ISSN 2709-3409 (Online)

JOURNAL OF TERTIARY AND INDUSTRIAL SCIENCES

TERTIARY SCIENCES

ECONOMICS AND MANAGEMENT SCIENCES

A MULTIDISCIPLINARY JOURNAL OF THE HIGHER TECHNICAL TEACHERS' TRAINING COLLEGE, KUMBA

VOLUME 6, NUMBER 3
AUGUST, 2026

PUBLISHER:
HIGHER TECHNICAL TEACHERS' TRAINING COLLEGE (HTTTC)
UNIVERSITY OF BUEA
P.O Box: 249 Buea Road, Kumba
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Website: https://www.jtis-htttcubuea.com

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

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Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

CONTENTS

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Robust Internal Control Systems Objectives: A Catalyst for the Financial Sustainability of Member-Owned Microfinance Institutions in Cameroon

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To cite: Nso et al. (2026). Robust Internal Control Systems Objectives: A Catalyst for the Financial Sustainability of Member-Owned Microfinance Institutions in Cameroon. Journal of Tertiary and Industrial Sciences (JTIS), 6(3), 79–82. https://doi.org/10.5281/zenodo.22179234

Submission Date: 30/05/2026 **Acceptance Date: 20/07/2026**

Abstract
This study explains the effect of internal control systems objectives on the financial sustainability of member-owned microfinance institutions (MFIs) in Cameroon. Employing a longitudinal panel design from 2021 to 2025, utilising advanced econometric methods including fixed-effects, random-effects, GLS, Driscoll-Kraay standard errors and the dynamic Arellano-Bond GMM estimator to address issues of heteroskedasticity, autocorrelation, endogeneity and unobserved heterogeneity. Findings from GLS models reveal positive and statistically significant effects of cash flow oversight and asset stewardship, with membership growth also positively influencing sustainability. Hazard mitigation unexpectedly shows a negative effect across the models. Fixed-effects estimations with Driscoll-Kraay standard errors confirm the robustness of these findings, and GMM findings indicate that past financial sustainability figures significantly predict current outcomes. Based on these findings, recommendations include; strengthening liquidity buffers through compliance with Basel III standards, implementing conservative hazard mitigation protocols, enhancing asset stewardship and expanding member engagement via digital channels would improve MFIs sustainability.
Keywords: Asset stewardship, Cash Flow Oversight, Hazard Mitigation, Internal Control Systems Objectives, Sustainability of Microfinance Institutions

JEL CODES: G21 and G28

1. Introduction

Microfinance institutions (MFIs) have exhibited significant resilience during various global economic crises, though their growth trajectories have varied considerably depending on the nature of each crisis and the regional contexts (Ali & Ncube, 2022).

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

While comprehensive global data on MFIs performance is limited, available evidence indicates that prior to the economic downturn of the 1990s, MFIs experienced periods of expansion, followed by phases of consolidation and adaptation. For example, the 2008 global financial crisis affected the sector, but many MFIs demonstrated adaptability by expanding services to the underserved and vulnerable populations despite challenging conditions (Morduch, 2022). Similarly, the European debt crisis yielded mixed outcomes, heavily influenced by national economic environments and regulatory responses (European Microfinance Network [EMN], 2023). The COVID-19 pandemic posed unprecedented challenges, especially in accessing financial resources and responding to shifting market demands. This compelled MFIs worldwide to innovate rapidly their operational and outreach strategies (ILO, 2022). Despite these hurdles, MFIs have continued to play a critical role in promoting financial inclusion by providing access to credit, savings, and other financial services to the marginalized population, thereby bolstering economic resilience and social development. The sector's ability to sustain operations amid crisis underscores the importance of ensuring long-term financial sustainability, which remains vital for their ongoing contribution to inclusive growth.

Globally, the growth and performance of credit unions have been a primary focus for the World Council of Credit Unions (WOCCU), which reports substantial increases in membership and assets over the past two decades (WOCCU, 2023). Between 2000 and 2023, membership expanded from 119 million to over 274 million, while total assets grew from $679 billion to $2.2 trillion (WOCCU, 2023). However, the sector faces ongoing challenges such as regulatory compliance, digital transformation, and operational efficiency (CUNA, 2022). To address these issues, WOCCU has implemented capacity-building initiatives, policy advocacy, and training programs aimed at strengthening financial sustainability globally (WOCCU, 2023). Countries like the United States and Ireland have benefited from these efforts, witnessing notable improvements in their credit union sectors, partly due to advocacy by the Credit Union National Association (CUNA), which fosters a conducive environment for growth and stability (CUNA, 2022). These efforts highlight the importance of strategic reforms, governance, and technological adaptation to promote the sustainability of credit unions across diverse environmental contexts (ICU, 2022).

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

In Africa, the microfinance industry has seen remarkable growth, emerging as a vital driver of inclusive development. Millions of individuals now access essential financial services through MFIs, which play a key role in fostering entrepreneurship, reducing poverty, and promoting financial inclusion, especially in underserved rural and urban communities (Alemayehu & Sileshi, 2023). These institutions empower entrepreneurs by providing the capital necessary for establishing or expanding businesses, leading to employment creation, economic diversification, and improved living standards. MFIs also significantly contribute to poverty alleviation by enabling households to enhance income-generating activities and socio-economic conditions (Ncube & Ndlela, 2022). Moreover, MFIs support gender empowerment by facilitating women's participation in economic activities, consequently increasing household incomes and social status (Kanyenze et al., 2022). Nonetheless, the industry faces persistent challenges, including high default rates, limited rural outreach, and inadequate regulatory frameworks that hinder sustainable growth (Osei & Kwarteng, 2023; Borio & Zhu, 2012; Njo, 2020). Addressing these issues is essential to maximizing the sector's impact on economic development, especially as microfinance becomes an increasingly important tool for inclusive growth in African countries (CIC, 2022; 2023).

Specifically, in Africa, the Association of African Cooperative Savings and Credit Unions (ACCOSCA) has played a crucial role in enhancing the performance and sustainability of credit unions across the continent. From 2000 to 2023, African credit unions experienced substantial growth, with membership increasing from approximately 4.5 million to over 35 million and assets rising from $2.5 billion to $15 billion (ACCOSCA, 2023). However, the sector continues to face challenges such as limited financial inclusion, infrastructural deficits, and weak governance structures, which threaten long-term sustainability (Osei & Kwarteng, 2023). In response, ACCOSCA has promoted capacity-building programs, improved governance frameworks, and advocated for more favorable regulatory policies to bolster institutional resilience and performance

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

(ACCOSCA, 2023). Countries like Kenya and Nigeria have benefited from these initiatives, witnessing improvements in operational efficiency and governance, which contribute to greater institutional sustainability (Mugisha & Odhiambo, 2022).

In Cameroon, the Cameroon Cooperative Credit Union League (CamCCUL) has been central to the growth and oversight of credit unions within the country. Between 2000 and 2023, CamCCUL's membership surged from 200,000 to over 1.5 million, while assets expanded from $100 million to $800 million (CamCCUL, 2023). Nevertheless, the Cameroonian credit union sector faces ongoing challenges such as high operating costs, loan delinquency, and limited rural outreach (Neba, 2020). To improve financial sustainability, CamCCUL has implemented measures including staff and management training, strengthening internal controls, and promoting better governance and compliance practices (CamCCUL, 2023). The regulatory framework for MFIs in Cameroon is overseen by the Central Bank of Central African States (BEAC) supervisory arm the Banking Commission of Central African States (COBAC), which sets prudential norms aimed at safeguarding sector stability and fostering sustainable growth (MINFI, 2024). As of 2022 and 2023, the number of licensed MFIs increased, with 366 Category I and 36 Category II institutions in 2022, rising to 389 and 40, respectively, in 2023 (MINFI / DGTCFM / RSIMA North West, 2024). COBAC's norms emphasize capital adequacy, liquidity, and risk management, all vital for sector sustainability.

The North West Region of Cameroon is particularly significant for studying the sector's performance, hosting a high concentration of MFIs. CamCCUL's regional chapters oversee over 59 affiliated institutions in seven divisions, including Mezam, where most MFIs are located (CamCCUL, 2023). As of 2023, the region had 105 licensed MFIs, with more than 85 classified as Category I institutions actively contributing to financial inclusion and local development (CamCCUL, 2023). Analyzing CamCCUL's member-owned MFIs internal control systems objectives and their influence on the sector

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

sustainability can provide valuable insights into the challenges and opportunities faced by Category I MFIs in particular and by MFIs in general in Cameroon. Such a research study is crucial, given the sector's role in promoting economic growth, reducing poverty and fostering financial inclusion in a fragile socio-economic environment (Njo & Tchombe, 2021). In light of the varied performance and sustainability levels across regions and institutions worldwide, there is an urgent need for further research to identify best practices and innovative strategies to strengthen the sector's long-term sustainability in Cameroon. Understanding how internal control systems objectives impact institutional resilience will be instrumental in shaping effective policies and practices that promote sustainability. This study aims to explore this relationship within CamCCUL, ultimately contributing to the development of a more resilient, inclusive and sustainable microfinance sector capable of supporting economic development and poverty alleviation over the long term in Cameroon.

1.2 The Statement of the Problem

In Cameroon, member-owned MFIs, including credit unions, are expected to demonstrate strong financial sustainability through specific performance indicators. These include an annual savings mobilization growth rate of at least 10%, a high-quality loan portfolio with delinquency rates below 5%, reserves that meet or exceed the regulatory minimum of 10% of total assets, and positive financial results characterized by a return on assets (ROA) of at least 2% and a return on equity (ROE) of at least 10%. Additionally, they must comply with all 14 key regulatory requirements established by COBAC, which is vital for ensuring the stability and security of the financial system. However, current data indicates that the actual performance of these MFIs has been mixed.

Savings mobilization has grown by only 5% annually, delinquency rates average around 49.44%, far above the target of 5% and reserves average 7% of total assets, below the required 10%. Financial results show an average ROA of 1.2% and ROE of 6%, both below

the expected thresholds, with some cases of negative outcomes. Furthermore, credit unions are on average meeting only 10 out of 14 COBAC norms, highlighting gaps in regulatory compliance. These discrepancies point to the need for MFIs to reassess their internal control systems objectives in order to improve their financial sustainability. Despite efforts by stakeholders such as CamCCUL, COBAC, and other regulatory bodies, including; training programs, capacity-building initiatives, and regulatory reforms, the sector continues to face significant challenges. Addressing these issues through the adoption of appropriate internal control system objectives, such as; asset stewardship, cash flow oversight and hazard mitigation could enable member-owned MFIs to close the financial sustainability gaps. This study aims to explore how internal control systems objectives influence the financial sustainability of member-owned MFIs in Cameroon, providing insights for policymakers and practitioners seeking to strengthen the sector.

This study therefore aims to address the main questions by examining the influence of specific internal control system on the financial sustainability of member-owned MFIs in Cameroon. Guided by the specific objectives, the research will assess the effect of cash flow oversight on financial sustainability; determine the effect of hazard management practices on financial sustainability and to investigate the effect of asset stewardship on financial sustainability. The findings will provide insights into whether these internal control objectives significantly contribute to enhancing the financial resilience of credit unions in Cameroon, thereby informing strategies for strengthening their sustainability.

2. Review of Related Literature

The conceptual issues in this study center on internal control objectives as critical components influencing the financial sustainability of member-owned MFIs, specifically credit unions in Cameroon. These objectives include cash flow oversight, hazard management practices and asset stewardship, which serve to strengthen financial stability and operational efficiency (Agarwal & Kearney, 2023 and Sam *et al.* 2025). Cash flow oversight involves managing liquidity to ensure that the credit unions can meet

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

short-term obligations and respond to member demands effectively (Chen *et al.,* 2022). Hazard management practices focus on identifying, assessing and mitigating risks that could threaten financial health, such as loan defaults or operational risks (Li & Wang, 2023; Sam *et al*, 2025). Asset stewardship entails managing the quality of assets, including; loans and investments, to minimize losses and enhance returns (Nguyen & Tran, 2023). Together, these internal control objectives form an integrated framework that supports the achievement of financial sustainability, enabling credit unions to optimize their performance, ensure regulatory compliance and fulfill their financial sustainability mission. Financial sustainability is the internal ability of the business or organisation to manage its money and resources. Meaning covering its current expenses, building financial services, and funding short-term and long-term goals without running out of money or relying on risky debts or relying on risky assets.

Theories reviewed in this study provide a foundational understanding of how internal control objectives influence financial sustainability in member-owned MFIs. The Liquidity Preference Theory underscores the importance of maintaining sufficient liquidity to ensure financial stability and meet short-term obligations (Jorion & Zhang, 2022). Risk Management Theory highlights the critical role of identifying and mitigating hazards to prevent losses and enhance performance (García & Martínez, 2023). The Modern Portfolio Theory emphasizes on asset stewardship to optimize returns and minimize risks through diversified asset portfolios (Feldman & Natarajan, 2022). Collectively, these theories justify the focus on cash flow oversight, hazard management practices and asset stewardship as vital elements for strengthening the financial sustainability of credit unions in Cameroon, aligning with contemporary internal control objectives.

Empirically, Recent studies underscore the critical role of cashflow oversight in enhancing the financial sustainability of microfinance institutions. Nsoh *et al*. (2024) found that effective liquidity management, encompassing loan repayment, cash

management, and capital adequacy, significantly improves financial performance in Cameroonian MFIs, aligning with Berger and Bouwman (2013), who emphasized liquidity as vital for maintaining operational stability. Tal (2022) further confirmed that a high level of liquidity has a substantial positive impact on financial sustainability, with 60% of respondents acknowledging its importance. Similarly, Ayinuola *et al.* (2023) highlighted that poor liquidity management adversely affects bank stability, illustrating the importance of robust cashflow oversight for long-term financial health. These findings collectively suggest that effective cashflow oversight is essential for maintaining the financial sustainability of credit unions and MFIs.

Hazard mitigation practices, including risk identification and control, are crucial for safeguarding financial performance. Ngimanang (2025) and Nkwati *et al*. (2025) demonstrated that credit risk management significantly influences the profitability of microfinance institutions, emphasizing the need for robust hazard mitigation strategies. Likewise, Eling and Marek (2012) found that effective risk management in banking enhances financial stability, while Cummins and Phillips (2005) confirmed that risk mitigation practices are fundamental to long-term financial performance in insurance firms. Hoyt & Liebenberg (2011) and Ndoh *et al.* (2025) extended this understanding by revealing that enterprise risk management directly increases firm value. These studies collectively illustrate that hazard mitigation practices are vital internal control objectives that underpin the financial sustainability of MFIs by reducing vulnerabilities to financial shocks.

Asset stewardship, particularly managing asset quality, has been shown to significantly influence financial sustainability. Dzakpasu (2020) reported a negative relationship between asset quality and maturity gaps in banks operating in subdued economic environments, indicating that poor asset quality hampers financial performance. Njeru *et al.* (2015) and Mefereh *et al.* (2025) emphasized that loan portfolio management is a primary revenue driver for microfinance institutions, reinforcing the importance of

effective asset stewardship. Fama and French (2004) established that asset quality is a key predictor of portfolio performance, with higher asset quality leading to better financial outcomes. Ang and Bekaert (2002) also confirmed that maintaining asset quality positively impacts portfolio performance, thereby contributing to the long-term financial sustainability of credit unions.

Although recent studies, such as those by Agarwal and Kearney (2023), Chen *et al.* (2022) and Nguyen & Tran (2023) have explored internal control objectives and their impact on financial sustainability in MFIs, they predominantly rely on primary data and employ basic OLS regression analysis, limiting the robustness of their findings. Additionally, most of these studies focus on cross-sectional or short-term data, neglecting the dynamic nature of internal controls over time. This study addresses these gaps by utilizing panel data collected over multiple periods, allowing for more nuanced analysis of the temporal effects of cash flow oversight, hazard management, and asset stewardship. Furthermore, it applies advanced panel data estimation techniques, such as fixed-effects and random effects to control unobserved heterogeneity and endogeneity issues, thereby providing more reliable insights into the impact of internal control objectives on the long-term financial sustainability of credit unions in Cameroon.

3. Methodology of the Study

3.1 Scope and Area of Study

This study focuses on the impact of internal control systems objectives, specifically; cash flow oversight, hazard mitigation and asset stewardship on the financial sustainability of member-owned microfinance institutions in Cameroon, concentrating on their ability to ensure operational stability and regulatory compliance (Agarwal & Kearney, 2023). The analysis covers data collected from 2021 through quarter one of 2025, capturing recent developments in internal control systems objectives amid evolving economic conditions. The research focuses on MFIs within the CamCCUL network across diverse regions, including urban and rural areas, where socio-economic and geographic factors influence

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

operational strategies (Sam, 2025; Tchombe *et al*., 2023). Emphasizing the role of internal control systems objectives in cash flow oversight, hazard mitigation and asset stewardship, the study aims to assess their collective effect on the long-term financial sustainability of these institutions in Cameroon's dynamic environment.

3.2 Research Design and Model Specification

This study adopts a longitudinal panel design, collecting data from the same microfinance institutions across all CamCCUL chapters over multiple periods. It employs fixed-effects, random-effects, and dynamic GMM models to analyze static and dynamic relationships, accounting for unobserved heterogeneity and endogeneity (Kihoro et al., 2022; Osei-Tutu et al., 2023). This approach captures the persistence of performance effects and provides robust insights into factors affecting financial sustainability in a multi-entity context. The use of panel data enhances the accuracy and validity of the findings, supporting evidence-based policy formulation. Recent studies confirm the effectiveness of this design in analyzing microfinance performance over time (Muriithi & Kihoro, 2023). Financial sustainability in this study is the continuous improvement in financial performance to keep the financial institution running profitably in the long-term.

The models for this study are specified as a function of the different estimation techniques adopted in analyzing the data collected.

a) **Fixed-Effects (Within) Regression with Driscoll-Kraay Standard Errors Model**

$$FS_{it}=ai+\beta 1CFO_{it}+\beta 2HM_{it}+\beta 3AS_{it}+\beta 4MMit+\varepsilon_{it} \quad \ldots\ldots 1$$

Where; FS is Financial Sustainability, CFO is Cash Flow Oversight, HM is Hazard Mitigation, AS is Asset Stewardship, and MM is Membership Strength, a is the constant term, and $\beta 1$, $\beta 2$, $\beta 13$ and $\beta 4$ are coefficients of the corresponding variables, and ε *is the error term.*

This Fixed effects (within) estimator with Driscoll-Kraay standard errors is appropriate to address heteroskedasticity and autocorrelation.

b) **Random-Effects GLS Regression**

$$FS_{it}=\beta 0+\beta 1CFO_{it}+\beta 2HM_{it}+\beta 3AS_{it}+\beta 4MMit+\varepsilon_{it} \quad \ldots\ldots 2$$

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Where; FS is Financial Sustainability, CFO is Cash Flow Oversight, HM is Hazard Mitigation, AS is Asset Stewardship, and MM is Membership Strength, β0 is the constant term, and β1, β2, β13 and β4 are coefficients of the corresponding variables, and ε is the error term.

The Random Effects GLS Estimation is appropriate because it accounts for chapter-specific effects.

c) **Fixed-Effects Model (with F-test for Fixed Effects)**

$$FS_{it}=ai+\beta 1\text{CFO}_{it+}\beta 2\text{HM}_{it}+\beta 3\text{AS}_{it}+\beta 4\text{MM}_{it}+\varepsilon_{it}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Where; FS is Financial Sustainability, CFO is Cash Flow Oversight, HM is Hazard Mitigation, AS is Asset Stewardship and MM is Membership Strength, a is the constant term, and β1, β2, β13 and β4 are coefficients of the corresponding variables, and ε is the error term.

This is the same as the first fixed-effects model, confirmed by the F-test for chapter-specific effects.

d) **Dynamic Panel Data Model (Arellano-Bond GMM)**

$$FS_{it}=a+\beta 1FS_{i,t-1}+\beta 2\text{CFO}_{it}+\beta 3\text{HM}_{it}+\beta 4\text{AS}_{it}+\beta 5\text{MM}it+\varepsilon_{it}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Where; FS is Financial Sustainability, CFO is Cash Flow Oversight, HM is Hazard Mitigation, AS is Asset Stewardship and MM is Membership Strength, a is the constant term, and β1, β2, β13, β4 and β5 are coefficients of the corresponding variables, and ε is the error term.

This two-step system GMM estimator with instruments is appropriate because it controls for lagged dependent variable and endogeneity.

3.3 Sources of Data and Methods of Collection

This study utilizes secondary data from the financial reports of CamCCUL chapters from 2021 to 2025, focusing on variables such as; cash flow oversight, hazard mitigation, asset stewardship, and capital adequacy to assess financial sustainability. In detail the data was collected from 9 chapters within CamCCUL umbrella made up of 45 member-owned MFIs. Due to some assumptions of OLS not being met and the limitations of fixed effects, the analysis employed a Robust Generalized Least Squares (GLS) Random Effects model, which produced similar results to the random effects approach.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

3.4 Pre-Estimation Tests, Estimation Techniques and Post-Estimation Tests

Pre-estimation involved conducting diagnostic tests such as Levin-Lin-Chu and Im-Pesaran-Shin for stationarity, Variance Inflation Factor (VIF) for multicollinearity, Breusch-Pagan LM for heteroskedasticity, Wooldridge for autocorrelation and Hausman-Wu for endogeneity, ensuring model appropriateness (Baltagi, 2021). Estimation techniques included fixed-effects (FE), random-effects (RE), robust Driscoll-Kraay standard errors, and the Arellano-Bond GMM estimator to address unobserved heterogeneity, autocorrelation, and endogeneity (Roodman, 2009). Post-estimation involved tests such as Hausman to compare FE and RE, Breusch-Pagan for heteroskedasticity, Arellano-Bond AR (2) for autocorrelation, Sargan for instrument validity, and Wald chi-square for overall model significance, validating the robustness of the findings (Verbeek, 2017). These combined methods strengthen the reliability of the econometric analysis in dynamic panel data contexts.

4. Presentation and Discussion of Findings

4.1 Presentation of Findings

Table 1: Correlation Matrix

	FS	**CFO**	**HM**	**AS**	**MM**
FS	1.000				
CFO	0.712***	1.000			
HM	-0.423***	-0.211	1.000		
AS	0.784***	0.537*	-0.153	1.000	
MM	0.652***	0.482	-0.102	0.624***	1.000
	*** p<0.01, ** p<0.05				

Source: Authors, (2026)

Based on table 1, the Levin-Lin-Chu and Im-Pesaran-Shin tests confirmed stationarity of the variables, with strong p-values supporting their robustness for analysis, as per Baltagi (2021). Key findings show positive correlations between financial sustainability and cash flow oversight (0.712) and asset stewardship (0.784), while a negative link exists with hazard mitigation (-0.423). Membership status is positively associated with financial

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

sustainability (0.652) and asset stewardship (0.624), highlighting its significance in the study. These findings validate the data's suitability for further econometric analysis.

Table 2: Quantile Regression Findings

Quantile	**CFO**	**HM**	**AS**	**MM**
0.25	0.352***	-0.178**	0.301*	0.211**
0.50	0.427***	-0.217***	0.381***	0.284***
0.75	0.483***	-0.242***	0.442***	0.327***

Source: Authors, (2026)

Based on table 2, MFIs top performers at the 75th percentile benefit more from cash flow oversight (0.483) and asset stewardship than lower performing MFIs, indicating they leverage these factors more effectively. Higher quantiles also face increased hazard penalties from hazard mitigation (-0.242 vs. -0.178). Policy-wise, high performers should focus on cashflow for growth, while low performers need to improve asset stewardship to enhance stability.

Table 3: Random-Effects GLS Regression Findings

$FSit=\beta 0+\beta 1\text{CFO}_{it}+\beta 2\text{HM}_{it}+\beta 3\text{AS}_{it}+\beta 4\text{MM}_{it}+\varepsilon_{it}$

xtset CITY DATE		
panel variable: CITY (strongly balanced)		
time variable: DATE, 2021 to 2025		
delta: 1 unit		
Random-effects GLS regression	Number of obs = 45	
Group variable: CITY	Number of groups = 9	
R-sq:		Obs per group:
within = 0.6789		min = 5
between = 0.8123		avg = 5.0
overall = 0.7436		max = 5
Wald chi2(4) = 112.73		
corr(u_i, X) = 0 (assumed	Prob > chi2 = 0.0000	
Robust		

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

FS~x	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]
CFO	0.427***	0.098	4.36	0.000	0.235 0.619
HM	-0.217***	0.062	-3.52	0.000	-0.338 -0.096
AS	0.381***	0.085	4.49	0.000	0.215 0.547
MM	0.284**	0.112	2.54	0.011	0.065 0.503
_constant	0.101***	0.028	3.61	0.000	0.046 0.156
sigma_u	0.041				
sigma_e	0.037				
rho	0.552 (fraction of variance due to u_i)				

Source: Authors (2026)

From table 3, the random-effects GLS regression across 9 chapters (2021-2025) shows strong model fit (R^2 0.6789-0.8123), with liquidity positively linked to performance (0.427, $p<0.001$) supporting Diamond & Dybvig (1983). Risk or hazard management negatively impacts performance (-0.217, $p<0.001$), aligning with Altman (1968) and Merton (1974), emphasizing balance. Asset quality (0.381, $p<0.001$) and membership growth (0.284, $p=0.011$) positively influence performance, consistent with literature on stability and scale economies (Cull et al., 2018; Armendáriz & Morduch, 2010). Variance decomposition indicates 55.2% heterogeneity from unobserved city effects, justifying the use of random effects per Baltagi (2021), while findings align with Berger & Humphrey (1997) and Demirgüç-Kunt & Huizinga (2010).

Table 4: Model Specification (Fixed-Effects Model) (F-test for Fixed Effects)
Model Specification (Fixed-Effects Model)

$FS_{it}=ai+\beta 1\text{CFO}_{it}+\beta 2\text{HM}_{it}+\beta 3\text{AS}_{it}+\beta 4\text{MM}_{it}+\varepsilon_{it}$

Fixed-effects (within) regression	Number of obs = 45
Group variable: CITY	Number of groups = 9
R-sq:	Obs per group:
within = 0.6789	min = 5
between = 0.8123	avg = 5.0
overall = 0.7436	max = 5

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
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			F(4,32) = 16.93		
corr(u_i, Xb) = 0.4377			Prob > F = 0.0000		
Robust					
FS	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]
CFO	0.412***	0.101	4.08	0.000	0.206 0.618
HM	-0.224***	0.064	-3.51	0.001	-0.354 -0.094
AS	0.372***	0.087	4.28	0.000	0.195 0.549
MM	0.291**	0.115	2.53	0.017	0.057 0.525
_constant	0.103***	0.029	3.55	0.001	0.044 0.162
sigma_u	0.041				
sigma_e	0.037				
rho	0.552 (fraction of variance due to u_i)				
.testparm i.CITY					
	F(8, 32) = 3.27				
	Prob > F = 0.0082				

Source: Authors (2026)

From table 4, the fixed-effects regression results indicate that variables such as cash flow oversight, asset stewardship, and membership significantly positively influence financial sustainability ($p<0.05$), while hazard mitigation has a negative effect ($p<0.01$). The model explains approximately 67.89% of the within-group variation, highlighting the importance of these practices in improving performance (Chamberlain, 1984). The significant F-test for city effects suggests that regional differences impact financial sustainability, justifying the use of fixed effects to control for unobserved heterogeneity (Baltagi, 2008). The rho value indicates that over half of the variance is attributable to city-specific effects, emphasizing the need to account for these in policy formulation (Wooldridge, 2010).

Table 5: Fixed Effects with Driscoll-Kraay Standard Errors Findings

$FSit=ai+\beta 1\text{CFO}_{it+}\beta 2\text{HM}_{it+}\beta 3\text{AS}_{it+}\beta 4\text{MM}_{it+}\varepsilon_{it}$

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Fixed-effects (within) regression with Driscoll-Kraay standard errors					
Number of obs = 45					
Groups = 9					
Time periods = 5					
R-squared (within) = 0.6789					
Drisc/Kraay					
FS	Coefficient	Std. Err.	t	P>|t|	[95% Conf. Interval]
CFO	0.412***	0.110	3.75	0.001	0.183 0.641
HM	-0.224***	0.068	-3.29	0.004	-0.364 -0.084
AS	0.372***	0.093	4.00	0.000	0.178 0.566
MM	0.291**	0.122	2.39	0.025	0.037 0.545
_constant	0.103***	0.031	3.32	0.004	0.039 0.167

Source: Authors (2026)

From table 5, the fixed-effects model with Driscoll-Kraay standard errors shows that cash flow oversight, asset stewardship, and membership significantly positively impact financial sustainability ($p<0.01$), while hazard mitigation has a significant negative effect ($p<0.01$). The model's R-squared of 0.6789 indicates a strong explanation of within-group variation (Hoechle, 2007). The use of Driscoll-Kraay standard errors accounts for heteroskedasticity and cross-sectional dependence, enhancing robustness (Driscoll & Kraay, 1998). All coefficients are statistically significant at the 5% level, confirming the importance of these variables in influencing financial sustainability (Wooldridge, 2019). The results emphasize the need to consider regional heterogeneity when assessing financial sustainability.

Table 6: Dynamic Panel Analysis: Arellano-Bond GMM Estimation

Because panel data frequently experiences issues such as autocorrelation and endogeneity arising from lagged effects, we utilize the Arellano-Bond (1991) GMM estimator, which employs lagged instruments to address unobserved heterogeneity and dynamic dependencies.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Model

$FS_{it}=a+\beta 1FS_{it-1}+\beta 2CFO_{it}+\beta 3HM_{it}+\beta 4AS_{it}+\beta 5MM_{it}+\varepsilon_{it}$

Dynamic panel-data estimation, two-step system GMM					
Group variable: CITY		Number of obs = 36			
Time variable: DATE		Number of groups = 9			
Number of instruments = 24		Obs per group: min = 4			
Wald chi2(5) = 89.71		avg = 4.0			
Prob > chi2 = 0.0000		max = 4			
Robust					
FSI~x	Coefficient	Std. Err.	z	P>|z|	[95% Conf. Interval]
L1.FS~x	0.312***	0.098	3.18	0.001	0.120 0.504
CFO	0.388***	0.105	3.70	0.000	0.182 0.594
HM	-0.203***	0.071	-2.86	0.004	-0.342 -0.064
AS	0.354***	0.092	3.85	0.000	0.174 0.534
MM	0.267**	0.118	2.26	0.024	0.036 0.498
_consrant	0.095***	0.032	2.97	0.003	0.032 0.158

Source: Authors (2026)

From table 6, the dynamic panel GMM results indicate that past financial performance significantly predicts current performance ($p<0.01$), confirming the persistence of financial sustainability over time (Arellano & Bover, 1995). Variables such as cash flow oversight, asset stewardship and membership positively influence financial sustainability ($p<0.05$), while hazard mitigation negatively affects it ($p<0.01$). The model's robustness is supported by the significant Wald chi-square statistic ($p<0.01$), highlighting the joint explanatory power of the variables (Roodman, 2009). The use of system GMM addresses endogeneity and unobserved heterogeneity effectively, ensuring reliable estimates (Blundell & Bond, 1998). These findings emphasize the importance of dynamic factors and governance variables in sustaining financial health over time (Baltagi, 2021).

Table 7: Comparison with Prior Models

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Variable	RE-GLS	FE w/ DK SEs	Arellano-Bond GMM
Lagged FS	–	–	**0.312*** (0.001)**
CFO	0.427***	0.412***	**0.388*** (0.000)**
HM	-0.217***	-0.224***	**-0.203*** (0.004)**
AS	0.381***	0.372***	**0.354*** (0.000)**
MM	0.284**	0.291**	**0.267** (0.024)**

Source: Authors (2026)

From table 7, the comparison across models reveals consistent positive effects of cash flow oversight, asset stewardship, and membership on financial sustainability, with all coefficients significant at conventional levels ($p<0.05$). The lagged financial sustainability variable is only included in the dynamic GMM model, where it shows a strong positive coefficient (0.312, $p<0.01$), indicating persistence over time (Arellano & Bond, 1991). The negative impact of hazard mitigation is significant across all models ($p<0.01$), underscoring its importance in sustainability strategies (Baltagi, 2021). The GMM estimates provide more reliable insights into dynamic relationships, addressing endogeneity concerns (Blundell & Bond, 1998). Overall, findings confirm the robustness of governance and strategic variables in influencing financial health, aligning with recent empirical research (Roodman, 2009).

Table 8: Model-Specific Insights

Feature	RE-GLS	FE w/DK SEs	Arellano-Bond GMM
Best For	Cross-chapter comparisons	Within-chapter changes	Dynamic effects
Key Advantage	Efficiency	Robust to autocorrelation	Controls for endogeneity

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Feature	RE-GLS	FE w/DK SEs	Arellano-Bond GMM
Lagged Effect	–	–	0.312*** (confirms path dependence)
Membership Sig.	0.284**	0.291**	0.267* (weakest)

Source: Authors (2026)

Table 8 highlights that RE-GLS is best suited for cross-chapter comparisons due to its efficiency, while FE with Driscoll-Kraay standard errors effectively account for autocorrelation in within-chapter analyses. The Arellano-Bond GMM model uniquely captures dynamic effects, with a significant lagged effect coefficient of 0.312 ($p<0.01$), confirming path dependence in financial sustainability. Membership remains significant across all models, though its coefficient is weakest in GMM ($p<0.05$), indicating a consistent but relatively modest influence. Overall, each method offers distinct advantages for analyzing different aspects of the data (Baltagi, 2021).

4.2 Discussion of Findings

The findings demonstrate that cash flow oversight significantly influences financial sustainability, aligning with the Liquidity Preference Theory, which emphasizes the importance of maintaining adequate liquidity to meet short-term obligations and ensure stability (Jorion & Zhang, 2022). Empirical evidence from Mefereh, *et al.* (2025) and Nsoh *et al.* (2025) confirm that effective liquidity management, including loan repayment and cash management, enhances the operational performance of Cameroonian MFIs. Similarly, Berger & Bouwman (2013) and Nsoh *et al.* (2024) emphasize that liquidity is vital for sustaining ongoing operations, while Tal (2022) highlights that high liquidity levels are associated with improved financial stability. Collectively, these results and theories affirm that robust cash flow oversight is essential for enhancing financial performance and resilience in member-owned financial institutions.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Hazard mitigation practices, such as risk identification and control, are critical in preventing financial losses and safeguarding stability, as supported by Risk Management Theory. García & Martínez (2023) emphasize that proactive hazard mitigation reduces vulnerabilities and enhances performance. Empirical studies, including Ngimanang (2025) and Nkwati *et al* (2025) reveal that credit risk management significantly impacts profitability, illustrating that effective hazard mitigation minimizes financial shocks. Eling & Marek (2012) and Fih *et al*. (2025) further attest that comprehensive risk management enhances overall financial stability, while Hoyt and Liebenberg (2011) and Ndoh *et al.* (2025) demonstrate that enterprise risk management directly contributes to increased firm value. These theoretical and empirical insights underscore the importance of hazard mitigation as a core internal control objective for the sustainability of MFIs. Overall, MFIs can mitigate risk or hazard by innovating their financial products, services and offerings (Nso *et al.* 2025) and this will in turn improve their assets quality.

Asset stewardship, particularly in managing asset quality, plays a pivotal role in ensuring financial sustainability, supported by the Modern Portfolio Theory which advocates for diversification and optimal asset management to maximize returns while minimizing risks (Feldman & Natarajan, 2022). Empirical research by Njeru *et al.* (2015) highlights that loan portfolio management and asset quality are primary drivers of microfinance profitability. Fama and French (2004) identify asset quality as a key predictor of portfolio performance, indicating that maintaining high asset standards positively impacts long-term financial outcomes. Furthermore, Ang and Bekaert (2002) confirm that effective asset stewardship enhances portfolio performance and institutional resilience. These studies and theories collectively emphasize that diligent management of assets is fundamental to the financial health of member-owned MFIs.

Membership engagement as a control variable significantly contributes to the financial sustainability of credit unions, consistent with theories linking stakeholder participation

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

to organizational performance. Empirical works such as those by Cull *et al.* (2018) suggest that increased membership correlates with greater financial stability due to higher deposit mobilization and community support. The positive association found in the correlation matrix (0.652) and regression analyses confirms that active membership supports institutional growth and stability. Theoretical frameworks on stakeholder theory also posit that engaged members foster trust, loyalty, and resource inflows, which are vital for long-term sustainability (Freeman, 1984). These insights reinforce that strengthening membership engagement is a strategic internal control objective for enhancing financial resilience.

5. Summary of Major Findings, Recommendations, Conclusion

5.1 Summary of Major Findings

The analysis reveals that enhancing liquidity and asset quality significantly improves financial performance, while high risk levels can negatively impact stability. Although membership growth has a lesser effect, the importance of dynamic effects is evident as past performance consistently influences current outcomes, supporting adaptive expectations theory. The robustness of the results across the different models confirms the study and the assessed variables' reliability, thus reinforcing the study's overall conclusions about the key drivers of financial sustainability in member-owned MFIs.

5.2 Recommendations

Sector-specific policies should prioritize strengthening cash buffers by enforcing Basel III standards and developing contingency plans. Hazard exposure caps and conservative hazard mitigation practices are crucial to mitigate volatility, especially in high-risk sectors. Managerial policies should also mandate rigorous credit assessments and regular asset quality monitoring, while, expanding membership through access facilitation and digital onboarding. Capacity-building and innovation in financial products are recommended to foster prudent practices, resilience and inclusive growth, with a focus on long-term stability.

Summarily, for policymakers, it is vital to emphasize asset stewardship reforms, implement systemic risk ceilings based on consistent model coefficients and promote long-term strategic planning. Managers should leverage GMM estimates for sustainable decision-making and monitor cash flow ratios monthly for short-term performance drivers. Researchers are encouraged to report multiple modeling approaches to ensure transparency, acknowledging potential overestimations from fixed and random effects, thus maintaining result accuracy.

5.3 Conclusion

Overall, the findings highlight the need to address dependence through institutional policies, by promoting long-term financial stability such as; strategic reinvestments and liquidity buffers. Continuous asset stewardship is essential for resilience, aligning with global research on financial stability. Emphasizing strong cash flow oversight and balanced risk strategies is crucial, alongside efforts to foster membership growth, to support and sustain long-term success and stability in the sector. The study confirms that financial stability in member-owned MFIs depends on persistent effects, with cash flow and asset quality improving outcomes, while excessive hazard exposure undermines stability. This study underlines the critical effect of targeted internal control systems objectives in fostering long-term financial resilience and sustainable growth of MFIs in Cameroon. The findings, free from multicollinearity and bias, align with established financial theories like the risk-return trade-off. Incorporating panel data dynamics underscores the importance of long-term management of cash flows, asset stewardship, and prudent risk strategies for maintaining financial health and fostering sustainable growth.

5.4 Limitation of the Study

The sample size of 9 chapters with CamCCUL with 45 observations within the umbrella might have been small to generate a positively statistically significant result for the hazard mitigation variable in this study. This is be operational compliance costs and, or

conservative provisioning might have been high or severe within the selected fewer chapters and 45 observations from the member-owned MFIs.

References

Agarwal, R., & Kearney, C. (2023). Internal control objectives and financial sustainability in microfinance institutions. *Journal of Microfinance Studies*, 15(2), 45-67.

Alemayehu, T., & Sileshi, T. (2023). Microfinance and inclusive development in Africa. African Journal of Economic Review, 11(2), 78-95.

Ali, S., & Ncube, M. (2022). Microfinance sector performance during economic crises in Africa. *African Journal of Development Studies*, 10(4), 89-110.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The journal of finance*, *23*(4), 589-609.

Ang, A., & Bekaert, G. (2002). International asset allocation with regime shifts. *The Review of Financial Studies*, 15(4), 1137-1187.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Journal of Economic Studies*, 58(2), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.

Armendáriz, B., & Morduch, J. (2010). *The economics of microfinance*. MIT press.

Association of African Cooperative Savings and Credit Unions (ACCOSCA). (2023). Annual report 2023: Microfinance sector performance and sustainability in Africa.

Baltagi, B. H. (2021). Dynamic panel data models. In *Econometric analysis of panel data* (pp. 187-228). Cham: Springer International Publishing.

Berger, A. N., & Bouwman, C. H. (2013). How does capital affect bank performance during financial crises?. *Journal of financial economics*, *109*(1), 146-176.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Borio, C., & Zhu, H. (2012). The role of macroprudential policies in mitigating systemic risks. *BIS Working Paper No. 347*. Bank for International Settlements.

CamCCUL. (2023). Annual report of the Cameroon Cooperative Credit Union League (CamCCUL). https://www.camccul.org

CamCCUL. (2023). Microfinance sector performance report 2023. https://www.camccul.org/reports

Chamberlain, G. (1984). Panel data. *Handbook of econometrics*, *2*, 1247-1318.

Chen, L., Wang, Y., & Li, X. (2022). Liquidity management in microfinance institutions: A review. *International Journal of Financial Studies*, 9(1), 12.

CIC. (2022). African microfinance sector analysis 2022. *Center for Inclusive Capitalism*. https://www.inclusivecapital.org

CIC. (2023). African microfinance sector analysis 2023. *Center for Inclusive Capitalism*. https://www.inclusivecapital.org

Cull, R., Demirgüç-Kunt, A., & Morduch, J. (2018). The microfinance business model: Enduring subsidy and modest profit. *The World Bank Economic Review*, *32*(2), 221-244.

Cummins, J. D., & Phillips, R. D. (2005). Risk management in insurance: An overview. *Journal of Risk and Insurance*, 72(3), 423-432.

CUNA. (2022). Global credit union sector report 2022. *Credit Union National Association*. https://www.cuna.org/research

Demirgüç-Kunt, A., & Huizinga, H. (2010). Bank competition, efficiency, and financial stability: Cross-country evidence. *Journal of Financial Stability*, 6(2), 100-118.

Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of economics and statistics*, *80*(4), 549-560.

Dzakpasu, S. (2020). The role of financial technology in developing banking services in emerging markets. *Journal of Banking and Finance Innovation*, 8(4), 210-228

Eling, M., & Marek, A. (2012). Enterprise risk management: Trends and future research directions. *European Journal of Operational Research*, 218(2), 273-284.

European Microfinance Network. (2023). Microfinance in Europe: Challenges and opportunities. *EMN Annual Report*. https://www.european-microfinance.org

Fama, E., & French, R. (2004). The capital asset pricing model: Theory and evidence. *Journal of Financial Economics*, 66(2-3), 385-423.

Feldman, R., & Natarajan, R. (2022). Financial risk management strategies in banking institutions: An empirical analysis. *Journal of Finance and Banking Research*, 15(2), 123-145.

Fih, L. S., Forgha, N. G., Nkwati, N. D., Muffee, V. W., & Geraldine, L. (2025). Constructing Financial Reality: A Critical Analysis of Credit Risk Management Practices as a Constitutive Element of Financial Performance in the Commercial Banking Ecosystem of Cameroon.

García, P., & Martínez, R. (2023). Risk management strategies in microfinance institutions. *Journal of Risk Management*, 18(3), 245-267.

Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, 7(3), 281-312.

Hoyt, R. E., & Liebenberg, A. P. (2011). The value of venture capital: Evidence from initial public offerings. *Journal of Business Venturing,* 26(6), 672–689

ICU. (2022). Global microfinance sector overview 2022. *International Cooperative Union*. https://www.icu.coop

ILO. (2022). Microfinance and COVID-19: Resilience strategies. *International Labour Organization*. https://www.ilo.org

Jorion, P., & Zhang, G. (2022). Liquidity preferences and financial stability. *Journal of Financial Intermediation*, 50, 100987.

Kanyenze, G. (2022). *Zimbabwe: The Link Between Politics and the Economy: The Link Between Politics and the Economy*. African Books Collective.

Kihoro, J., Muriithi, M., & Ochieng, J. (2022). Panel data analysis in microfinance research. *African Journal of Economic Review*, 10(2), 123-138.

Li, Q., & Wang, X. (2023). Risk management practices in microfinance institutions. Financial Review, 58(2), 213-231.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Mefereh, M. R., Forgha, N. G., Nkwati, N. D., Nso, M. A., & Nsoh, N. C. (2025). Loan management strategies: A lever for loan delinquency reduction in the microfinance sector of Bamenda, Cameroon. *Journal of Entrepreneurship, Management, Economics, and Business Administration*, *3*(1), 12-22.

Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *The Journal of finance*, *29*(2), 449-470.

Ministère des Finances (MINFI). (2024). *Rapport annuel 2023 sur le contrôle interne et la performance financière au Cameroun*. République du Cameroun

Ministry of Finance (MINFI) / Directorate General of Treasury and Public Finance Management (DGTCFM) / Regional Statistical and Investment Management Agency (RSIMA) North West. (2024). *Annual financial and development report 2024*: North West region. Ministry

Morduch, J. (2022). The resilience of microfinance during crises. *World Development*, 150, 105722.

Mugisha, J., & Odhiambo, O. (2022). The impact of financial literacy on youth entrepreneurship in East Africa. *Journal of African Development Studies*, 15(3), 210-226.

Muriithi, M., & Kihoro, J. (2023). Panel data techniques in microfinance research: A review. *Journal of Banking & Finance*, 39, 45-59.

Ncube, M., & Ndlela, T. (2022). Microfinance and poverty alleviation in Africa. *Development Policy Review*, 40(3), 439-459.

Ndoh, A. R., Nkwati, N. D., Aziseh, N. E., Watard, H., & Forgha, N. G. (2025). Innovative Financial Risk Management Paradigms: Addressing the Financial Performance Conundrum in the Credit Union Sector of Cameroon. *International Journal of Finance*, *10*(7), 1-29.

Neba, F. A. (2020). Internal control systems and financial performance of manufacturing firms in Cameroon. *African Journal of Economic and Management Studies*, 11(2), 245-262

Ngimanang, B. (2025). Credit risk management and microfinance profitability in Cameroon. *African Journal of Financial Management*, 12(1), 34-52.

Nguyen, T., & Tran, T. (2023). Asset management in microfinance institutions. *Journal of Asset Management*, 24(4), 232-248.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Njeru, M. D., Njeru, A., & Ondabu, I. T. (2015). Effect of loan repayment on financial performance of deposit taking Saccos in Mount Kenya Region.

Njo, P. K. (2020). Financial regulation and microfinance performance in Cameroon. *Cameroon Journal of Economics*, 8(2), 77-94.

Njo, P. K., & Tchombe, M. (2021). Internal control systems and financial performance of credit unions in Cameroon. *Cameroon Journal of Business*, 14(1), 23-39.

Nkwati, N. D., Sam, N. C., Sam, N. K., Watard, H., & Forgha, N. G. (2025). The Effect of Corporate Governance Practices on the Financial Stability of Selected Credit Unions in the North West Region of Cameroon. *African Development Finance Journal*, *8*(6), 94-119.

Nso, M. A., Nkwati, N. D., Sam, N. C. & Watard, H. (2025). Financial Innovation, Bank Liquidity and Entrepreneurship Support: An Analytical Evidence from Commercial Banks in Bamenda, Cameroon. *European Scientific Journal, ESJ,* 21 (34), 205-240. https://doi.org/10.19044/esj.2025.v21n34p205

Nsoh, C. N., Forgha, N. G., Nkwati, N. D. and Nso, M. A., (2025). The Liquidity-Financial Performance Nexus: Investigating the Role of Effective Liquidity Management in Microfinance Institutions in Bamenda, Cameroon. *European Modern Studies Journal*, 9(1), 32-44.

Nsoh, N. C., Kenmegni, G. R., Nkwati, N. D., & Forgha, N. G. (2024). The effect of capital adequacy on the financial performance of micro finance institutions in Bamenda, Cameroon. *Journal of Entrepreneurship, Management, Economics, and Business Administration*, *2*(1), 27-34.

Osei, K., & Kwarteng, A. (2023). Challenges facing microfinance growth in Africa. *African Development Review*, 35(2), 101-118.

Osei-Tutu, E., et al. (2023). Panel data analysis of microfinance institutions in Ghana. *Ghanaian Journal of Economics*, 12(4), 56-78.

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, 9(1), 86-136.

Sam, N. C., Nkam, F. M., Nkwati, N. D., Sam, N. K., & Watard, H. (2025). The Effect of Risk Mitigation Practices on the Asset Quality of Some Selected Member-Owned Microfinance Institutions in the North West Region of Cameroon. *International Journal of Finance*, *10*(5), 52-70.

Journal of Tertiary and Industrial Sciences *Vol. 6, No. 3, 2026*
ISSN 2709-3409 (Online)

Sam, N. C., Nkwati, N. D., & Watard, H. (2025). Unravelling the Synergistic Effect of Institutional Resilience on Asset Quality; A Contemporary Outlook of Cameroon's Credit Unions. *International Journal of Finance*, *10*(7), 30-49.

Tal, A. (2022). Liquidity management in microfinance: Impact on sustainability. *International Journal of Microfinance*, 12(3), 77-89.

Tchombe, M., et al. (2023). Socio-economic factors influencing microfinance in Cameroon. *African Journal of Development Studies*, 15(2), 102-120.

Verbeek, M. (2017). *A guide to modern econometrics* (4th ed.). Wiley.

WOCCU. (2023). World Council of Credit Unions Annual Report 2023. https://www.woccu.org

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data.* MIT Press.

Wooldridge, J. M. (2019). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.