ISSN: 2958-2326

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Publisher's Home Page: https://ijcsacademia.com/

AFRICAN JOURNAL OF COMMERCIAL STUDIES

Research Paper | Peer Reviewed | Open Access

The Effectiveness of Financial Risk Hedging Strategies amidst Global Crises: A Study of Licensed Microfinance Institutions in Zambia

Bupe Mutale [1]*, Taonaziso Chowa[2]

[1] *Graduate School of Business, University of Zambia, Zambia*
[2] *Department of Mathematics and Statistics, University of Zambia, Zambia*
* Corresponding Author

Article Info

Volume 7, Issue 6

Publication history:

Accepted on 3 July 2026;
Published: 21 November 2026

Key Words:

Microfinance Institutions, Financial Risk Hedging, Financial Resilience, Global Crises, Zambia

Article Doi:

10.59413/ajocs/v7.i6.4

Abstract

Microfinance institutions (MFIs) serve as critical agents of financial inclusion in developing economies, yet their structural fragility is severely exposed during global crises. This study assessed the effectiveness of financial risk hedging strategies employed by all 22 licensed Zambian MFIs during global crises principally the COVID-19 pandemic (2020–2022), compounded by the Russia–Ukraine war and the global inflation surge (2021–2023) and proposed a tailored financial resilience framework. Using a convergent mixed methods design anchored in pragmatic philosophy, quantitative data were collected through a structured questionnaire administered to 83 respondents across all 22 institutions (census design), while qualitative insights were obtained from ten key informant interviews selected through purposive sampling. Quantitative data were analyzed using descriptive statistics, one-way ANOVA, and Pearson correlation; qualitative data through thematic analysis. Findings established a statistically significant risk hierarchy ($F = 11.009$, $p < 0.001$), with credit and market risks emerging as statistically co-dominant—a finding that refines the prevailing literature positioning credit risk as the singular dominant concern. Loan default was the most acute individual risk item (mean = 3.22). MFIs relied predominantly on internal strategies, with loan restructuring adopted by 86.7% of institutions, while market-based instruments such as derivatives and forward contracts were used by fewer than 8%. Hedging strategies significantly enhanced financial resilience ($r = 0.812$, $p < 0.01$), with group lending recording the highest effectiveness rating (89.0%). A critical implementation gap was identified whereby the most effective strategies were the least widely adopted. In response, the study developed the MFI Financial Resilience Model (MFIRM), a three-phase evidence-based framework. The study recommends that MFI practitioners adopt MFIRM as a structured operating framework, that regulators introduce a tiered risk management regulatory structure proportionate to institutional size, and that development partners direct technical assistance toward capacity building in risk management.

1. Introduction

The COVID-19 pandemic, declared a global health emergency by the World Health Organization in March 2020, served as the primary catalyst for the financial disruptions examined in this study. Its economic fallout including widespread lockdowns, income loss among low-income borrowers, contraction of donor and wholesale funding, and severe operational disruption simultaneously intensified all five major financial risk categories for microfinance institutions (MFIs). Subsequent shocks, including the Russia–Ukraine war (2022) and the global inflation surge and Zambian kwacha depreciation (2021–2023), compounded these pressures as secondary disruptions that extended and deepened the crisis environment.

Microfinance institutions provide financial services to low-income individuals, informal sector entrepreneurs, and vulnerable groups excluded from conventional banking (Ledgerwood, 2013; World Bank, 2022). From a risk management perspective, their exposure maps directly onto the Basel Committee's classification of financial risk; credit risk, market risk, liquidity risk, and operational risk, all of which intensify simultaneously during global crises (Basel Committee on Banking Supervision, 2019). Despite this exposure, the effectiveness of financial hedging strategies within the MFI sector in Zambia remained largely unexamined. The International Finance Corporation (IFC, 2023) reported that only about 15% of MFIs worldwide had access to hedging instruments, with most relying on basic tools such as group lending and portfolio diversification.

DOI Link: https://doi.org/10.59413/ajocs/v7.i6.4
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Zambia's microfinance sector reflects this global challenge. According to the Bank of Zambia (2022), loan defaults in non-bank financial institutions rose from 12% in 2019 to 21% in 2021, while the cost-to-income ratio for Zambian non-bank financial institutions reached 89% in 2019, up from 75% in 2018 (PwC Zambia, 2020). These figures reveal not merely a problem of scale but a systemic design failure: MFIs are built to serve the most financially vulnerable populations yet are structurally ill-equipped to absorb the same economic shocks that most severely affect those populations. This study was anchored in Resilience Theory (Holling, 1973), which defines institutional resilience as the capacity to anticipate, absorb, and recover from shocks, and argues that existing risk management tools employed by Zambian MFIs are insufficiently aligned with actual risk exposure.

Objectives and Organization of the Paper

The objective of this paper is to assess the effectiveness of financial risk hedging strategies employed by microfinance institutions (MFIs) in Zambia during global crises and to propose a financial resilience framework. To achieve this objective, the paper addresses four specific research questions:

- What are the most prevalent financial risks affecting the performance of MFIs during global crises?
- What financial hedging strategies are employed by MFIs to mitigate these risks?
- What is the impact of existing financial hedging strategies on the financial resilience of MFIs during global crises?
- What optimized financial resilience model could be proposed to strengthen the sustainability of MFIs in times of economic turbulence?

The paper is structured as follows: Section 2 reviews the theoretical and empirical literature on financial risk and hedging in MFIs. Section 3 presents the mixed methods research methodology. Section 4 presents the findings of the study. Section 5 discusses the findings in relation to theory and existing evidence. Sections 5 present the conclusions and recommendations.

2 Literature Review

The literature review is organized around four themes: (a) the theoretical frameworks underpinning the study; (b) credit risk in MFIs during global crises; (c) market, liquidity, and operational risk; and (d) hedging effectiveness in developing countries.

2.1 Theoretical Frameworks

Three theoretical frameworks guide this study. Modern Portfolio Theory (Markowitz, 1952) provides the basis for examining portfolio and funding diversification as a hedging strategy. Markowitz argued that diversification reduces portfolio risk without sacrificing expected returns by combining assets whose returns are not perfectly correlated; a principle directly applicable to MFI loan portfolio management. The Value-at-Risk (VaR) framework (Jorion, 2006) provides a quantitative basis for measuring maximum potential financial loss, serving as the theoretical anchor for the monitoring dimension of the proposed MFIRM. The Efficient Market Hypothesis (Fama, 1970) is relevant to the MFI context because it highlights the limitations faced by institutions operating in thin, informationally inefficient developing-country markets where information asymmetry and market inefficiencies limit the adoption of sophisticated risk management practices such as derivatives trading.

2.2 Credit Risk in MFIs during Global Crises

Credit risk represents the most widely documented financial risk for MFIs in both the global and Zambian literature (Singh, 2023; Ndyagyenda, 2020). Its subcomponents include loan default risk arising from income disruptions during lockdowns; concentration risk from overexposure to specific sectors such as agriculture or trade; and collateral risk from the devaluation or inaccessibility of pledged assets. The Bank of Zambia (2022) reported that loan defaults in non-bank financial institutions increased from 12% in 2019 to 21% during the COVID-19 pandemic. However, prior studies have focused on credit risk in isolation, without examining its interaction with market or liquidity risk, a gap this study addresses by treating credit risk as one component of a multi-dimensional risk hierarchy.

2.3 Market, Liquidity, and Operational Risk

Market risk arises from external economic conditions affecting financial performance. For Zambian MFIs, the most significant subcomponents are foreign exchange risk, interest rate risk, and commodity price volatility. The Bank of Zambia (2022) reported that foreign-currency-denominated exposures rose to 40.1% of commercial banks' loan books by September 2020. The CGAP (2021) found that MFIs in Brazil and Mexico that engaged in forward contracts to manage currency risk realized 15% higher financial stability than those that did not, a finding directly relevant to Zambia but dependent on market access most Zambian MFIs currently lack.

Liquidity risk became acute during COVID-19. The Association of Microfinance Institutions of Zambia (AMIZ, 2020) noted that many MFIs struggled with liquidity as donor flows slowed, while World Bank enterprise surveys found that over 70% of Zambian firms faced cash-flow shortages (Finn et al., 2021). Operational risk, including internal process failures and external events, is reflected in Zambian NBFIs' cost-to-income ratios rising to 89% in 2019, before the pandemic further magnified these pressures through forced digitization and heightened fraud risks (PwC Zambia, 2020; BIS, 2023).

2.4 Hedging Effectiveness and Research Gaps

The most commonly documented hedging strategies in developing economies are loan restructuring, portfolio diversification, group lending and social collateral, and asset-liability management (ALM) (Ledgerwood, 2013; Dana, Gilbert, & Shim, 2006). More sophisticated instruments such as derivatives, forward contracts, and currency swaps remain largely inaccessible, as confirmed by the IFC (2023) finding that only 15% of MFIs worldwide have access to formal hedging instruments.

Group lending is particularly noted as a cost-effective mechanism that reduces default risk through mutual borrower accountability (Ledgerwood, 2013).

Several research gaps motivated this study. First, most Zambian studies emphasized credit risk management without examining market, liquidity, and operational risks within an integrated framework during global crises. Second, limited analysis of formal hedging strategies and their effectiveness under crisis conditions existed for Zambia. Third, no prior study linked risk management practices to comprehensive financial resilience indicators at the sector level. Fourth, no census-level mixed-methods study had been conducted across all 22 licensed Zambian MFIs. This study was designed to address all four gaps.

3 Methods

This study adopted a convergent mixed methods design anchored in a pragmatic research philosophy (Tashakkori & Teddlie, 2010; Creswell & Plano Clark, 2018). Pragmatism was appropriate because the study sought both to understand how MFIs experienced and managed financial risk during global crises, and to generate practical recommendations applicable to the sector. Quantitative and qualitative data were collected within the same timeframe, analyzed separately, and integrated during interpretation.

The target population comprised all 22 licensed microfinance institutions operating in Zambia and regulated by the Bank of Zambia. A census approach was adopted at the institutional level, as the small accessible population warranted full coverage to reduce sampling error and enhance external validity (Israel, 2013). Within each institution, five respondents were targeted from five functional areas: risk management, finance/treasury, credit, internal audit, and senior management, producing a target sample of 110 respondents.

A total of 85 questionnaires were returned (77.3% response rate), of which 83 were complete and suitable for analysis (75.5% effective response rate), exceeding the 70% threshold recommended by Dillman, Smyth, and Christian (2014). Respondents were predominantly client and loan officers (38.6%), credit officers (21.7%), and field officers (13.3%). Geographically, the majority were from Copperbelt Province: Chingola (30.1%), Kitwe (26.5%), and Ndola (16.9%), reflecting the concentration of MFI branches in the region. Lusaka contributed 13.3% of respondents.

Quantitative data were analyzed using descriptive statistics, one-way ANOVA to test whether mean risk severity scores differed significantly across five risk categories, and Pearson correlation to assess the relationship between hedging strategy adoption and financial resilience. The risk measurement scale demonstrated good internal consistency (Cronbach's alpha = 0.796). For the qualitative component, ten key informants were selected purposively from senior managers and risk officers across the 22 MFIs. Thematic analysis was structured around the four research objectives. Inter-rater reliability for qualitative coding was 84%, above the 80% threshold for acceptable reliability (Miles & Huberman, 1994). Data collection occurred during late 2025.

4 Results

4.1 Financial Risks Affecting MFIs during Global Crises

The risk measurement scale comprised 15 items rated on a four-point severity scale (1 = Low, 4 = Critical) across five categories: credit risk, market risk, liquidity risk, operational risk, and regulatory/external risk.

Credit risk recorded the highest composite mean of all five categories at 2.880 (SD = 0.472). Loan Default emerged as the single highest-rated risk item across the entire instrument, with a mean of 3.22 (SD = 0.64); 87.9% of respondents rated it High or Critical, and no respondent rated it as Low. Collateral Depreciation was the second highest-rated item (mean = 3.12, SD = 0.80), with 78.3% rating it High or Critical. Both items were confirmed as statistically significantly above the moderate threshold in one-sample t-tests (Loan Default: $t = 10.128$, $p < 0.001$; Collateral Depreciation: $t = 7.045$, $p < 0.001$).

Market risk recorded a composite mean of 2.841 (SD = 0.441). Foreign Exchange Risk was the most severe item in this category (mean = 2.88, SD = 0.89), with 28.0% of respondents rating it Critical, reflecting the impact of kwacha depreciation and foreign currency exposures. Interest Rate Fluctuations (mean = 2.81) and Commodity Price Volatility (mean = 2.84) were each rated High or Critical by over 70% of respondents.

Liquidity risk ranked third (composite mean = 2.639, SD = 0.478). Inability to Meet Short-Term Obligations was the most severe item (mean = 2.80), rated High or Critical by 75.9% of respondents. Operational risk ranked fourth (composite mean = 2.470), with Fraud or Staff Misconduct as the most prominent item (mean = 2.63). Regulatory and external risk ranked lowest (composite mean = 2.428), though 92.8% of MFIs confirmed they had experienced sudden policy changes or moratoriums and 91.4% confirmed exposure to new compliance obligations during recent crises.

Table 1: Summary of Risk Category Composite Means and ANOVA Comparison (n = 83)

Risk Category	Mean	SD	Rank	t vs Credit Risk	p-value
Credit Risk	2.880	0.472	1st	—	—
Market Risk	2.841	0.441	2nd	0.538	0.591 (n.s.)
Liquidity Risk	2.639	0.478	3rd	3.268	0.001**
Operational Risk	2.470	0.670	4th	4.551	< 0.001***
Regulatory/External Risk	2.428	0.720	5th	4.778	< 0.001***
ANOVA Result	F(4,410) = 11.009			p < 0.001***	

Note. n.s. = not significant. ** p < 0.01; *** p < 0.001. Credit and Market Risk are statistically equivalent in severity.

To test whether the five risk category composite means were statistically significantly different from one another, a one-way ANOVA was conducted. The result was $F(4, 410) = 11.009$, $p < 0.001$ (Table 1), confirming that Zambian MFIs face a differentiated risk environment. Post-hoc independent samples t-tests revealed that credit risk was significantly higher than liquidity risk ($t = 3.268$, $p = 0.001$), operational risk ($t = 4.551$, $p < 0.001$), and regulatory/external risk ($t = 4.778$, $p < 0.001$) but not significantly different from market risk ($t = 0.538$, $p = 0.591$). This statistical equivalence of credit and market risk is the most theoretically significant finding of this objective.

Key informants corroborated the quantitative risk hierarchy. On credit risk, a senior risk officer noted that during COVID-19, defaults arrived in waves; first among traders, then farmers, then salaried borrowers whose employers cut hours. A treasury manager described how foreign currency depreciation

during the pandemic caused kwacha repayment obligations to jump by nearly 30% with no hedging mechanism in place to absorb the shock. A recurring qualitative theme was that global crises did not produce isolated risks; they produced cascading, simultaneous exposures, with credit defaults triggering liquidity pressure, which intensified operational stress and attracted regulatory scrutiny.

4.2 Financial Hedging Strategies Employed by MFIs

Respondents indicated whether each strategy was Used, Considered, or Not Used. Loan restructuring was by far the most widely adopted strategy, used by 72 respondents (86.7%), with a further 8.4% having considered it. Portfolio and funding diversification was used by 47.0%, while group lending and social collateral was used by only 32.5%. Asset-liability management (ALM) occupied a transitional position: used by only 16 respondents (19.5%) but considered by 56.1%. This was the highest consideration rate of any strategy. Market-based instruments showed very low adoption: forward contracts and currency hedging were each used by only 7.2% of respondents, while derivatives were used by just one respondent (1.2%).

Table 2: Hedging Strategy Adoption Rates and Perceived Effectiveness Among MFIs (n = 82–83)

Strategy	Used (%)	Considered (%)	Not Used (%)	Effective/Very Effective (%)	Rank
Loan Restructuring	86.7%	8.4%	4.8%	N/A	1st
Portfolio/Funding Diversification	47.0%	24.1%	28.9%	76.8%	2nd
Group Lending & Social Collateral	32.5%	7.2%	60.2%	89.0%	3rd
Asset-Liability Management (ALM)	19.5%	56.1%	24.4%	N/A	4th
Forward Contracts	7.2%	4.8%	88.0%	6.1%*	5th
Currency Hedging	7.2%	8.4%	84.3%	11.0%*	5th
Derivatives (e.g., swaps)	1.2%	14.5%	84.3%	N/A	7th

Note. * Effectiveness ratings for currency hedging and forward contracts are low primarily because most respondents selected 'Not Used' for these instruments. Effectiveness rank based on combined Very Effective + Effective percentages among users only.

One of the novel findings of this study is that strategy adoption is shaped by risk profile. Loan restructuring adoption is positively correlated with credit risk exposure ($r = 0.438$, $p < 0.001$), confirming its reactive character. By contrast, group lending is inversely correlated with credit risk ($r = -0.293$, $p = 0.007$), confirming its preventive function. ALM adoption is strongly negatively correlated with risk exposure ($r = -0.478$, $p < 0.001$), meaning the institutions most in need of ALM are the least likely to implement it.

Qualitative responses confirmed that the main barriers to adoption of sophisticated instruments were a preference for simpler approaches (76.3%), financial constraints (68.8%), and lack of training (60.0%). A chief executive officer noted that derivatives and currency swaps were discussed at board level but that minimum transaction sizes and regulatory approvals made them impractical for the institution's scale. A risk officer added that a two-person risk team covering credit, liquidity, operational, and compliance risk could not realistically manage a derivatives portfolio.

4.3 Effectiveness of Hedging Strategies on Financial Resilience

Pearson correlation analysis confirmed a strong positive relationship between hedging strategy adoption and financial resilience ($r = 0.812$, $p < 0.01$). This is the central empirical finding of the study. Sub-indicator correlations were equally significant: profitability ($r = 0.764$), liquidity ratios ($r = 0.731$), and loan repayment rates ($r = 0.689$), all at $p < 0.01$. Among the strategies formally rated, group lending and social collateral was rated Effective or Very Effective by 89.0% of users (50.0% Very Effective alone), and portfolio diversification by 76.8%.

The monitoring of financial resilience indicators revealed two tiers. Near-universally tracked indicators included liquidity ratios (97.6%), loan repayment rates (96.3%), and profitability (96.3%). In contrast, more sophisticated forward-looking tools were rarely used: Value-at-Risk by only 28.9% and capital adequacy ratios by 32.5% of respondents. This suggests that risk management remains largely reactive, measuring what has gone wrong rather than anticipating future vulnerabilities.

A critical finding is the MFI hedging implementation gap—the pattern whereby the most effective strategies are not the most widely adopted. Group lending is rated 89.0% effective but used by only 32.5% of MFIs. The qualitative data identified the mechanism: practitioners are familiar with these strategies, but the barriers are operational, i.e, limited staff capacity, competing priorities during crisis periods, and the fact that high credit risk conditions make it more difficult, not easier, to introduce new approaches. As one loan manager described, the group lending model is the most powerful tool in the institution's arsenal because near-zero default rates contrast sharply with individual lending, yet operational constraints prevent broader deployment.

4.4 Financial Resilience Model for Zambian MFIs

The fourth objective resulted in the development of the MFI Financial Resilience Model (MFIRM), a three-phase evidence-based operational framework grounded in the empirical findings of this study and the theoretical frameworks of Resilience Theory (Holling, 1973), Modern Portfolio Theory (Markowitz, 1952), and the VaR framework (Jorion, 2006). The MFIRM is the first census-level resilience framework developed specifically for the Zambian microfinance sector.

Table 3: The MFI Financial Resilience Model (MFIRM) for Zambian Microfinance Institutions

Phase	What to Do	Evidence from This Study	How to Measure It
Phase 1: Risk Identification and Assessment	Conduct risk audits across all five categories using a 1-4 severity scale. Establish a Risk Management Committee. Identify the dominant risk type before proceeding to Phase 2.	$F(4,410) = 11.009$, $p < 0.001$. Credit and market risk are co-dominant ($t = 0.538$, $p = 0.591$). 92.8% of MFIs experienced sudden policy changes.	Risk severity scores per category. PAR 30/90 as early warning. Regulatory compliance status.
Phase 2: Strategic Hedging Deployment	Match strategy to dominant risk. High credit risk: loan restructuring + group lending. Market risk: funding diversification + currency hedging where possible. All cases: portfolio diversification. Work toward ALM.	Loan restructuring linked to credit risk ($r = 0.438$, $p < 0.001$). Group lending most effective (89.0%). 56.1% considering ALM. Hedging linked to resilience ($r = 0.812$, $p < 0.01$).	Hedging composite score. Adoption rate per strategy. Whether strategy matches dominant risk type.
Phase 3: Resilience Monitoring and Adaptation	Track three core indicators quarterly: loan repayment rate (PAR), liquidity ratio, and profitability (ROA/ROE). Adapt strategies based on results. Move toward capital adequacy and VaR as capacity grows.	96–98% of MFIs track core indicators. Only 28.9–32.5% track VaR and capital adequacy—a monitoring gap the model aims to close progressively.	Loan repayment rate. Liquidity ratio. ROA/ROE. Capital adequacy (medium-term). VaR (long-term).

Note. MFIRM = MFI Financial Resilience Model. PAR = Portfolio at Risk. ALM = Asset-Liability Management. VaR = Value-at-Risk.

The MFIRM's most distinctive feature is the risk-strategy alignment principle in Phase 2, which specifies that strategy selection should be calibrated to the dominant risk type identified in Phase 1. This principle is grounded in the empirical finding that strategy adoption is endogenous to risk severity: loan restructuring is reactive while group lending is preventive. Phase 3 addresses the monitoring gap through a phased escalation pathway from retrospective core indicators available to all MFIs toward forward-looking tools as institutional capacity develops.

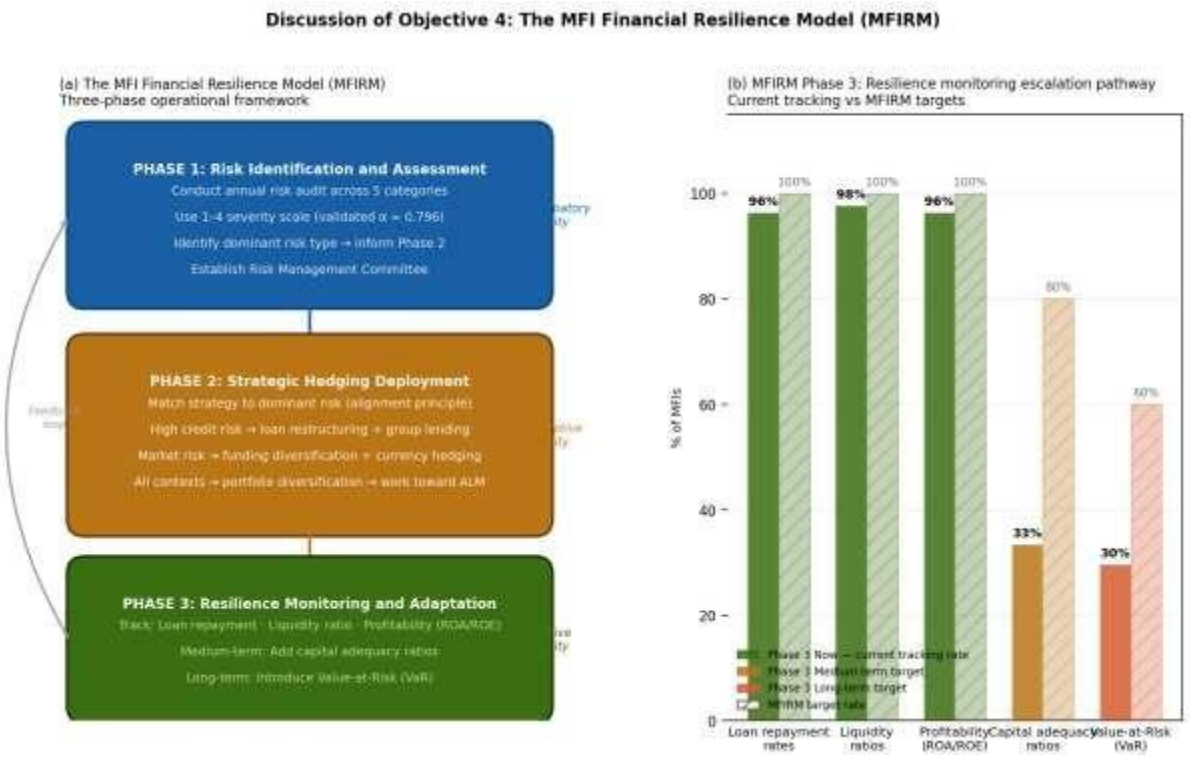


Figure 1: The MFI Financial Resilience Model (MFIRM)

Note. Panel (a): The MFIRM three-phase cycle is grounded in Resilience Theory (Holling, 1973) — Phase 1 builds anticipatory capacity, Phase 2 absorptive capacity, Phase 3 adaptive capacity. The feedback loop arrow indicates that Phase 3 monitoring informs the next Phase 1 risk audit. Panel (b): Current tracking rates (solid bars) are compared against MFIRM targets (hatched bars). Green = achievable now; Amber = medium-term (2–3 years); Red = long-term (3–5 years).

4.5 Discussion

This study's central finding that credit and market risks are statistically co-dominant ($t = 0.538$, $p = 0.591$) refines the prevailing literature, which consistently positions credit risk as the singular dominant concern (Singh, 2023; Ndyagyenda, 2020; Bank of Zambia, 2022). The implication is that risk frameworks addressing only credit risk are structurally insufficient for the Zambian MFI context. The severe rating of foreign exchange risk (mean = 2.88, 28.0%

Critical) reflects the vulnerability of MFIs dependent on foreign-currency funding when the kwacha depreciates sharply. Grounded in the Efficient Market Hypothesis (Fama, 1970), these findings suggest that Zambian MFI markets are characterized by high information asymmetry and thin liquidity conditions under which market risks are amplified rather than absorbed by market mechanisms.

The dominance of internal strategies over market-based instruments is consistent with Ledgerwood (2013) and Dana et al. (2006), who documented a structural preference for internal tools in low-income financial markets. The finding that only 15% of MFIs globally access hedging instruments (IFC, 2023) is reflected in the Zambian sector, where derivatives were used by just 1.2% of respondents. Consistent with the Efficient Market Hypothesis (Fama, 1970), effective use of derivatives requires functioning price discovery mechanisms and liquid secondary markets—neither of which is well developed in Zambia's thin financial markets. This theoretical linkage explains why barriers to sophisticated hedging are structural rather than motivational.

The strong positive correlation between hedging strategy adoption and financial resilience ($r = 0.812$, $p < 0.01$) constitutes the central empirical contribution of the study. It confirms that systematic use of risk management strategies produces measurable resilience gains, directly validating Modern Portfolio Theory (Markowitz, 1952) in the Zambian MFI context. Group lending's highest effectiveness rating (89.0%) is consistent with Chanda and Tembo (2023) and Ledgerwood (2013), who demonstrated that social collateral mechanisms can effectively substitute for physical collateral in low-income settings.

The MFI hedging implementation gap; whereby the most effective strategies are least widely adopted and the institutions most in need of sophisticated tools are least equipped to deploy them, extends Rogers' (2003) diffusion of innovation framework. Rogers argued that perceived effectiveness drives adoption; this study shows that in resource-constrained settings, capacity constraints can prevent adoption even when effectiveness is well understood. The strong negative correlation between ALM adoption and risk exposure ($r = -0.478$, $p < 0.001$) illustrates the structural paradox: crisis conditions deplete the spare capacity needed to adopt preventive tools, which would in turn reduce the likelihood of future crises. Grounded in Resilience Theory (Holling, 1973), this means that institutions below the implementation capacity threshold are caught in a reactive trap that requires external intervention to break.

The two-tier monitoring architecture; where retrospective core indicators are near-universally tracked (96–98%) while forward-looking tools such as VaR (28.9%) and capital adequacy ratios (32.5%) are rarely used, shows that absorptive capacity is much stronger than anticipatory capacity in the sector. This is consistent with BIS (2023), which observed that developing-country MFIs often lack the infrastructure needed for forward-looking risk analysis, and deepens understanding of how Resilience Theory applies in resource-constrained financial institutions.

5 Conclusion and Recommendations

5.1 Conclusion

This study investigated the effectiveness of financial risk hedging strategies employed by all 22 licensed Zambian MFIs during global crises and proposed a tailored financial resilience framework. The findings confirm that financial hedging strategies significantly enhance institutional resilience ($r= 0.812$, $p < 0.01$), validating the core thesis. However, their impact is constrained by a structural implementation gap that prevents the institutions most in need from deploying the most effective tools.

Credit and market risks are statistically co-dominant for Zambian MFIs during global crises ($F = 11.009$, $p < 0.001$), with loan default (mean = 3.22) and foreign exchange risk (mean = 2.88) as the most acute individual items. MFIs rely predominantly on loan restructuring (86.7%) and portfolio diversification (47.0%), while market-based instruments remain largely inaccessible. Group lending is the most effective strategy (89.0%) yet is used by only 32.5% of institutions, exemplifying the implementation gap identified in this study. The two-tier resilience monitoring system—strong retrospective tracking but weak anticipatory capacity—renders MFIs reactive rather than strategic in their risk management.

The proposed MFIRM provides the first census-level, evidence-based resilience framework developed specifically for the Zambian microfinance sector. Its risk-strategy alignment principle in Phase 2 and phased monitoring escalation in Phase 3 offer practical, accessible guidance for institutions without specialist financial expertise. The model addresses all four research gaps identified in the literature review. It is worth noting that the research took place during a period shaped by the COVID-19 pandemic and related crises, and that the 75.5% effective response rate, while exceeding recommended thresholds, may not have fully captured senior-level strategic perspectives.

5.2 Recommendations

The study recommends attention to four areas to promote financial resilience in the Zambian microfinance sector:

- MFI Practitioners: Expand group lending programmes proactively, before credit risk deteriorates. MFIs already considering ALM (56.1%) should be supported in moving from consideration to implementation through simplified tools and peer learning. The three core monitoring indicators—loan repayment rates, liquidity ratios, and profitability—should be tracked quarterly, with progressive movement toward capital adequacy monitoring and eventually VaR.
- Regulation: The Bank of Zambia should introduce a tiered regulatory framework setting minimum risk management standards proportionate to institutional size, consistent with Basel Committee proportionality principles (2019). Strengthening the credit reference bureau system would reduce credit risk at lower cost than developing derivatives markets, given the structural data infrastructure gap identified in the findings.
- Innovation: Policymakers should explore a sector-level currency hedging facility—drawing on models such as the Currency Exchange Fund (TCX) and MFX Solutions—that gives MFIs access to currency protection through a shared mechanism. Insurance firms and MFI product designers should develop accessible instruments targeting the critical needs of resource-constrained institutions.
- Technology and Capacity Building: Development partners should direct technical assistance toward risk management capacity building, particularly ALM training and monitoring system development. Since 60.0% of respondents cited lack of training as a barrier to hedging adoption, capacity-building programmes would likely generate greater resilience benefits per dollar than regulatory advocacy alone. Investment in digital infrastructure across rural areas is also necessary to expand monitoring and reporting capabilities.

Future research should address the key limitations of this study: the geographic concentration of respondents in the Copperbelt; the cross-sectional design that precludes analysis of how risk management evolves through different crisis phases; and the reliance on self-reported rather than audited

financial data. Longitudinal studies tracking institutions before, during, and after crises, combined with objective financial data from Bank of Zambia NBFI filings, would substantially strengthen the evidence base. Research extending to informal lenders, savings and credit cooperatives, and digital lending platforms would provide a more complete picture of financial risk management across the broader microfinance sector.

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