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Influence of Digital Loan Repayments on Loan Performance of Microfinance Banks in Kenya

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Abstract

Microfinance banks promote financial inclusion by serving underserved populations but face challenges of poor loan performance, with NPL ratios reaching 32.9% as of June 30, 2023, compared to 14.5% for commercial banks. To address this issue, they are increasingly adopting digital innovations such as digital loan repayments. The objective of the research was to examine the influence of digital loan repayments on the loan performance of microfinance banks in Kenya. The research adopted an ex post facto design and a pragmatist research philosophy. The target population was 348 loan officers from all 13 licensed microfinance banks in Kenya. Proportionate stratified sampling was used to select the sample from the target population. The study utilized both secondary and primary data. A semi-structured questionnaire was used to collect primary data. Thematic analysis was employed for analyzing qualitative data. Inferential and descriptive statistics were used to analyze quantitative data using SPSS version 28. Descriptive statistics included the mean and standard deviation. Inferential statistics involved logistic regression and the Pearson correlation coefficient. The findings indicated that digital loan repayments had a statistically significant impact on loan performance among Kenyan microfinance banks. The study recommends that microfinance banks expand digital repayment options by integrating mobile money, internet banking, and agency networks, along with borrower awareness programs to encourage their use. Regulators should promote efficient and accessible systems with multiple channels to improve repayment rates, lower costs, and reduce defaults.

Keywords: *Digital loans, Repayments, Loan performance, Microfinance, Penalties, Notifications*

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1.0 Introduction

Microfinance banks (MFBs) play a vital role in providing financial services to small businesses and individuals who often lack access to traditional banking systems. Despite their importance in promoting financial inclusion, MFBs have faced declining performance, characterized by challenges in loan repayment and management (Vakkapatla, 2024). Loan performance is measured by indicators such as the non-performing loan ratio, loan turnover ratio, net interest margin, delinquency rate, and Portfolio at Risk (PAR). Globally, during the COVID-19 pandemic, non-performing loans (NPLs) increased as microfinance banks serving low-income populations were affected by economic instability. The World Bank (2021) reported that the global MFI NPL ratio rose from 8.5% in 2010 to 12.2% in 2020. In Myanmar, NPLs jumped from 9.6% in December 2020 to 28% by June 2022. In Uganda, Tier 2 and Tier 3 institutions experienced a 9% annual increase in NPLs from 2016 to 2023, compared to 2% for commercial banks (Bank of Uganda, 2022). Over the past decade, in response to poor loan performance, microfinance institutions have integrated technology into their financial services, streamlining loan applications and approvals, enabling faster decision-making (Menza, 2024).

Digital loan repayments have become essential for improving loan performance in microfinance institutions worldwide, regionally, and locally. Vakkapatla (2024) notes that combining efficient disbursement with seamless repayment options boosts operational efficiency, lowers transaction costs, and enhances loan outcomes across microfinance organizations. In countries such as India and Bangladesh, digital repayment systems streamline payment processes and reduce transaction times, thereby improving loan portfolio quality (Vakkapatla, 2024). In Africa, especially in Tanzania, automated reminders and monitoring tools help ensure timely payments, thereby reducing default rates. In Kenya, the rapid growth of mobile money platforms such as Mpesa and the integration of online repayment channels into lending systems have revolutionized loan servicing by enabling real-time payments, automated reminders, and improved transaction tracking. These digital repayment solutions have reduced transaction costs and lowered default risk, especially among rural borrowers, thereby strengthening repayment performance and lowering non-performing loan levels in the Kenyan microfinance sector (Chege & Njeru, 2025). However, despite these advantages, limited empirical research exists on the direct relationship between digital loan repayments and loan performance in Kenyan microfinance banks, which this study aims to explore.

Problem Statement

Microfinance banks promote financial inclusion by serving small businesses and low-income customers, relying heavily on deposits and lending to high-risk borrowers without collateral. This approach increases default risk, as repayment difficulties and limited options in the event of default increase the likelihood of non-performing loans (Menza et al., 2024). Loan performance at microfinance banks has faced significant pressure; recent data underscores the seriousness of the issue. The Kenya Microfinance Industry Report (2023) shows that while industry performance remained strong in the financial year 2022 and the first half of 2023, an increase in repayment defaults due to multiple macroeconomic shocks

led to higher non-performing loans (NPLs). As of June 30, 2023, the expected non-performing loan (NPL) ratios for microfinance banks were 32.9%, for credit-only microfinance institutions 11.6%, and for wholesale microfinance institutions 6.2%. In contrast, the ratio of gross NLPs to gross loans held by commercial banks was 14.5% at the end of the third quarter of 2023 (Central Bank of Kenya [CBK], 2023). This demonstrates the unique challenges these microfinance banks face in serving low-income borrowers, who may be more vulnerable to financial instability and economic hardship. Little is known about digital loan repayments and loan performance among Kenyan MFIs. Therefore, this research examines the influence of digital loan repayments on loan performance among Kenyan MFBs.

The study tested the following null hypothesis:

H_{01}: Digital loan repayments have no statistically significant influence on the loan performance of microfinance banks in Kenya

Theoretical Review

The technology acceptance model (TAM) was introduced by Davis in 1989. This model helps understand the factors that influence users' decisions to adopt and use new technologies (Vakkapatla, 2024). The Technology Acceptance Model (TAM) posits that a person's intention to use a technology is primarily determined by perceived ease of use and usefulness, which together influence actual adoption. TAM has been used to explain how digital loan repayments affect loan performance in microfinance banks in Kenya. As microfinance banks adopt digital platforms for loan repayments, the perceived ease of use becomes crucial for both borrowers and loan officers. If the digital repayment system is simple and easy to understand, borrowers are more likely to engage with it regularly, leading to on-time repayments. This ease of use can enhance user experience and satisfaction, resulting in higher repayment rates and better loan performance. When borrowers see that digital repayments save them time and effort compared to traditional methods, they are more likely to use the system, which improves overall loan performance (Elizabeth, 2020).

"This study shows that digital loan repayments play a key role in improving loan performance in the microfinance sector"

Empirical Review

Digital Loan Repayments and Loan Performance

Vala et al. (2022) examined the effect of digitalization on loan repayment in India, highlighting the shift from traditional methods to flexible, accessible, and customer-focused digital systems. Using qualitative methods, the study found that convenience, faster transactions, and 24/7 accessibility motivate borrowers to adopt digital channels, leading to higher repayment rates, lower collection costs, and stronger borrower engagement. In Nairobi City County, Kenya, Elizabeth (2020) found that digital loan repayment significantly influenced loan performance, improving loan servicing efficiency and financial outcomes for both institutions and borrowers. Digital platforms such as mobile money and online banking enhance transparency, reduce transaction times, minimize administrative bottlenecks, and lower operational costs. Chege

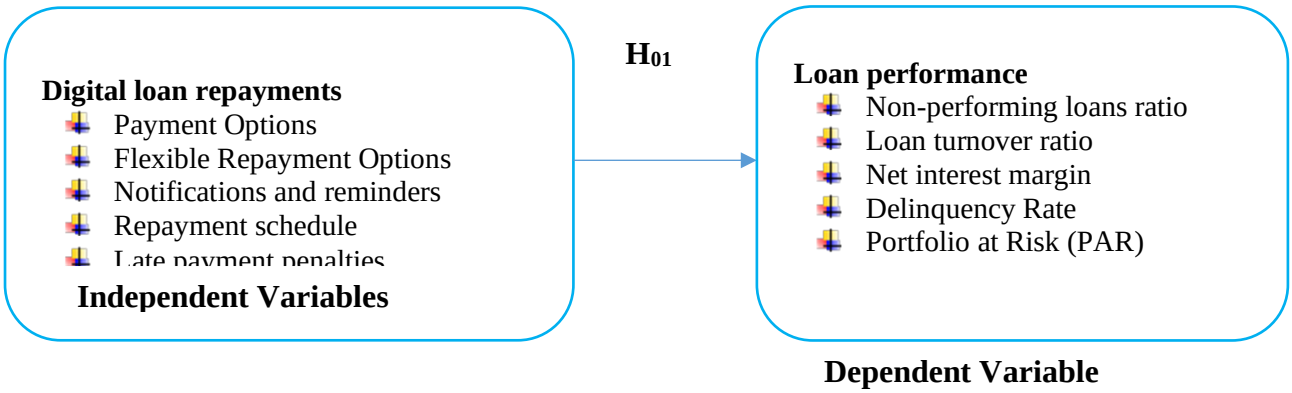
and Njeru (2025) assessed electronic loan repayment systems in Kenyan MFIs using a mixed-methods research design, including surveys and interviews. Their findings showed significant improvements in repayment timelines, reduced manual errors, and increased borrower compliance, driven by convenience and flexibility.

Conceptual Framework

Figure 2.1 shows the relationship between the predictor study variable (digital loan repayments) and the response variable (loan performance).

Figure 1

Conceptual framework



2.0 Materials and Methods

The pragmatist research philosophy was employed in this study because it enabled the use of both qualitative and quantitative methods. Ex post facto study, or after-the-fact research, was selected as the research design. The unit of analysis included all 13 MFBs in Kenya that have been operational for the past five years, as reported by the Central Bank of Kenya (CBK, 2023). The unit of observation was loan officers within these 13 Kenyan MFBs. The target population consisted of 348 loan officers across 116 branches of the microfinance banks. Proportionate stratified random sampling was used to determine the sample size. The strata for this research were the 13 Kenyan MFBs. The sample size was calculated using Slovin's formula.

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

Where: n = number of samples; N = total population; and e = margin of error (0.05). The 5% margin of error (e = 0.05) is used because it is a common standard in social science research, offering a good balance between accuracy and practicality. A 5% error margin corresponds to a 95% confidence level, meaning the sample estimates are expected to be within ±5% of the true population value, while also keeping the sample size manageable in terms of time and cost.

$$n = \frac{348}{1 + (348 * (0.05^2))}$$

$$n = 186.7$$

Table 1

Sample size distribution

Microfinance Bank	Loan Officers	Sample Size (n=187)
Caritas Microfinance Bank	21	11
Choice Microfinance Bank	3	2
Salaam Microfinance Bank	3	2
U&I Microfinance Bank	3	2
Sumac Microfinance Bank	21	11
SMEP Microfinance Bank	21	11
Lolc Kenya Microfinance	6	3
Rafiki Microfinance Bank	51	27
Kenya Women Microfinance Bank	93	50
Faulu Microfinance Bank	117	63
Daraja Microfinance Bank	3	2
Muungano Microfinance Bank	3	2
Maisha Microfinance Bank	3	2
Total	**348**	**187**

Both secondary and primary data were employed in this research. Primary data was collected using semi-structured questionnaires. Secondary data was obtained from yearly bank supervision reports published by the Central Bank of Kenya. A pretest was conducted at Branch Microfinance Bank, and the results showed that the research instrument was both valid and reliable. All constructs demonstrated strong reliability, with Cronbach's alpha values above 0.7, indicating high internal consistency. Validity was confirmed through expert review and statistical tests (AVE> 0.5, high KMO values, and a significant Bartlett's test), demonstrating that the instrument was appropriate and suitable for analysis.

Thematic analysis was used to analyze qualitative data, while descriptive and inferential statistics were employed to analyze quantitative data using SPSS version 28. Descriptive statistics included the mean, standard deviation, percentages, and frequencies. Inferential statistics involved Pearson correlation and binary logistic regression. Before conducting logistic regression, diagnostic tests were performed to check regression assumptions. These tests included multi-collinearity, goodness-of-fit, and the likelihood-ratio test. Loan performance was categorized as either "performing" or "non-performing". The study used logistic regression because the dependent variable, loan performance, was modeled as a binary outcome (e.g., performing versus non-performing). Unlike multiple linear regression, logistic regression is suitable when the dependent variable is categorical, as it estimates the probability of an event occurring using the log-odds transformation. The model was presented as follows:

$$Log\left(\frac{P(Loan\ Performance)}{1-P(Loan\ Performance)}\right) = \beta_0 + \beta_1 DLR + \varepsilon$$

Whereby; $Log\left(\frac{P(Loan\ Performance)}{1-P(Loan\ Performance)}\right)$= the natural log of the odds of loan performance (whether a loan is performing = 1 or not performing = 0); LP = Loan performance; B_0 = Constant; β_1 =Coefficients of determination; DLR = Digital loan repayments; ε = Error term

3.0 Results and Discussion

The sample size for this study included 187 loan officers from 13 microfinance banks in Kenya. The study achieved a notable response rate of 97.33%, reflecting high participation and strong engagement from the respondents. According to Latwal (2020), a 50% response rate is considered adequate for analysis.

Descriptive Analysis of the Study Variables

Digital Loan Repayments

Table 2 shows that respondents acknowledge their institutions offer multiple payment options (mean = 4.033), which improves customer experience (mean = 3.989) and allows clients to choose repayment methods that fit their financial situations (mean = 4.082). This suggests that flexible repayment channels could enhance loan performance.

Table 2

Payment Options

Statements	N	Mean	Std. Deviation
Our institution provides multiple payment options to accommodate different client preferences.	182	4.033	.771
We believe that offering a diverse range of payment methods enhances the overall customer experience.	182	3.989	.712
Our team actively encourages clients to choose the payment option that best suits their financial situation.	182	4.082	.840

Table 3 indicates that respondents strongly agree that flexible repayment options reduce client financial stress (mean = 4.126), that customizing repayment plans to borrowers' needs increases suitability (mean = 4.153), and that schedule adjustments further improve loan performance (mean = 4.197), emphasizing the positive effect of adaptive repayment strategies.

Table 3

Flexible Repayment Options

Statements	N	Mean	Std. Deviation
We understand that flexible repayment options can significantly alleviate financial stress for our clients.	182	4.126	.779
Our institution aims to tailor repayment plans to meet each borrower's unique needs.	182	4.153	.819
We believe that allowing clients to adjust their repayment schedules promotes better loan performance.	182	4.197	.716

Table 4 demonstrates strong agreement that institutions use notifications and reminders to inform clients of payment dates (mean = 4.153), that proactive communication helps reduce missed payments (mean = 4.170) and that regular assessments ensure the effectiveness of the notification system (mean = 4.126), highlighting the importance of timely communication in supporting loan repayment.

Table 4

Notifications and reminders

Statements	N	Mean	Std. Deviation
We utilize notifications and reminders to keep our clients informed about upcoming payment dates.	182	4.153	.742
Our team believes that proactive communication reduces the likelihood of missed payments.	182	4.170	.734
We regularly assess the effectiveness of our notification system to ensure it meets client needs.	182	4.126	.736

Table 5 indicates that respondents agree repayment schedules are clear and easy to understand (mean = 4.082), align with clients' cash flow patterns (mean = 4.137), and are periodically reviewed to stay relevant and manageable (mean = 4.120). This emphasizes how well-structured schedules support effective loan repayment.

Table 5

Repayment schedule

Statements	N	Mean	Std. Deviation
Our repayment schedules are designed to be clear and easy to understand for our clients.	182	4.082	.734
We consider it essential to align repayment schedules with our clients' cash flow patterns.	182	4.137	.805
Our institution reviews repayment schedules periodically to ensure they remain relevant and manageable.	182	4.120	.791

Table 6 shows strong agreement that institutions clearly communicate late-payment penalties (mean = 4.148), that enforcement promotes timely repayment (mean = 4.164), and that regular assessments keep penalties fair and effective (mean = 4.126), demonstrating that transparent, monitored penalty systems support loan compliance.

Table 6

Late payment penalties

Statements	N	Mean	Std. Deviation
We clearly communicate our late payment penalties to all clients to maintain transparency.	182	4.148	.724
Our institution believes that imposing late-payment penalties encourages timely repayments.	182	4.164	.739
We assess the impact of late-payment penalties on borrowers' behavior to ensure they are fair and effective.	182	4.126	.772

The participants were asked to comment on any other issues related to digital loan repayments and the loan performance of microfinance banks (MFBs) in Kenya. A significant concern raised was that many borrowers, particularly in rural areas, struggle with digital platforms due to limited digital literacy. Respondents noted that clients often encounter difficulties with mobile payment platforms, including errors such as using the wrong paybill number or failing to follow the correct payment procedures. One respondent noted that, Many clients, especially in rural areas, are unfamiliar with digital platforms.

Loan Performance (LP)

Table 7 shows that respondents agree their institutions monitor non-performing loan (NPL) ratios to maintain financial health (mean = 3.879), somewhat agree that low NPL ratios indicate effective lending (mean = 3.637), and implement strategies to reduce NPLs (mean = 3.752), highlighting the importance of NPL monitoring in maintaining institutional performance.

Table 7

Non-Performing Loans Ratio

Statements	Mean	Std. Deviation
Our institution actively monitors the non-performing loans ratio to ensure financial stability.	3.879	.938
We believe that a low non-performing loans ratio reflects our effective lending practices.	3.637	.997
Our team regularly implements strategies to reduce the non-performing loans ratio.	3.752	.980

Table 8 indicates that respondents agree that their institutions monitor the loan turnover ratio to evaluate lending efficiency (mean = 3.708), consider high ratios as signs of attracting and retaining borrowers (mean = 3.791), and use this metric to identify opportunities to improve service delivery (mean = 3.807). This highlights the importance of turnover analysis in boosting operational performance.

Table 8

Loan Turnover Ratio

Statements	Mean	Std. Deviation
We track the loan turnover ratio to assess our lending efficiency.	3.708	.933
A high loan turnover ratio indicates our ability to attract and retain borrowers effectively.	3.791	.922
Our institution uses the loan turnover ratio to identify areas for service delivery improvement.	3.807	.975

Table 9 indicates that respondents agree their institutions analyze the net interest margin to evaluate profitability (mean = 3.648), consider a healthy margin a sign of effective interest management (mean = 3.791) and aim to improve it through competitive pricing strategies (mean = 3.731), demonstrating how interest margin analysis supports financial performance.

Table 9

Net Interest Margin

Statements	Mean	Std. Deviation
We closely analyze the net interest margin to evaluate our profitability from lending activities.	3.648	1.012
A healthy net interest margin indicates our effective management of interest income and expenses.	3.791	1.013
Our institution consistently seeks ways to improve the net interest margin through competitive pricing.	3.731	.968

Table 10 shows that respondents agree their institutions work to keep delinquency rates below industry standards (mean = 3.753), view low rates as evidence of effective client

engagement and repayment strategies (mean = 3.675) and regularly review rates to refine credit policies (mean = 3.785), emphasizing the importance of monitoring delinquency to maintain credit quality.

Table 10

Delinquency Rate

Statements	Mean	Std. Deviation
We actively work to keep our delinquency rate below industry standards.	3.753	1.050
A low delinquency rate signifies our successful client engagement and repayment strategies.	3.675	1.002
Our institution regularly reviews delinquency rates to refine our credit policies and procedures.	3.785	.942

Table 11 indicates that respondents agree their institutions use the PAR metric to evaluate loan portfolio quality (average = 3.714), consider low PAR a sign of effective risk management (average = 3.714), and regularly analyze it to inform lending decisions (average = 3.719), emphasizing the importance of PAR monitoring in supporting sound credit management

Table 11

Portfolio at Risk (PAR)

Statements	Mean	Std. Deviation
We use the portfolio-at-risk metric to assess the overall quality of our loan portfolio.	3.714	.955
A low PAR indicates that our risk management strategies are effective in mitigating potential losses.	3.714	.978
Our institution routinely analyzes the PAR to inform lending decisions.	3.719	.988

Correlation Analysis

From the correlation analysis results shown in Table 12, digital loan repayments are strongly positively correlated with loan performance (r = 0.712, p = 0.000). The findings align with previous studies by Alief and Astute (2024) who, argue that increased reliance on digital loan repayments improves repayment consistency by providing clients with convenient, timely payment options.

Table 12

Correlation Analysis Results

		Loan Performance	Digital Loan Repayments
Loan Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	182	
Digital Loan Repayments	Pearson Correlation	.712**	1
	Sig. (2-tailed)	.000	
	N	182	

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

Hypothesis Testing

H_{01}: Digital loan repayments have no statistically significant influence on the loan performance of microfinance banks in Kenya

Table 13 shows that digital loan repayments significantly contribute to the variability in loan performance. The values 0.337 and 0.455 indicate that digital loan repayments explain between 33.7% and 45.5% of the variations in loan performance, demonstrating a moderate but meaningful influence on microfinance banks in Kenya.

Table 13

Model Summary for Digital Loan Repayments and Loan Performance

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	170.431[a]	.337	.455

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

The regression results in Table 14 below show that digital loan repayments have a statistically significant effect on loan performance. The coefficient (B) was 4.800, with a Wald statistic of 27.745 and a p-value of 0.000, indicating strong statistical significance. Based on these results, the null hypothesis (H01) was rejected at the 0.05 significance level, confirming that digital loan repayments have a statistically significant influence on the loan performance of microfinance banks in Kenya. The results align with Alief and Astute's (2024) argument that digital repayment platforms simplify loan servicing, reduce transaction costs, and improve repayment consistency, thereby enhancing loan performance.

Table 14

Coefficients for Digital Loan Repayments and Loan Performance

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Digital Loan Repayments	4.800	.911	27.745	1	.000	121.522
	Constant	-19.557	3.800	26.482	1	.000	.000

a. Variable(s) entered on step 1: Digital Loan Repayments

4.0 Conclusion

In conclusion, this study shows that digital loan repayments play a key role in improving loan performance in the microfinance sector. Digital repayment platforms, especially mobile money services, provide borrowers with convenience, accessibility, and efficiency, which help ensure timely repayments and reduce operational delays. The use of these technologies has made it easier for clients, particularly in remote or underserved areas, to meet their repayment obligations.

5.0 Recommendations

Recommendations from this study suggest that microfinance banks should expand their digital loan repayment options to enhance loan performance. They ought to also run borrower awareness programs to educate clients on how to use digital repayment tools. By making digital repayment methods easier and encouraging their use, microfinance banks can boost repayment rates, lower operational costs, and reduce loan delinquency.

Regulators should promote microfinance banks to adopt user-friendly digital repayment platforms that support various payment options, ensuring convenience, prompt collections, and lower default rates.

Further Research

Since this study was limited to microfinance banks in Kenya, future research should examine the same variables across other financial institutions, such as commercial

banks, SACCOs, and fintech companies, to offer comparative insights on how digital loan repayments influence loan performance in different settings. Further studies could also explore the long-term impacts of digital loan repayments on loan sustainability and borrower welfare.

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