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Balancing internal capabilities and external funding: A study on the financial sustainability of people's credit funds in Vietnam

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Abstract: This study examines the determinants of financial sustainability in Vietnam's People's Credit Funds (PCFs) using a quantitative model. The results indicate that customer outreach has the most significant positive effect, followed by loan portfolio management, organizational capacity, productivity, governance quality, and transparency. These findings emphasize the importance of expanding client access, improving internal efficiency, and strengthening governance structures to enhance sustainability. In contrast, financial autonomy exhibits a negative impact, suggesting that PCFs may not yet be ready for full independence without gradual institutional support. Financial management, while positively associated, does not show statistical significance. The study enriches microfinance literature by offering a comprehensive framework that captures both internal and external drivers of sustainability. It also provides practical guidance for PCF managers and policymakers to improve operational performance and carefully plan the transition toward greater financial independence based on institutional capacity.

Keywords: *Financial management, Financial self-sustainability, Financial sustainability, PCFs, Microfinance, Vietnam.*

1. Introduction

People's Credit Funds (PCFs) in Vietnam represent essential cooperative financial institutions that promote financial inclusion and drive socio-economic development, particularly in rural and underserved regions. Through the provision of customized credit and savings products, PCFs enable unbanked and underbanked households and small enterprises to access crucial financial resources needed for both business operations and everyday life [1]. The financial sustainability of PCFs—defined as their ability to cover operational and financing costs independently of external subsidies—is vital for their continued existence and for advancing community welfare [2]. However, PCFs face significant challenges stemming from economic fluctuations, evolving regulatory landscapes, and increasing competition from commercial financial institutions, all of which pose risks to their operational resilience.

In the broader context of Vietnam's banking sector, issues of sustainability and performance have attracted increasing scholarly interest, especially in light of the post-COVID-19 recovery period, the momentum of digital transformation, and the growing importance of Environmental, Social, and Governance (ESG) criteria. Recent empirical research by Nguyen, et al. [3] and Phan, et al. [4] indicates that fintech adoption and transparent ESG disclosures not only enhance financial inclusion but also foster sustainable growth, making these elements integral to the long-term strategies of financial institutions. These insights are corroborated by Nguyen and Bui [5] who demonstrate that a business model oriented toward sustainability significantly strengthens long-term competitive advantage.

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Furthermore, the implementation of International Financial Reporting Standards and strategic diversification of revenue sources have been shown to improve bank performance [6].

Global research concerning microfinance institutions (MFIs) and credit cooperatives highlights a combination of internal and external factors influencing financial sustainability. Internal drivers—such as governance quality, organizational capacity, and effective loan portfolio management—have been consistently recognized as pivotal determinants of financial performance [7, 8]. Nonetheless, relatively few studies have integrated the perspectives of both PCF managers and members, thereby limiting the breadth of understanding regarding the drivers of sustainability.

Addressing these gaps, this study investigates both internal and external determinants of financial sustainability among Vietnamese PCFs, employing a mixed-methods approach that synthesizes quantitative survey data with qualitative interview findings. Theoretically, the research contributes to the microfinance literature by validating and refining the financial sustainability framework specific to the Vietnamese context. It offers empirical evidence on the dynamic interactions among organizational capacity, governance practices, and transparency mechanisms in shaping sustainability outcomes. Additionally, the study critically examines the conventional assumption that financial self-sufficiency inherently promotes sustainability, exploring its potential unintended consequences, and thereby enriching the discourse on balancing financial viability with social objectives within cooperative finance [2].

From a practical standpoint, the research delivers targeted policy and managerial recommendations aimed at strengthening the sustainability of PCFs through improved governance structures, enhanced productivity, and broader client outreach. By proposing strategies tailored to the Vietnamese context, the study supports the development of resilient PCFs capable of more effectively serving rural communities and advancing the nation's broader financial inclusion goals [9].

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature, constructs the theoretical framework, and defines key variables. Section 3 details the research methodology, including data collection methods and analytical procedures. Section 4 presents the empirical findings, comprising both quantitative results and qualitative insights. Section 5 discusses the findings in relation to existing literature and explores their policy implications. Finally, Section 6 concludes the paper with a summary of key findings, policy recommendations, and suggestions for future research. Through a comprehensive analysis of the financial sustainability of Vietnam's PCFs, this study not only advances academic knowledge but also offers practical guidance for stakeholders engaged in community finance.

2. Literature Review

2.1. Background Theory

2.1.1. The Concept of People's Credit Funds and Financial Sustainability

People's Credit Funds (PCFs) are cooperative credit institutions formed by legal entities, individuals, and households under the Law on Credit Institutions and the Law on Cooperatives, primarily aiming to support mutual assistance in production, business, and livelihood enhancement [10]. As distinct legal entities, PCFs mobilize member savings for investment and trade, thereby reinforcing the formal financial system, reducing poverty, and enhancing incomes. To sustain these vital economic and social functions, PCFs must achieve financial self-sufficiency. From both theoretical and practical perspectives, scholars and development agencies—including Ledgerwood, et al. [2] and CGAP [11] and the Asian Development Bank (ADB) [12]—argue that PCFs go beyond being mere alternative credit providers; they operationalize principles of autonomy, collaboration, and mutual support in managing financial resources. These contributions play a significant role in socio-economic development, particularly in rural and underserved areas.

The World Bank [13] asserts that the sustainable development of financial sectors in emerging economies depends on adherence to several core principles:

1. Defining explicit development objectives

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2. Employing market-based economic instruments when feasible
3. Promoting household and institutional savings
4. Optimizing organizational and governance structures
5. Leveraging synergistic opportunities to generate multiplier effects
6. Incentivizing private-sector participation in environmental initiatives
7. Strengthening environmental institutions
8. Prioritizing sound management practices over technological solutions
9. Emphasizing preventive measures over remedial actions
10. Fostering broad-based social engagement in environmental stewardship.

2.1.2. Rationale for Applying the Financial Sustainability of PCFs Framework

The adoption of a financial sustainability framework for PCFs is justified for several reasons. First, it provides an integrated view of the economic, social, and governance dimensions that influence institutional endurance. By analyzing how these dimensions interact, scholars can identify the critical conditions and threshold effects that support or undermine PCF viability. Second, the framework's emphasis on social responsibility aligns with PCFs' cooperative mission to empower underserved communities and foster inclusive financial development. Achieving a balance between profitability and social outreach is essential for PCFs to remain financially robust while fulfilling their mandate of serving members' livelihood needs [1]. Third, applying this framework allows for the identification of context-specific best practices and operational strategies. As PCFs face evolving regulatory requirements and increased competition from commercial lenders, a sustainability-focused approach can guide decision-making in areas such as pricing, product design, and governance reforms, which enhance both resilience and member impact [13]. Finally, employing a financial sustainability lens contributes to the broader community finance literature by illustrating how cooperative institutions can serve as pillars of a resilient financial ecosystem. This perspective underscores the potential of PCFs to advance Sustainable Development Goals such as poverty reduction, gender equality, and decent work by integrating social objectives with financial performance targets [12].

2.2. Hypothesis and Research Model

Financial sustainability is tightly linked to all PCF activities and is influenced by multiple factors, as outlined below:

2.2.1. Organizational Capacity

Organizational capacity is a crucial determinant of the success and sustainability of PCFs. A well-capacitated PCF can effectively manage risks, improve operational efficiency, expand market reach, build a strong reputation, and adapt to changes in the business environment [14]. To achieve these objectives, PCFs should invest in human resource development, implement modern risk management systems, leverage information technology, and collaborate with other organizations. As a result, PCFs will not only ensure sustainable profitability but also make a significant contribution to local and national socio-economic development. Hartarska [7] found that governance and management significantly impact the financial performance of microcredit institutions, with effective governance reducing risks and improving sustainability. Rahman [15] also highlighted that sound management practices help maintain liquidity and attract investment, which creates a positive cycle between capital mobilization and credit supply. While organizational capacity is vital, an overemphasis on capacity-building can divert resources from core operations [2]. PCFs must balance capacity-building efforts with core operations, ensuring efficient resource allocation. Strategic capacity building, effective resource allocation, workforce development, and strong governance can enhance operational efficiency, reduce costs, and improve financial outcomes [16].

H_1: Organizational capacity has a positive impact on the financial sustainability of PCFs.

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2.2.2. Productivity

Productivity is closely linked to the financial sustainability of PCFs. A productive PCF, characterized by efficient operations, optimal resource utilization, and skilled staff, can significantly boost its financial performance [17]. Enhanced productivity leads to reduced operational costs, increased loan disbursement, and improved financial sustainability. By focusing on productivity, PCFs can strengthen their financial position, expand services, and contribute to community economic development. Adhikary and Papachristou [18] showed a positive relationship between microfinance institutions' financial sustainability and productivity. On the other hand, Abrar and Javid [19] noted that poor financial performance and low productivity signal a lack of sustainability, while Wassie, et al. [20] emphasized that personnel productivity positively impacts the financial performance, including financial self-sufficiency, of microfinance institutions. For long-term sustainability, PCFs must prioritize continuous improvement, robust risk management, financial discipline, member engagement, and adaptability.

H_2: Productivity has a positive impact on the financial sustainability of PCFs.

2.2.3. Loan Portfolio Management

Loan portfolio management involves strategically managing and monitoring a portfolio of loans to optimize returns and minimize risks [21]. Effective loan portfolio management helps financial institutions maintain stability, enhance customer satisfaction, and promote sustainable growth [22]. For PCFs, managing loan portfolios effectively reduces credit risks, improves asset quality, and contributes to financial stability. According to Ha [8] the financial sustainability of microfinance institutions is positively affected by loan intensity and scale. However, poor loan portfolio management can lead to financial losses, harm a PCF's reputation, and jeopardize sustainability. Effective loan management is essential for reducing non-performing loans and preserving the capital base.

H_3: Loan portfolio management has a positive impact on the financial sustainability of PCFs.

2.2.4. Governance Quality

Good governance plays a vital role in ensuring the financial sustainability of PCFs. Most PCFs have established mechanisms, policies, and internal regulations that guide governance, management, operational activities, and risk control [23]. Effective governance minimizes risks, optimizes resources, enhances competitiveness, and builds customer trust [2]. Conversely, poor governance can lead to corruption, waste, and loss of trust, ultimately jeopardizing the organization's survival. Effective governance not only improves day-to-day financial operations but also ensures the generation of sufficient income to cover costs and achieve profitability. As Hartarska [7] indicated, governance quality positively impacts financial sustainability by minimizing risks and improving performance.

H_4: Governance quality has a positive impact on the financial sustainability of PCFs.

2.2.5. Loan Portfolio Management

Loan portfolio management is a crucial factor for the financial sustainability of People's Credit Funds (PCFs). The quality of loans granted, as well as the effectiveness of loan monitoring systems, can have a significant impact on a PCF's financial health. An effective loan portfolio management system ensures that credit risks are minimized, repayment rates are high, and the loan portfolio is diversified to reduce exposure to a single borrower or sector. High non-performing loan (NPL) rates, for instance, can significantly impair a PCF's ability to generate profit and maintain financial stability. According to Cuadrado-Ballesteros and Bisogno [24] sound loan portfolio management practices can enhance the sustainability of microfinance institutions by minimizing risks and ensuring that credit operations are profitable.

H_5: Loan portfolio management has a positive impact on the financial sustainability of PCFs.

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2.2.6. Governance Quality

Good governance is fundamental to the sustainability of financial institutions, including PCFs. Governance quality refers to the effectiveness of leadership, decision-making processes, and accountability structures within the organization. High-quality governance enhances transparency, reduces the risk of corruption, and promotes efficient decision-making, all of which contribute to the financial sustainability of the institution. Studies by Cucciniello, et al. [25] indicate that institutions with strong governance mechanisms are more likely to attract investment, maintain operational efficiency, and adapt to regulatory changes. Furthermore, effective governance ensures that the organization is managed in a way that aligns with the long-term interests of stakeholders, including members, employees, and investors.

H_6: Governance quality positively influences the financial sustainability of PCFs.

2.2.7. Financial Management

Financial management involves the planning, monitoring, and control of financial resources to achieve the institution's objectives. For PCFs, sound financial management is critical to ensuring liquidity, profitability, and long-term sustainability. It includes aspects such as budgeting, financial reporting, risk assessment, and capital management. According to Heald [26] financial management practices, such as maintaining adequate capital reserves and effective cost control measures, are essential for mitigating financial risks and ensuring the stability of microfinance institutions. Proper financial management helps PCFs to withstand economic shocks and maintain solvency even during periods of financial distress.

H_7: Financial management has a positive impact on the financial sustainability of PCFs.

2.2.8. Financial Self-Sufficiency

Financial self-sufficiency (FSS) refers to the ability of an institution to generate enough revenue to cover its operational costs without relying on external funding sources. For PCFs, achieving financial self-sufficiency is a key indicator of their long-term sustainability. Institutions that are financially self-sufficient can reduce their dependency on donor funding or government subsidies, which are often temporary and unreliable. According to the Microfinance Information Exchange (MIX) [27] a strong focus on FSS allows PCFs to reinvest their profits into expanding services, improving operations, and enhancing member outreach, which in turn leads to greater financial stability. Achieving financial self-sufficiency also boosts stakeholder confidence and encourages further investment in the institution.

H8: Financial self-sufficiency positively influences the financial sustainability of PCFs.

3. Methodology

3.1. Sample

We developed a structured questionnaire using Google Forms and implemented a snowball-sampling procedure to recruit respondents. Drawing on Nguyen's recommendation that each latent construct be measured by a minimum of five indicators—and preferably ten, to satisfy a 10:1 respondent-to-item ratio [28] our instrument comprises 35 measurement items. Accordingly, the study requires at least 175 completed surveys (35 items × 5 responses per item), with additional responses enhancing the precision of parameter estimates and the stability of multivariate analyses. To achieve this target, we initially distributed the questionnaire to a purposive set of approximately 50 employees drawn from diverse Vietnamese firms and asked each participant to refer the survey link to colleagues within their professional networks. This snowball approach not only facilitates access to hard-to-reach populations but also helps ensure that the final sample ($n \geq 175$) is sufficiently large for robust reliability and validity assessment, including confirmatory factor analysis and structural equation modeling.

Based on the demographic data, the gender distribution of survey respondents was approximately balanced, with 47.9% male and 52.1% female. Age groups were also evenly represented: 29.9% were

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aged 46–55, 27.5% were 35–45, and both the under-35 and over-55 cohorts accounted for 21.3% each. Educational attainment varied: 32.7% held a master's degree, 22.3% a bachelor's degree, 20.4% a doctorate, 14.7% a high-school diploma, and 10.0% other qualifications. Participant roles were unevenly distributed: supervisory-board members comprised 23.2%, directors and employees each 20.9%, middle managers 19.9%, and board members 15.2%. Finally, in terms of years of experience, 43.1% had 3–10 years, 35.5% over 10 years, and 21.3% under 3 years.

3.2. Measure

Building upon prior research, we developed a comprehensive measurement scale to assess the determinants influencing the financial sustainability of PCFs in Vietnam. Following an extensive process of data collection and evaluation, we finalized a research model comprising eight independent variables: organizational capacity, productivity, loan portfolio management, governance quality, financial management, client outreach, transparency, and financial self-sufficiency. The dependent variable in this model is the financial sustainability of PCFs. To ensure the clarity and validity of the survey instrument, a pilot test was conducted with approximately 15 professionals from diverse organizations. Feedback obtained from this pre-testing phase was instrumental in refining the questionnaire to enhance its reliability and relevance.

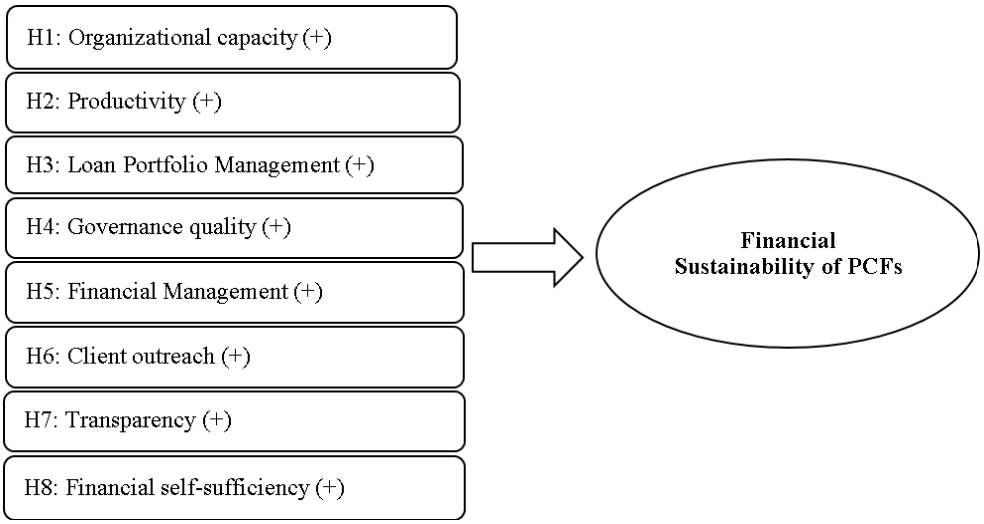

Figure 1.
Research model.

The survey employed a 5-point Likert scale designed based on previous research's scales, such as the organizational capacity scale by Judge and Douglas [29] the productivity, governance quality, financial sustainability, and financial self-sufficiency scales by Beg [30]. The scale has 5 options on a Likert scale: 1. Strongly disagree; 2. Disagree; 3. Neutral; 4. Agree; and 5. Strongly agree. Participants will select the answer most suitable for them. The purpose of the survey is to assess the impact of organizational capacity, productivity, governance quality, financial management, and financial self-sufficiency on the financial sustainability of people's credit in Vietnam. To collect data, we conducted an online survey using Google Forms. The survey interface was designed to be user-friendly and accessible to Vietnamese respondents. Additionally, we included usage instructions on the first page of the survey to ensure clarity. After a pilot test with 15 individuals, we collected feedback to refine the survey and distributed it to staff in companies, requesting that employees share it among themselves to collect data on a larger scale. After the data collection process, we proceeded with data cleaning. First, responses that did not meet the participation criteria were excluded, and we received 211 valid questionaires.

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Next, we eliminated outliers, including responses that selected only one answer or exhibited unusual patterns. Finally, the valid data was coded and entered into SPSS for multiple linear regression analysis to test the research hypotheses.

3.3. Data Analysis

The data after being collected from the online survey, will be further processed in SPSS software for analysis. From there, we will assess the impact of factors such as organizational capacity, productivity, loan portfolio management, governance quality, financial management, client outreach, transparency, and financial self-sufficiency on the financial sustainability of PCFs in Vietnam. The analysis process includes: descriptive statistics to determine the characteristics of the sample, Cronbach's alpha coefficient analysis to determine the consistency of observed variables within a factor, and EFA to test the reliability and validity of the scale. Next, Pearson correlation analysis will be conducted to examine the correlation between independent and dependent variables. Finally, regression analysis will be used to evaluate the relationship between variables. Based on the results from SPSS, we will draw conclusions and implications for the research.

4. Results

4.1. Measurement Model

Table 1 presents the descriptive statistics for the nine key variables across a sample of 211 observations.

- Organizational Capacity (NL): The variable has a mean score of 3.9633 and a standard deviation of 0.78931, with a minimum value of 1 and a maximum of 5. This indicates a relatively high perceived organizational capacity, close to 4 out of 5.
- Productivity (HQ): The mean value is 3.8863 with a standard deviation of 0.81493, ranging from 1 to 5, suggesting moderate variability in the perceived level of productivity.
- Loan Portfolio Management (QL): This variable recorded the highest mean among the managerial constructs (4.0296), with a standard deviation of 0.80060. Values ranged from 1.25 to 5.
- Quality Management (CL): The average score is 3.9125 with a standard deviation of 0.75041, within the range of 1.25 to 5.
- Financial Management (QTTC): Reported a mean of 3.9088 and a standard deviation of 0.78998, ranging from 1 to 5.
- Customer Access (TCH): This construct achieved the highest overall mean (4.0877) with a standard deviation of 0.81249, indicating strong performance in accessibility.
- Transparency (MB): The mean value is 4.0166, with a standard deviation of 0.75245, suggesting consistent perceptions of transparency across respondents.
- Financial Autonomy (TCTC): This variable has the lowest mean score among all variables (3.8780), with a standard deviation of 0.81371.
- Financial Sustainability of People's Credit Funds (TBV): The mean value is 4.0257, with a standard deviation of 0.73730.

Overall, the mean values for all constructs exceed 3.8, reflecting positive evaluations across the measured dimensions. "Customer Access" received the highest mean rating, whereas "Financial Autonomy" was rated lowest.

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Table 1.
Descriptive statistics.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
NL	211	1	5	3.9633	0.78801
HQ	211	1	5	3.8863	0.81583
QL	211	1.25	5	4.0296	0.82050
CL	211	1.25	5	3.9123	0.75041
QTTC	211	1	5	3.9088	0.79898
KH	211	1.25	5	4.0877	0.81249
MB	211	1.25	5	4.0166	0.78245
TCTC	211	1	5	3.8780	0.81371
TBV	211	1	5	4.0237	0.75730

We used Cronbach's Alpha reliability test to evaluate the consistency of the observed variables within each scale designed to measure the nine constructs. The results showed that Cronbach's Alpha for all scales exceeded 0.7, and the corrected item-total correlation of all 35 observed variables was greater than 0.3. And this is considered a good and highly reliable scale according to Nunnally [31] and Cristobal, et al. [32] so there were no items excluded and all observed variables were carried to the next step EFA. Table 2 reports the reliability of each measurement scale using Cronbach's Alpha:

- Organizational Capacity (NL): Comprising 4 items, Cronbach's Alpha is 0.822 (Very Good), with a minimum corrected item-total correlation of 0.592.
- Productivity (HQ): With 4 items, Cronbach's Alpha is 0.849 (Very Good), and the minimum corrected item-total correlation is 0.665.
- Loan Portfolio Management (QL): Consisting of 4 items, Cronbach's Alpha is 0.850 (Very Good), with a minimum correlation of 0.669.
- Quality Management (CL): Includes 4 items, Cronbach's Alpha is 0.825 (Very Good), and the lowest correlation is 0.600.
- Financial Management (QTTC): Cronbach's Alpha is 0.839 (Very Good) with a minimum correlation of 0.625 across 4 items.
- Customer Access (TCH): Demonstrated the highest internal consistency, with Cronbach's Alpha of 0.867 (Excellent) and a minimum correlation of 0.713.
- Transparency (MB): Cronbach's Alpha is 0.828 (Very Good), with the lowest item-total correlation at 0.625.
- Financial Autonomy (TCTC): Achieved Cronbach's Alpha of 0.848 (Very Good), with a minimum correlation of 0.649.
- Financial Sustainability (TBV): Comprising 3 items, this construct yielded Cronbach's Alpha of 0.759 (Acceptable), with a minimum item-total correlation of 0.550.

All scales exceeded the acceptable threshold of 0.7, confirming high internal consistency. "Customer Access" achieved the highest reliability, whereas "Financial Sustainability" had the lowest but remained within the acceptable range.

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Table 2.
Cronbach's Alpha Reliability Test Results.

Variables	Number of Items	Cronbach's Alpha	The minimum value of the Corrected Item- Total Correlation
NL	4	0.822	0.598
HQ	4	0.849	0.663
QL	4	0.850	0.669
CL	4	0.825	0.600
QTTC	4	0.839	0.625
KH	4	0.867	0.712
MB	4	0.838	0.623
TCTC	4	0.848	0.649
TBV	3	0.759	0.550

Kaiser-Meyer-Olkin (KMO) Measure: The KMO value of 0.897 indicates excellent sampling adequacy (KMO > 0.8 is considered very good). Bartlett's Test of Sphericity: Chi-Square: 3370.395; Degrees of Freedom: 496; Significance Level: $p < 0.001$. The significant result ($p < 0.05$) rejects the null hypothesis that the correlation matrix is an identity matrix, confirming that factor analysis is appropriate. (Table 3).

Table 3.
KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**0.897**
Bartlett's Test of Sphericity	Approx. Chi-Square	3570.395
	df	496
	Sig.	0.000

Before Rotation: Factor 1 explained 33.701% of the variance (Eigenvalue = 10.794). Subsequent factors explained progressively less: Factor 2 (7.316%), Factor 3 (6.476%), ..., Factor 9 (3.381%). After Rotation: Variance explained by each factor became more evenly distributed: Factor 1 (9.191%), Factor 2 (9.256%), ..., Factor 8 (8.341%). Total Variance Explained: The nine extracted factors collectively account for 69.443% of the total variance, surpassing the commonly accepted 60% threshold in social science research. Although the ninth factor had an Eigenvalue slightly below 1 (0.762), it was retained for theoretical and structural relevance. The rotated solution achieved a balanced and interpretable factor structure, with each factor explaining approximately 8–9% of the total variance. (Table 4).

Table 4.
Total Variance Explained.

No.	Total	Initial Eigenvalues			Extractions sums of squared loadings			Rotation sums of squared loadings	
		% of Variance	Cumul-ative %	Total	% of Variance	Cumula-tive%	Total	% of Variance	Cumulative %
1	10.784	33.701	33.701	10.784	33.701	33.701	2.941	9.191	9.191
2	2.341	7.316	41.017	2.341	7.316	41.017	2.901	9.065	18.256
3	2.073	6.478	47.495	2.073	6.478	47.495	2.841	8.877	27.133
4	1.677	5.241	52.736	1.677	5.241	52.736	2.758	8.619	35.752
5	1.632	5.101	57.837	1.632	5.101	57.837	2.742	8.570	44.321
6	1.374	4.293	62.130	1.374	4.293	62.130	2.688	8.401	52.723
7	1.277	3.990	66.120	1.277	3.990	66.120	2.681	8.380	61.102
8	1.063	3.323	69.443	1.063	3.323	69.443	2.669	8.341	69.443
9	0.762	2.381	71.824						

Next, we conducted Pearson correlation analysis to examine the correlation between independent and dependent variables and to test for multicollinearity. Results showed that Pearson correlation coefficients (r) for all pairs of variables were in the range of $-1 < r < 1$, with sig < 0.001. Furthermore,

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the absolute value of the correlation coefficient between independent variables did not exceed 0.7, indicating that there was no evidence of multicollinearity between pairs of variables [33]. Table 5 presents the factor loadings after rotation, illustrating the strength of the relationship between each observed variable and its respective extracted factor:

- Factor 1 – Customer Outreach (TCH): Comprising TCH1 (0.803), TCH2 (0.774), TCH4 (0.767), and TCH3 (0.753), this factor reflects the institutions' effectiveness in reaching and engaging customers.
- Factor 2 – Loan Portfolio Management (QL): Including QL1 (0.769), QL3 (0.775), QL4 (0.748), and QL2 (0.747), this factor captures the management efficiency of loan portfolios.
- Factor 3 – Financial Governance (QTTC): Represented by QTTC4 (0.756), QTTC1 (0.746), QTTC2 (0.736), and QTTC3 (0.667), indicating the institutions' internal financial oversight capabilities.
- Factor 4 – Transparency (MB): With loadings from MB4 (0.809), MB1 (0.793), MB2 (0.716), and MB3 (0.694), this factor assesses the level of institutional transparency.
- Factor 5 – Financial Autonomy (TCTC): Constituted by TCTC1 (0.783), TCTC2 (0.760), TCTC4 (0.741), and TCTC3 (0.652), reflecting the degree of independent financial decision-making.
- Factor 6 – Productivity (HQ): Comprising HQ1 (0.750), HQ2 (0.747), HQ3 (0.740), and HQ4 (0.665), this factor indicates the operational productivity of the institutions.
- Factor 7 – Organizational Capacity (NL): Including NL1 (0.805), NL4 (0.752), NL3 (0.707), and NL2 (0.569), this factor represents the overall capacity and competency of the organizational structure.
- Factor 8 – Governance Quality (CL): Reflected by CL3 (0.731), CL2 (0.724), CL4 (0.705), and CL1 (0.698), this factor measures the governance practices within the institutions.

In line with standard thresholds for factor analysis, all observed variables demonstrated factor loadings above 0.5 (the minimum acceptable level), with most exceeding 0.7, indicating robust convergent validity. Importantly, there were no significant cross-loadings, meaning each variable loaded strongly on only one factor, further affirming the discriminant validity and structural integrity of the factor model.

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Table 5.
Rotated component matrix.

Scales	Components							
	1	2	3	4	5	6	7	8
KH2	0.803							
KH3	0.774							
KH4	0.760							
KH1	0.753							
QL1		0.798						
QL3		0.775						
QL4		0.748						
QL2		0.747						
QTTC4			0.756					
QTTC1			0.746					
QTTC2			0.736					
QTTC3			0.687					
MB4				0.809				
MB1				0.782				
MB2				0.716				
MB3				0.694				
TCTC1					0.783			
TCTC2					0.760			
TCTC4					0.741			
TCTC3					0.652			
HQ1						0.750		
HQ2						0.747		
HQ3						0.740		
HQ4						0.663		
NL1							0.805	
NL4							0.732	
NL3							0.707	
NL2							0.660	
CL3								0.751
CL2								0.745
CL4								0.708
CL1								0.698

NL is positively and significantly correlated with all other variables, with the strongest associations observed with TBV ($r = 0.575$, $p < 0.01$) and HQ ($r = 0.417$, $p < 0.01$). HQ is positively and significantly correlated with all constructs, most notably with TCTC ($r = 0.478$, $p < 0.01$) and TBV ($r = 0.502$, $p < 0.01$). QL shows significant positive correlations with all variables, especially with CL ($r = 0.455$, $p < 0.01$) and TBV ($r = 0.521$, $p < 0.01$). CL is strongly associated with QTTC ($r = 0.441$, $p < 0.01$) and TBV ($r = 0.546$, $p < 0.01$). QTTC also exhibits significant positive correlations with all variables, particularly with TBV ($r = 0.465$, $p < 0.01$). TCH shows strong positive relationships across variables, with the most pronounced correlation being with MB ($r = 0.392$, $p < 0.01$) and especially TBV ($r = 0.674$, $p < 0.01$), highlighting the critical role of outreach in enhancing sustainability. MB is significantly associated with TCTC ($r = 0.414$, $p < 0.01$) and TBV ($r = 0.534$, $p < 0.01$). TCTC shows the strongest positive correlation with TBV ($r = 0.376$, $p < 0.01$). (Table 6). In conclusion, all variables exhibit statistically significant positive intercorrelations at the 0.01 level, indicating tight interrelationships across the research dimensions. Most notably, each construct maintains a strong, significant association with the dependent variable, TBV. The strongest relationship is observed between TCH and TBV ($r = 0.674$, $p < 0.01$), underscoring the pivotal role of customer engagement in ensuring institutional sustainability [33].

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Table 6.
Pearson Correlation analysis results.

Factor	NL	HQ	QL	CL	QTTC	KH	MB	TCTC	TBV
NL	1	0.417**	0.273**	0.500**	0.435**	0.483**	0.420**	0.394**	0.575**
HQ	0.417**	1	0.396**	0.435**	0.524**	0.494**	0.456**	0.478**	0.582**
QL	0.273**	0.396**	1	0.341**	0.408**	0.399**	0.368**	0.471**	0.521**
CL	0.500**	0.435**	0.341**	1	0.441**	0.413**	0.434**	0.458**	0.546**
QTTC	0.435**	0.524**	0.408**	0.441**	1	0.306**	0.405**	0.538**	0.465**
KH	0.483**	0.494**	0.399**	0.413**	0.306**	1	0.395**	0.302**	0.672**
MB	0.420**	0.456**	0.368**	0.434**	0.405**	0.395**	1	0.414**	0.514**
TCTC	0.394**	0.478**	0.471**	0.458**	0.538**	0.302**	0.414**	1	0.376**
TBV	0.575**	0.582**	0.521**	0.546**	0.465**	0.672**	0.514**	0.376**	1

4.2. Hypothesis Testing

Table 7 presents the summary results of the regression model: R = 0.830, indicating a strong correlation between the independent variables and the dependent variable. R Square = 0.689, suggesting that 68.9% of the variation in the dependent variable (Financial Sustainability – FS) is explained by the independent variables in the model. Adjusted R Square = 0.675, providing a more accurate estimate of the model's explanatory power after adjusting for the number of predictors. Standard Error of the Estimate = 0.42098, representing the standard deviation of the residuals. Durbin-Watson = 2.013, which is close to 2, indicating no significant autocorrelation issues in the regression residuals [34].

Table 7.
Model Summary.

Model	R	R Square	Adjusted R Squared	Std. Error of the Estimate	Durbin- Watson
1	0.812	0.659	0.645	0.45098	2.015

Note: OC: Unstandardized coefficient B = 0.182, Standardized Beta = 0.189, statistically significant (Sig. < 0.001), VIF = 1.667; **PR:** B = 0.156, Beta = 0.168, significant (Sig. = 0.003), VIF = 1.816; **LPM**: B = 0.197, Beta = 0.214, significant (Sig. < 0.001), VIF = 1.647; **GQ**: B = 0.154, Beta = 0.156, significant (Sig. = 0.004), VIF = 1.639; **FM**: B = 0.132, Beta = 0.142, significant (Sig. = 0.009), VIF = 1.763; **CO**: B = 0.203, Beta = 0.224, significant (Sig. < 0.001), VIF = 1.650; **TR**: B = 0.109, Beta = 0.112, significant (Sig. = 0.027), VIF = 1.514; FA: B = -0.121, Beta = -0.129, significant (Sig. = 0.019), VIF = 1.762 (Table 8). All independent variables are statistically significant ($p < 0.05$) in predicting financial sustainability. All VIF values are below 5, indicating no severe multicollinearity issues.

Table 8.
Linear regression results.

Variables	Unstandardized B	Standardized Coefficients Beta	Sig.	VIF
NL	0.182	0.189	<0.001	1.667
HQ	0.156	0.168	0.003	1.816
QL	0.197	0.214	<0.001	1.487
CL	0.154	0.152	0.004	1.639
QTTC	0.062	0.065	0.235	1.763
KH	0.302	0.324	<0.001	1.650
MB	0.109	0.112	0.027	1.514
TCTC	-0.121	-0.129	0.019	1.762

Table 9.
Outlines the hypothesis testing results.

H1**:** Organizational Capacity has a positive impact on financial sustainability – Supported (β = 0.189	Sig. < 0.001).
H2**:** Productivity positively affects financial sustainability – Supported (β = 0.168	Sig. = 0.003).
H3**:** Loan Portfolio Management has a positive impact on financial sustainability – Supported (β = 0.214	Sig. < 0.001).
H4**:** Governance Quality positively influences financial sustainability – Supported (β = 0.156	Sig. = 0.004).
H5**:** Financial Management has a positive effect on financial sustainability – Supported (β = 0.142	Sig. = 0.009).
H6**:** Customer Outreach positively affects financial sustainability – Supported (β = 0.224	Sig. < 0.001).
H7**:** Transparency has a positive impact on financial sustainability – Supported (β = 0.112	Sig. = 0.027).
H8**:** Financial Autonomy has a negative impact on financial sustainability – Supported (β = -0.129	Sig. = 0.019).

Note: All eight hypotheses are supported by the data, with statistically significant effects ($p < 0.05$).

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Table 10.
The Results of Hypotheses Testing.

Hypotheses	Results	Supported
H1: Organizational capacity has a positive impact on financial sustainability of PCFs	B=0.189	Yes
	Sig=<0.001<0.05	
H2: Productivity has a positive impact on Financial sustainability of PCFs	B=0.168	Yes
	Sig=<0.003<0.05	
H3: Loan portfolio management has a positive impact on financial sustainability of PCFs	B=0.214	Yes
	Sig=<0.001<0.05	
H4: Governance quality has a positive impact on financial sustainability of PCFs	B=0.152	Yes
	Sig=0.004<0.05	
H5: Financial management has a positive impact on financial sustainability of PCFs	B=0.065	No
	Sig=0.235>0.05	
H6: Client outreach has a positive impact on financial sustainability of PCFs	B=0.324	Yes
	Sig=<0.001<0.05	
H7: Organizational transparency has a positive impact on the financial sustainability PCFs	B=0.112	Yes
	Sig=0.027<0.005	
H8: Financial self-sufficiency has a positive impact on the financial sustainability PCFs	B=-0.129	Yes
	Sig=0.019<0.005	

From the regression coefficients, we can construct a standardized linear regression equation as follows:

TBV = 0,324*KH + 0,214*QL + 0,189*NL + 0,168*HQ + 0,152*CL + 0,112*MB -0,129*TCTC +ε

5. Discussions and Limitations

5.1. Discussion of Research Findings

This study identifies eight key factors influencing the financial sustainability of PCFs in Vietnam. The regression model produced an R^2 value of 0.689, indicating that 68.9% of the variance in financial sustainability is explained by the independent variables—an appreciable level of explanatory power in social science research.

Customer Outreach and Financial Sustainability: Customer outreach exerts the strongest influence on the financial sustainability of PCFs ($\beta = 0.324$, $p < 0.001$). This finding aligns with Hermes, et al. [35] who emphasized that effective outreach and customer service are pivotal for financial sustainability. PCFs with robust customer outreach are more likely to expand their client base, diversify service offerings, and increase revenue streams, thereby enhancing sustainability. This is particularly crucial in the context of rising competition from other financial institutions.

Loan Portfolio Management and Financial Sustainability: Loan portfolio management demonstrates a significant positive effect ($\beta = 0.214$, $p < 0.001$), underscoring the importance of effective loan management. This result is consistent with Nyamsogoro [36] who highlighted the critical role of loan portfolio quality in determining profitability and sustainability. PCFs that implement prudent lending policies, rigorous loan appraisal processes, and effective monitoring systems can minimize non-performing loans, ensure stable cash flow, and enhance financial sustainability.

Organizational Capacity and Financial Sustainability: Organizational capacity has a significant positive impact ($\beta = 0.189$, $p < 0.001$), confirming the vital role of organizational structure and managerial competence. This is in line with Mersland and Strøm [37] who found that institutions with strong governance structures, qualified staff, and efficient operations tend to be more financially sustainable. PCFs should invest in capacity building through staff training, process improvement, and adoption of advanced technologies.

Productivity and Financial Sustainability: Productivity has a positive effect ($\beta = 0.168$, $p = 0.003$), reflecting the importance of operational efficiency. This supports the findings of Cull, et al. [38] who argued that high productivity enables better resource utilization and improved profitability. PCFs should focus on enhancing productivity through process innovation, automation, and cost optimization.

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Governance Quality and Financial Sustainability: Governance quality shows a positive impact (β = 0.152, p = 0.004), reaffirming the significance of effective corporate governance. This result concurs with Hartarska [7] who demonstrated that sound governance leads to more effective decision-making, lower risk exposure, and stronger stakeholder confidence. PCFs should establish transparent, accountable, and efficient governance mechanisms to foster sustainability.

Transparency and Financial Sustainability: Transparency exerts a positive influence (β = 0.112, p = 0.027), highlighting the importance of information disclosure. This aligns with Beisland, et al. [39] who found that transparency enhances stakeholder trust and attracts investment. PCFs should ensure transparency in financial reporting, operational processes, and decision-making to strengthen credibility and sustainability.

Financial Management and Financial Sustainability: Although financial management shows a positive coefficient (β = 0.065), the effect is not statistically significant at the 5% level (p = 0.235). This deviates from initial expectations and may reflect the current limitations in standardized and professional financial management practices among PCFs in Vietnam. This suggests a need for enhancing financial management capacity to positively influence sustainability.

Financial Autonomy and Financial Sustainability: Notably, financial autonomy has a negative impact on financial sustainability (β = -0.129, p = 0.019), contrary to initial expectations. This may be attributed to the unique characteristics of PCFs in Vietnam, where moving toward financial autonomy may reduce support from the government or international organizations, while PCFs may not yet be fully capable of operating independently. These findings suggest that the path to financial autonomy should be gradual and aligned with the actual capacity of PCFs.

5.2. Theoretical Contributions

This study contributes to the theoretical literature on microfinance and the financial sustainability of community-based financial institutions in several ways:

First, the study develops and empirically tests a comprehensive model integrating both internal (e.g., organizational capacity, governance) and external (e.g., customer outreach, transparency) factors influencing the financial sustainability of PCFs. This model broadens the understanding of sustainability in the context of community financial institutions.

Second, the study identifies a negative relationship between financial autonomy and sustainability—an unexpected finding that challenges previous studies. This suggests that the link between autonomy and sustainability is more complex and may be context-dependent.

Third, the study underscores the crucial roles of customer outreach and loan portfolio management in enhancing sustainability, emphasizing the strategic importance of these factors in the long-term development of PCFs.

5.3. Practical Implications

This research offers several practical insights for PCF managers and policymakers:

For PCF managers, the findings suggest prioritizing customer outreach and improving loan portfolio management—two factors with the most substantial impact on sustainability. Additionally, attention should be given to strengthening organizational capacity, enhancing productivity, and improving governance quality.

For policymakers, the study indicates that promoting financial autonomy among PCFs should be approached cautiously, with a roadmap that reflects institutional capacity. Policy support should focus on capacity building, improved governance, and facilitating broader customer access.

5.4. Limitations and Future Research Directions

This study has several limitations that should be considered when interpreting the results:

First, the use of convenience sampling may introduce selection bias. Future studies should adopt

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random sampling techniques to enhance the representativeness of the sample.

Second, the research focuses solely on PCFs in Vietnam, limiting the generalizability of the findings to other types of microfinance institutions or PCFs in other countries. Future research could expand to different institutional forms or conduct cross-country comparisons.

Third, the study uses cross-sectional survey data, which limits the ability to draw causal inferences. Future research could utilize panel data or longitudinal designs to explore causal relationships over time.

Fourth, the study does not fully incorporate external factors such as macroeconomic conditions, government policies, and industry competition. Future studies should integrate these variables to provide a more holistic understanding of financial sustainability.

Finally, the finding of a negative relationship between financial autonomy and sustainability warrants deeper exploration. Future research could investigate the mechanisms and conditions under which financial autonomy influences sustainability in PCFs.

6. Conclusion

This study sheds light on the factors influencing the financial sustainability of PCFs in Vietnam through a quantitative model with a high explanatory power ($R^2 = 0.689$). The findings identify eight key determinants, among which customer outreach, loan portfolio management, organizational capacity, productivity, governance quality, and transparency exhibit positive and statistically significant effects. Notably, customer outreach emerges as the most influential factor, underscoring the pivotal role of effective and inclusive customer service in strengthening the financial foundations of PCFs.

Conversely, the remaining two factors—financial management and financial autonomy—demonstrate unexpected patterns. While financial management does not significantly affect sustainability, financial autonomy shows a negative impact, contrary to theoretical expectations. This suggests that the push for autonomy may pose internal challenges for PCFs in Vietnam and highlights the need for a phased and capacity-aligned approach to achieving financial self-reliance.

Theoretically, this research contributes to the microfinance literature by proposing a comprehensive framework that integrates both internal and external drivers of financial sustainability. Importantly, it identifies a noteworthy inverse relationship between financial autonomy and sustainability, challenging conventional assumptions. Practically, the findings offer clear managerial implications for PCF leaders and policymakers—particularly in enhancing organizational capacity, improving governance, and refining customer engagement strategies.

Nonetheless, this study is not without limitations. It employs a convenience sampling method, cross-sectional data, and a context-specific focus limited to Vietnam. Future research should expand the sample scope, incorporate panel data, and consider macroeconomic variables to provide a more comprehensive understanding of financial sustainability in community-based financial institutions.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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