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**Financial Inclusion Strategies and Profitability of Microfinance Banks in Nairobi City
County, Kenya**

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Abstract

Purpose: The study examined the effect of financial inclusion strategies on the profitability of microfinance banks (MFBs) in Nairobi City County, Kenya. Specifically, it analyzed how digital financial services, group lending models, and financial literacy programs influence profitability among licensed microfinance banks.

Methodology: The research design used was explanatory with a focus on 168 management staff members chosen randomly from finance, credit, and operation departments in 14 licensed microfinance banks in Nairobi City County. A census method was used to involve all institutions. Data was collected using structured questionnaires alongside secondary data derived from financial statements between 2016-2024. The data was validated to ensure reliability using the Cronbach alpha statistic ($\alpha = 0.872$), which exceeded 0.7. Data analysis was performed using STATA version 16. Secondary data derived from financial statements was used to validate results obtained.

Findings: The analysis showed that all three financial inclusion strategies, that is, digital financial services, group lending model, and financial literacy program, positively influenced the profitability of microfinance banks in Nairobi City County. The results showed a high positive association between financial inclusion strategies and profitability. The digital financial services recorded a high association ($r = 0.712$, $p < 0.001$), compared to the group lending approach ($r = 0.648$, $p < 0.001$), which was higher compared to financial literacy education ($r = 0.603$, $p < 0.001$). The regression analysis results verified that both had a joint positive influence on increasing profitability, while determining digital financial services to be highly influential ($\beta = 0.328$, $p < 0.01$). The overall model was significant ($R^2 = 0.691$, $F(3.164) = 47.08$, $p < 0.001$), signifying that financial inclusion strategies accounted for 69.1 percent variation in determining profitability.

Unique Contribution to Theory, Practice, and Policy: The study's contribution to the Resource-Based View theory rests on its ability to demonstrate that financial inclusion strategies serve as internal resources or organizational capacities that enhance profitability when well-aligned with institutional structures. In a practical sense, for example, access to online financial services mitigates business expenditures and extends outreach to clients, whereas group loans and financial skills development raise borrowers' repayment capacities. These findings can inform regulators in creating an enabling environment that enhances inclusion-related profitability in microfinance banks in Kenya.

Keywords: Financial Inclusion, Profitability, Digital Financial Services, Group Lending Models, Financial Literacy

JEL Codes: O16, G21, E44, I25, D14, G20

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INTRODUCTION

The Microfinance Banks (MFBs), due to this drastic innovation, are now an important tool that supports the attainment of financial inclusion to a great extent. These banks cater to extending basic financial services like loans, savings, and insurance to those sectors that are predominantly less accessible to banking services (Soofia, 2024). Although the prime aim behind establishing these banks actually revolves around supporting financial inclusion in terms of empowerment, building profitability, or financial sustainability to measure their efficacy in the long run to become an efficient tool for financial empowerment seems to become a crucial task for these banks. In other words, building profitability shows not only positive outcomes but also examines areas related to those banks' effectiveness or ineffectiveness in converting outreach into profit. Building profitability or return evaluates areas related to earning profit using its assets. Higher profitability derives from efficient operation along with proficient use of resources.

Globally, the success story about Grameen Bank in Bangladesh, or similar efforts launched in India and Pakistan, suggests that to reap both benefits, socially transformative as well as profit-oriented, of microfinance, technology, together with efficient finance management can prove to be highly effective (Yunus, 2017; Swamy, 2018). The success stories tend to describe how, using efficient methods to manage inclusive finance, there would not only be improvements in efficiency with lower transaction costs, but new sources of income would also be created, along with expanding the base of more customers that would ultimately improve profitability.

In Africa specifically, the MFBs are highly responsible for filling the gaps arising from a high level of exclusion. In Ghana, Awuah & Addaney (2016) pointed out that credit access made possible by MFBs promotes credit access for poor groups in society and women in particular, but profitability suffers due to setbacks arising from little capital, high cost, and poor financial literacy. The importance of the topic derives from its revelation about a lack of efficiency in the inclusivity agenda due to sustainability losses. In a similar study that assessed the influence of inclusivity in fintech for Sub-Saharan Africa, Banna, Mia, Nourani, & Yarovaya (2022) observed that both cost efficiency and access improved due to the increased availability of services provided in real-time automatically. However, according to them, inclusivity in finance needs to become more efficiency-focused through innovation and finance's structural approach to efficiency.

In Kenya, MFBs are major contributors to small business development. Although these entities have registered significant successes, there was volatility in sector performance. From 2016 to 2024, total assets reduced from KSh 72.5 billion to KSh 57.9 billion, whereas ROA depreciated from -3.72% to -6.1% (CBK, 2024). The fact that there has been a continuous decline in these indicators suggests that improvements in asset expansion or outreach expansion did not result in profit expansion.

In light of these challenges, various financial inclusion strategies like digital financial services, group lending techniques, and financial literacy training are used by MFBs to improve operational efficiency characteristics, improve repayment culture, and improve outreach sustainability. These financial inclusion strategies are aimed at lowering transaction costs using technology, improving loan portfolio quality using joint responsibility for repayment, and improving repayment capacities using credit education. However, despite its common implementation across participating MFBs, analysis into its specific financial consequences

within the dynamic microfinance sector in Kenya to date remains largely underexplored in Nairobi City County.

This study investigated the extent to which financial inclusion strategies, specifically digital financial services, group lending mechanisms, and financial literacy programs, affect the profitability of MFBs in Nairobi City County, Kenya. By linking financial inclusion to operational efficiency and ultimately to profitability, the study emphasized inclusion not just as a social imperative but as a strategic driver of financial sustainability.

Statement of the Problem

Microfinance Banks (MFBs) in Kenya continue to expand their outreach, yet profitability remains a persistent concern. According to the Central Bank of Kenya (2023), over 30% of MFBs in Nairobi County report sustained losses, with the sector's average return on assets (ROA) at 1.5%, below the 3% threshold considered financially sustainable. Between 2016 and 2023, total assets declined by 8.84%, while net income dropped from a loss of KSh 377 million to KSh 2.39 billion. These figures indicate that growth in outreach has not translated into profitability, reflecting inefficiencies in cost control, asset utilization, and credit risk management.

This performance paradox suggests that while MFBs have successfully deepened financial inclusion, they struggle to convert inclusion into sustainable financial outcomes. The contradiction lies in achieving social outreach without corresponding operational efficiency or profitability, raising questions about whether current inclusion models enhance or hinder institutional sustainability.

Previous studies have primarily examined internal operational factors such as liquidity (Aluodo & Musau, 2024), credit risk (Kosasia & Njeru, 2023), portfolio diversification (Nyabiba & Kimani, 2023), and firm characteristics (Ouma, 2024). While these works advanced understanding of MFB performance, they largely overlooked how inclusion-oriented strategies, such as digital financial services, group lending, and financial literacy programs, affect profitability through efficiency gains.

Therefore, despite the expansion of financial inclusion initiatives, empirical evidence remains limited on whether these strategies improve operational efficiency and profitability in the Kenyan microfinance context. This study seeks to bridge this gap by examining how digital financial services, group lending models, and financial literacy programs influence the profitability of MFBs in Nairobi City County.

LITERATURE REVIEW

This section involves relevant literature and theories related to the study's objectives, focusing on how financial inclusion strategies affect MFB profitability and the conceptual framework.

Theoretical Framework

To establish a solid foundation for examining the relationship between financial inclusion strategies and the profitability of MFBs, this study was anchored on four complementary theories, namely, financial intermediation theory, group lending model, financial literacy theory, and profit maximization theory. Collectively, these frameworks explain how inclusion strategies, that is, digital financial services, group lending, and financial literacy programs, translate into operational efficiency and ultimately improved profitability, measured through Return on Assets (ROA).

Proposed by Gurley and Shaw (1960) and later refined by Diamond (1984), the financial intermediation theory posits that financial institutions act as intermediaries between savers and borrowers by pooling risks, lowering transaction costs, and mitigating information asymmetry. In the context of Nairobi's MFBs, this theory explains how digital financial services enhance intermediation efficiency. By automating transactions, reducing manual errors, and broadening outreach through mobile and agency banking, MFBs minimize operational costs and improve turnaround time. These efficiency gains increase the volume of transactions relative to total assets, thereby raising ROA, the key profitability indicator in this study.

The group lending model, developed by Muhammad Yunus in the 1970s through the Grameen Bank initiative, is based on joint liability and peer monitoring, where group members collectively guarantee one another's loans. In the Nairobi MFB context, this model explains how collective responsibility mechanisms reduce credit risk and loan defaults, leading to a healthier loan portfolio. Improved repayment performance directly reduces loan loss provisions and administrative costs, both of which positively impact profitability as measured by ROA. Thus, the model not only facilitates social collateral but also serves as a mechanism for maintaining financial sustainability within competitive microfinance markets.

According to Lusardi and Mitchell (2014), financial literacy theory emphasizes that individuals who are more knowledgeable about financial matters make better borrowing, saving, and repayment decisions. In this study, the theory provides a behavioral lens for understanding how client training programs enhance repayment discipline and reduce default rates in Nairobi MFBs. When clients are financially literate, they manage credit more responsibly, which minimizes non-performing loans and supports stable interest income streams, factors that improve MFBs' ROA. Therefore, financial literacy operates as a preventive mechanism that links customer competence to institutional profitability through improved financial behavior.

Introduced by Marshall (1890) and later reinforced by Friedman (1953), the profit maximization theory posits that a firm's ultimate goal is to maximize profits as a measure of efficiency and sustainability. This theory underpins the profitability by explaining how MFBs assess the economic value of strategic inclusion investments. In this study, the theory provides a unifying perspective, that is, decisions to adopt digital technologies, promote group lending, or implement financial literacy programs are guided by their capacity to generate higher financial returns relative to assets deployed. Profit maximization thus connects the institution's social mission of inclusion with its financial objective of maintaining a viable ROA.

These four theories interact in a complementary manner to explain how financial inclusion strategies drive profitability in MFBs. Financial intermediation theory emphasizes efficiency gains from digital platforms; the group lending model highlights risk reduction through social collateral; and financial literacy theory focuses on improved borrower behavior and repayment capacity. Profit maximization theory integrates these perspectives by asserting that all inclusion strategies must ultimately enhance the institution's financial returns. Together, the theories establish a multi-level explanatory framework linking efficiency, risk management, client behavior, and strategic decision-making to profitability (ROA) among Nairobi's MFBs.

Empirical Review

Digital Financial Services and Profitability

Nguyen & Mensah in 2025 conducted a study on mobile money and financial inclusion for the informal sectors of sub-Saharan Africa. The rationale was to establish the impacts of mobile money services on the availability of deposits and credits for micro-enterprises. The researchers

used cross-sectional regression analysis on survey data from 12 countries. The study found that mobile money services improved the availability of deposits and credits, with an indirect effect on the profitability of financial institutions. Although the study was on informal firms instead of MFBs with operational licenses, the applicability to the microfinance environment in Nairobi remains compromised. The study supports the Financial Intermediation Theory, which argues that the availability of technology decreases the transaction cost and increases efficiency, but the relation between the variables was not supported.

Kimalit & Musau in 2024 conducted a study on the impacts of digital banking channels on the profitability of Kenyan MFB banks. The researchers aimed to evaluate the role of mobile, internet, and card-based financial channels on the profitability of MFB banks in Kenya. The researchers used panel data analysis from 2015 to 2022 on 11 MFB banks across the country, but the study only involved conventional technology without exploring the use of the latest fintech innovations in the credit system, which are common practices in the financial markets of Nairobi.

Kipchoge (2024), in his research on the effects of digital inclusion on financial performance in microfinance banks in Kenya, concluded that mobile-based banking, agency-based banking, and to some extent, internet-based banking made a significant contribution to increasing return on assets (ROA). Kipchoge's conclusion lends credence to Finance Intermediation Theory because his results show that digital inclusion leads to increased efficiency in finance-related activities. However, the study did not analyze the specific ways customers used technology, which could have offered more detailed insights into profitability drivers.

Similarly, Ouma (2024) explored characteristics of firms, financial considerations, and their effects on profitability in Kenyan microfinance banks. Again, the focus was on digital capabilities. In a descriptive-correlational design study using both primary as well as secondary sources of data to explore the significance of digital capabilities in increasing profitability in line with Profit Maximization Theory. However, the study did not differentiate between mobile, internet, or agency banking models.

A study that was performed in Nairobi by Luvanda (2023) explored how innovation affects the profitability of microfinance banks to establish the extent to which innovation impacts profitability owing to increased efficiency. The survey design was used to show that innovation helped cut operational costs so that innovation positively affected profitability due to increased transaction sizes. The study confirmed the results provided by the Financial Intermediation Theory. The theory states that innovation positively impacts profitability due to reduced costs in banks. However, its single-period design limited causal interpretation. Overall, these studies affirm that digital transformation improves efficiency and operational effectiveness in microfinance institutions.

Nonetheless, these studies affirm that digital transformation enhances efficiency and operational effectiveness in MFBs. However, most did not quantify profitability using ROA or focus on Nairobi's evolving fintech environment. The current study seeks to fill this gap by assessing how digital financial services enhance microfinance bank profitability through improved efficiency and cost reduction.

Financial Literacy and Profitability

In a related study, Lang et al. (2024) conducted a study based on financial literacy and poverty alleviation to determine how financial knowledge contributes to economic decision-making concerning microfinance bank efficiency. The findings indicate that enhanced financial literacy

influenced savings behavior in households, thus increasing resilience to financial shocks. Although these findings are in line with the arguments provided by the Financial Literacy Theory, which argues that there exists a relationship between financial knowledge and decision-making effectiveness, the study did not measure profitability or return on assets (ROA), thus, its practicality to MFBs remains limited. In another related study, Atahau (2023), applying Structural Equation Modeling (SEM), explored the relationship between financial literacy and the sustainability of microfinance banks. The study concluded that increased financial literacy influenced increased repayment percentages, service delivery mechanisms, and efficiencies, thus raising sustainability. Although these indicators are well aligned according to financial literacy theories, their practicality to sustainability in microfinance banks remains perpetually hampered due to geographic variances, considering rural microfinance structures found in Indonesia compared to those found in Kenya in MFB. In his related study, Riro (2022) examined financial literacy skills related to debt accumulation behavior, savings behaviors using a survey design approach. The results showed that financial literacy positively influenced procedures involved in debt accumulation behavior savings behaviors. Although these impacts involved behavior within households, their practicality to determining effects concerning profitability within MFBs remains not applicable. In another related study, Chepkoech (2022), applied correlation analysis methodologies, set to evaluate a relationship between financial illiteracy or lack thereof concerning SACCO sustainability. As a result, improvements concerning SACCO were observed. Although its sustainability was related to SACCOs' business structures, which are challenging to directly compare to those found in MFB structures, its practicality remains applicable. In another related study concerning impacts pertaining to microfinance financial illiteracy within microfinance banks, Mwangi & Kimani (2021), applying survey methodologies involving 250 participants to test multiple regression analysis methodologies identified significant effects concerning loan defaulting behaviors. Although significant impacts could not remain unanswered concerning loan defaulting behaviors due to financial illiteracy impacts instituted within microfinance banks based in Kenya, its practicality remains limited since return or profit ratios (ROA), are not considered.

Overall, the reviewed studies consistently show that financial literacy enhances financial behavior and repayment performance but fall short of linking these behavioral improvements to profitability indicators. The current study addresses this gap by examining how financial literacy programs among clients contribute to MFB profitability (ROA) within Nairobi City County.

Group Lending Models and Profitability

Bashir & Hassan (2022) focus on the effect of group lending practices on the stability of microfinance institutions in South Asia. The study aimed to reveal how the design of lending with peers affects the issue of default and financial sustainability. The study used panel regression, analyzing data from 97 MFIs, concluding that group lending practices are successful in lowering default levels, improving portfolio stability, however profitability indicators such as ROA were not included.

A study was conducted by Njagi & Njoka (2021) to establish the effect of group lending on credit risk in microfinance banks in Kenya. The researchers aimed to establish the effectiveness of the notion of group lending practices on credit outcomes. The study conducted was descriptive-correlational, involving data from 32 MFBs, concluded that group lending had an effect on credit outcomes, increasing credit repayment by lowering credit risks, but the study

failed to establish the effect on profitability outcomes, creating an empirical gap between credit risk reduction and profitability outcomes.

Ahmed (2021) examined the impact of group lending on repayment performance in Nigerian microfinance institutions, analyzing survey data through multiple regression analysis. The result indicated that Monitoring & Social Accountability had enhanced repayment levels & decreased defaults, thereby confirming the Groups' Lending Model & Profit Maximization Theory, according to which collective responsibility leads to the minimization of agency problems & improves financial stability. However, profitability measures were again absent.

In a study conducted by Mwaipopo (2020), peer monitoring and credit discipline in microfinance banks in Tanzania was explored using a case study design. The results obtained showed that social collateral greatly influenced loan portfolio quality enhancement and repayment discipline. Although these results were in line with Group Lending Theory, differences in regulatory conditions make it difficult to compare these results to those pertaining to Kenyan MFBs.

In a similar fashion, Karanja & Gachanja (2019) examined the efficacy of group lending to Kenyan MFIs using regression analysis. These authors found that group lending improved portfolio quality and repayment performances but was carried out before the digital revolution that is presently transforming microfinance functions. In aggregate, these papers show that group lending leads to joint improvements in repayment capacities, credit risk mitigation, and portfolio quality. Nonetheless, most fail to directly associate these benefits with profitability indicators such as return on assets (ROA). The current study aims to bridge this gap by analyzing how group lending mechanisms contribute to MFB profitability within Nairobi's increasingly digitalized and competitive financial sector.

Summary of Empirical Gaps

The reviewed literature confirms that financial inclusion strategies, that is, digital financial services, group lending models, and financial literacy programs, play an important role in enhancing access, efficiency, and repayment performance in microfinance institutions. However, existing studies either focus on social or operational outcomes rather than profitability metrics such as ROA. Furthermore, few have integrated all three inclusion strategies into a single empirical model within Kenya's urban context. This study aims to fill the conceptual, contextual, and methodological gaps by examining the combined effect of these inclusion strategies on the profitability of microfinance banks in Nairobi City County, Kenya.

Conceptual Framework

In this study, financial inclusion strategies are treated as the independent variable, measured through digital financial services, group lending mechanisms, and financial literacy initiatives. Profitability serves as the dependent variable, evaluated using return on assets (ROA).

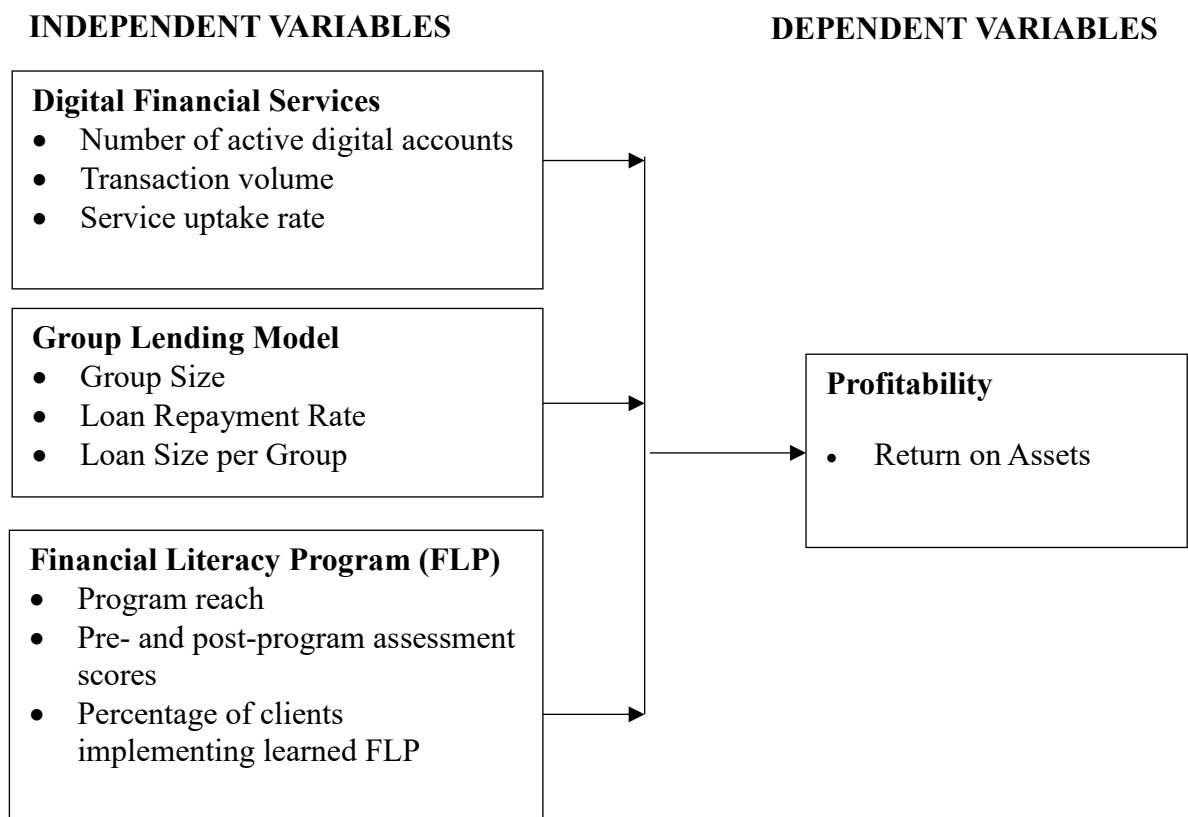


Figure 1: Conceptual Framework

Source: Researcher, (2025)

METHODOLOGY

The study applied an explanatory research design to validate the connection between the financial inclusion strategy, which encompasses digital finance services, a group lending model, and a financial literacy model, and the profitability of MFBs. The study design was perfectly applicable in hypothesis development concerning the connection between strategic approach by finance entities and finance outcomes. The population for the study included management staff members of all licensed microfinance banks (MFBs), which stood at 14 in Nairobi County according to a list provided by the Central Bank of Kenya in 2023. The study participants came from six major departments in these banks, including finance departments, marketing departments, operation departments, risk management departments, human resources departments, and information technology departments. The study applied a census method to involve all 168 qualified participants to avoid sampling error. Both primary and secondary data collection methods were applied. The data was obtained using structured questionnaires consisting of a likert scale rated on a five-point basis. Secondary data was extracted from financial statements provided by MFBs and return-on-assets ratios obtained annually between 2016-2024 from Annual Central Bank of Kenya reviews. A pilot test involving 17 members was used to validate the questionnaire's validity. Reviews done using experts helped to establish content validity. The data was reliable after establishing an Alpha value above 0.70.

The data was subjected to quantitative analysis using the STATA software. Descriptive methods for data description analysis in conjunction with inferential statistical analysis methods like correlation analysis was used. Tests confirmed that there was no multicollinearity, heteroscedasticity, or autocorrelation in the data. Thus, the procedure adopted in determining the relationship between financial inclusion approach strategies and profitability was tested using the following model equation:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_t \dots \dots \dots \text{[Equation 1]}$$

Where:

- Y_t = Profitability of MFBs (measured by ROA) for year t
- X_{1t} = Digital financial services for year t
- X_{2t} = Group lending models for year t
- X_{3t} = Financial literacy programs for year t
- β_0 = Constant
- $\beta_1, \beta_2, \beta_3$ = Regression coefficients
- ε_t = Error term

RESULTS AND DISCUSSION

The study focused on evaluating the extent to which financial inclusion approaches, like digital finance services, group lending model, and financial education, are significant to the profitability of Microfinance Banks (MFBs). Mean and standard deviation analysis was utilized to evaluate the perceptions held by participants concerning the study variables. The profitability variable was assessed using ROA.

Digital Financial Services

The first objective of the study was to examine the effect of digital financial services on the profitability of microfinance banks. Respondents were asked to rate statements relating to efficiency, accessibility, and cost reduction associated with digital platforms. The results are presented in Table 1.

Table 1: Descriptive Statistics on Digital Financial Services (N = 152)

Items	Mean	SD
Mobile banking has made loan application and processing more efficient.	4.08	0.79
Customers can easily access financial services through mobile platforms.	4.01	0.85
Digital financial services have reduced operational costs for the bank.	4.06	0.76
Overall Mean and SD	4.05	0.80

The average mean for the efficiency of mobile banking was 4.08 with SD = 0.79, reflecting strong agreement on the effectiveness of mobile platforms in lending efficiency. Customer reach via mobile banking had a mean of 4.01 with SD = 0.85, compared to the average score of 4.06 with SD = 0.76 for the reduction of costs via digital platforms. The mean of 4.05 with SD = 0.80 signifies quality agreement on the effectiveness of digital financial services on the efficiency of operation and profitability. This is supported by the work of Kimalit (2024), who stated that the effect of mobile/agency banking was an important factor in improving the profitability of MFBs in Kenya, hence reducing their operational/overhead costs and increasing their reach.

Group Lending Models

The second objective assessed the role of group lending models in improving the performance of MFBs. Respondents evaluated statements on accountability, repayment behavior, and credit access. Results are summarized in Table 2.

Table 2: Descriptive Statistics on Group Lending Models (N = 152)

Items	Mean	SD
Group lending promotes high repayment rates among clients.	3.94	0.89
Group members hold each other accountable for loan repayments.	4.11	0.74
Group lending has increased access to credit for low-income clients.	4.00	0.83
Overall Mean and SD	4.02	0.82

The mean score on the level of accountability between the group members was 4.11 (SD = 0.74), the highest score on the scale, implying the importance of group member supervision in the process of repayment. Ensuring repayment discipline scored 3.94 (SD = 0.89), while improving credit availability to the poor scored 4.00 (SD = 0.83). The mean score on the responses is 4.02 (SD = 0.82), showing that generally there is an agreement on the effectiveness of group lending on loan repayment performance, as well as client inclusion. This is consistent with Abdirashid & Jagongo (2019) who indicated that group accountability structures in microfinance institutions brought about good repayment practices with the reduction of default rate levels in the Nairobi City County.

Financial Literacy Programs

The third objective examined the influence of financial literacy programs on MFB profitability. Respondents rated their agreement with statements relating to budgeting, saving, decision-making, and monitoring of training outcomes. Table 3 presents the results.

Table 3: Descriptive Statistics on Financial Literacy Programs (N = 152)

Items	Mean	SD
Financial literacy programs have improved client budgeting and saving habits.	4.03	0.81
Clients who attend financial literacy programs make better loan decisions.	3.97	0.85
The bank tracks the implementation of skills learned through financial training.	4.10	0.78
Overall Mean and SD	4.03	0.81

The mean score on the tracking of the outcomes of financial training implementation was 4.10 with a standard deviation of 0.78, while the mean score on the improvement of budgeting and saving practices was 4.03 with a standard deviation of 0.81. The mean score on sounder loan decisions was 3.97 with a standard deviation of 0.85. The mean score of 4.03 with a standard deviation of 0.81 suggests that respondents generally held positive views regarding financial literacy programs. This aligns with Riro (2024) findings, which indicated that financial literacy training significantly improved clients' financial management skills, repayment behavior, and, in turn, the profitability of microfinance banks in Kenya.

Profitability Analysis (ROA)

To assess the overall financial performance of MFBs, Return on Assets (ROA) data for the period 2016–2024 were analyzed. Table 4 summarizes the descriptive results for the fourteen licensed microfinance banks in Nairobi City County.

Table 4: Descriptive Statistics of ROA per MFB (2016–2024)

Year	Mean ROA (%)
2016	1.35
2017	1.28
2018	1.19
2019	1.11
2020	0.96
2021	0.89
2022	1.07
2023	1.24
2024	1.42
Overall Mean (2016–2024)	1.21

The findings indicates that the average ROA varied between 0.89% in 2021 and 1.42% in 2024. There was a declining trend from 1.35% in 2016 to 0.89% in 2021, but there was a slight improvement to nearly 1.42% in 2024. Furthermore, the average ROA over the period of 2016 to 2024 stands at 1.21%, which indicates that the MFB on average had lower profitability compared to its assets over the period of the study. Despite the fact that the ratio is positive, its value is substantially below the 3% threshold advocated by CBK (2023) for financial sustainability of the financial institution. The result is consistent with the conclusions from recent empirical work, which indicates the challenges with profitability that the microfinance subsector is currently facing. For instance, Luvanda (2023) indicated that the profitability level of most MFBs in Kenya was erratic, with fluctuations in the levels of profitability occurring from time to time. Consequently, Molla et al. (2025) argued that operational risks, as well as liquidity risks, apply extremely strong pressure on the profitability levels of MFBs in Kenya, hence verifying the point that the subsector is indeed vulnerable. The CBK report (2023) also indicated that, although the subsector has made some initial positive steps towards reviving itself, the subsector is still weak, hence why there is still fear over its long financial sustainability future prospects today.

Correlation and Multiple Regression Analysis

The study analyzed the relationship between financial inclusion initiatives and the profitability of MFBs in Nairobi City County. Correlation analysis was applied to investigate the nature and strength of the relationships between variables, and subsequently, regression analysis was conducted to evaluate their predictive influence on profitability.

Correlation Analysis

To evaluate the interrelationships between the study variables, Pearson correlation coefficients were computed, and the findings are summarized in Table 5.

Table 5: Correlation Matrix for Variables

		ROA	Digital Financial Services	Group Lending Model	Financial Literacy Program
ROA	Pearson Correlation	1.000			
Digital Financial Services	Sig. (2-tailed)	.682**	1.000		
Group Lending Model	Pearson Correlation	.655**	.614**	1.000	
Financial Literacy Program	Sig. (2-tailed)	.608**	.599**	.589**	1.000

The result in Table 5 indicates that all the independent variables positively correlate with the profitability of the MFBs with significance levels of 0.01. The financial service had the highest correlation with the profitability of the MFBs with a value of $r = 0.682$, $p < 0.01$, meaning that the adoption or application of technology, for example, mobile banking, agency banking, and the other banks, was highly linked to the profitability of the MFBs in Kenya. The result is supported by the study conducted by Kimalit & Musau (2024) & Ondao (2024) who highlighted that the financial service is one of the core drivers of the financial success of the MFBs in Kenya. The study is also supported by Khanchel (2025) who observed that the application of FinTech impacts microfinance institutions in diverse financial and social impacts, hence emphasizing the importance of technology in improving financial inclusion for the poor in developing countries.

The study also indicated the strong positive connection between the application of the group lending structure to the profitability with $r = 0.655$, $p < 0.01$, meaning that the financial lending structures, which are monitored by the peers, improve the profitability of the MFBs' lending process. The result is well-supported by Bashir & Hassan (2022) & Ahmed (2021), who concluded that the application of the group lending concept, which involves the responsibility taken by the peers, highly improves the payments made or the financial success in the MFBs' lending process.

Financial literacy programs also had a strong positive correlation with profitability, having a value of $r = 0.608$, $p < 0.01$. The result implies that quality financial literacy programs are able to empower customers with the necessary financial management techniques, hence improving profitability. This aligns with the findings by Mwangi and Kimani (2021) and Chepkoech (2022), who established that financial literacy strengthens repayment capacity and improves institutional financial sustainability.

The inter-correlation between the independent variables varied from 0.589 to 0.614, implying the presence of moderate correlations with complementarities in the inclusion strategies. Also, the values are well below 0.7, implying that multicollinearity was not significant to be of concern for the upcoming analysis on regression. The results from the correlation analysis clearly reflect the complementarity between financial inclusion strategies, digitalization, group lending, financial literacy, and their impacts on MFB profitability in the Nairobi City County.

Multiple Regression Analysis

Multiple regression analysis was conducted to assess the combined and individual effects of the financial inclusion strategies on MFB profitability between 2016 and 2024.

Table 6: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.831	0.691	0.681	2.094

The model presented in Table 6 demonstrated strong explanatory power, with an R² value of 0.691, indicating that 69.1% of the variation in microfinance banks' profitability was explained by digital financial services, group lending mechanisms, and financial literacy initiatives. Cohen (1988) asserts that an R² exceeding 0.60 signifies a strong model fit in behavioral and financial research. The adjusted R² of 0.681 further confirmed the model's robustness, while the low standard error of 2.094 suggested a close relationship between the observed and predicted profitability values.

Analysis of Variance (ANOVA)

An ANOVA test was conducted to determine whether the regression model significantly accounted for variations in profitability compared to a model without predictor variables.

Table 7: ANOVA Summary

Source	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Regression	1242.456	3	414.152	70.52	0.000
Residual	647.143	148	4.374		
Total	1889.599	151			

The ANOVA Table ($F = 70.52$, $p < 0.001$) indicates that the model is statistically significant at the 1% level. This finding suggests that financial inclusion strategies collectively predict profitability more accurately than would occur by chance. These results are consistent with those of Kimalit (2024) and Molla et al. (2025), who established that inclusion-driven financial models have a substantial impact on the profitability of microfinance banks in Kenya and across Sub-Saharan Africa.

Regression Coefficients

The standardized regression coefficients highlight the specific contributions of each financial inclusion strategy to profitability, illustrating the relative importance of digital financial services, group lending, and financial literacy programs in driving MFB profitability.

Table 8: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-34.582	13.201	-	-2.62	0.010
	Digital Financial Services	0.328	0.054	0.442	6.07	0.000**
	Group Lending Model	0.291	0.062	0.388	4.69	0.000**
	Financial Literacy Program	0.253	0.057	0.359	4.44	0.000**

The regression coefficients revealed that all three inclusion strategies had a positive and statistically significant influence on profitability ($p < 0.01$). Digital financial services exhibited the strongest effect ($\beta = 0.442$), suggesting that enhancing digital infrastructure and service delivery leads to substantial profitability improvements. Group lending mechanisms ($\beta = 0.388$) and financial literacy initiatives ($\beta = 0.359$) also contributed meaningfully, underscoring their roles in improving repayment discipline and minimizing default risks. The regression equation is presented as follows:

$$Y = -34.582 + 0.328X_1 + 0.291X_2 + 0.253X_3 + \varepsilon \dots\dots\dots \text{[Equation 2]}$$

Where:

- Y = Profitability of MFBs (measured by ROA)
- X_1 = Digital Financial Services
- X_2 = Group Lending Models
- X_3 = Financial Literacy Programs
- ε = Error term

The positively related and significant coefficients suggest that financial inclusion factors considered together are complementary in increasing profitability in microfinance banks. These results are in line with those obtained by Mwangi, Musau, & Muathe (2018), which found that inclusion factors, specifically technological innovation and financial literacy, positively influenced financial sustainability in both commercial banks and microfinance banks in Kenya.

Discussion

Digital Financial Services (DFS) and Profitability

The result showed that digital financial services portrayed the highest significance in contribution to profitability ($\beta = 0.328$, $p < 0.01$). It was evident that improved mobile and agency banking services, coupled with online transaction services, greatly improved return on assets (ROA). In fact, its significance proved that digitalization stands to greatly contribute to improvement in profitability compared to other inclusion methods. Nairobi's sophisticated digital platform environment, which features widespread mobile money services, fintech partners, and agencies, increases its effects by lowering transaction costs and increasing effectiveness. These results are in line with Kimalit (2024), who illustrated comparable results in improved profitability in Kenyan MFBs using digital financial services. Other comparable

results are those illustrated by Umba, Croquet, & Godfroid (2024), who found that digitalization increased both financial and social performances in microfinance sectors. In light of these findings, these results validate the Financial Intermediation Theory. Therefore, H_{01} was rejected.

Group Lending Models (GLM) and Profitability

The group lending approach again reinforced a positively significant value to profitability ($\beta = 0.291$, $p < .01$). This shows that joint accountability mechanisms improve repayment behavior, reduce delinquencies, and allow for improved return on assets (ROA). Although its value is slightly lower than digital financial services, group lending remains an essential component in improving profitability, especially for microfinance banks that cater to low-income or informal sector clients who lack conventional collaterals. In fact, these results are similar to those found in Abdirashid and Jagongo (2019), who found improved repayment behavior because of joint accountability mechanisms. These results collectively validate both Group Lending Theory and Profit Maximization Theory since joint accountability mechanisms improve operational efficiencies and achieve sustainability in terms of profitability. Thus, H_{02} was denied.

Financial Literacy Programs (FLP) and Profitability

The efforts for financial literacy education likewise found a positively significant effect on profitability ($\beta = 0.253$, $p < 0.01$). The training delivered to improve budgeting capacities, savings behavior, and borrowing choices positively impacts repayment conduct and credit risk, ultimately increasing favorable ROA. Although its influence was less compared to electronic financial services and group loans, financial literacy education remains an essential complementary component. It amplifies the other strategies since it makes sure that clients correctly utilize electronic services and demonstrate sound borrowing behavior. These results are similar to those obtained by Omowole et al. (2024), who considered financial education to be a significant determining component in microfinance institute success. Hasan & Hoque (2021), likewise, showed that educating borrowers positively impacts loan repayment. These results validate the 'Financial Literacy Theory' since educated clients positively influence institutional sustainability. As expected, H_{03} was not ratified.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The study verified that there is a significant and positive association between financial inclusion strategies and the profitability of microfinance banks (MFBs). Digital financial services ($\beta = 0.328$, $p < 0.01$) turned out to be the major influential determinant because mobile and agency banking channels combined with online transactions result in increased efficiency, lower operating costs, and increased return on assets (ROA). Group lending schemes ($\beta = 0.291$, $p < 0.01$) became an important factor in positively increasing profitability because these schemes focus on developing improved repayment culture characteristics with minimized prospects of default risk due to collective accountability. Finally, financial education or training ($\beta = 0.253$, $p < 0.01$) turned out to positively contribute to increased profitability because these schemes result in increased responsible borrowing behavior with a focus on repayment discipline. The combined model ($R^2 = 0.691$) demonstrated that these three inclusion strategies explained 69.1% variation in terms of profitability for MFBs in Nairobi City County. These inclusion strategies are not just effective instruments but also important driving forces behind institutional effectiveness. They are greatly influenced by digital financial services because Nairobi's MFBs function in a fintech-supported urban setting where mobile transactions directly influence cost-effectiveness.

Conclusion

The research assessed the effects of digital financial services, group lending methods, and financial education campaigns on the profitability of MFBs in Nairobi City County. Regression analysis verified that all three strategies had highly significant impacts on profitability, cumulatively explaining 69.1% to ROI. Digital financial services ($\beta = 0.328$, $p < 0.01$), with its largest individual significance, demonstrated mobile and agency banking to increase efficiencies, reduce operating costs, and maximize gains. Although hampered by problems like infrastructure deficits and digital illiteracy, DFS remains a major profit-maker. Group lending strategies ($\beta = 0.291$, $p < 0.01$), despite variability in successes tied to efficient mechanisms for handling conflicts, played a significant role in encouraging accountability to groups to prevent defaults but maximize repayment. Campaigns for financial education ($\beta = 0.253$, $p < 0.01$), despite gaps between training sessions to fully maximize gains to those trained (prevention of defaults), made major impacts on profitability to maximize gains. The study concludes that strategic approaches to financial inclusion are vital for maximizing gains to profitability for banks like MFBs.

Recommendations

The results showed that digital financial services (DFS) positively and significantly affected the profitability of microfinance banks (MFBs). The Central Bank of Kenya (CBK) must develop supportive regulatory frameworks focusing on interoperability, cybersecurity, and consumer protection. MFBs are advised to invest in developing mobile and agency banks, improving information technology (ICT), and teaching staff members' and clients' digital skills to achieve maximum efficiency and profit. Group lending schemes (GLS) positively affected profitability due to mutual monitoring. The Ministry of Cooperatives and MSME Authority must institutionalize GLS through credit guarantees and improved control. MFBs are advised to establish standard methods for monitoring groups and train loan officers in group handling and conflict resolution to ensure sustainability. Financial literacy courses (FLCs) further improved profitability due to improved budgeting, savings, and credit handling behaviors. The CBK must include mandatory financial education training for all MFBs. Every bank must establish training departments to undertake standard training activities related to DFS. Every bank's effort to improve profitability must focus on activities related to DFS, GLS, or improved training. These three components explain 69.1% variation in profitability. Therefore, there is a need for integrated financial inclusion efforts between these three components. Innovation hubs must test new digital technology platforms or inclusive financial instruments to improve profitability.

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