KEY DETERMINANTS OF CUSTOMER LOYALTY IN MICROFINANCE INSTITUTIONS: EVIDENCE FROM TIEN GIANG PROVINCE, VIETNAM

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Abstract – *In an increasingly volatile business environment, customer loyalty is crucial in enhancing the competitive edge of financial institutions, particularly microfinance institutions. This study examines the factors that influence customer loyalty among active borrowers, including laborers and low-income workers, at microfinance institutions. Primary data were collected from 400 customers borrowing capital from microfinance institutions in Tien Giang Province, Vietnam. Cronbach's alpha, exploratory factor analysis, and multiple regression analysis were employed to examine the impact of customer commitment, perceived interest rate, service quality, and switching barriers on customer loyalty. The results reveal that all four factors significantly affect customer loyalty, with customer commitment showing the strongest influence. Hence, to retain current clients, attract new borrowers, and limit reliance on informal lending practices, microfinance institutions should design targeted strategies to foster financial and social stability in the region.*

Keywords: customer commitment, customer loyalty, microfinance institutions, service quality, Tien Giang.

I. INTRODUCTION

Microfinance (MF) is a system of financial services designed for low-income individuals or those who lack access to traditional banking services [1]. Policymakers and business leaders have considered MF as an effective tool for poverty reduction by offering microloans, savings, and insurance services. Proper assessment of capital utilization enables disadvantaged individuals to initiate income-generating activities, thereby mitigating vulnerabilities and reducing poverty [1].

Microfinance institutions (MFIs) play a crucial role in providing financial services to marginalized and vulnerable groups. Thus, MFIs need to ensure their financial sustainability by achieving higher levels of customer satisfaction and service delivery [1]. Currently, MF services are undergoing significant transformations driven by advancements in legal frameworks, shifting market dynamics, and increasingly complex customer demands. As a result, the marketing strategies of MFIs focus on retaining existing clients while attracting new ones [1].

Although MFIs often offer loans at lower interest rates compared to traditional lenders, customers today have an increasing number of financial service options, including informal credit channels and newly emerging fintech platforms. This growing market diversity leads to intensified competition, even among institutions serving low-income clients. In such a context, customer loyalty is no longer guaranteed solely by favorable lending conditions. Therefore, it becomes crucial to investigate the determinants of loyalty in microfinance settings, particularly to understand how MFIs differentiate themselves and maintain stable relationships with their clients. Exploring loyalty not only helps MFIs retain existing customers but also supports their long-term sustainability and ability to fulfill their social mission.

According to a report by the Capital Aid Fund for Employment of the Poor (CEP) [2], over its 32 years of service, CEP has provided loans to more than 1.5 million workers and low-income

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individuals, helped them create jobs, improved their living conditions, and avoided exploitative 'black credit' practices.

As noted by Makudza [3], the emergence of the post-industrial society intensified challenges in customer retention strategies. People believe that customers are more sophisticated, requiring entirely new approaches to understanding their profiles and preferences. Services in the market have become more diverse, and advances in communication technology have brought unprecedented challenges compared to the past. Furthermore, growing customer awareness has led to highly fragmented markets and intensified competition among financial institutions.

In recent years, customer retention strategies have been critical for encouraging customers to maintain or renew their relationships with financial institutions. Beyond MF, the banking industry is also adopting approaches to enhance customer retention and improve service quality in client management [4, 5]. Accordingly, this research aims to strengthen customer loyalty, attract new customers, and contribute to the socio-economic development of Tien Giang Province and the whole region.

II. LITERATURE REVIEW

A. Theory of loyalty

Akbar [6] stated that customer loyalty (CL) represents the extent to which customers remain committed to a business or brand. This concept has been examined in various contexts, including brand loyalty, supplier loyalty, service loyalty, and corporate loyalty. Prior research predominantly explores CL from the customer's perspective, focusing on behavioral tendencies such as repurchase intentions or continued usage. Ranaweera et al. [7] emphasized that customer retention is a behavioral indicator of loyalty, reflecting the customer's tendency to stay with a service provider over time.

In this study, CL is viewed not only as a behavioral outcome but also as a result of multiple influencing factors, such as perceived service quality, pricing, customer commitment,

and switching barriers. The study adopts two theoretical models to deepen understanding: the customer switching model by Richards [8] and the relationship commitment model by Sharma et al. [9].

The customer switching model explains how switching barriers, such as procedural, financial, and relational costs, can deter customers from changing service providers, thereby indirectly increasing loyalty [8]. Meanwhile, the relationship commitment model suggests that a strong, long-term psychological attachment between the customer and the organization serves as a key driver of loyalty [9]. This study integrates these theoretical foundations to examine how both barriers to switching and levels of commitment jointly affect customer loyalty, especially in the microfinance context.

By combining the two models, this study provides a multi-dimensional theoretical foundation for analyzing customer loyalty in MFIs, where both rational (e.g., switching costs) and emotional (e.g., trust and commitment) elements play significant roles.

B. Review of previous research

There is limited research specifically focusing on the determinants of CL in MFIs. A study in Kenya investigated the influence of price perception, commitment, service quality, and switching barriers [10]. Results indicated that customer commitment had a strong and significant effect on CL, while other variables showed only weak relationships. The study also recommended transforming switching barriers, such as transaction time and branch accessibility, into strategic advantages. In the same vein, another research in Kenya aimed to identify the financial factors influencing customer retention in microfinance institutions, with a specific case of the Kenya Women Microfinance Bank in Nyeri County. The study recommended that MFIs should consider adjusting interest rates and service fees to reasonable levels, while also improving the banking environment to enhance customer experience and foster greater loyalty [11]. In the study examining

the impact of group lending strategies on customer retention in microfinance banks in Nairobi County, Kenya, the findings recommended that microfinance banks should enhance elements of group lending strategies, such as allowing members to form groups voluntarily, adopting progressive lending, and being flexible in the use of social collateral to reduce customer dropout rates [12]. Similarly, Makudza [3] found a significant influence of service quality on customer loyalty in the banking sector in Zimbabwe.

In Vietnam, a study examining the determinants of customer loyalty in the banking sector found that service quality, brand reputation, and corporate social responsibility have significant positive effects on customer satisfaction. Furthermore, customer satisfaction was identified as a critical mediating variable in strengthening customer loyalty among individual depositors. The study emphasized that improving these key factors is essential for banks to foster and sustain long-term customer relationships, thereby contributing to their sustainable business growth [13]. Through a qualitative study, Nguyen Ngoc Diep et al. [14] identified ten factors affecting brand loyalty, including brand trust, perceived service quality, satisfaction, perceived usefulness, advertising, commitment, switching costs, attitude, brand experience, and perceived value.

Phan et al. [15] investigated customer loyalty among small and medium-sized enterprises (SMEs) in the Vietnamese banking sector and found that service reliability, responsiveness, and assurance had significant positive effects on customer satisfaction, which in turn positively influenced customer loyalty. Their findings suggest that these dimensions of service quality not only foster trust and confidence among business clients but also play a crucial role in developing long-term customer relationships. Customer satisfaction was identified as a key mediating variable, indicating that enhancements in service performance can effectively strengthen customer loyalty within the SME banking segment. Moreover, a study by Huynh Thi Thu Suong et al. [16] at Shinhan Bank Vietnam demonstrated that

service quality dimensions, such as tangibility, empathy, reliability, and responsiveness, were strongly associated with customer loyalty through the mediating effect of satisfaction.

Most previous studies focus on commercial banking and general brand loyalty without considering the specific context of microfinance institutions. Furthermore, those studies examined each factor separately, lacking a clear investigation of the interaction between commitment, switching barriers, and customer loyalty in low-income customer segments [10–16]. Therefore, this study aims to fill the research gap by integrating two complementary theoretical models (customer switching and relationship commitment models) into a single analytical framework and applying it to MFIs in Vietnam. The context of microfinance, with its socio-economic focus and vulnerability to customer disengagement, demands a tailored analysis that goes beyond what has been previously studied. Therefore, this research offers new empirical evidence and theoretical insights specific to customer loyalty in the microfinance sector.

III. RESEARCH METHODS

A. Methods of data collection

The study collected primary data from customers borrowing capital from MFIs in Tien Giang Province as of 31 December 2023.

Phase 1: Customers who are borrowing capital were classified according to the stratification method, including (1) customers of laborers and employees, and (2) districts and cities.

Phase 2: Customers who are borrowing capital were selected for direct interviews using convenience non-probability sampling. The sample size was determined based on the Formula (1) for the proportion of the sample to the total by Hoang Trong et al. [17].

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

Until the end of the year 2023, the total number of customers in Tien Giang Province was 33,194

[18]. Using Formula (1) with a confidence level of 95%, the minimum sample size of this study was calculated as in Formula (2).

$$n = \frac{N}{1 + N(e^2)} = \frac{33,194}{1 + 33,194(0.05)^2} = 395 \quad (2)$$

To ensure the quality of the research, the actual sample size was 400. Hence, the confidence level of this study was higher than 95%.

B. Data analysis method

Assess the reliability of the scale

The study used a 5-level Likert scale and tested the reliability of the data using Cronbach's Alpha reliability coefficient. At the same time, the study examined the corrected item-total correlation coefficients to evaluate the internal consistency and contribution of each item to the overall scale. If the Alpha coefficient of each variable is above 0.6, the overall Alpha coefficient is above 0.7, and the variables have a corrected item-total correlation coefficient above 0.4, the data ensures reliability.

Factor analysis method

The characteristic factors are correlated with each other and with the common factor. The common factor can be expressed as a linear combination of the observed variables, as in Formula (3).

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \ldots + W_{ik}X_k \quad (3)$$

In there:
- F_i is the estimated value of the independent variables determined after factor analysis.
- W_i is the factor weight.
- k is the number of variables.

Regression analysis method

This study employed regression analysis to determine the relative influence of each group of factors on customer loyalty at MFIs in Tien Giang Province. The study builds a linear regression model in the form as in Formula (4).

$$Y = \beta_0 + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_4 + u_i \quad (4)$$

In there:
- Y is loyalty.
- β_0, β_1, β_2, β_3, and β_4 are correlation coefficients.
- X_1, X_2, X_3, and X_4 are independent variables determined after factor analysis.

C. Research model

This study focuses on four latent variables – customer commitment (CC), perceived interest rate (IR), service quality (SQ), and perception of conversion barriers (CB) – to examine their influence on customer loyalty at MFIs in Tien Giang Province. These variables were selected based on a comprehensive literature review and their practical relevance in the microfinance context. Each latent variable is defined and measured through corresponding indicators, as detailed below:

- Customer commitment (CC): Customer commitment has been widely recognized as a key driver of loyalty. Richards [8] highlighted that building emotional and psychological commitment, based on customers' perceived value and service experience, is crucial for long-term retention. Similarly, Sharma et al. [9] emphasized that commitment is strengthened by switching costs and the perceived benefits of maintaining the relationship, reinforcing its central role in sustaining loyalty. Similarly, Tegambwage [4] found that the quality of relationships at both individual and organizational levels plays an important role in fostering customer loyalty in the microfinance sector. This variable reflects the psychological and emotional attachment of customers to the organization. It is measured through observed variables such as customer interest in the organization (CC1), voluntary participation in programs (CC2), and the intentional decision to remain with the institution (CC3). This factor is hypothesized to have a positive impact (+) on customer loyalty, as committed customers are more likely to continue using the services and advocate for the institution.

- Perceived interest rate (IR): Perceived interest rate is another factor influencing customer loyalty, particularly in the context of microfinance.

Muthoni [11] identified that reasonable interest rates and service fees have a significant impact on client retention. The study recommended that microfinance institutions should adjust these financial terms to improve customer experience and enhance long-term loyalty. This variable captures the customers' perception of the institution's pricing policies. It is measured by the accuracy of price information (IR1), reasonableness of the offered rates (IR2), and flexibility in interest adjustments (IR3). A positive relationship (+) with customer loyalty is expected, since fair and transparent pricing fosters trust and long-term engagement.

- Service quality (SQ): Service quality is consistently cited as a critical determinant of customer satisfaction and loyalty. Makudza [3] found that managing customer experience, through virtual interaction, physical environment, and service delivery, positively affects loyalty in the banking industry. Similarly, Phan Thi Hang Nga et al. [15] showed that specific service quality dimensions such as reliability, responsiveness, and assurance significantly influence satisfaction and loyalty among SME clients in Vietnam. This factor assesses how well the institution meets customer expectations in service delivery. It includes service delivery time (SQ1), responsiveness to customer inquiries (SQ2), satisfaction with current products (SQ3), and willingness to continue using the services (SQ4). High service quality is anticipated to have a positive effect (+) on customer loyalty.

- Perception of conversion barriers (CB): Perception of conversion barriers has also been shown to influence customer retention. Ranaweera et al. [7] indicated that switching barriers have a positive effect on customer retention and serve as moderators in the satisfaction-loyalty relationship. Sharma et al. [9] further demonstrated that switching costs, alternative attractiveness, and prior customer experience act as moderators of relationship commitment, reinforcing loyalty in professional service settings. This variable refers to factors that hinder customers from switching to other service providers. Observed indicators include interpersonal relationships with staff (CB1), perceived switching costs (CB2), attractiveness of alternatives (CB3), and awareness of competing options (CB4). These barriers are believed to positively influence (+) loyalty, as they make switching less appealing.

The selection of these four latent variables is grounded in both theoretical frameworks and the specific characteristics of microfinance operations in Vietnam. They represent the most salient dimensions influencing loyalty in this sector, and limiting the scope allows for deeper exploration and more reliable model testing within the context of this study.
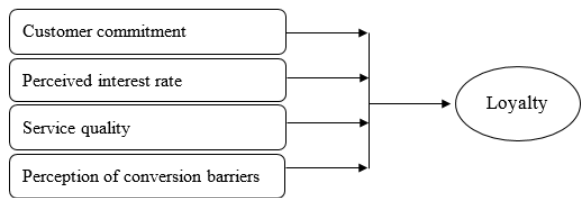

Fig. 1: Proposed research model

Source: Proposed by Authors, 2024

IV.   RESULTS AND DISCUSSION

A. Descriptive statistics

The frequency analysis results from 400 observations show that female customers account for 73% of the sample, which is higher than the proportion of male customers (27%). This is consistent with the overall gender distribution of CEP's total customer base in Tien Giang Province [1]. Most of the participants' age ranges from 35 years old and above, accounting for 81% of the sample. Regarding educational level, 67.5% of participants completed primary or secondary school, 27% attained intermediate or college-level education, and only 4.5% graduated from university. In terms of occupation, those engaged in small business and trading represented the largest group (35.8%), followed by workers and manual laborers (27.2%), farmers (22.3%), while the remaining occupations made up a combined total of 14.7% (Table 1).

Table 1: Survey sample characteristics

Content	Statistics	
	Frequency (person)	Relative (%)
Sex		
Male	108	27.0
Female	292	73.0
Age		
< 25 years old	22	5.5
From 25 to < 35 years old	54	13.5
From 35 to < 45 years old	96	24.0
From 45 to < 55 years old	126	31.5
From 55 years old and above	102	25.5
Education level		
Elementary	154	38.5
Secondary, high school	116	29.0
Intermediate, college	108	27.0
University	18	4.5
Postgraduate	4	0.1
Job		
Small business, buying and selling	143	35.8
Workers, general laborers	109	27.2
Farmer	89	22.3
Teacher	13	3.2
Armed Forces	14	3.5
Retired, Housewife	13	3.2
Other	19	4.8

Source: Results of actual survey, 2024

B. Scale reliability assessment

Table 2 shows the results of the scale reliability test, in which the Cronbach's Alpha coefficients for all 18 variables satisfied the research requirements. These include one dependent variable with four observed items, and four independent variables with a total of 14 observed items. All corrected items–total correlation coefficients were greater than 0.4. Therefore, all observed variables were retained for exploratory factor analysis (EFA).

C. Exploratory factor analysis (EFA)

In Table 3, the results of factor rotation for the independent variables satisfy the requirement that all factor loadings are greater than 0.5 [16]. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.879 (> 0.5), and Bartlett's test of sphericity is statistically significant (Sig = 0.000 < 0.01), indicating that the data are suitable for factor analysis. The total variance explained

Table 2: Cronbach's Alpha reliability coefficient

Factor	No. of Items	Cronbach's Alpha	Minimum correlation coefficient	Cronbach's Alpha if Item Deleted is the largest
Customer commitment (CC)	3	0.824	0.647	0.789
Perceived interest rate (IR)	3	0.854	0.686	0.836
Service quality (SQ)	4	0.847	0.660	0.815
Perception of conversion barriers (CB)	4	0.821	0.600	0.794
Loyalty (LT)	4	0.854	0.646	0.835

Source: Results of survey data analysis, 2024

is 71.087% (> 50%), and the smallest eigenvalue is 1.340 (> 1), confirming the adequacy of the model. The Varimax rotation method with Kaiser normalization was applied to improve interpretability by maximizing the variance of loadings across factors. As shown in Table 3, the factor analysis results yield four distinct factors composed of 14 observed variables, demonstrating a high level of convergence and construct validity.

Table 3: Rotated matrix of independent variable factors

Variables	Factor			
	1	2	3	4
SQ1	0.794			
SQ2	0.778			
SQ4	0.778			
SQ3	0.768			
CB4		0.815		
CB3		0.769		
CB2		0.742		
CB1		0.733		
IR1 M,			0.869	
IR2			0.843	
IR3			0.834	
CC1				0.833
CC2				0.821
CC3				0.782
Eigenvalues: 1.340				
Variance extracted: 71.087%				
KMO coefficient: 0.879				
Sig. = 0.000				

Source: Results of survey data analysis, 2024

For the dependent variable (customer loyalty), the KMO coefficient is 0.810 (> 0.5), and

Bartlett's test is significant at 0.000 < 0.01. The factor analysis confirms reliability and statistical significance, with an eigenvalue of 2.788 (> 1) and total variance explained of 69.702% (> 50%). The Varimax rotation method also revealed that four observed items of the loyalty variable converge into one factor, which is retained for further analysis [16].

Based on the results of EFA, factor scores for the independent and dependent variables were computed using the regression method, which is widely adopted when the objective is to use extracted factors as continuous predictor variables in subsequent regression analysis. This method provides the best linear estimates of factor scores based on observed variables, making it appropriate for studies that explain variance in a dependent variable through latent constructs [19].

D. Results of regression analysis and discussion

In this study, factor scores were used as input variables for the regression analysis following the EFA procedure. This approach is commonly adopted when the goal is to reduce multicollinearity among observed variables and to derive composite indicators representing latent constructs more efficiently [19]. As noted by Devlieger et al. [20], using factor scores can lead to situations where standardized and unstandardized regression coefficients appear similar (all the studied variables have been standardized with a mean = 0 and a standard deviation = 1), and standard errors exhibit only minimal differences and are nearly uniform across predictors, due to the nature of factor score estimation and scaling. Furthermore, according to Zuccaro [19], factor scores serve as weighted linear combinations of observed variables, eliminating the need to report individual variable weights post-EFA. Therefore, the observed output characteristics are consistent with standard practices when applying factor scores in predictive models.

In Table 4, the ANOVA analysis shows a significance level (Sig.) of 0.000 < 0.01. Therefore, the result is statistically significant, confirming the reliability of the regression model.

The Variance Inflation Factor (VIF) values of all variables in the model are 1. According to DiStefano et al. [21], the use of factor scores eliminates multicollinearity among independent variables. Therefore, the model does not exhibit any signs of multicollinearity. This is because the study applied a standardized model by using the factor scores extracted from the EFA rotation for regression analysis [19, 20].

Table 4: Analysis of variance ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	226.089	4	56.522	129.120	0.000
	Residual	172.911	395	0.438		
	Total	399.000	399			

Source: Results of survey data analysis, 2024

The results of linear regression analysis in Table 5 show that four factors including: customer commitment (CC), perceived interest rate (IR), service quality (SQ), and perception of conversion barriers (CB) have Sig: 0.000 < 0.01, so all factors affect customer loyalty and have statistical significance. The regression equation after analysis has the form as in Formula (5).

$$LT = 0.439*CC + 0.396*SQ + 0.358*IR + 0.299*CB \qquad (5)$$

Table 5 presents the regression coefficients for each independent variable in the model. The results indicate that all four factors (customer commitment, service quality, perceived interest rate, and perception of conversion barriers) exert a positive influence on customer loyalty at MFIs in Tien Giang Province. The adjusted R^2 value of 0.567 suggests that the variation in customer loyalty, approximately 56.7%, reflects a moderately strong explanatory power.

Among the four variables, customer commitment ($\beta = 0.439$) was considered the most influential factor. This finding aligns with previous research by Tegambwage [4], who emphasized that customer commitment plays a crucial role in enhancing long-term loyalty in microfinance settings. In this study, customer commitment is measured through customer interest, voluntary participation in the institution's programs, and

Table 5: The parameters in regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	0	0.033		0	1.000	
Service quality (SQ)	0.396	0.033	0.396	11.968	0.000	1.000
Perception of conversion barriers (CB)	0.299	0.033	0.299	9.018	0.000	1.000
Perceived interest rate (IR)	0.358	0.033	0.358	10.796	0.000	1.000
Customer commitment (CC)	0.439	0.033	0.439	13.244	0.000	1.000
Adjusted R^2 = 0.567						
F = 129.120						
Sig. = 0.000						

Source: Results of survey data analysis, 2024

the intentional choice to maintain a long-term relationship [8]. This result suggests that fostering emotional bonds and shared values with customers is crucial for customer retention in MFIs, particularly in communities that value trust and relationship-building.

The second most influential factor is service quality (β = 0.396), supporting findings from Zhengmeng et al. [5], who assert that flexibility, responsiveness, and customer-centric service delivery are critical to fostering customer satisfaction and loyalty. In the context of this study, service quality is defined by timely service delivery, responsiveness, customer satisfaction with current products, and intention to repurchase [3, 15]. The result emphasizes the importance for MFIs to consistently deliver high-quality services to strengthen customer relationships and encourage repeat engagement.

The perceived interest rate (β = 0.358) ranks third in its impact on loyalty. Although financial institutions often compete on rates, this study confirms that transparent and flexible pricing policies play a significant role in customer perceptions and loyalty. These findings are consistent with Killu [10], who suggested that interest rate adjustments and strategic promotions can significantly influence loan uptake and customer retention [11]. MFIs should not only focus on offering competitive rates but also ensure that customers understand pricing structures clearly and perceive them as fair and beneficial.

Lastly, perception of conversion barriers (β =

0.299) has the lowest impact among the variables, yet still shows a statistically significant positive relationship with customer loyalty. This aligns with the theoretical perspectives presented by Richards [8], who indicated that strong interpersonal relationships, switching costs, and perceived lack of better alternatives can discourage customers from leaving. The relatively lower coefficient may suggest that while these barriers matter, they are less effective in building emotional loyalty compared to intrinsic factors such as commitment and service quality [7, 9]. Nevertheless, MFIs should invest in media communication and branding to create a strong presence in the customer's mind and build a sense of community belonging, which in turn can reinforce these psychological barriers to switching.

For microfinance institutions, the findings underscore the need to prioritize emotional bonds through customer commitment and deliver consistent service quality. Managers should also consider transparent interest rate policies and recognize the psychological impact of switching barriers. Tailored communication strategies, community-building efforts, and flexible service offerings could significantly enhance customer retention.

V. CONCLUSION

The results of the multivariate regression analysis indicate that customer loyalty at MFIs in Tien Giang Province is significantly influenced by four key factors: customer commitment (0.439),

service quality (0.396), perceived interest rate (0.358), and perceptions of conversion barriers (0.299). Among these, customer commitment has the strongest impact, underscoring the importance of building trust and fostering long-term relationships between MFIs and their clients. Meanwhile, service quality and competitive perceived interest rates also play crucial roles in enhancing customer satisfaction and loyalty. Lastly, perceptions of conversion barriers, though less impactful, remain an important factor in retaining customers amidst increasing competition.

Overall, the findings highlight the multidimensional nature of customer loyalty in the microfinance sector. Emotional, functional, and psychological factors jointly contribute to shaping customer behaviors. The study supports existing literature while offering context-specific insights into the dynamics of loyalty at grassroots financial institutions in Vietnam.

Based on these findings, MFIs should implement strategic policies to strengthen customer commitment, improve service quality, optimize perceived interest rates, and create competitive advantages. These efforts will not only help retain existing customers but also attract new ones, contributing to the sustainable growth of MFIs and promoting financial inclusion in the region.

This study, while offering valuable insights, has several limitations. First, the data were collected from a single province (Tien Giang), which may limit the generalizability of the findings to other regions or countries. Second, the use of cross-sectional data restricts the ability to infer causality. Future research could expand the geographic scope, incorporate longitudinal data, and explore potential moderating or mediating variables such as digital engagement or financial literacy. Third, the analytical method employed in this study is linear regression based on factor scores, in which both the independent and dependent variables are estimated values. Therefore, the regression coefficients reflect the relationships between these values, rather than directly representing the relationships between actual phenomena.

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