FinTech-led cash flow management. A correlational method was used in this study. Mainly, a correlational research method was used because it allowed the researcher to explore the nature and strength of the relationship between FinTech-led cash flow management and SME growth in Kitui County, Kenya, without any manipulation. Data were gathered through structured questionnaires distributed to SMEs in Kitui and Mwingi Towns, where digital financial services are increasingly prevalent. The analysis relied on descriptive and inferential statistics, including correlation, ANOVA, and multiple regression, to evaluate the effects of FinTech-enabled cash flow management on SME growth and performance.

Target Population

The study examined 4,732 registered SMEs located in Kitui Town and Mwingi Town, both in Kitui County. These SMEs had been in operation for at least three years across different sectors. The towns were selected because they have a high density of SMEs and are emerging as centres for FinTech-driven solutions for small businesses.

Table 1: Target Population of Registered SMEs by Nature of Operation

Nature of SMEs	Registered SMEs	Percentage
Retails shops	2,278	48.14
Wholesale shops	706	14.92
Bookshops	28	0.59
Barber shops	211	4.46
Hotels, bars, and restaurants	227	4.80
Carwash / mechanics	67	1.42
Guesthouses	145	3.06
M-Pesa agents	532	11.24
Hardware stores	117	2.47
Welding/ woodwork shops	421	8.90
Total	4,732	100.00

Source: Department of Revenue Management, County Government of Kitui (2025)

Table 1 shows that retail shops dominate SMEs in Kitui and Mwingi, with 2,278 enterprises (48.14%), likely due to low capital, demand, and ease of entry. Wholesale shops are second at 706 (14.92%), supporting local commerce. M-Pesa agents were 532 (11.24%), reflecting growth in digital transactions. Although M-Pesa agents primarily serve as intermediaries in the provision of FinTech services, the agents selected for this study were also engaged in various business activities, including the sale of phone accessories, stationery, computer and printer accessories, airtime, printing services, and repair services. Consequently, they were considered suitable respondents because, in addition to providing FinTech services, they operate as SMEs and utilise FinTech solutions to support their own business operations and cash flow management.

Welding and woodwork shops total 421 (8.90%), indicating the role of informal manufacturing. Hotels, bars, and restaurants are 227 (4.80%), barber shops 211 (4.46%), guesthouses 145 (3.06%), and hardware stores 117 (2.47%), supporting construction and accommodation. Carwashes/mechanics and bookshops are the smallest, at 67 (1.42%) and 28 (0.59%), respectively, due to lower demand and specialisation. Overall, the data indicate that SMEs in Kitui County are mainly concentrated in retail, wholesale, and mobile money services: key sectors linked to daily commercial and financial activities.

Sample Size and Sampling Technique

The sample size of the study was determined using Yamane's (1967) sample size determination formula at a 95 per cent confidence level and 5 per cent margin of error.

$$n = \frac{N}{1 + N(e)^2} = \frac{4{,}732}{1 + 4{,}732(0.05)^2} = 368.82 \approx 369$$

Where ***n*** = sample size, ***N*** = population size, and ***e*** (or 0.05) = precision level. Given that N = 4,732 registered SMEs.

The study used stratified random sampling to collect data from SMEs in different sectors. The population was divided into strata, and respondents were randomly selected within each stratum.

Table 2: Sample Size of Registered SMEs by Nature of Operation

Nature of SMEs	Target Population	Sample Size	Percentage
Retails shops	2,278	178	48.14
Wholesale shops	706	55	14.92
Bookshops	28	2	0.59
Barber shops	211	16	4.46
Hotels, bars, and restaurants	227	18	4.80
Carwash / mechanics	67	5	1.42
Guesthouses	145	11	3.06
M-Pesa agents	532	42	11.24
Hardware stores	117	9	2.47
Welding/ woodwork shops	421	33	8.90
Total	4,732	369	100.00

Source: Researcher (2025)

Data Type and Source

A structured and closed-ended questionnaire, with questions on SME liquidity, cash flow visibility, and real-time transaction tracking, key factors influencing FinTech-led SME cash flow management, was developed. Each questionnaire item was measured on a four-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (4), with no neutral midpoint included to encourage respondents to indicate a clear position on each statement. This forced-choice approach was deemed suitable because the study aimed to obtain clear perceptions of the constructs under study, given that owners of SMEs who participated in the study had substantial experience with FinTech-led solutions. Although individual Likert-scale responses are ordinal, each construct was measured with five items (question responses), which were combined and averaged to produce a composite score for each observation. The aggregation of multiple items is generally considered to approximate interval-level measurement, allowing the resulting scores to be treated as continuous variables for regression analysis. However, this approach remains subject to methodological debate and should be interpreted as a limitation of the study.

Before the eventual data collection using the questionnaire, a pilot study was conducted in Wote, Makueni County, to assess its validity and reliability. After validity tests (content validity, construct validity, face validity) and a reliability test (Cronbach's Alpha = 0.81 and greater than the recommended minimum of 0.70), the questionnaire was readjusted to improve its clarity, relevance, consistency, and ability to accurately measure the study variables before the final data collection process.

Data Analysis Methods

IBM Statistical Package for the Social Sciences version 27 (IBM SPSS 27) was used to analyse the collected data. It produced descriptive statistics for demographic features like age, gender, and education level of SMEs in Kitui County. Additionally, inferential statistics were generated to examine the relationships between liquidity, cash flow visibility, real-time transaction tracking, and SME growth in Kitui County.

$$Sales\ Margin\ (SME\ Growth) = \alpha + \beta_1 LiqCashF + \beta_2 VisCashF + \beta_3 RealTime + \varepsilon_i$$

Where;

$SMEGrowth$	SMEs' growth – measured by sales margin
$LiqCashF$	Liquidity for SMEs– measured using availability of working capital and ease of accessing cash for daily operations.
$VisCashF$	Cash flow visibility- measured the ability to monitor, forecast, and track cash inflows and outflows.
$RealTime$	Real-time transaction tracking– measured using the speed and accuracy of monitoring transactions as they occur.
α	Constant term
$\beta_1, \beta_2, \beta_3$	Coefficients of regression to be determined
ε_i	Error term – It is the SMEs' growth not explained by FinTech-led cash flow management.

Before collecting data, the researcher secured an authorisation letter and a research permit from NACOSTI. All respondents provided informed consent via a letter explaining the study's purpose and their right to withdraw at any time without consequences. To protect participants' confidentiality and anonymity, personal identifiers were not included in the study results. Furthermore, all data was stored securely and used only for academic purposes to safeguard respondents' privacy.

Response Rate

The study distributed 369 questionnaires to SME owners in the towns of Kitui and Mwingi. Table 3 shows the response rate.

Table 3: Response Rate

	Description	Frequency	Percentage (%)
General response rate	Sample Size of the Study	369	100.00
	Fully filled questionnaires	344	93.22
	Partially filled questionnaires	25	6.78
	Total	**369**	**100.00**
Response rate by SME category	Retails shops	163	47.4
	Wholesale shops	45	13.1
	Bookshops	2	0.6
	Barber shops	16	4.7
	Hotels, bars, and restaurants	17	4.9
	Carwash / mechanics	5	1.5
	Guesthouses	18	5.2
	M-Pesa agents	39	11.3
	Hardware stores	8	2.3
	Welding/ woodwork shops	31	9.0
	Total	**344**	**100.0**

Source: Research Data, 2026

Results shown in Table 3 indicate that of the 369 sampled SME owners, 344 completed the questionnaires fully, representing a response rate of 93.22 per cent. Additionally, 25 questionnaires (6.78%) were only partially completed. This high response rate suggests that the questionnaire was clear, relevant, and well-administered, which enhances the reliability and representativeness of the findings. As noted by Al Khalaf et al. (2022), response rates above 70 per cent are sufficient to reduce non-response bias. The retail shop category was the largest, with 163 respondents (47.4%), highlighting the prominence of retail trade in Kitui and

Mwingi towns. Wholesale shops accounted for 45 respondents (13.1%), while M-Pesa agents made up 39 respondents (11.3%), showing the increasing importance of digital financial services. Welding and woodwork shops had 31 respondents (9.0%), while smaller proportions were recorded in hospitality businesses, barber shops, hardware stores, carwash/mechanics, and bookshops.

Demographic Information

Table 4 presents the demographic profile of the 344 SME owners in Kitui County who participated in the study.

Table 4: Demographics of Owners of SMEs

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Female	138	40.1
	Male	206	59.9
	Total	**344**	**100.0**
Age	18 – 27 years	62	18.0
	28 – 37 years	93	27.1
	38 – 47 years	97	28.2
	48 – 57 years	51	14.8
	Above 57 years	41	11.9
	Total	**344**	**100.0**
Level of Education	Primary Education	73	21.2
	Secondary Education	117	34.0
	Tertiary Education	145	42.2
	Any Other (Specify)	9	2.6
	Total	**344**	**100.0**

Source: Research Data, 2026

Most participants were male (206, 59.9%), with females representing 138 respondents (40.1%), highlighting male dominance in SME ownership and management in Kitui County. This aligns with Ahmed et al.'s (2025) study, which noted that male entrepreneurs typically have better access to resources, networks, and business opportunities. Nevertheless, the significant number of female entrepreneurs shows increasing female engagement in business and supports gender-inclusive analysis of SME development and financial access. Most respondents were middle-aged, with 93 (27.1%) aged 28–37 years and 97 (28.2%) aged 38–47 years, indicating that the study mainly involved experienced, economically active entrepreneurs. This is in line with Khorow's (2023) study, which found that many SME owners in Kenya are in productive middle-aged groups. Younger respondents aged 18–27 years numbered 62 (18.0%), while older groups aged 48–57 years and above 57 years comprised (14.8% and 11.9%), respectively. Concerning education, most had tertiary education (145, 42.2%), followed by secondary education (117, 34.0%) and primary education (73, 21.2%), reflecting relatively high literacy levels and potential for FinTech adoption among SME owners.

Diagnostic Tests

Diagnostic tests for normality, linearity, homoscedasticity, multicollinearity, and autocorrelation were employed to validate the impact of FinTech-led cash flow management on SME growth.

Normality Test

Figure 1 displays a histogram of standardised regression residuals for the dependent variable, assessing data normality.

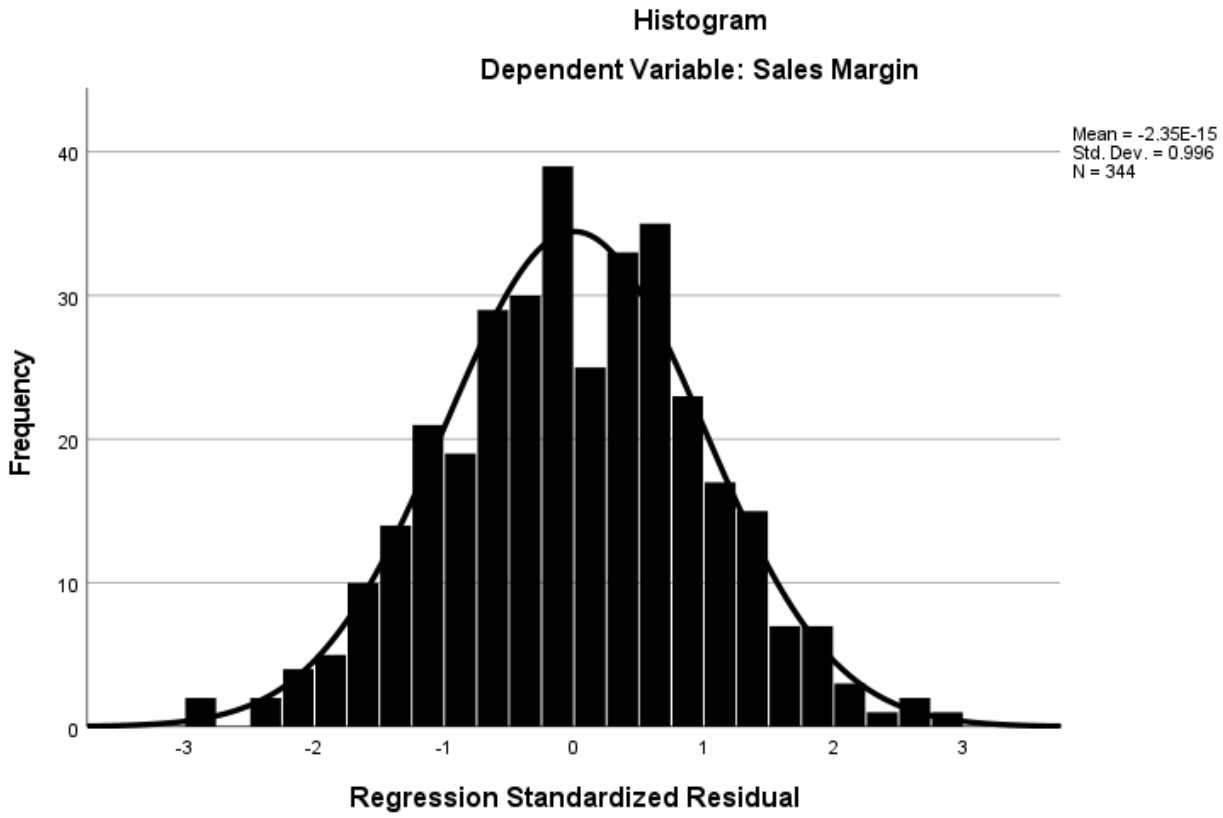


Figure 1: Histogram: Sales Margin

Source: Research Data, 2026

Figure 1 illustrates the distribution of standardised residuals for the average sales margin, used to evaluate normality. The distribution is bell-shaped, with most bars clustered around a mean near zero (Sales margin ≈ -2.35E-15) and symmetrically tapering off on both sides. With a standard deviation of 0.996, the sales margin aligns with a normal distribution assumption, as the residuals mainly fall between -3 and +3, showing no significant outliers or unusual peaks.

Linearity and Homoscedasticity Tests

Figure 2 presents scatterplots of standardised regression residuals plotted against standardised predicted values for the dependent variables, used to evaluate linearity and homoscedasticity.

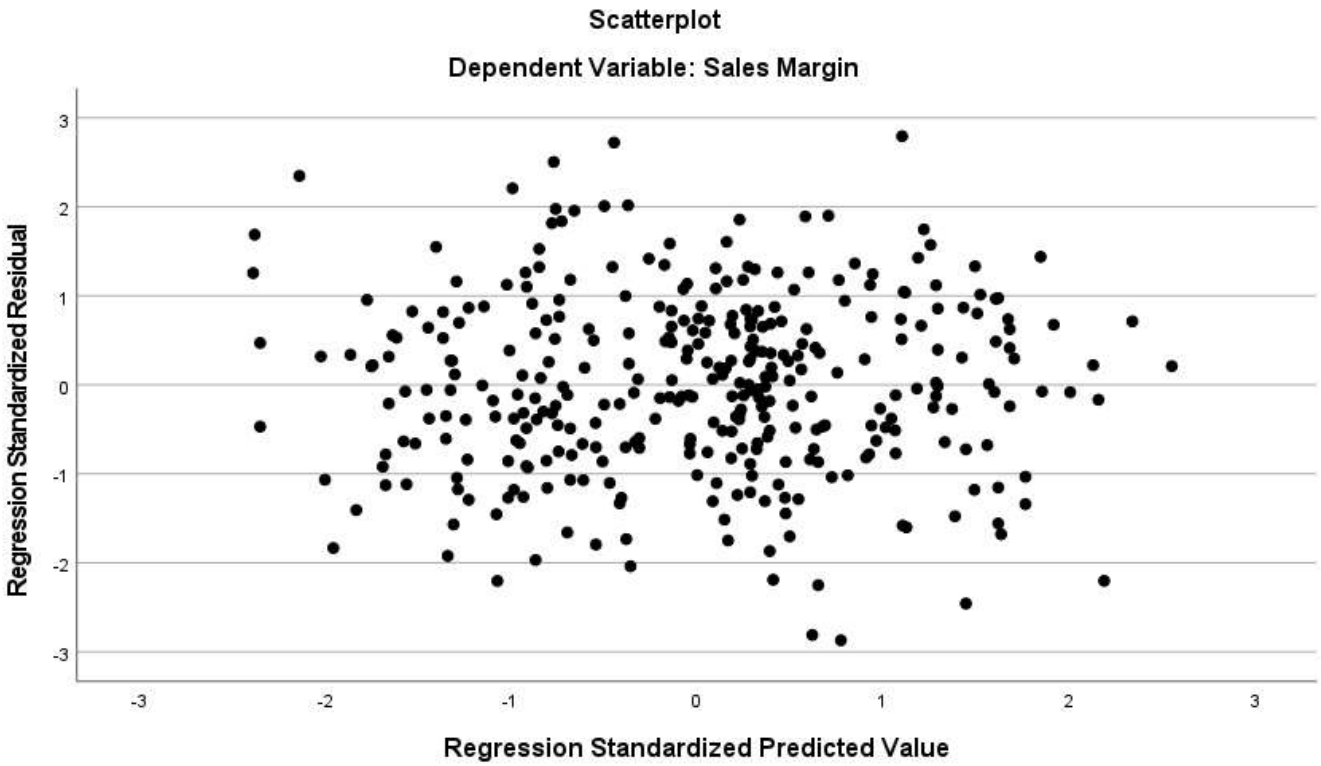


Figure 2: Scatterplot: Sales Margin

Source: Research Data, 2026

Figure 2 presents residuals scattered randomly around zero, with no discernible pattern, indicating linear relationships among variables. The residuals show a consistent spread across predicted values, demonstrating homoscedasticity, and most are within the range of -3 to +3, suggesting no major outliers. Overall, the scatterplot confirms that the assumptions of linearity and homoscedasticity are met, supporting the reliability of the model estimates.

Multicollinearity Tests

Table 8 shows the Variance Inflation Factor (VIF) used to assess the multicollinearity of the data on the sales margin model.

Table 5: Multicollinearity Tests

Model	Tolerance	VIF
(Constant)		
Liquidity for SMEs	0.991	1.009
Cash Flow Visibility	0.993	1.008
Real-Time Transaction Tracking	0.995	1.005

Source: Research Data, 2026

Table 5 indicates that Liquidity for SMEs, Cash Flow Visibility, and Real-Time Transaction Tracking had tolerance values of 0.991, 0.993, and 0.995, respectively, with corresponding Variance Inflation Factor (VIF) values of 1.009, 1.008, and 1.005. Tolerance values near 1 suggest minimal linear correlation among the independent variables, and VIF values close to 1 confirm the absence of multicollinearity. As Field (2024) stated, tolerance values above 0.1 and VIF values below 10 indicate that the regression models are free from multicollinearity. Hence, the results show that multicollinearity was not an issue in the regression model, indicating that each independent variable uniquely contributed to SME growth without overlapping.

Autocorrelation Tests

Table 6 shows the Durbin–Watson statistic used to assess autocorrelation of the residuals in the sales margin model.

Table 6: Autocorrelation Tests

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson
1	0.818[a]	0.669	0.666	13534.40478	2.159

Source: Research Data, 2026

a. Predictors: (Constant), Real-Time Transaction Tracking, Cash Flow Visibility, Liquidity for SMEs

b. Dependent Variable: Sales Margin

Table 6 presents a Durbin–Watson statistic of 2.159 for the sales margin model, slightly above the ideal value of 2, suggesting no significant autocorrelation in the residuals. According to Field (2024), values ranging between 1.5 and 2.5 are considered acceptable and suggest that the error terms are independent. Therefore, the regression model shows no signs of serial correlation, indicating that its estimates are dependable.

Undue Influence

Table 7 presents Cook's Distance, which is used to identify observations that may have unduly affected the regression results.

Table 7: Undue Influence

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	0.000	0.041	0.003	0.005	344

Source: Research Data, 2026

a. Dependent Variable: Sales Margin

Cook's Distance values ranged from 0.000 to 0.041, all below the recommended threshold of 1.0, indicating that no single observation had an excessive influence on the regression results. This confirms that the assumption of no undue influence was met. Furthermore, the standardised and studentised residuals remained within acceptable limits, suggesting no significant outliers. Overall, the regression results are stable and reliable, with little distortion from individual cases, which strengthens the validity of the study's conclusions on SME sales margin growth over the five-year period.

Correlations

Table 8 presents Pearson correlation analysis examining the relationships among the three independent variables: liquidity for SMEs, cash flow visibility, and real-time transaction tracking in FinTech-led cash flow management.

Table 8: Correlations of Independent Variables

		Liquidity for SMEs	Cash Flow Visibility	Real-Time Transaction Tracking
Liquidity for SMEs	Pearson Correlation	1.000	0.078	0.058
	Sig. (2-tailed)		0.151	0.283
Cash Flow Visibility	Pearson Correlation	0.078	1.000	0.042
	Sig. (2-tailed)	0.151		0.433
Real-Time Transaction Tracking	Pearson Correlation	0.058	0.042	1.000
	Sig. (2-tailed)	0.283	0.433	

Source: Research Data, 2026

Table 8 shows that the correlations among the independent variables are very weak, close to zero. Specifically, the correlation between liquidity for SMEs and cash flow visibility is r = 0.078 (p = 0.151), between liquidity for SMEs and real-time transaction tracking is r = 0.058 (p = 0.283), and between cash flow visibility and real-time transaction tracking is r = 0.042 (p = 0.433). These near-zero correlation coefficients suggest there are no meaningful linear relationships among the independent variables. All p-values exceed 0.05, indicating the correlations are not statistically significant. This suggests that liquidity for SMEs, cash flow visibility, and real-time transaction tracking capture different aspects of FinTech-led cash flow management. The lack of significant correlations also supports the earlier multicollinearity results, where VIF values ranged from 1.005 to 1.009, confirming no redundancy or overlap among predictors. Overall, this correlation analysis shows the variables are statistically independent, which strengthens the reliability and robustness of the regression model and allows for clear, accurate interpretation of each variable's effect on SME growth.

Regression Findings

A linear regression model was employed to evaluate the causal link between the dependent variable (sales margin) and independent variables (liquidity for SMEs, cash flow visibility, and real-time transaction tracking) in finTech-led cash flow management. The regression results comprise a model summary, ANOVA table, and regression coefficients.

Model Summary

Table 9 presents the results from a sales margin model estimating the effects of liquidity for SMEs, cash flow visibility, and real-time transaction tracking on SME growth through sales margin.

Table 9: Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	0.818[a]	0.669	0.666	13534.40478

Source: Research Data, 2026

a. Predictors: (Constant), Real-Time Transaction Tracking, Cash Flow Visibility, Liquidity for SMEs

b. Dependent Variable: Sales Margin

Table 9 results reveal a high correlation coefficient (R = 0.818), demonstrating a strong positive link between the independent variables (liquidity for SMEs, cash flow visibility, and real-time transaction tracking) and the dependent variable, sales margin. This indicates that enhancements in these areas are closely connected to improvements in SME sales performance in Kitui County. The substantial correlation suggests that better FinTech-driven cash flow management is associated with higher sales margins among SMEs.

The coefficient of determination ($R^2 = 0.669$) shows that the three predictors in the regression explain about 66.9 per cent of the variation in SME sales margin: liquidity for SMEs, cash flow visibility, and real-time transaction tracking. This highlights the model's strong explanatory power, suggesting it captures a significant portion of the factors affecting SME sales margin in Kitui County. The adjusted R^2 (0.666), being very close to R^2, indicates the model remains stable after accounting for the number of predictors. This similarity points to minimal overfitting and supports the model's reliability.

Furthermore, the standard error of estimate (13534.40478) reflects the average difference between observed sales margin values and those predicted by the model. Overall, the model summary shows that the regression is statistically reliable, fits the data well, and has strong explanatory capability. Consequently, liquidity for SMEs, cash flow visibility, and real-time transaction tracking are key factors influencing SME sales margins in Kitui County.

ANOVA

Table 10 shows the ANOVA results for the regression models evaluating how Liquidity for SMEs, Cash Flow Visibility, and Real-Time Transaction Tracking in FinTech-led cash flow management contribute to explaining SME growth through sales margin.

Table 10: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	125941672246.438	3	41980557415.479	229.176	0.000[b]
	Residual	62281238358.636	340	183180112.820		
	Total	188222910605.073	343			

Source: Research Data, 2026

a. Dependent Variable: Sales Margin

b. Predictors: (Constant), Real-Time Transaction Tracking, Cash Flow Visibility, Liquidity for SMEs

Regression results in Table 10 indicate that the overall sales margin model is statistically significant, with F = 229.176 and p < 0.001. This shows that the independent variables (liquidity for SMEs, cash flow visibility, and real-time transaction tracking) collectively have a significant impact on SME sales margins in Kitui County. The high F-value suggests that the model predicts sales margin better than a model without these predictors. Comparing the residual sum of squares (62,281,238,358.636) with the regression sum of squares (125,941,672,246.438) reveals that a large part of the variation in SME sales margin is explained by the model. This indicates that FinTech-driven cash flow management factors significantly influence SME sales performance. Overall, the ANOVA results demonstrate that the model is statistically significant, effectively fits the data, and explains the variability in SME sales margins in Kitui County.

Regression Coefficients

Table 11 shows the regression coefficients for models assessing how Liquidity for SMEs, Cash Flow Visibility, and Real-Time Transaction Tracking by FinTech-driven cash flow management influence sales margin as an indicator of SME growth.

Table 11: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	404114.754	8166.661		49.483	0.000
	Liquidity for SMEs	24343.206	1534.627	0.497	15.863	0.000
	Cash Flow Visibility	20947.191	1533.420	0.428	13.660	0.000
	Real-Time Transaction Tracking	20046.905	1531.389	0.409	13.091	0.000

Source: Research Data, 2026

a. Dependent Variable: Sales Margin

$$Sales\ Margin = 404114.754 + \beta_1 24343.206 + \beta_2 20947.191 + \beta_3 20046.905$$

The results from the sales margin model in Table 11 reveal that all three independent variables have positive and highly significant effects on SME sales margins (p < 0.001). Specifically, liquidity for SMEs (B = 24,343.206, β = 0.497, t = 15.863) plays a key role, as better access to liquidity significantly boosts sales margins, helping SMEs sustain operations and increase revenues. Cash flow visibility also exerts a positive, significant impact (B = 20,947.191, β = 0.428, t = 13.660), indicating that improved monitoring of cash inflows and outflows enhances financial planning and overall business performance. Additionally, real-time transaction tracking (B = 20,046.905, β = 0.409, t = 13.091) positively influences sales margins, suggesting that efficient transaction monitoring improves operational efficiency and financial outcomes for SMEs. Among these predictors, liquidity for SMEs has the strongest influence, as reflected by the highest standardised beta coefficient (β = 0.497). The intercept (B = 404,114.754, p < 0.001) indicates the baseline sales margin when all variables are held constant. Overall, the findings suggest that FinTech-driven cash flow management plays a significant role in enhancing SME sales performance in Kitui County.

FINDINGS AND DISCUSSION

Effect of Liquidity on SME Growth

The study found that liquidity benefits for SMEs significantly boost SME growth in Kitui County, leading to the rejection of H_{01}. Descriptive data showed that respondents strongly agree that FinTech solutions enhance access to short-term liquidity and meet immediate cash needs, highlighting that SMEs view digital financial systems as vital for operational continuity and financial stability. Inferential analysis confirmed that SME liquidity had the most substantial positive and statistically significant impact on sales margin ($\beta = 0.497$, $p < 0.001$). This suggests that better liquidity access helps SMEs cover operational costs, sustain working capital, and support expansion. These results align with earlier research indicating that FinTech-driven liquidity solutions improve SME resilience and efficiency. In their study, Karim et al. (2022) noted that FinTech platforms boost liquidity management and financial sustainability, while Migozzi et al. (2024) observed that digital financial ecosystems facilitate real-time liquidity access and growth opportunities for SMEs.

Effect of Cash Flow Visibility on SME Growth

The study found that cash flow visibility has a significant positive impact on SME growth in Kitui County, leading to the rejection of H_{02}. Participants generally agreed that FinTech tools offer clear insights into cash inflows and outflows, allowing SMEs to track transactions efficiently, predict financial requirements, and make better operational choices. Further analysis confirmed that cash flow visibility has a positive and statistically significant effect on sales margin ($\beta = 0.428$, $p < 0.001$). This indicates that enhanced financial visibility helps SMEs control expenses, minimise financial leakages, and improve business planning. These results align with existing research showing that digital financial systems boost enterprise efficiency and financial performance. Lashitew et al. (2019) noted that mobile money systems enable SMEs to better monitor cash flows, while Githaiga (2024) showed that digital platforms improve transaction convenience and financial management. Overall, FinTech-driven cash flow visibility enhances financial control and supports SME growth and sustainability.

Effect of Real-Time Transaction Tracking on SME Growth

The study found that real-time transaction tracking significantly benefits SME growth in Kitui County, leading to the rejection of H_{03}. Respondents strongly agreed that FinTech platforms facilitate instant transaction monitoring and improve financial decision-making, indicating that SMEs view real-time tracking as crucial for operational efficiency, accountability, and timely financial responses. Statistical analysis confirmed that real-time tracking positively and significantly impacts sales margins ($\beta = 0.409$, $p < 0.001$). This suggests that timely transaction monitoring enhances record accuracy, reduces delays, and improves financial coordination within SMEs. These results align with previous research showing that digital transaction systems boost SME financial management and operational efficiency. For example, Slazus and Bick's (2022) study found that mobile banking technologies accelerate transactions and increase accessibility, while Khorow's (2023) study showed that real-time mobile payment systems improve working capital and liquidity management among Kenyan SMEs.

CONCLUSION AND RECOMMENDATIONS

Conclusion: This research adds to the expanding body of knowledge on FinTech and SME development by exploring how FinTech-driven cash flow management impacts SME growth in Kitui County, Kenya. Unlike many prior studies that broadly addressed financial inclusion and mobile money use, this study specifically conceptualised FinTech-led cash flow management in terms of liquidity access for SMEs, cash flow transparency, and real-time transaction monitoring. Results showed that all three aspects significantly and positively influence SME growth, as measured by sales margin.

Respondents largely agreed on FinTech platforms' role in improving liquidity, increasing visibility of cash movements, and enabling real-time transaction oversight. Further analysis indicated that liquidity for SMEs was the most influential factor on sales margin, followed by cash flow visibility and real-time transaction tracking.

The findings suggest that efficient digital financial systems boost operational efficiency, promote accountability, enhance financial planning, and ensure business continuity for SMEs. Additionally, the study shows that FinTech-enabled cash flow management not only simplifies financial transactions but also boosts SMEs' financial resilience and sustainability in the long term. The regression model's strong explanatory power indicates that digital financial solutions are increasingly

critical factors in determining SME competitiveness and growth in Kitui County.

Recommendations: The findings carry significant policy implications. Policymakers and financial institutions ought to enhance digital infrastructure, expand internet access, and boost digital financial literacy for SMEs. Furthermore, FinTech companies should create affordable, intuitive, and transparent financial management tools designed specifically for SMEs in rural and semi-urban regions. Future research could explore the long-term impacts of FinTech adoption and consider moderating factors like financial literacy and institutional backing.

Conflict of Interest Statement

The authors declare no conflict of interest concerning this publication. There were no personal, professional, or financial relationships that influenced the research, authorship, or publication process. Additionally, no funding agency influenced the study design, data collection, analysis, or manuscript preparation.

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