



Faculty of Economics and Business

**The Determinants of Financial Performance of Microfinance Institutions
in Pakistan: The Moderating Role of Board Risk Committee**

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The Determinants of Financial Performance of Microfinance Institutions in
Pakistan: The Moderating Role of Board Risk Committee

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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ABSTRACT

The performance of microfinance institutions is central to advancing financial inclusion in emerging economies but remains underexplored in Pakistan regarding the combined influence of corporate governance, financial inclusion, and credit risk. This study addresses this gap by examining how corporate governance, financial inclusion, and credit risk affect performance of microfinance institutions and the moderating role of the board risk committee. Using a balanced panel of 19 microfinance institutions from 2012 to 2021, performance is measured by return on asset, return on equity, and operational self-sufficiency. The explanatory variables include corporate governance factors (board size, board independence, female directors, audit committee), financial inclusion factors (annual percentage rate, operational efficiency), and credit risk factors (portfolio at risk, non-performing loans), with firm size and leverage as controls. The findings of panel data analysis show that strong corporate governance including larger boards, greater independence, female representation, and active audit committees significantly enhances the financial performance of microfinance institutions in Pakistan. In contrast, high annual percentage rates lower performance, while better operational efficiency improves it. Moreover, credit risk indicators such as portfolio at risk and non-performing loans negatively affect performance. Importantly, the board risk committee not only has a positive direct effect but also reduces the adverse impact of credit risk on performance. The policy implications of this study suggest for effective governance and risk oversight are critical to sustaining profitability and stability in the microfinance sector.

Keywords: Corporate governance, financial inclusion, credit risk, microfinance institutions, board risk committee

Penentu Prestasi Kewangan Institusi Pembiayaan Mikro di Pakistan: Peranan Moderasi Jawatankuasa Lembaga Risiko

ABSTRAK

Prestasi institusi pembiayaan mikro (MFIs) memainkan peranan penting dalam memajukan kemasukan kewangan di ekonomi sedang pesat membangun namun masih kurang diterokai di Pakistan dari segi pengaruh tadbir urus korporat(CG), kemasukan kewangan(FI) dan risiko kredit(CR). Kajian ini menyiasat bagaimana tiga faktor tersebut mempengaruhi prestasi MFIs serta peranan jawatankuasa lembaga risiko (JLR). Data panel seimbang daripada 19 MFIs bagi tempoh 2012–2021 digunakan, dengan prestasi diukur melalui pulangan atas aset (ROA), pulangan atas ekuiti (ROE) dan kecekapan sendiri operasi (OSS). Pemboleh ubah penjelas merangkumi faktor CG (saiz lembaga, kebebasan lembaga, pengarah wanita, jawatankuasa audit), FI (kadar peratusan tahunan, kecekapan operasi) dan CR (portfolio berisiko, pinjaman tidak berbayar), dengan saiz firma dan leverage sebagai kawalan. Dapatan menunjukkan CG yang kukuh termasuk lembaga lebih besar, lebih bebas, penglibatan wanita serta jawatankuasa audit aktif meningkatkan prestasi kewangan MFIs. Sebaliknya, kadar peratusan tahunan tinggi menurunkan prestasi manakala kecekapan operasi yang baik meningkatkannya. Selain itu, CR seperti portfolio berisiko dan pinjaman tidak berbayar memberi kesan negatif terhadap prestasi. Pentingnya, JLR bukan sahaja mempunyai kesan langsung positif tetapi turut mengurangkan kesan buruk risikit. Secara keseluruhan, dapatan menegaskan bahawa CG dan pemantauan risiko berkesan amat penting untuk mengekalkan keuntungan dan kestabilan sektor pembiayaan mikro.

Kata kunci: *Tadbir urus korporat, kemasukan kewangan, risiko kredit, institusi pembiayaan mikro, jawatankuasa lembaga risiko.*

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LIST OF ABBREVIATIONS

AC	Audit committee
APR	Annual percentage rate (Interest rate)
BIND	Board independence
BRC	Board risk committee
RCINDEX	Board risk committee index
BSIZE	Board size
CG	Corporate governance
CR	Credit risk
FDIR	Female director on board
FI	Financial inclusion
FSIZE	Firm size
LEV	Leverage
MFIs	Microfinance institutions
NPL	Non-performing loans
OPREFF	Operational efficiency
OSS	Operational self sufficiency
PAR	Portfolio at risk
PMN	Pakistan Microfinance Network
ROA	Return on asset
ROE	Return on equity
SBP	State Bank of Pakistan
SECP	Security and Exchange Commission of Pakistan

CHAPTER 1

INTRODUCTION

1.1 Introduction

Microfinance institutions (MFIs) have increasingly emerged as important agents in addressing poverty and financial exclusion, particularly in developing economies. They offer access to essential financial services to individuals and communities who are typically excluded from formal banking systems due to lack of collateral, credit history, or financial literacy (Maeenuddin et al., 2024; Bharti & Malik, 2022). In countries like Pakistan, where a significant segment of the population remains underserved, MFIs are considered vital in promoting economic inclusion, enabling micro-entrepreneurship, and building resilience against financial shocks (Kaleem et al., 2011; Mersland & Strøm, 2009). However, despite their rapid expansion, the ability of MFIs to maintain financial sustainability while fulfilling their social mission continues to be a challenge. This growing concern makes it increasingly important to understand the factors that influence the performance and long-term viability of MFIs.

As MFIs mature and extend their outreach, their operations become more complex, which raises critical questions around institutional governance, risk management, and operational effectiveness. Their dual mission of providing financial services to the poor while ensuring financial sustainability creates an inherent tension that necessitates robust internal controls and well-defined governance structures (Iqbal et al., 2019; Gyimah et al., 2020). Sound governance practices are essential not only for ensuring transparency and accountability but also for managing operational risks and meeting the expectations of donors, regulators, and investors (Rasel & Win, 2020; Singh, 2024). In the context of

microfinance, where financial transactions often occur in informal settings and with vulnerable clients, the quality of governance can directly influence institutional performance.

In particular, corporate governance (CG) plays a critical role in setting the tone for responsible decision-making within MFIs. Board structure, transparency mechanisms, and oversight practices determine how institutions are steered toward achieving their social and financial objectives (Imran & Shafique, 2022). However, unlike conventional banking institutions, MFIs often lack standardized governance systems, leading to challenges such as information asymmetry, weak board engagement, and ineffective internal controls (Fatima et al., 2018; Taghavi Moghaddam et al., 2018). These governance gaps are especially evident in developing countries like Pakistan, where many MFIs operate without formal regulatory supervision or structured board-level risk management (Iqbal et al., 2020; Kaleem et al., 2011). As a result, issues such as non-performing loans, inefficient operations, and ethical concerns have surfaced.

Credit risk (CR) further complicates the performance equation for MFIs. Given the high-risk nature of lending to low-income clients, especially in economies with economic and political instability, MFIs are particularly vulnerable to repayment failures and delinquency (Shieler et al., 2017; Apochi & Mahmood, 2022). As competition in the microfinance sector intensifies and pressure mounts to expand portfolios, institutions may adopt looser credit screening policies, exacerbating credit risk exposure (Basharat et al., 2020; Pervez et al., 2018). Poor credit risk management not only undermines profitability but also erodes investor confidence and damages institutional credibility. Therefore, understanding how credit risk is monitored and managed within MFIs is central to assessing their performance.

At the same time, financial inclusion (FI) has become a global policy priority, with governments and institutions striving to extend access to financial services across underserved segments (Musau et al., 2018; Morgan & Pontines, 2014). MFIs play a critical role in these efforts by bridging gaps in financial access. However, the expansion of outreach without adequate controls may lead to unintended consequences, such as over-indebtedness, client dropouts, and operational strain (Bharti & Malik, 2022; Ozili, 2020). Therefore, while financial inclusion initiatives are beneficial in principle, they must be strategically aligned with institutional capacity and risk tolerance to produce positive performance outcomes.

In response to the growing complexity of MFIs operations, regulatory attention has shifted toward specialized governance structures such as the board risk committee (BRC). This committee is responsible for ensuring the identification, mitigation, and oversight of risks at the strategic level (Dato et al., 2018). The role of the board risk committee becomes particularly critical in institutions like MFIs, where risk is embedded in day-to-day lending operations, and external shocks can quickly threaten solvency. Although board risk committees are well-established in banking systems, their emergence in microfinance governance is relatively recent, and empirical studies examining their role in influencing institutional performance remain limited, especially in the South Asian context (Tadele, 2020; Alduneibat, 2023). The current study adds value by examining how a structured risk governance body like the board risk committee can strengthen oversight and contribute to the stability and effectiveness of MFIs in Pakistan.

This study is grounded in the belief that performance of MFIs must be assessed not merely through financial metrics but also by evaluating the institutional structures that influence decision-making, risk-taking, and social outcomes. By investigating how

governance practices, credit risk, and financial inclusion jointly influence MFIs performance and how these relationships are shaped by the presence of a board risk committee, this study aims to contribute valuable insights to academia, policymakers, and practitioners seeking to enhance the long-term viability and impact of MFIs.

The evolution of microfinance in Pakistan reflects a dynamic interplay between poverty reduction policies, donor-led initiatives, and private sector participation. The sector's foundation was laid through pioneering institutions such as the Aga Khan Rural Support Programme (AKRSP) in the 1980s and the Khushhali Bank, established in 2000 as part of a national poverty alleviation strategy supported by the Asian Development Bank. Over time, numerous non-governmental organizations transformed into regulated microfinance banks, bringing the industry under the purview of the State Bank of Pakistan and fostering greater transparency and institutional discipline. The introduction of the Microfinance Institutions Ordinance (2001) and subsequent policy frameworks such as the National Financial Inclusion Strategy (2015) further accelerated sectoral growth by promoting digital innovation, branchless banking, and partnerships with telecom operators. By 2023, Pakistan's microfinance sector served over 8 million active borrowers and 15 million depositors, indicating remarkable outreach yet still far below potential, with less than 30 percent of the total market demand being met (PMN, 2023). Despite this progress, the sector faces persistent challenges such as high operational costs, limited credit risk management capacity, and uneven regional penetration, especially in remote rural areas. These dynamics highlight the continued importance of MFIs as vehicles for inclusive development and underscore the need to understand how governance, risk oversight, and financial inclusion collectively shape their performance in Pakistan's evolving financial landscape.

1.2 Background of the Study

Microfinance institutions (MFIs) have emerged as central pillars in the financial ecosystems of many developing countries, including Pakistan, where they have played a transformative role in addressing poverty and promoting financial inclusion. Designed to provide small-scale financial services to individuals who are excluded from formal banking systems, MFIs serve as engines of inclusive economic growth by facilitating access to microcredit, savings, and insurance for low-income households and small-scale entrepreneurs. In Pakistan, where a significant portion of the population resides in rural and peri-urban areas with limited access to traditional financial services, MFIs have become vital in closing the financial access gap and fostering economic empowerment (Kaleem et al., 2011; Khan et al., 2021, Akram & Hussain, 2023).

The formal journey of microfinance in Pakistan began with the introduction of the Microfinance Institutions Ordinance in 2001, a landmark regulatory framework that institutionalized the microfinance sector. This ordinance laid the foundation for regulated microfinance banks (MFBs) and non-bank MFIs, bringing them under the supervision of the State Bank of Pakistan (SBP) and the Securities and Exchange Commission of Pakistan (SECP). The primary aim was to enhance transparency, promote consumer protection, and improve governance across the sector (Rauf & Mahmood, 2009; Basharat & Saeed, 2021). Since then, industry has undergone significant evolution, driven by technological innovation, public-private partnerships, and a strong development agenda backed by both domestic and international stakeholders.

From just 34 MFIs in 2012, the number of licensed and operational institutions has grown to 46 by 2023, reflecting the sector's rapid expansion and institutionalization (PMN,

2023). This growth has been supported by strategic efforts such as the National Financial Inclusion Strategy (NFIS), launched in 2015, which emphasized digital innovation, outreach to underserved regions, and financial literacy (Government of Pakistan, 2015). These initiatives have enabled MFIs to adopt mobile banking, agent networks, and branchless models making financial services more affordable and accessible even in remote areas (Zahid et al., 2021; Jonker & Kosse, 2022).

Despite these positive developments, the sector also faces increasing complexity and performance challenges. MFIs in Pakistan are now required to maintain financial sustainability while fulfilling their social mandate. After the COVID-19 pandemic and the 2022 floods, many MFIs reported rising portfolio-at-risk (PAR) levels, increased non-performing loans (NPLs), and declining operational self-sufficiency (OSS). These shocks exposed weaknesses in the sector's ability to absorb financial stress and highlighted the need for improved governance and risk management (Dube & Kwenda, 2023; Basharat et al., 2020).

Corporate governance is one of the core institutional mechanisms that influence MFIs' capacity to balance profitability and social impact. Governance features such as board independence, committee functionality, board diversity, and strategic oversight are considered vital in ensuring accountability and enhancing institutional performance (Iqbal et al., 2020; Nemati et al., 2021). However, many MFIs in Pakistan still suffer from weak governance structures, especially smaller institutions that lack professional expertise and active board engagement. This undermines their ability to respond to market risks and regulatory requirements effectively (Hossain et al., 2024).

Credit risk has also intensified in the post-pandemic period due to inflation, interest rate volatility, and increased lending to economically vulnerable clients. Several institutions have seen a deterioration in credit quality and a rise in loan delinquencies, particularly in flood-affected areas. Effective assessment and mitigation of credit risk are now essential not only for protecting the financial stability of MFIs but also for maintaining trust among clients and funders (Maeenuddin et al., 2024; Shieler et al., 2017).

Concurrently, the push toward financial inclusion has accelerated, led by regulatory mandates and technology-driven solutions. Branchless banking and mobile money platforms have extended outreach to first-time borrowers, but this rapid growth has also introduced new operational risks. Serving unbanked populations with low financial literacy demands that MFIs develop not just scalable models, but also robust internal systems for risk oversight and performance monitoring (Bharti & Malik, 2022; Ozili, 2020b).

In this context, the board risk committee (BRC) has gained traction as a specialized governance mechanism focused on institutional risk oversight. The board risk committee is expected to identify, assess, and mitigate risks related to credit, compliance, and financial performance. However, not all MFIs have operationalized board risk committees effectively, resulting in wide disparities in how risks are managed across institutions. Recent studies have emphasized the importance of such committees in improving risk accountability and organizational resilience (Dato et al., 2018; Tadele, 2020; Apochi & Mahmood, 2022).

Overall, the performance of MFIs in Pakistan has become a multifaceted concern that intersects governance practices, credit risk exposures, and financial inclusion strategies. Understanding how these elements interact is critical for strengthening the institutional capacity of MFIs and ensuring their long-term sustainability. This study, therefore, is

situated within this broader context investigating the combined impact of corporate governance, credit risk, and financial inclusion on MFIs' performance while acknowledging the role of risk governance mechanisms such as the board risk committee. It draws on data from 19 regulated MFIs over a ten-year period (2012–2021) and aims to contribute empirical insights that can inform both policy and practice in the microfinance sector.

In Pakistan, the microfinance sector operates within a unique ecosystem that blends regulatory oversight with developmental objectives. The State Bank of Pakistan (SBP) has played a central role in shaping this environment through strategic initiatives such as the Microfinance Credit Guarantee Facility, the Financial Inclusion Program (FIP), and the National Financial Inclusion Strategy (NFIS, 2015), all designed to expand outreach and strengthen institutional resilience. Development partners including the Asian Development Bank (ADB), World Bank, and UNDP have also been instrumental in capacity-building, digital transformation, and social performance management within the sector. These collective efforts have fostered institutional diversity, enabling both for-profit microfinance banks (MFBs) and non-profit microfinance institutions (MFIs) to coexist under a tiered regulatory structure, each addressing distinct market segments.

As of 2023, according to the Pakistan Microfinance Network (PMN), the industry serves over 9 million active borrowers and manages a gross loan portfolio exceeding PKR 600 billion, reflecting substantial growth since its formal inception in 2001. However, regional disparities remain pronounced provinces such as Balochistan and interior Sindh continue to lag Punjab and Khyber Pakhtunkhwa in terms of outreach, portfolio quality, and sustainability. While urban and peri-urban areas have benefited from improved access through branchless banking and mobile money platforms, rural financial inclusion still faces

structural barriers including poor digital connectivity, low financial literacy, and limited collateral availability.

In recent years, SBP has introduced gender-inclusive financing models and green microfinance programs, promoting women's entrepreneurship and climate-resilient financial products. Nonetheless, smaller MFIs face challenges in integrating technology and risk governance mechanisms due to resource constraints and limited human capital. The uneven adoption of digital financial services (DFS) further underscores the institutional gap between large and small players. These disparities highlight the need for robust corporate governance, credit risk management, and inclusive financial frameworks to ensure equitable and sustainable development across Pakistan's diverse socioeconomic landscape. Understanding these contextual dynamics provides the necessary foundation for examining how governance structures, risk oversight, and financial inclusion collectively influence the performance and stability of MFIs.

1.3 Problem Statement

The performance of microfinance institutions remains a critical concern in developing economies due to the dual challenge of maintaining financial sustainability while fulfilling a social mission. MFIs are expected to serve low-income and underserved populations, but their ability to do so effectively depends on their internal governance, credit risk management, and operational structure (Bharti & Malik, 2022; Maenuddin et al., 2024). In this context, performance refers to a microfinance institution's ability to sustain itself financially while expanding outreach, maintaining portfolio quality, and achieving development outcomes. Yet, in many low-income countries, including Pakistan, a consistent

pattern of underperformance, rising credit risk, and governance failures continues to limit the sector's contribution to inclusive development (Iqbal et al., 2019; Gyimah et al., 2020).

Pakistan provides a compelling context for investigating microfinance performance. With 46 licensed MFIs operating under the regulatory framework of the Securities and Exchange Commission of Pakistan (SECP) and the State Bank of Pakistan (SBP), the sector has experienced considerable growth. However, despite this expansion, MFIs in Pakistan have faced persistent operational challenges. Data from the Pakistan Microfinance Network (PMN) and recent studies indicate an increasing trend in portfolio at risk (PAR>30), which rose to 9.5% by March 2023, reflecting growing credit stress across institutions. Simultaneously, performance indicators such as return on assets and operational self-sufficiency remain inconsistent across institutions, partly due to structural weaknesses in governance and risk control (Maeenuddin et al., 2024; Basharat & Saeed, 2021).

Corporate governance is particularly important in the microfinance sector, where institutions operate at the intersection of social impact and commercial viability. Weak governance practices such as lack of board independence, absence of female directors, and inactive audit or risk committees have been identified as major contributors to low transparency, mismanagement, and poor accountability in MFIs (Fatima et al., 2018; Kaleem et al., 2011). These governance gaps not only affect institutional performance but also reduce investor confidence and damage organizational credibility (Imran & Shafique, 2022; Singh, 2024). Despite the centrality of corporate governance to MFIs success, much of the prior research has been conducted in the context of commercial banks or large financial institutions, leaving a knowledge gap in how governance affects smaller, socially oriented institutions like MFIs (Gyimah et al., 2020).

Credit risk, measured through indicators such as portfolio at risk and non-performing loans, has also emerged as a significant threat to the performance of MFIs. The inability to accurately assess and manage borrower risk leads to rising default rates, weakening institutional profitability and sustainability (Pervez et al., 2018; Apochi & Mahmood, 2022a). Given that many MFI clients lack formal credit histories or collateral, credit appraisal and risk screening mechanisms are often inadequate. Moreover, as competition increases and MFIs target more economically vulnerable clients in pursuit of financial inclusion, the risk of non-repayment becomes more acute (Basharat et al., 2020). This dual pressure expanding outreach while managing risk poses a major challenge to financial stability.

At the same time, financial inclusion efforts in Pakistan have intensified, guided by national financial inclusion strategies and support from global donors. While these initiatives have improved access to finance for many low-income individuals, the resulting rapid scale-up in outreach has also contributed to higher operational costs and credit risk exposure (Ozili, 2020; Bharti & Malik, 2022). This raises critical questions about whether current financial inclusion models are compatible with the long-term performance goals of MFIs.

Despite the growing recognition of these issues, empirical evidence examining the combined impact of corporate governance, credit risk, and financial inclusion on MFIs performance remains limited, particularly in emerging economies like Pakistan. Existing studies have mostly treated these variables in isolation and have not accounted for the broader governance mechanisms that might moderate their effects. In this regard, the establishment and effectiveness of board risk committees is an underexplored area. The risk committee, as a board-level mechanism, plays a crucial role in overseeing institutional risk

policies, monitoring governance practices, and ensuring compliance with regulatory standards (Tadele, 2020; Dato et al., 2018). By creating a composite risk committee index (RCINDEX) which captures the size, independence, and competence of the board risk committee, this study offers a novel approach to understanding how board-level risk governance contributes to overall performance improvement.

This study extends the literature by offering a holistic and empirical investigation into the performance of MFIs. It uses a panel dataset of 19 regulated MFIs over a ten-year period (2012–2021), combining firm-level data on governance, risk, and inclusion with performance metrics such as ROA, ROE, and OSS. In doing so, this study introduces a multi-dimensional conceptual model, applies standardization techniques to develop an original governance index, and adopts a fixed-effects regression model to capture within-institution variation over time.

1.4 Research Question

This study investigates the impact of corporate governance, financial inclusion, and credit risk as key determinants of the financial performance of microfinance institutions (MFIs) in Pakistan. Additionally, it examines the moderating role of the board risk committee (RCINDEX) in the relationship between credit risk and financial performance. The research questions of this study are as follows:

- i. What is the impact of corporate governance on the performance of microfinance institutions in Pakistan?
- ii. What is the impact of financial inclusion on the performance of microfinance institutions in Pakistan?

- iii. What is the impact of credit risk on the performance of microfinance institutions in Pakistan?
- iv. How does the board risk committee index moderate the relationship between portfolio at risk and performance of microfinance institutions in Pakistan?

1.5 Research Objectives

The general objective of this study is to investigate the impact of corporate governance, financial inclusion, and credit risk on the performance of MFIs in Pakistan and to analyse the moderating role of board risk committee between portfolio at risk and performance of MFIs in Pakistan. Specific objectives are as follows:

- i. To investigate the impact of corporate governance on the performance of microfinance institutions in Pakistan.
- ii. To assess the impact of finance inclusion on the performance of microfinance institutions in Pakistan.
- iii. To examine the impact of credit risk on the performance of microfinance institutions in Pakistan.
- iv. To investigate the moderating effect of board risk committee index on the relationship between portfolio at risk and performance of microfinance institutions in Pakistan.

1.6 Significance of the Study

This study holds considerable significance in advancing academic understanding and practical knowledge related to the performance of microfinance institutions in Pakistan. As

MFIs continue to grow in outreach and complexity, concerns over their financial sustainability, risk management, and governance frameworks have intensified. By examining how corporate governance, financial inclusion, and credit risk collectively shape the performance of MFIs, this study contributes to the ongoing discourse on improving institutional outcomes in resource-constrained and high-risk environments.

One of the key contributions of this study lies in its integrated approach. Previous studies have typically examined corporate governance, financial inclusion, or credit risk in isolation. In contrast, this study considers these factors simultaneously, thereby offering a more comprehensive understanding of their interdependencies and combined effects on institutional performance. This approach reflects the real-world complexity of MFIs operations, especially in developing countries, where social objectives and financial performance must be carefully balanced.

Another important contribution is the introduction of the board risk committee as a moderating variable in the relationship between credit risk and performance. Although risk oversight is critical in microfinance, limited empirical work has addressed how board-level risk committees' function within MFIs. By developing a composite risk committee index, this study highlights the governance structures that can enhance institutional resilience and accountability in challenging operating environments.

This study also adds value by using a decade-long panel dataset (2012–2021) from Pakistan's regulated MFIs, thereby offering robust empirical insights based on a consistent and reliable data framework. In doing so, it contributes to the limited pool of longitudinal studies in microfinance governance and performance, especially in South Asia. The findings are relevant not only for academic scholarship but also for institutional stakeholders seeking

to improve transparency, reduce credit defaults, and strengthen governance mechanisms. Thus, the study advances empirical knowledge within the field of microfinance.

1.7 Scope of the Study

This study assesses the impact of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in Pakistan. It also investigates the moderating role of the board risk committee, measured through a composite risk committee index (RCINDEX), specifically in the relationship between credit risk and MFIs performance. The scope is limited to 19 MFIs that are regulated by the Securities and Exchange Commission of Pakistan (SECP) and the State Bank of Pakistan (SBP) and are affiliated with the Pakistan Microfinance Network (PMN). These institutions were selected due to their operational consistency, availability of complete financial data, and relevance to the regulatory and institutional framework governing microfinance in Pakistan.

This study covers a ten-year period from 2012 to 2021, which represents a transformative decade for the microfinance sector in Pakistan. This timeframe includes the implementation of the revised code of corporate governance in 2012 and the introduction of a dedicated microfinance regulatory framework in 2015. These regulatory developments marked a shift toward greater accountability, transparency, and financial sustainability. By capturing both pre- and post-reform conditions, the study offers a comprehensive perspective on how these governance-related interventions influenced MFIs performance.

The selected MFIs represent a substantial share of the Pakistani microfinance market and include a diverse mix of institutions with at least ten years of consistent operations as of 2021. This ensures that the study focuses on institutions with mature governance structures and sufficient historical data for robust analysis. As of 2024, the total number of licensed

and operational MFIs in Pakistan has increased to 46, indicating rapid sectoral expansion since the early years of the study period. The chosen sample allows for meaningful insights while maintaining analytical consistency.

This study is confined to a quantitative analysis based on panel data from 2012 to 2021. It focuses solely on regulated MFIs and does not include informal or unregistered entities, which may operate under different governance or risk frameworks. The findings of this study aim to guide regulators, policymakers, and MFIs management by offering evidence-based insights into the institutional and structural factors that influence MFIs performance. The scope is deliberately framed to produce relevant conclusions for strengthening governance, managing risk, and supporting sustainable financial inclusion in Pakistan's evolving microfinance sector.

1.8 Organization of the Study

This study is structured to investigate the complex dynamics between corporate governance, financial inclusion, credit risk, and the performance of microfinance institutions in Pakistan, focusing particularly on the moderating role of the board risk committee.

Chapter One introduces the study by presenting the background, problem statement, research questions, objectives, significance, scope, and the organization of the study. It establishes the motivation for focusing on MFIs in Pakistan and outlines the thematic focus on governance, inclusion, risk, and performance.

Chapter Two sets the foundation by reviewing literature on the evolution of microfinance globally and within Pakistan. It discusses the critical roles of MFIs in economic development and examines specific aspects such as corporate governance, financial

inclusion, and credit risk. This chapter also introduces the theoretical frameworks guiding the study, including agency theory, stakeholder theory, and risk management theory, describing the conceptual framework and concludes with the development of research hypotheses.

Chapter Three details the methodology employed in this study research design, data collection methods, and the econometric models used to analyse the relationships among the identified variables. It outlines how the dependent, independent, control, and moderating variables are measured, and describes the model specification and model estimation used in this study.

Chapter Four presents the results and discussion from the empirical analysis. It begins with descriptive statistics that provide an overview of the data characteristics. The chapter then progresses to a thorough analysis of correlations between variables, along with comprehensive diagnostic tests that assess the validity of the regression models used. These tests include evaluations for normality, multicollinearity, serial correlation, and heteroscedasticity to ensure the robustness of the findings. Subsequently, the chapter presents detailed panel data regression analysis results that assess the impacts of corporate governance, financial inclusion, and credit risk on the financial performance of microfinance institutions. It also examines the moderating role of the board risk committee between credit risk and performance relationships. The discussion integrates these findings with existing literature to offer insights into how corporate governance, financial inclusion, credit risk, and board risk committee influence MFIs' performance within the context of Pakistan's microfinance sector.

Chapter Five concludes this study by summarizing the key findings. It reflects on the theoretical and practical contributions of the study, discusses implications for policymakers, regulatory bodies, shareholders, and managers, and highlights the limitations of the study while suggesting future research directions. This chapter synthesizes the insights gathered throughout the study, providing a comprehensive wrap-up and direction for future work in the field.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive review of the literature to establish both the theoretical and empirical foundation of the study. It begins with an overview of the development of microfinance institutions (MFIs), followed by a discussion of the key theoretical perspectives underpinning this research, namely agency theory, stakeholder theory, and risk management theory. The chapter then reviews empirical studies on firm performance with a particular focus on the financial performance of MFIs, before examining the independent variables of the study: corporate governance, financial inclusion, and credit risk. Each of these dimensions is explored through prior empirical evidence, including their respective relationships with MFIs performance. The review further considers the role of the board risk committee and the control variables of firm size and leverage. Subsequently, the chapter identifies critical gaps in the literature and presents the conceptual framework guiding this study. The final section develops the study's hypotheses by linking theoretical foundations and prior empirical findings with the research objectives. Overall, this chapter provides a structured synthesis of existing knowledge, highlights areas of divergence, and builds the rationale for the empirical investigation that follows.

2.2 The Development of Microfinance Institutions

Microfinance has emerged as a pivotal tool for addressing financial exclusion and fostering economic empowerment among marginalized populations worldwide. Initially rooted in informal lending practices and community-based financial systems, microfinance has evolved into a sophisticated sector, offering diverse financial services tailored to the

needs of underserved communities. The modern microfinance movement gained momentum in the 1970s with the establishment of the Grameen Bank by Nobel Laureate Muhammad Yunus in Bangladesh. Yunus introduced the concept of collateral-free microloans, emphasizing the use of group-based lending models and social collateral as a means to empower low-income individuals and promote entrepreneurship. The success of the Grameen Bank demonstrated the potential of microfinance to address systemic poverty and catalyse socio-economic development, inspiring the establishment of similar institutions across developing nations (Younus, 1999; Armendáriz & Jonathan, 2010).

As the sector expanded, microfinance institutions began to formalize their operations, offering a broader range of financial products such as savings accounts, insurance, and remittances. These institutions transitioned from informal credit providers to regulated financial entities capable of serving diverse client segments. Innovations such as the Self-Help Group (SHG) model in India, Village Savings and Loan Associations (VSLAs) in Africa, and Credit Unions in Latin America highlighted the adaptability of microfinance to varying cultural and socio-economic contexts. These models underscored the importance of community engagement and participatory decision-making, which remain integral to the sector's success. By the late 20th century, MFIs in countries like Bolivia, Peru, and Kenya had developed hybrid models combining social and financial objectives, further solidifying the role of microfinance as a driver of inclusive economic growth (Cull et al., 2007; Armendáriz & Jonathan, 2010).

The turn of the 21st century marked a pivotal transformation in the global microfinance landscape as institutions began prioritizing financial sustainability and operational efficiency to achieve long-term viability. The focus shifted from purely social

objectives to incorporating financial performance as a key metric of success, reflecting the need for MFIs to remain solvent while fulfilling their developmental mission. Achieving financial sustainability allowed institutions to expand their operations, attract investments, and enhance their capacity to serve larger client bases. Studies underscore that MFIs capable of balancing their social objectives with robust financial performance are better positioned to weather economic fluctuations and maintain service delivery during periods of uncertainty (Cull et al., 2007; Ledgerwood, 1999).

As the demand for microfinance services grew, institutions adopted strategic measures to improve operational efficiency, reduce costs, and optimize resource allocation. Financial performance metrics such as return on assets, return on equity, and operational self-sufficiency became critical indicators for assessing institutional success and sustainability. These metrics not only provided insights into the profitability and resource utilization of MFIs but also informed stakeholders, including investors and donors, about the institution's capacity to deliver on its mission (Armendáriz & Jonathan, 2010). Enhancing financial performance enabled MFIs to reinvest profits into their operations, develop innovative products, and extend their services to underserved communities, creating a cycle of growth and impact.

The increasing emphasis on financial performance also prompted MFIs to adopt risk management frameworks to mitigate the challenges associated with credit risk and portfolio management. Non-performing loans and high portfolio-at-risk levels emerged as significant concerns, as they directly impacted profitability and institutional stability. MFIs that effectively managed these risks were better able to maintain healthy loan portfolios, ensuring consistent revenue streams and financial stability. Studies highlights the importance of

governance structures, such as audit committees and independent boards, in overseeing financial performance and ensuring accountability in decision-making processes (Hermes & Lensink, 2011; Mersland & Strøm, 2009).

The transition towards financial performance as a core objective was also accompanied by an increased focus on client retention and satisfaction. Institutions recognized that delivering value to clients whether through competitive pricing, tailored financial products, or improved service delivery was critical to maintaining a loyal customer base and sustaining revenue growth. The alignment of financial goals with client-centric approaches enabled MFIs to build trust and strengthen their market position, further contributing to their financial success (Hulme & Mosley, 1996; Cull et al., 2007).

Regulatory reforms and international collaborations also contributed to the sector's growth. Governments and international organizations recognized the transformative potential of microfinance and developed policies to support its expansion. Initiatives such as the United Nations' 2005 International Year of Microcredit encouraged the integration of microfinance into mainstream financial systems, fostering partnerships between public and private stakeholders. These efforts emphasized the importance of client protection, responsible lending practices, and transparent governance to ensure the sector's sustainability and integrity (Ledgerwood, 1999). Furthermore, international development agencies provided technical and financial assistance, facilitating knowledge transfer and capacity-building initiatives that strengthened the institutional capacity of MFIs globally (Cull et al., 2007; Huq et al., 2017).

While the global microfinance sector has made substantial progress, it continues to face significant challenges. Over-indebtedness among clients, predatory lending practices,

and inadequate consumer protection measures have raised concerns about the sector's social impact. Research highlights the importance of implementing robust regulatory frameworks and ethical standards to address these issues and safeguard the interests of clients. For instance, the integration of social performance management and Environmental, Social, and Governance (ESG) standards into microfinance operations has been identified as a key strategy for promoting responsible financial practices and enhancing institutional credibility (Mersland & Strøm, 2009; Uwamariya et al., 2019).

The sector's resilience to external shocks, such as economic downturns and global pandemics, also remains a critical area of focus. Studies emphasize the need for adaptive business models and contingency planning to ensure the sustainability of MFIs in the face of market volatility. Strategic collaborations and public-private partnerships have been identified as effective strategy for addressing these challenges, enabling MFIs to leverage resources and expertise to overcome operational constraints (Hussain et al., 2020). As the sector continues to evolve, its ability to navigate these complexities will determine its long-term impact on Financial Inclusion and socio-economic development.

2.3 Theoretical Studies

2.3.1 Agency Theory

Agency Theory, as introduced by Jensen and Meckling (1976), provides the primary theoretical underpinning for this study. The theory is grounded on the relationship between principals (such as shareholders or donors) and agents (such as managers), highlighting the potential for conflicts of interest, information asymmetry, and divergent objectives. In microfinance institutions, these agency conflicts are prevalent, especially where the dual

mission of social outreach and financial sustainability must be balanced (Mersland & Strøm, 2009; Cull et al., 2007).

In the context of MFIs, agency theory explains how weak governance mechanisms can result in inefficient decision-making, poor risk oversight, and ultimately, declining performance. Agency costs such as monitoring costs, bonding expenditures, and residual losses are higher in organizations with limited transparency and accountability (Fama, 1980). This is particularly relevant for MFIs in developing countries like Pakistan, where institutional governance structures may be weak, regulatory enforcement may vary, and information asymmetries between boards, management, and stakeholders are common (Iqbal et al., 2020; Hussain et al., 2020).

Corporate governance mechanisms are central to mitigating agency problems. In this study, corporate governance is measured through board size, board independence, female representation on the board, and the presence of an audit committee. According to agency theory, a well-structured board can enhance oversight, reduce managerial opportunism, and align strategic decisions with the institution's financial and social goals (Armendáriz & Jonathan, 2010; Mohamed & Elgammal, 2023). The inclusion of female directors, for example, has been associated with greater board vigilance and improved risk management, while independent directors and audit committees are linked with enhanced transparency and financial reporting quality (Nawaz et al., 2020; Hossain et al., 2024).

Agency theory also explains the dynamics of credit risk in MFIs. In borrower-lender relationships, agents (borrowers) may possess more information than the MFIs, leading to moral hazard and adverse selection. Weak credit evaluation processes and lenient monitoring can result in higher non-performing loans and portfolio-at-risk (Cull et al., 2007; Rizwan et

al., 2019). In Pakistan's microfinance sector, high portfolio-at-risk and non-performing loans values have been observed particularly after the COVID-19 pandemic and recent floods, pointing to the need for robust risk governance (PMN, 2023). Agency theory underscores the importance of internal controls and governance oversight in managing such risks effectively.

In this regard, the board risk committee, a governance sub-structure designed to oversee institutional risk is a key mechanism supported by agency theory. The board risk committee improves the board's capacity to assess, monitor, and respond to financial, credit, and operational risks (Fersi & Boujelbène, 2023). This study examines the board risk committee as a composite measure capturing the size, independence, and competence of the risk committee. Agency theory suggests that such committees reduce agency costs by ensuring that risk-related decisions are aligned with stakeholder interests and long-term institutional performance (Tadele et al., 2021; Jalil et al., 2018).

Financial inclusion, although primarily an external outreach function, is also influenced by agency relationships. Expanding services to previously unbanked populations involves operational and reputational risks, particularly when outreach targets surpass institutional capacity. Agency theory helps explain how MFIs, in the pursuit of outreach, must be held accountable through internal governance checks to prevent mission drift or unsustainable credit expansion (Dorfleitner & Nguyen, 2021; Mia et al., 2022).

By applying agency theory as its primary theoretical lens, this study investigates how governance structures such as board composition and risk committees influence the performance of MFIs in Pakistan, especially under conditions of credit risk and financial inclusion expansion. The theory provides the conceptual rationale for linking governance

quality to performance outcomes, and for evaluating the moderating effect of board risk committee on the credit risk and performance relationship.

In summary, agency theory supports this study's focus on how sound governance reduces information asymmetry and promotes sustainable performance in MFIs. It justifies the selection of corporate governance variables, the analysis of credit risk and its moderation through board risk committee, and the institutional relevance of governance reform for improving MFIs resilience and accountability in the Pakistani context (Mohamed & Elgammal, 2023; Hossain et al., 2024; Nawaz et al., 2020).

2.3.2 Stakeholder Theory

Stakeholder theory, originally proposed by Freeman (1984), provides a broad perspective on governance by emphasizing that an organization's success depends not only on maximizing shareholder value but also on satisfying the needs of a wide array of stakeholders. These include clients, employees, creditors, regulators, investors, and communities. Donaldson and Preston (1995) argued that the theory is normative, instrumental, and descriptive in nature helping firms understand, justify, and implement stakeholder-centered governance. Mitchell et al. (1997) further introduced the concept of *stakeholder salience*, noting that stakeholder influence varies based on power, legitimacy, and urgency.

In the context of microfinance institutions, stakeholder theory provides a crucial lens for evaluating governance practices that balance financial sustainability with social outreach. MFIs operate in a unique dual-objective framework achieving development impact while maintaining financial viability. As such, stakeholder theory helps explain how governance mechanisms should be designed to meet the expectations of all relevant parties, including

borrowers, regulatory authorities, social investors, and communities (Mia et al., 2023; Mohamed & Elgammal, 2023).

Recent studies reinforce the role of stakeholder-oriented governance in improving MFI outcomes. Hossain et al. (2024) highlighted how inclusive governance frameworks such as diversified boards, independent oversight, and participatory planning can strengthen institutional trust and long-term performance. Similarly, Fersi and Boujelbène (2023) found that stakeholder-aligned policies enhance transparency and reduce reputational and compliance risks in MFIs. Such alignment is particularly important in Pakistan, where MFIs face regulatory challenges and socio-economic disparities that require a more inclusive governance approach.

Stakeholder theory also complements agency theory, the primary framework of this study, by offering a broader understanding of organizational accountability. While agency theory emphasizes reducing conflicts between principals and agents, stakeholder theory ensures that MFIs do not prioritize managerial or investor interests at the expense of borrowers or communities. In a sector where social capital and client trust are critical, stakeholder theory serves as a foundation for designing governance mechanisms that promote fairness, access, and ethical conduct (Jonker & Kosse, 2022; Mia et al., 2023).

This study applies stakeholder theory to justify the relevance of inclusive governance components such as board diversity, committee independence, and strategic risk management in strengthening MFIs performance. It underscores the importance of stakeholder-aligned practices in enhancing both financial and social outcomes, particularly in a developing country context like Pakistan, where microfinance plays a transformative role in poverty alleviation, women's empowerment, and local enterprise development.

2.3.3 Risk Management Theory

Risk management theory provides a structured framework for identifying, assessing, and controlling potential risks that may negatively affect an organization's operations, financial performance, and long-term sustainability. The theory emphasizes the integration of risk awareness into strategic and operational decision making, allowing institutions to build resilience against both internal and external shocks (Kaplan & Mikes, 2012; Zhang & Cao, 2021).

Risk can be broadly categorized into operational, financial, credit, market, and compliance related types. In the context of financial institutions, particularly Microfinance institution, credit risk constitutes a primary area of concern. It refers to the possibility of loan default and the deterioration of portfolio quality, which can significantly impair institutional viability. According to Hussain et al. (2020) and Mia et al. (2022), managing credit risk effectively requires an institution wide approach that aligns monitoring, assessment, and control mechanisms within a formalized risk management framework.

Risk management theory supports the establishment of such frameworks by encouraging proactive identification and quantification of risk exposures, supported by clear internal policies, strong governance oversight, and the use of diagnostic indicators such as portfolio at risk and non-performing loans (Mohamed & Elgammal, 2023; Lassoued, 2017). These indicators help institutions detect emerging credit vulnerabilities and take corrective actions in a timely manner.

In this study, risk management theory is applied to understand how MFIs in Pakistan implement credit risk control measures and how these measures affect institutional performance. Moreover, this theory underpins the role of the board risk committee, which is

conceptualized in this study as a moderating factor that enhances the effectiveness of credit risk management. The presence of a well-structured board risk committee comprising qualified, independent, and experienced members can improve institutional risk oversight, align lending policies with risk appetite, and enforce compliance with regulatory guidelines (Zamore et al., 2021; Tadele et al., 2021).

The integration of risk management theory within this study supports the argument that MFIs with more rigorous internal risk governance, particularly those that establish formal risk committees, are better equipped to manage credit portfolios and achieve higher operational sustainability. As such, the theory complements agency theory by focusing on risk control mechanisms that reduce exposure to borrower default and systemic instability, reinforcing the importance of governance in maintaining performance and resilience in Pakistan's microfinance sector.

2.4 Empirical Studies on Firm Performance

Firm performance is a critical measure that reflects an organization's efficiency, effectiveness, and sustainability, making it central to understanding how institutions operate and achieve their objectives. As a dependent variable, it provides valuable insights into the outcomes of various organizational strategies, governance structures, and operational practices. Evaluating firm performance is crucial for stakeholders, including investors, regulators, and policymakers, as it informs decision-making, resource allocation, and strategic planning. The concept of firm performance spans multiple dimensions, encompassing financial, operational, and market-based outcomes, and serves as a benchmark for assessing the success of an organization in achieving its goals (Farooq et al., 2022; Ali et al., 2022; Barney, 1991; Freeman, 1984; Jensen & Meckling, 1976).

From a theoretical standpoint, the evaluation of firm performance draws heavily on frameworks such as agency theory, stakeholder theory, and other theories. Agency theory highlights the need for robust governance frameworks to mitigate conflicts of interest between managers and stakeholders, ensuring that organizational actions align with broader institutional goals (Jensen & Meckling, 1976). This theory underscores the importance of accountability, transparency, and control systems in enhancing firm performance. Stakeholder theory, on the other hand, emphasizes the organization's responsibility to address the interests and expectations of diverse stakeholder groups, including employees, clients, suppliers, and communities. By focusing on stakeholder engagement and value creation, firms can build trust, enhance reputation, and achieve sustainable performance outcomes (Freeman, 1984).

Firm performance is critical because it captures the effectiveness of various organizational initiatives, governance practices, and strategic decisions. A well-performing firm demonstrates its ability to allocate resources efficiently, manage risks effectively, and adapt to dynamic market conditions. Conversely, poor performance can signal inefficiencies, misaligned priorities, or governance failures, prompting corrective actions by stakeholders. In financial institutions, where trust and stability are paramount, evaluating performance helps identify areas of improvement, enhance operational practices, and safeguard stakeholder interests (Imran & Shafique, 2022; Saeed et al., 2018).

The measurement of firm performance typically involves a combination of quantitative and qualitative indicators. Financial metrics, such as return on assets and return on equity, are widely used to assess profitability and efficiency, providing a snapshot of the firm's ability to generate returns on its investments and equity base. Operational indicators,

such as efficiency ratios and cost-to-income ratios, offer insights into the firm's internal processes and cost management practices. Market-based measures, such as stock price performance and market share, reflect the firm's competitive position and stakeholder confidence. These metrics collectively provide a holistic view of performance, enabling stakeholders to evaluate the firm's strengths and weaknesses across various dimensions (Shettima & Dzolkarnaini, 2018; Cull et al., 2018).

The relevance of firm performance extends beyond individual organizations to broader economic and industry-level analyses. By examining the factors that influence performance, researchers and practitioners can uncover patterns, trends, and relationships that inform policy decisions and industry best practices. For instance, the relationship between governance mechanisms and firm performance provides insights into the effectiveness of board structures, audit committees, and executive compensation policies. Similarly, studies on the impact of external factors, such as regulatory frameworks and macroeconomic conditions, highlight the contextual influences that shape performance outcomes (Ali et al., 2022; Farooq et al., 2022).

Firm performance also serves as a foundation for exploring the interplay between independent variables, such as governance practices, risk management strategies, and operational innovations. Understanding these relationships enables organizations to design targeted interventions that address specific performance drivers, optimize resource utilization, and enhance overall outcomes. For financial institutions, the dynamic nature of performance evaluation underscores the need for continuous monitoring and adaptation, ensuring resilience in an increasingly complex and competitive environment (Mia et al., 2023; Hermes & Lensink, 2011).

Recent studies in the context of Pakistan have highlighted that firm performance, particularly in microfinance institutions, is increasingly shaped by governance quality, credit risk management, and financial inclusion strategies. For instance, Farooq and Khalid (2024) found that MFIs in Pakistan experienced a decline in operational self-sufficiency and rising non-performing loans after the 2022 floods, underscoring the importance of robust governance and risk oversight in sustaining performance. Similarly, Zahoor and Ahmad (2025) emphasized that board structures, especially the effectiveness of risk committees, significantly improve financial performance by reducing portfolio-at-risk and strengthening accountability mechanisms. Moreover, Akram and Hussain (2023) documented that efficiency in resource allocation and client outreach positively contributes to performance outcomes, suggesting that MFIs balancing social and financial objectives are more resilient. These findings align with the broader literature but also reveal the contextual challenges of Pakistan's microfinance sector, where external shocks and weak governance remain persistent threats to performance sustainability.

2.4.1 Financial Performance of Microfinance Institutions

The financial performance of MFIs is a vital indicator of their operational efficiency, financial sustainability, and impact on the financial ecosystem. Financial performance metrics provide insights into an institution's ability to meet organizational goals, generate consistent revenue, and serve its target groups effectively. According to Bharti and Malik (2022), evaluating financial performance enables stakeholders to assess an MFI's capacity to balance its financial objectives with its social mission of promoting Financial Inclusion in underserved areas. MFIs often operate in challenging environments with limited resources and must demonstrate sound financial health to remain viable and competitive.

Previous studies highlight that the profitability of MFIs is closely linked to their ability to align financial sustainability with their mission of delivering equitable financial services to marginalized communities. For example, Mia et al. (2023) found that MFIs must carefully balance their dual objectives to achieve both financial and social goals. Financial sustainability ensures that MFIs can continue operating without excessive dependence on external funding, while their social mission ensures they maintain their commitment to improving the economic conditions of low-income populations. This delicate balance is critical for the long-term success of MFIs, as neglecting either financial or social objectives can undermine their effectiveness and credibility.

Successful financial performance is crucial not only for ensuring the continuity of services but also for fostering long-term socioeconomic development in the communities served by MFIs. According to Maeenuddin et al. (2024), MFIs that achieve strong financial performance can reinvest in their operations, expand their outreach, and develop innovative financial products tailored to the needs of their clients. Financially sound MFIs are better positioned to attract investment, improve operational efficiency, and enhance the quality of services provided to underserved populations. This, in turn, supports broader development objectives, such as reducing income inequality and promoting inclusive economic growth.

Assessing the financial performance of MFIs is particularly significant in the context of Pakistan, where poverty eradication and Financial Inclusion remain national priorities. MFIs play a key role in addressing these challenges by providing credit, savings, and insurance products to individuals and small enterprises that lack access to traditional banking services (Shettima & Dzolkarnaini, 2018; Saeed et al., 2018). Evaluating financial performance through indicators such as return on assets, return on equity, and operational

self-sufficiency enables stakeholders to gauge the effectiveness of MFIs in achieving their goals. Strong financial performance not only ensures the sustainability of MFIs but also highlights their contribution to inclusive economic growth and community development.

Additionally, the financial performance of MFIs is a critical determinant of their resilience in the face of economic and operational challenges. Hossain et al. (2024) emphasized that MFIs with robust financial health are better equipped to withstand external shocks, such as economic downturns, regulatory changes, and market competition. These institutions can maintain service delivery, protect their client base, and continue supporting economic activities even during periods of instability. Conversely, poor financial performance can jeopardize the sustainability of MFIs, leading to a reduction in services, loss of client trust, and diminished developmental impact.

2.4.1.1 Return on Assets

Return on assets is a key financial performance indicator that measures the efficiency with which an institution utilizes its assets to generate profit. Return on assets is calculated as net income divided by total assets and provides a clear metric for assessing operational efficiency and profitability. It is particularly significant in the context of microfinance institutions, where financial sustainability and resource utilization are critical for achieving long-term objectives (Cull et al., 2018; Maenuddin et al., 2024). By reflecting the capacity of MFIs to generate earnings from their asset base, return on assets serves as a benchmark for stakeholders to evaluate institutional efficiency and competitiveness.

In MFIs, achieving a strong return on assets is often challenging due to the dual mission of balancing financial and social goals. Unlike traditional financial institutions, MFIs must allocate resources to not only maintain profitability but also enhance financial

inclusion for underserved populations. This dual responsibility can strain resources and impact operational efficiency, which in turn affects return on assets. High return on assets values are indicative of sound financial health, effective cost management, and efficient asset utilization. They signify the ability of MFIs to sustain operations without excessive reliance on external subsidies or donor funding, a critical aspect of financial sustainability (Hermes & Lensink, 2011; Hossain et al., 2024).

The quality of governance plays a pivotal role in influencing return on assets in MFIs. Corporate governance practices, such as board independence, board size, and the presence of audit committees, have been shown to enhance institutional performance, including return on assets. Strong governance ensures effective oversight, reduces agency conflicts, and fosters accountability in resource allocation. Studies have found that MFIs with robust governance frameworks achieve higher return on assets due to better decision-making and risk management practices (Fersi & Boujelbene, 2023; Gohar & Batool, 2015). For example, independent boards are more likely to challenge management decisions and align institutional strategies with long-term profitability goals, thereby improving asset efficiency and financial outcomes (Sultana et al., 2019).

Operational efficiency is another critical determinant of return on assets. MFIs that effectively manage their operational costs and streamline service delivery processes are more likely to achieve a higher return on assets. Operational efficiency involves reducing overhead costs, leveraging technology for cost-effective service delivery, and minimizing wastage of resources. Studies indicate that MFIs adopting digital tools, such as mobile banking and automated loan processing, achieve greater operational efficiency and better return on assets outcomes (Ledgerwood, 2013). Efficient operations not only enhance profitability but also

improve the institution's ability to serve a larger client base, further contributing to financial performance (Cull et al., 2018).

The quality of the loan portfolio also has a direct impact on return on assets. High levels of non-performing loans and portfolio-at-risk negatively affect revenue generation and increase provisioning costs, thereby reducing return on assets. Effective credit risk management practices, such as thorough credit assessments, timely repayment monitoring, and proactive recovery strategies, are essential for maintaining a healthy loan portfolio. Studies have consistently shown that MFIs with lower non-performing loans ratios exhibit higher return on assets, as they are able to generate consistent income from lending activities while minimizing losses (Zamore et al., 2023; Rosenberg, 2009). Furthermore, maintaining a diverse loan portfolio reduces concentration risk and enhances financial resilience, which positively influences return on assets.

Income diversification is another factor that significantly impacts return on assets in MFIs. Institutions that rely solely on interest income from lending activities are often exposed to revenue volatility, particularly during economic downturns or regulatory changes. However, MFIs that diversify their income streams through non-interest revenue sources, such as fees, commissions, and savings products, achieve greater financial stability and higher return on assets. Diversification reduces dependency on a single revenue source and allows MFIs to sustain profitability even in challenging market conditions (Cull et al., 2018). Additionally, offering a broader range of financial products enhances client loyalty and institutional competitiveness, further improving return on assets.

Empirical studies underscore the importance of return on assets as a measure of financial performance in MFIs. Cull et al. (2018) emphasized that return on assets provides

a comprehensive view of an institution's profitability by capturing the efficiency of its asset utilization. Hermes and Lensink (2011) highlighted the role of governance and operational efficiency in driving higher return on assets, noting that institutions with strong governance practices and streamlined operations consistently outperform their peers. Similarly, Rosenberg (2009) found that MFIs with diversified income streams and healthy loan portfolios achieve higher return on assets, as these factors contribute to stable revenue generation and cost control.

Optimal return on assets in MFIs is often constrained by several challenges, including high operational costs, inefficient asset utilization, and weak credit risk management practices. These issues can significantly impact an institution's ability to maximize profitability and sustain financial performance. Additionally, the dual mission of MFIs, which seeks to balance financial sustainability with social outreach, introduces trade-offs that may influence return on assets. Expanding services to remote or underserved areas often increases operational expenses, reducing short-term profitability. Nevertheless, MFIs that focus on strategic initiatives such as improving operational efficiency, strengthening governance structures, and diversifying revenue sources are better equipped to overcome these barriers. Such measures enable institutions to achieve sustainable return on assets while maintaining their dual objectives over time (Ledgerwood, 2013).

2.4.1.2 Return on Equity

Return on equity is one of the most widely used financial performance indicators, measuring a firm's ability to generate profits relative to shareholders' equity. It reflects how effectively a company utilizes its equity capital to generate returns for its owners, making it a critical metric for evaluating organizational efficiency, profitability, and financial sustainability (Maeenuddin et al., 2024; Ross, Westerfield, & Jaffe, 2018). In the context of

microfinance institutions, return on equity serves as an important measure of financial health, indicating the profitability achieved through the capital contributions of stakeholders. It aligns with the dual mission of MFIs to achieve both financial sustainability and developmental objectives, offering insights into how well these institutions balance operational costs, risk management, and income generation (Hermes & Lensink, 2011).

Return on equity is calculated by dividing net income by shareholders' equity. A high return on equity indicates that an institution is efficiently using its equity base to generate profits, making it an attractive prospect for investors and stakeholders (Pandey, 2015; Cull et al., 2018). For MFIs, where financial sustainability is paramount, achieving a strong return on equity demonstrates their ability to balance social and financial goals effectively. MFIs with high return on equity can attract additional capital, expand their outreach, and invest in new technologies or products, thus strengthening their long-term operational stability (Ledgerwood, 2013). However, achieving an optimal return on equity depends on various factors, including governance practices, risk management, portfolio quality, and operational efficiency (Hossain et al., 2024).

One of the primary determinants of return on equity in MFIs is governance quality, particularly corporate governance practices such as board independence, board size, and audit committee effectiveness. Strong governance structures promote accountability, reduce managerial opportunism, and ensure that resources are allocated efficiently, all of which positively influence return on equity (Fersi & Boujelbène, 2023; Hermes & Lensink, 2011). Studies have found that MFIs with independent boards and robust governance frameworks achieve higher financial performance metrics, including return on equity, as these structures enhance decision-making and risk oversight (Ali et al., 2023; Gohar & Batool, 2015).

Moreover, gender diversity on boards, such as the inclusion of female directors, has been linked to improved governance and financial outcomes in MFIs, further supporting their return on equity performance (Sultana et al., 2019; Hossain et al., 2024).

Operational efficiency is another significant factor influencing return on equity in MFIs. Institutions that manage their operational costs effectively and streamline administrative processes are more likely to achieve higher profitability relative to their equity base. Efficient operations reduce overhead costs and enable MFIs to reinvest savings into income-generating activities, thereby boosting their return on equity (Cull et al., 2018). The adoption of technology, such as mobile banking and digital payment systems, has also been shown to improve operational efficiency and return on equity by expanding client outreach at lower costs (Ledgerwood, 2013; Maeenuddin et al., 2024).

The quality of the loan portfolio also plays a critical role in determining return on equity. High levels of non-performing loans and portfolio-at-risk negatively impact profitability, as they reduce the revenue generated from lending activities while increasing loan loss provisions. MFIs with effective credit risk management systems are better positioned to maintain healthy portfolios and achieve stronger return on equity (Apochi & Mahmood, 2022; Zamore et al., 2023). Empirical evidence indicates that institutions with lower non-performing loans ratios consistently outperform their peers in terms of financial performance, highlighting the importance of prudent lending practices and robust credit assessment mechanisms (Rosenberg, 2009).

Income diversification further influences return on equity in MFIs. Institutions that rely solely on interest income may face challenges in maintaining profitability during periods of market volatility or regulatory changes. However, MFIs that diversify their income

streams through non-interest revenue sources, such as fees, commissions, and insurance products, are better equipped to sustain profitability and achieve higher return on equity (Cull et al., 2018; Bharti & Malik, 2022). Diversification not only mitigates risks associated with single-revenue dependencies but also enhances the institution's ability to adapt to changing market conditions (Hossain et al., 2024).

Empirical studies provide extensive insights into the importance of return on equity for MFIs. Cull et al. (2018) emphasized that ROE is a critical metric for evaluating the financial sustainability of MFIs, as it indicates how efficiently equity capital is being utilized to generate profits. Rosenberg (2009) highlighted that MFIs with high return on equity ratios are more likely to attract investment and expand their operations, particularly in competitive or resource-constrained markets. Similarly, Hermes and Lensink (2011) demonstrated that governance quality and operational efficiency are strongly correlated with higher return on equity in MFIs, suggesting that institutional strategies directly impact equity-based profitability. Achieving optimal return on equity poses challenges for MFIs, especially those operating in developing economies. High operating costs, weak credit risk management, and regulatory constraints can hinder profitability, reducing return on equity (Ali et al., 2023). Additionally, the dual mission of MFIs balancing financial goals with social objectives often creates trade-offs that affect their ability to generate equity-based returns. For instance, expanding Financial Inclusion to underserved populations may increase operational costs, thereby lowering return on equity in the short term. However, microfinance institutions that strategically manage these trade-offs through efficient operations, strong governance, and diversified income streams can achieve sustainable return on equity in the long term (Ledgerwood, 2013).

2.4.1.3 Operational Self-Sufficiency

Operational self-sufficiency is a vital metric that evaluates an MFI's ability to cover its operating expenses from its operational revenue, excluding interest. It provides insights into the institution's financial viability and sustainability, emphasizing its self-reliance in meeting its day-to-day operational costs without relying excessively on external funding sources (Maeenuddin et al., 2024; Hossain et al., 2024; Fersi & Boujelbène, 2023). Operational self-sufficiency serves as a crucial measure of an MFI's financial resilience and its capacity to maintain its operations independently over time.

Operational self-sufficiency is a key performance indicator that reflects the ability of microfinance institutions to cover operating expenses, financial costs, and loan loss provisions through income generated from their operations. Operational self-sufficiency is critical for assessing the financial sustainability of MFIs, particularly those operating in resource-constrained environments where reliance on donor funding or subsidies is not a long-term solution. A high operational self-sufficiency ratio indicates efficient resource utilization, effective cost management, and robust revenue generation, enabling MFIs to sustain their operations and compete in the financial sector (Cull et al., 2018; Bharti & Malik, 2022; Rasel & Win, 2020). The importance of operational self-sufficiency lies in its ability to balance the social mission of MFIs, which focuses on providing financial services to underserved populations, with the financial objective of maintaining self-sustaining operations. MFIs achieving high operational self-sufficiency are better positioned to attract investments and expand their outreach, as this metric signals financial discipline and operational efficiency, making the institution more appealing to stakeholders (Ledgerwood, 2013; Hermes & Lensink, 2011).

Operational self-sufficiency is influenced by several critical factors, including operational efficiency, cost structure, portfolio quality, and income generation capacity. Operational efficiency is a primary driver of operational self-sufficiency, as it reflects an MFI's ability to manage costs effectively while maximizing revenue. Institutions that streamline administrative processes, adopt cost-effective technologies, and reduce redundancies are more likely to achieve high operational self-sufficiency ratios, even in competitive markets (Maeenuddin et al., 2024; Cull et al., 2018; Ledgerwood, 2013). Cost management plays a similarly crucial role, with lower administrative and financial costs allowing MFIs to sustain their operations independently. Strategies such as minimizing overhead costs, optimizing resource allocation, and maintaining lean staffing structures contribute significantly to improving operational self-sufficiency (Fersi & Boujelbène, 2023; Hossain et al., 2024; Bharti & Malik, 2022).

Another determinant is portfolio quality, as high levels of non-performing loans and portfolio-at-risk can erode an MFI's revenue base, reducing its ability to cover operating expenses. Effective credit screening processes, repayment monitoring, and risk mitigation strategies are essential for maintaining a healthy loan portfolio and supporting operational self-sufficiency (Zamore et al., 2023; Apochi & Mahmood, 2022; Rosenberg, 2009). Income generation capacity, particularly from interest and fee income, also directly affects operational self-sufficiency. MFIs that diversify their income streams through additional financial products, such as savings and insurance, are better equipped to sustain their operations and reduce dependency on a single revenue source (Cull et al., 2018; Bharti & Malik, 2022; Hermes & Lensink, 2011).

Operational self-sufficiency is also a vital component of an MFI's broader financial sustainability framework. While financial sustainability involves the institution's ability to meet its obligations over the long term, operational self-sufficiency specifically focuses on its immediate and medium-term operational capacity. High operational self-sufficiency ratios enable MFIs to transition toward full financial sustainability, allowing them to scale their operations and increase outreach without compromising financial stability (Hossain et al., 2024; Fersi & Boujelbène, 2023; Rasel & Win, 2020). Empirical studies consistently underscore the importance of operational self-sufficiency in determining MFIs performance and resilience. For instance, Rosenberg (2009) highlighted that MFIs with operational self-sufficiency above 100% are more capable of withstanding external shocks and maintaining operational continuity in volatile market conditions. Similarly, Hermes and Lensink (2011) found strong correlations between operational efficiency, portfolio quality, and operational self-sufficiency in MFIs operating in developing countries. Cull et al. (2018) emphasized that operational self-sufficiency is a critical metric for investors and stakeholders in evaluating the financial health and sustainability of MFIs, particularly in regions where external funding is constrained.

Despite its significance, achieving operational self-sufficiency is challenging for many MFIs, particularly those in developing economies. High operational costs, weak credit risk management, and limited income generation capacity often hinder MFIs from reaching self-sufficiency. Moreover, the dual mission of MFIs to balance financial goals with social outreach presents additional challenges. Expanding financial services to underserved and remote populations often increases operational costs, making it difficult to achieve operational self-sufficiency while fulfilling their social mandate (Fersi & Boujelbène, 2023; Maenuddin et al., 2024; Cull et al., 2018). However, MFIs that prioritize operational

efficiency, implement robust risk management practices, and diversify income sources are more likely to overcome these challenges and achieve high operational self-sufficiency ratios (Ledgerwood, 2013; Bharti & Malik, 2022; Rasel & Win, 2020). Operational Self-Sufficiency remains a critical measure of an MFI's financial health and long-term viability, reflecting its capacity to sustain itself in a competitive and resource-constrained environment while delivering impactful services to its target communities.

2.5 Empirical Studies on Corporate Governance

MFIs' corporate governance serves as a cornerstone for ensuring the sustainability, accountability, and operational efficiency of microfinance institutions. Given the dual mission of MFIs balancing financial sustainability with social outreach corporate governance frameworks are critical for aligning institutional objectives with stakeholder interests. Effective corporate governance practices foster transparency, mitigate risks, and ensure the prudent allocation of resources, enabling MFIs to navigate the complexities of the microfinance sector (Nurtrontong et al., 2021; Farooq et al., 2022; Hermes & Lensink, 2011). The governance structure of MFIs includes transparent accountability mechanisms, board member roles and responsibilities, and ethical business practices that support both the institution's social mission and its financial goals (Arif et al., 2023; Fersi & Boujelbène, 2023; Okoye & Siwale, 2017).

The role of corporate governance in MFIs extends beyond operational oversight to influencing institutional resilience, stakeholder involvement, and financial sustainability, particularly in developing nations like Pakistan. Successful corporate governance practices enhance trust and integrity among investors, regulators, and clients, ensuring the long-term profitability and social impact of MFIs (Hossain et al., 2024; Rasel, 2021; Fatima et al.,

2018). In the Pakistani context, regulatory efforts by the State Bank of Pakistan have been instrumental in strengthening governance frameworks. The introduction of governance and risk management guidelines, coupled with standardized reporting practices, has fostered greater transparency and accountability among MFIs, creating a more sustainable regulatory environment (State Bank of Pakistan, 2020; Iqbal et al., 2019).

The effectiveness of corporate governance in MFIs largely depends on the board of directors, which plays a critical role in providing strategic guidance, ensuring oversight, and promoting ethical practices. A competent and impartial board enhances institutional resilience by proactively identifying risks, monitoring regulatory compliance, and making informed decisions that align with stakeholder interests. This approach not only strengthens the credibility and reputation of MFIs in the microfinance market but also contributes to their financial stability and operational sustainability (Sultana et al., 2019; Ehugbo, 2021; Rasel, 2021). Furthermore, board characteristics, such as composition, independence, and diversity, significantly influence governance effectiveness. Research highlights that boards with diverse expertise and independent members are better equipped to address governance challenges and align institutional priorities with stakeholder expectations (Ali et al., 2023; Gohar & Batool, 2015).

Corporate governance frameworks in MFIs also encompass board committees, internal control mechanisms, and financial reporting practices. The composition and independence of board committees, such as audit committees, are critical in ensuring transparency and accountability in financial reporting. These committees enhance stakeholder confidence by monitoring internal controls and ensuring regulatory compliance (Karanja & Simiyu, 2022; Saeed et al., 2018). Internal control mechanisms further support

governance objectives by mitigating operational risks and promoting ethical decision-making. The integration of these practices into corporate governance frameworks ensures that MFIs adhere to the values of transparency, accountability, and social responsibility, which are fundamental to their dual mission.

Research has shown that strong corporate governance practices in MFIs lead to improved financial performance and institutional resilience. Effective governance structures enable MFIs to achieve better outcomes in key performance indicators such as return on assets, return on equity, and operational self-sufficiency (Cull et al., 2018; Apochi & Mahmood, 2022; Fersi & Boujelbène, 2023). These metrics reflect the ability of MFIs to balance financial sustainability with their social objectives, highlighting the critical role of corporate governance in driving institutional performance. However, the impact of corporate governance practices is often influenced by contextual factors, such as regulatory environments and market conditions, underscoring the need for tailored governance strategies (Maeenuddin et al., 2024; Ali et al., 2022; Cull et al., 2018).

Recent empirical studies in Pakistan provide strong evidence that corporate governance mechanisms particularly board independence, audit committee effectiveness, and gender diversity significantly influence firm performance. For instance, Amjad, Alim, Ahmed, and Nisar (2022) found that board size, board independence, and directors' education positively affect return on assets (ROA) among firms listed on the Pakistan Stock Exchange over 2010–2019. Similarly, Khan, Qureshi, and Abbas (2021) reported that an active and independent audit committee improves firm performance by enhancing financial transparency and accountability in non-financial firms. Rehman, Naseem, and Ahmad (2023) also revealed that the presence of female directors on corporate boards contributes

positively to firm performance, although this relationship weakens under concentrated family ownership. Collectively, these studies suggest that in Pakistan, stronger governance structures particularly those emphasizing independent boards, effective audit committees, and gender diversity are key drivers of enhanced organizational performance and long-term sustainability.

2.5.1 Corporate Governance and Performance of Microfinance Institutions

Corporate governance plays a pivotal role in determining the performance of microfinance institutions by fostering institutional stability, stakeholder confidence, and sustainable socio-economic impact. In the dynamic landscape of Pakistan's microfinance sector, effective corporate governance frameworks enhance financial resilience, operational efficiency, and strategic adaptability, enabling MFIs to achieve their dual objectives of financial sustainability and socio-economic development (Maeenuddin et al., 2024; Hossain et al., 2024; Gohar & Batool, 2015). By promoting transparency, accountability, and ethical practices, corporate governance ensures that MFIs can navigate challenges, mitigate risks, and deliver impactful services to underserved populations.

Governance structures extend beyond regulatory compliance to promote inclusive growth, gender equality, and Female's empowerment. Governance systems that prioritize gender diversity, leadership opportunities for female, and inclusive decision-making processes create an environment of equity and opportunity. These structures enable MFIs to address gender-based disparities, enhance female financial literacy, and support female's economic participation and community development. Previous studies highlight that gender-inclusive governance frameworks positively influence institutional performance and

contribute to broader developmental goals, reinforcing the importance of diversity in governance (Ali et al., 2023; Hossain et al., 2024; Khan et al., 2020).

Technology-driven innovations have become integral to corporate governance frameworks, enabling MFIs to expand their outreach and improve service delivery. Digital banking platforms, mobile banking solutions, and innovative financial products have transformed the accessibility and affordability of financial services, allowing MFIs to serve remote, marginalized, and underserved communities. The integration of technology into governance practices streamlines transactional processes, promotes financial literacy, and encourages savings, investments, and financial planning among unbanked populations. These advancements not only enhance operational efficiency but also contribute significantly to poverty reduction and socio-economic development (Ekong & Ekong, 2022; Uddin & Barai, 2022; Cull et al., 2018).

Effective corporate governance systems are also instrumental in aligning MFIs' strategic priorities with their financial and social objectives. Governance mechanisms, such as board composition, independence, and oversight, influence key performance indicators like return on assets, return on equity, and operational self-sufficiency. MFIs with robust governance structures achieve better financial performance and outreach, as they are able to balance their financial goals with their social mission. Studies have consistently shown that governance practices that incorporate risk management, innovation, and stakeholder engagement strengthen institutional performance and resilience (Rasel & Win, 2020; Apochi & Mahmood, 2022; Imran & Shafique, 2022).

In the context of Pakistan, corporate governance has been identified as a critical factor in fostering innovation, resilience, and sustainable growth in the microfinance sector.

By adopting governance practices that integrate technology, promote gender equity, and emphasize transparency, MFIs can enhance their ability to achieve financial inclusion, community empowerment, and socio-economic progress (Fersi & Boujelbène, 2023; Hossain et al., 2024; Ali et al., 2023). The State Bank of Pakistan's governance and risk management guidelines have further strengthened corporate governance frameworks in the sector, standardizing reporting practices and fostering greater accountability (State Bank of Pakistan, 2020; Iqbal et al., 2019). These efforts reinforce the sector's commitment to achieving financial sustainability and poverty alleviation, ensuring that MFIs remain effective agents of economic transformation.

2.5.1.1 Board Size

Board size is one of the most extensively studied proxies for corporate governance in MFIs. It reflects the board's capacity to provide strategic oversight, ensure governance transparency, and foster inclusive decision-making. A well-structured board size enhances the institution's ability to address governance challenges effectively. Larger boards often bring a diverse set of skills, expertise, and perspectives, which can strengthen oversight and improve decision-making processes (Maeenuddin et al., 2024; Fersi & Boujelbène, 2023). Mersland and Strøm (2009) conducted a study using random effects panel data estimations and found that larger boards positively impact both the financial performance and outreach capabilities of MFIs. Similarly, Saeed et al. (2018) highlighted that larger board sizes contribute to improved financial outcomes by enhancing strategic discussions and providing checks on managerial decisions.

However, the relationship between board size and performance is not uniform across all contexts. While larger boards provide greater diversity of thought, excessively large boards may hinder communication and decision-making efficiency. Tadele (2020) observed

a differential impact of board size on financial and outreach performance in sub-Saharan African MFIs, where larger boards enhanced financial performance but reduced outreach effectiveness. These findings suggest that the optimal board size may vary depending on the specific objectives and operational contexts of MFIs (Hossain et al., 2024; Rasel & Win, 2020).

Studies in other regions also highlight the nuances of board size and its influence on performance. Cull et al. (2018) emphasized that while board diversity improves decision-making and oversight, board effectiveness diminishes beyond a certain size, suggesting the need for balance. Similarly, Apochi and Mahmood (2022) underscored the importance of tailoring board size to the institution's specific strategic and operational goals, noting that governance practices must align with the cultural and economic conditions in which the MFI operates. Overall, board size remains a critical determinant of governance effectiveness in MFIs. Striking the right balance in board size ensures that the institution can achieve its dual objectives of financial sustainability and social outreach, while maintain governance efficiency and foster impactful decision-making (Ali et al., 2023; Gohar & Batool, 2015).

2.5.1.2 Board Independence

Board independence is a critical proxy for corporate governance, emphasizing the role of non-executive or independent directors in ensuring impartial oversight and protecting stakeholder interests. Independent boards are less likely to be influenced by managerial opportunism, making them more effective in mitigating agency conflicts and promoting transparency. Studies by Mersland and Strøm (2009) and Ayuba and Samaila (2022) underscore the positive relationship between board independence and financial performance in MFIs. Independent directors bring an objective perspective to governance practices, enabling institutions to align their strategies with both financial and social goals

(Maeenuddin et al., 2024; Fersi & Boujelbène, 2023). In the context of MFIs in Nigeria, Ehugbo (2021) found that board independence significantly improves Return on Assets (ROA), indicating its critical role in enhancing institutional performance. Similarly, Hussain et al. (2021) emphasized the importance of independent boards in fostering accountability and strategic oversight. These findings highlight that board independence is a cornerstone of effective governance frameworks, directly influencing the operational and financial outcomes of MFIs (Hossain et al., 2024; Rasel & Win, 2020).

Further evidence from Cull et al. (2018) and Apochi and Mahmood (2022) suggested that independent boards improve risk management practices and ensure alignment between institutional strategies and stakeholder expectations. These studies demonstrate that board independence enhances financial sustainability by promoting better oversight of operational risks, loan portfolios, and credit practices. Additionally, Ali et al. (2023) emphasized the role of independent boards in driving innovations that align with Financial Inclusion and socio-economic development goals. The importance of board independence extends to fostering institutional resilience and trust among investors, regulators, and clients. MFIs with a higher proportion of independent directors are better equipped to navigate governance challenges, adapt to market conditions, and maintain their dual focus on financial sustainability and outreach (Fersi & Boujelbène, 2023; Cull et al., 2018). These governance structures serve as a foundation for accountability, ensuring that MFIs achieve long-term stability and growth.

2.5.1.3 Female Directors

The presence of female directors on boards has become a critical element of corporate governance, particularly in the context of microfinance institutions, where both financial and social missions intersect. Female directors bring diverse perspectives and leadership approaches that enrich decision-making, improve governance practices, and

enhance the alignment of institutional strategies with stakeholder needs. Research demonstrates that their inclusion strengthens financial performance and governance quality, particularly in institutions targeting marginalized communities (Hossain et al., 2024; Fersi & Boujelbène, 2023; Vishwakarma, 2017; Ghosh & Guha, 2019). Female directors often advocate for more inclusive financial practices, making their role instrumental in achieving financial inclusion and fostering equitable access to resources for underserved populations.

Governance structures that include female directors are often associated with improved accountability and stakeholder trust. These directors contribute to more cautious decision-making and enhanced risk management practices, which are crucial in the inherently high-risk environment of MFIs. Studies highlight that their involvement reduces financial risk in for-profit MFIs, as they tend to prioritize long-term sustainability over short-term financial gains (Ali et al., 2023; Tadele et al., 2021; Ghosh & Guha, 2019). This careful approach to governance not only strengthens institutional resilience but also promotes ethical practices, which are essential for maintaining credibility and investor confidence in the sector. However, the impact of female directors on financial risk management in non-profit MFIs is more complex, as some studies associate higher female representation with increased financial risk, reflecting the nuanced dynamics of their influence across different institutional types (Fersi & Boujelbène, 2023; Tadele et al., 2021).

Female directors also play a pivotal role in driving innovation and enhancing the social impact of MFIs. Their contributions often extend beyond financial performance metrics to include initiatives that prioritize programs targeting Female and vulnerable populations, thereby advancing Financial Inclusion and social empowerment. Boards with female representation are more likely to develop and implement financial literacy programs

and community development initiatives that address the unique challenges faced by underserved populations (Khan et al., 2020; Hossain et al., 2024; Mia et al., 2023). This inclusive approach to governance supports the dual mission of MFIs, bridging the gap between financial sustainability and social objectives (Cull et al., 2018; Vishwakarma, 2017).

Challenges to the effective integration of female directors remain, particularly in regions where cultural and institutional barriers limit Female's participation in leadership roles. Achieving gender diversity on boards requires addressing these barriers through targeted interventions, such as capacity-building programs, regulatory policies, and advocacy for gender equity in governance. While some studies have questioned the uniformity of their impact such as Gudjonsson et al. (2020), who found mixed results regarding the financial benefits of female board members compared to female managers and loan officers research consistently supports the broader governance and social benefits of female directors (Tadele et al., 2021; Ali et al., 2023). Their presence enhances governance practices, stakeholder relationships, and institutional accountability, which are critical for fostering trust and resilience in the sector.

The broader contributions of female directors to MFIs underscore their role as catalysts for innovation and inclusivity in governance. By fostering diverse perspectives and strengthening governance frameworks, female directors contribute significantly to the operational success and social impact of MFIs. Their leadership facilitates the development of strategies that not only enhance financial outcomes but also promote sustainable development and community empowerment. Research consistently supports the importance of female representation in governance, emphasizing its role in addressing gender-based

disparities and improving the overall effectiveness of microfinance institutions (Hossain et al., 2024; Tadele et al., 2021; Khan et al., 2020; Vishwakarma, 2017). Future studies should continue to explore the contextual factors that influence the contributions of female directors, providing deeper insights into their role in fostering sustainable and inclusive growth within the microfinance sector.

2.5.1.4 Audit Committee

The audit committee is a cornerstone of effective corporate governance, particularly within microfinance institutions, where it plays a vital role in ensuring financial transparency, accountability, and regulatory compliance. As a specialized governance mechanism, the audit committee provides oversight of internal controls, monitors financial reporting processes, and evaluates adherence to regulatory frameworks, thereby enhancing institutional credibility and investor confidence. Research consistently highlights the critical impact of active and independent audit committees on the financial performance and operational stability of MFIs. Saeed et al. (2018) emphasized that the presence of a well-functioning audit committee strengthens risk management practices and improves financial outcomes by addressing vulnerabilities such as fraud and financial mismanagement. This role is especially significant in developing economies, where regulatory oversight may be weaker, and the risk of financial irregularities is higher (Maenuddin et al., 2024; Tadele et al., 2021; Shettima & Dzolkarnaini, 2018).

Audit committees enhance the resilience of MFIs by promoting robust financial governance practices that align with ethical standards and institutional objectives. By closely scrutinizing financial statements and ensuring compliance with regulatory requirements, these committees mitigate the risks associated with errors, misstatements, and fraudulent activities in financial reporting. Studies have shown that MFIs with active audit committees

are more likely to maintain stakeholder trust and attract investments, as their governance frameworks inspire confidence in their financial integrity (Hossain et al., 2024; Ali et al., 2022; Hussain et al., 2021). Additionally, audit committees play an instrumental role in improving the quality of financial disclosures, which facilitates informed decision-making by investors, regulators, and other stakeholders, ultimately contributing to the institution's sustainability and growth (Farooq et al., 2022; Imran & Shafique, 2022; Cull et al., 2018).

In the context of risk management, audit committees provide critical oversight that enhances an MFI's ability to identify, assess, and mitigate financial and operational risks. Effective audit committees ensure that risk management policies are aligned with institutional goals and are implemented consistently across all levels of the organization. This function is particularly relevant in MFIs, where credit risk, portfolio management, and operational inefficiencies are common challenges. Research by Tadele et al. (2021) found that institutions with well-structured audit committees demonstrate improved risk management outcomes, as these committees actively monitor internal processes and enforce accountability measures. This proactive approach not only safeguards the financial health of MFIs but also contributes to their ability to achieve long-term financial and social objectives (Apochi & Mahmood, 2022; Mersland & Strøm, 2009).

Audit committees also facilitate the alignment of governance practices with broader regulatory and developmental goals, making them essential for MFIs operating in diverse and complex environments. In Pakistan, for example, the regulatory frameworks established by the State Bank of Pakistan have underscored the importance of audit committees in strengthening governance structures within the microfinance sector (State Bank of Pakistan, 2020; Iqbal et al., 2019). These guidelines emphasize the role of audit committees in

promoting transparency, ensuring accurate financial reporting, and fostering ethical governance practices, thereby enhancing the overall resilience and performance of MFIs. Studies conducted in other developing countries further corroborate the significance of audit committees, demonstrating that their presence is strongly associated with improved financial sustainability and reduced risks in microfinance operations (Fersi & Boujelbène, 2023; Gohar & Batool, 2015; Mersland & Strøm, 2009).

The effectiveness of audit committees is further enhanced by their independence and the expertise of their members. Independent audit committees, composed of members with specialized financial and regulatory knowledge, are better equipped to provide impartial oversight and challenge management decisions when necessary. Research highlights that audit committees with a high degree of independence are more effective in enforcing governance standards and mitigating risks, as their objectivity allows them to prioritize institutional interests over managerial preferences (Sultana et al., 2019; Ayuba & Samaila, 2022; Tadele et al., 2021). This alignment of governance practices with institutional priorities ensures that MFIs remain compliant with regulatory requirements while addressing the expectations of their stakeholders.

The role of audit committees extends beyond operational oversight to include strategic contributions that support institutional sustainability and growth. By fostering a culture of accountability and ethical decision-making, audit committees contribute to the overall governance ecosystem of MFIs, enabling them to navigate challenges and seize opportunities in a rapidly evolving financial landscape. The presence of an active and independent audit committee is not merely a regulatory requirement but a strategic asset that

strengthens the institutional framework, enhances stakeholder confidence, and drives long-term success (Hossain et al., 2024; Fersi & Boujelbène, 2023; Cull et al., 2018).

2.6 Empirical Studies on Financial Inclusion

Financial inclusion refers to the process of ensuring that individuals and businesses, particularly those in underserved and marginalized communities, have access to affordable and useful financial products and services. These services include savings, credit, insurance, and payment systems, delivered in a manner that meets their needs while promoting financial well-being and economic participation. Financial inclusion is a critical component of sustainable economic development, as it bridges the gap between the unbanked population and formal financial systems, fostering inclusive growth and reducing income inequality (Maeenuddin et al., 2024; Hossain et al., 2024; Morgan & Pontines, 2014). Research highlights that financial inclusion is not merely a tool for providing financial access but also a transformative mechanism for empowering individuals and communities, enabling them to improve their living standards and resilience against economic shocks (Ozili, 2020; Dorfleitner & Nguyễn, 2021).

The significance of financial inclusion lies in its ability to catalyse economic activity and stimulate entrepreneurship. Access to financial services allows individuals and small businesses to engage in productive activities, such as investing in education, healthcare, and income-generating ventures. Studies have shown that financial inclusion enhances the ability of households to smooth consumption, manage risks, and build assets over time, thereby contributing to long-term poverty alleviation (Cull et al., 2018; Klapper et al., 2016). Moreover, financial inclusion promotes gender equality by empowering female through access to credit and savings, enabling them to participate in economic activities and

contribute to household decision-making processes (Noreen et al., 2022; Khan et al., 2020; Kabeer, 2005). This empowerment has a multiplier effect on broader development outcomes, as female tend to reinvest their earnings in their families and communities, furthering the impact of financial inclusion initiatives.

The role of technology in advancing financial inclusion cannot be overstated. Technological innovations, such as mobile banking, agent banking, and digital payment systems, have revolutionized the delivery of financial services, particularly in remote and underserved areas. These innovations reduce transaction costs and logistical barriers, making financial services more accessible and affordable for low-income populations. Mobile banking platforms, for instance, have been instrumental in extending the reach of financial institutions to rural areas, enabling previously excluded individuals to access savings and credit facilities without the need for physical bank branches (Jonker & Kosse, 2022; Ekong & Ekong, 2022). Digital payment systems and mobile wallets have further streamlined financial transactions, enhancing efficiency and convenience for users (Uddin & Barai, 2022; Zahid et al., 2021). These advancements align with the goals of FI by bridging the gap between formal financial institutions and marginalized communities, fostering greater financial inclusion.

Financial inclusion initiatives often include complementary programs, such as financial literacy campaigns and capacity-building activities, to maximize their impact. Financial literacy empowers individuals to make informed decisions about managing their money, understanding financial products, and planning for the future. Studies indicate that financial literacy improves borrowing and repayment behaviour, reducing the risks associated with over-indebtedness and fostering responsible financial practices (Dorfleitner

& Nguyễn, 2021; Rasel & Win, 2020). Capacity-building programs further support financial inclusion by equipping individuals and businesses with the skills needed to utilize financial services effectively, enabling them to enhance their productivity and economic outcomes.

The challenges of achieving financial inclusion, particularly in developing economies, highlight the need for targeted policies and innovative solutions. Structural barriers, such as lack of infrastructure, high transaction costs, and cultural factors, often hinder access to financial services for marginalized groups. Additionally, regulatory environments in many developing countries may not be conducive to the growth of inclusive financial systems, requiring reforms to support the expansion of financial access (Fersi & Boujelbène, 2023; Ozili, 2020). Addressing these challenges necessitates a multi-stakeholder approach involving governments, financial institutions, and technology providers to design and implement sustainable financial inclusion strategies.

The global emphasis on financial inclusion is reflected in initiatives such as the United Nations' Sustainable Development Goals (SDGs), which identify financial inclusion as a critical enabler of inclusive economic growth and poverty reduction. Goal 8 of the SDGs, which focuses on promoting sustained and inclusive economic growth, explicitly highlights the importance of providing universal access to financial services, including credit and insurance. Financial inclusion is also central to achieving other SDGs, such as gender equality (Goal 5) and reducing inequalities (Goal 10), demonstrating its cross-cutting impact on development outcomes (Klapper et al., 2016; Hossain et al., 2024; Zahid et al., 2021).

Empirical work on financial inclusion in Pakistan has similarly shown that access, usage, and the reach of financial services significantly impact economic outcomes and institution-level performance. One recent study by Khalid, Ali, & Yasser (2023) examines

microfinance institutions (MFIs) over 2014–2019 and finds that the number of branches (a measure of geographic outreach) positively influences MFI financial performance; however, larger average loan balance per borrower is negatively related to performance, suggesting that focusing on lower-income borrowers is less profitable but more inclusionary. In another study, Khan, Khattak, & Hashim (2020) analyze determinants of financial inclusion (2008–2018), and conclude that ‘access’ and ‘availability’ of financial services are strong predictors of financial inclusion in Pakistan. There is also evidence from Shaikh (2021) comparing Islamic banking progress that financial inclusiveness remains limited in Pakistan, especially in terms of cost, usage and equitable distribution of services. These results indicate that while regulatory frameworks and infrastructure are progressing, there remain gaps in how far financial inclusion translates into improved institutional performance and broader socioeconomic outcomes.

2.6.1 Financial Inclusion and Performance of Microfinance Institutions

Financial inclusion plays a critical role in enhancing the performance of microfinance institutions by facilitating access to financial services for underserved populations and fostering sustainable economic growth. The provision of microcredit, savings accounts, and insurance products enables MFIs to serve unbanked individuals and small-scale entrepreneurs, thereby promoting savings, investments, and sustainable livelihoods (Hossain et al., 2024; Morgan & Pontines, 2014; Ozili, 2020). Through these initiatives, MFIs address the financial needs of low-income households and small businesses, integrating marginalized groups into the formal financial system. This integration not only supports poverty alleviation but also strengthens economic participation among vulnerable communities, which are often excluded from traditional financial services (Jonker & Kosse, 2022; Dorfleitner & Nguyễn, 2021; Zahid et al., 2021).

In developing economies like Pakistan, financial inclusion has been pivotal in driving socioeconomic transformation by providing tailored financial services that meet the unique needs of diverse client segments. MFIs have played a transformative role in offering accessible and client-centric solutions, promoting inclusive growth, and fostering equitable wealth distribution across rural and urban populations (Noreen et al., 2022; Fersi & Boujelbène, 2023). The microfinance sector's focus on underserved communities has empowered marginalized groups by equipping them with the resources and opportunities needed to improve their living standards. Financial literacy programs and capacity-building initiatives have further enhanced financial inclusion interventions by encouraging responsible borrowing and enabling individuals to make informed financial decisions, ultimately improving their long-term socioeconomic well-being (Dorfleitner & Nguyễn, 2021; Cull et al., 2018; Zahid et al., 2021).

Technological advancements and digital innovations have significantly contributed to the expansion of financial inclusion by overcoming geographical and operational barriers. Mobile banking, agent banking, and digital payment platforms have bridged the gap between formal financial institutions and remote or underprivileged communities, making financial services more accessible and affordable (Jonker & Kosse, 2022; Maenuddin et al., 2024; World Bank, 2014). These technological solutions have not only extended the reach of MFIs but also enhanced the efficiency of service delivery, enabling institutions to cater to a broader client base. In addition to technological solutions, innovative financial products tailored to the needs of specific client groups have reinforced the sector's ability to foster inclusive economic development. This approach underscores the sector's commitment to creating a more equitable financial ecosystem, particularly in regions where traditional banking

systems have limited penetration (Morgan & Pontines, 2014; Ekong & Ekong, 2022; Ozili, 2020).

Financial inclusion also encompasses initiatives aimed at building community resilience and promoting entrepreneurship among vulnerable populations. By addressing the financial needs of diverse client groups, MFIs contribute to the empowerment of individuals and communities, enabling them to engage in income-generating activities and achieve economic independence (Khan et al., 2020; Noreen et al., 2022). The focus on tailored solutions, such as flexible repayment options and customized financial products, demonstrates the sector's adaptability in meeting the unique preferences of its clientele. These efforts align with the broader goals of sustainable development and poverty alleviation, highlighting the transformative potential of financial inclusion in fostering socioeconomic progress (Zahid et al., 2021; Fersi & Boujelbène, 2023). Research shows that financial inclusion initiatives not only improve the financial health of clients but also enhance their capacity to weather economic shocks, further strengthening the impact of MFIs on community well-being and economic stability (Hossain et al., 2024; Dorfleitner & Nguyễn, 2021; Cull et al., 2018).

The significance of financial inclusion in Pakistan is evident in the success of MFIs in addressing the unique challenges faced by marginalized communities across the country. The sector has demonstrated its ability to create meaningful change by expanding access to financial services, fostering economic empowerment, and promoting inclusive growth (Apochi & Mahmood, 2022; Zahid et al., 2021). MFIs' commitment to client-centric approaches, combined with innovative product offerings and financial literacy initiatives, underscores their vital role in driving sustainable socioeconomic development. Through

these efforts, MFIs have established themselves as key agents of transformation, capable of addressing the diverse needs of underserved populations while contributing to the broader objectives of economic inclusion and equitable growth (Noreen et al., 2022; Tadele et al., 2021; Zahid et al., 2021).

2.6.1.1 Annual Percentage Rate

The annual percentage rate is a critical proxy for assessing financial inclusion as it reflects the cost of borrowing for microfinance clients. It is widely used in the microfinance sector to express the overall cost of a loan, including interest rates and associated fees, in a standardized manner. This enables borrowers to make informed decisions by comparing loan offers across different institutions. Research highlights the significance of annual percentage rate in determining the affordability of financial products, which is a key factor in promoting inclusive financial services. Studies by Banerjee et al. (2015) emphasize the role of annual percentage rate in ensuring transparency in lending practices, helping borrowers understand the true cost of credit. Transparency in loan pricing not only protects borrowers from exploitative practices but also enhances their trust in financial institutions, thereby encouraging greater participation in formal financial systems (Hossain et al., 2024; Gyimah et al., 2020; Nourani et al., 2020).

High annual percentage rates have been identified as a major barrier to financial inclusion, particularly in low-income communities where affordability is a critical concern. Gyimah et al. (2020) found that exorbitant interest rates often lead to loan defaults and undermine the financial sustainability of microfinance institutions. This aligns with the principles of stakeholder theory, which advocate for balancing institutional profitability with the needs of clients. MFIs operating under this theoretical framework must carefully design their loan products to ensure that they are accessible and affordable while maintaining

financial sustainability. Schicks (2014) highlighted the adverse effects of over-indebtedness, which often results from high annual percentage rates, on both borrowers and MFIs. Borrowers face financial distress, while MFIs encounter increased credit risk and weakened institutional stability (Cull et al., 2018; Fersi & Boujelbène, 2023).

Studies further underscores the importance of regulatory frameworks and industry standards in determining acceptable annual percentage rate levels. Frączek (2020) discussed systems designed to enhance transparency in consumer credit, emphasizing that standardized annual percentage rate calculations and clear disclosures are essential for protecting borrowers. These measures are particularly important in developing countries like Pakistan, where financial literacy levels are relatively low, and borrowers are more vulnerable to deceptive lending practices (Rasel & Win, 2020; Zahid et al., 2021). Annual percentage rate's significance as a measure of financial inclusion is also supported by risk management theory, which advocates for practices that minimize credit risk while ensuring accessibility (Tadele et al., 2021; Frączek, 2020).

Annual percentage rate is not only a measure of cost but also a determinant of MFIs performance. Institutions that offer competitive annual percentage rates often achieve greater client retention and outreach, thereby expanding their market share and improving operational efficiency. Nourani et al. (2020) emphasized that institutions focusing on affordability and transparency in their lending practices tend to perform better both financially and socially. This dual impact of annual percentage rate on borrower welfare and institutional success highlights its critical role in fostering sustainable financial inclusion in the microfinance sector (Fersi & Boujelbène, 2023; Hossain et al., 2024; Maeenuddin et al., 2024).

2.6.1.2 Operational Efficiency

Operational efficiency serves as another vital proxy for financial inclusion, reflecting an institution's ability to deliver financial services effectively and sustainably. Efficiency in operations allows MFIs to reduce costs, expand outreach, and improve service delivery, thereby enhancing their inclusiveness and impact. Studies consistently show that operational efficiency is closely linked to financial inclusion, as institutions with streamlined processes and lower transaction costs are better positioned to serve underserved populations. Bharti and Malik (2022) found that MFIs in Bangladesh with higher operational efficiency achieved greater outreach, enabling them to cater to a broader segment of the population, including low-income and marginalized groups (Maeenuddin et al., 2024; Hossain et al., 2024).

The significance of operational efficiency is further underscored by its role in achieving financial sustainability. Institutions that operate efficiently can allocate more resources to client outreach and product innovation without compromising their profitability. Research by Khan and Shireen (2020) highlighted that larger MFIs, as measured by the logarithm of assets, tend to exhibit higher operational efficiency. This scalability allows them to deliver financial services to a larger number of clients while maintaining lower unit costs, thus promoting financial inclusion. These findings align with agency theory, which suggests that reducing operational inefficiencies minimizes agency costs and enhances institutional performance (Cull et al., 2018; Nourani et al., 2020).

Operational efficiency also plays a critical role in balancing the dual objectives of MFIs: financial sustainability and social outreach. Mia et al. (2022) demonstrated that institutions with higher efficiency levels achieve better outcomes in terms of both financial performance and social impact. Their study emphasized that operational efficiency enables MFIs to address credit risk effectively while maintaining their commitment to serving

marginalized populations. This dual benefit aligns with the principles of stakeholder theory, which advocate for strategies that simultaneously meet institutional goals and stakeholder needs (Fersi & Boujelbène, 2023; Zahid et al., 2021).

Efficiency is also tied to technological advancements, as digital solutions and process automation have significantly reduced operational costs in the microfinance sector. However, the relationship between operational efficiency and financial inclusion extends beyond technology. Institutional factors such as governance structures, staff training, and resource allocation play a crucial role in determining efficiency levels. Khan and Shireen (2020) highlighted that well-managed institutions with strong governance frameworks tend to achieve higher efficiency, which directly translates into improved FI (Jonker & Kosse, 2022; Tadele et al., 2021).

In the context of Pakistan, operational efficiency is particularly critical for expanding financial access in rural and remote areas. The high cost of serving these regions often discourages formal financial institutions from entering these markets. MFIs that achieve operational efficiency can overcome this barrier, ensuring that financial services reach even the most underserved communities. Studies by Nourani et al. (2020) and Mia et al. (2022) emphasize the importance of institutional efficiency in addressing geographic and demographic disparities in financial inclusion, highlighting its relevance in developing economies (Hossain et al., 2024; Cull et al., 2018).

Operational efficiency is not merely a measure of institutional performance but also a reflection of an MFI's commitment to financial inclusion. By optimizing their processes and resources, MFIs can lower the cost of financial services, making them more accessible and affordable to low-income clients. This, in turn, fosters greater financial inclusion,

aligning with the broader developmental goals of reducing inequality and promoting inclusive economic growth. Operational efficiency, therefore, stands as a cornerstone of sustainable microfinance practices, bridging the gap between institutional objectives and societal needs (Fersi & Boujelbène, 2023; Maenuddin et al., 2024; Hossain et al., 2024).

2.7 Empirical Studies on Credit Risk

Credit risk is the likelihood of financial loss resulting from a borrower's failure to meet contractual debt obligations, making it a central concern in financial institutions globally. The concept of credit risk is rooted in the inherent uncertainties associated with lending, where factors such as economic conditions, borrower behaviour, and institutional frameworks play a crucial role in determining the likelihood of default. Financial institutions face credit risk as one of the most significant challenges due to its direct implications for profitability, operational stability, and overall financial health. Effective management of credit risk requires a thorough understanding of its causes, manifestations, and consequences, which are deeply intertwined with governance and strategic decision-making (Hussain et al., 2020; Cull et al., 2007; Schicks, 2014).

Risk management theory provides a robust framework for understanding and addressing credit risk. This theory emphasizes the importance of identifying, assessing, and mitigating risks to safeguard institutional resilience. According to risk management principles, credit risk arises not only from borrower-related factors such as financial instability or over-indebtedness but also from macroeconomic conditions, policy environments, and the structural inefficiencies of financial systems. Institutions must therefore adopt a holistic approach to credit risk, encompassing both micro-level borrower assessments and macro-level market dynamics. Research highlights that institutions that

prioritize proactive risk identification and mitigation strategies tend to achieve greater financial stability and operational efficiency, ensuring their ability to meet both short-term and long-term objectives (Tadele et al., 2021; Uddin & Barai, 2022; Cull et al., 2007).

Agency theory offers additional insights into the governance dynamics that influence credit risk. This theory suggests that the separation of ownership and control in financial institutions creates agency conflicts, where the interests of management may diverge from those of stakeholders. Effective governance structures, such as independent boards, oversight committees, and transparent accountability mechanisms, help align these interests, thereby enhancing the institution's ability to manage credit risk. Empirical evidence demonstrates that organizations with robust governance frameworks are better equipped to implement sound lending practices, reducing the incidence of defaults and improving loan recovery rates (Galema et al., 2012; Mersland & Strøm, 2009; Schicks, 2014).

Credit risk is also shaped by broader economic and social contexts, as financial institutions operate within environments characterized by varying degrees of volatility and uncertainty. In developing economies, for instance, income instability, limited financial literacy, and weak regulatory frameworks exacerbate credit risk, as borrowers often lack the resources or knowledge to fulfil their financial obligations. Studies have shown that during periods of economic downturn or external shocks, such as global pandemics or natural disasters, credit defaults surge, placing immense strain on financial institutions. These challenges underscore the importance of adaptive and context-specific strategies for managing credit risk, including diversification of lending portfolios, careful borrower selection, and contingency planning (Adegbola et al., 2023; Cull et al., 2007; Schicks, 2014).

The consequences of high credit risk extend beyond financial losses to include reputational risks and operational inefficiencies. Institutions with rising levels of credit risk often experience diminished investor confidence, increased cost of capital, and reduced ability to attract new clients. These ripple effects underscore the interconnected nature of credit risk and its impact on institutional sustainability. Stakeholder theory further illuminates the broader implications of credit risk by emphasizing the responsibility of financial institutions to balance the interests of various stakeholders, including borrowers, investors, regulators, and the community. Institutions that fail to manage credit risk effectively risk eroding trust and undermining their ability to fulfil their mission, particularly in contexts where social and economic objectives are central to their operations (Hussain et al., 2020; Adegbola et al., 2023; Cull et al., 2007).

Risk management theory also emphasizes the role of predictive analytics and data-driven decision-making in mitigating credit risk. Advances in technology have enabled financial institutions to leverage sophisticated risk assessment models that incorporate historical data, borrower profiles, and economic indicators. These tools enhance the accuracy of creditworthiness evaluations, enabling institutions to make informed lending decisions and minimize defaults. However, effective implementation of these technologies requires strong governance and oversight, as well as an organizational culture that prioritizes transparency and accountability (Uddin & Barai, 2022; Tadele et al., 2021; Cull et al., 2007).

In financial systems worldwide, credit risk represents a critical determinant of institutional performance and resilience. Its multifaceted nature requires financial institutions to adopt a comprehensive approach that integrates governance, strategic planning, and operational efficiency. By grounding their practices in theoretical frameworks

such as risk management, agency theory, and stakeholder theory, institutions can navigate the complexities of credit risk, ensuring their sustainability and ability to contribute meaningfully to economic growth and financial stability. These considerations set the stage for understanding how credit risk specifically impacts the performance of microfinance institutions, as explored in the following sections.

Recent studies on credit risk in Pakistan's microfinance sector have increasingly focused on the implications of portfolio quality particularly portfolio at risk and non-performing loans for institutional performance and sustainability. According to the Pakistan Microfinance Network (PMN, 2024), the industry's average PAR (30) ratio has shown moderate improvement since 2022 yet remains vulnerable to macroeconomic fluctuations and client repayment capacity, particularly in flood-affected and inflation-sensitive regions. Empirical evidence from Ahmad and Javed (2022) revealed that higher PAR and NPL levels are significantly associated with reduced financial performance among Pakistani MFIs, emphasizing the need for stronger internal control systems and monitoring mechanisms. Similarly, Khan, Mahmood, and Rauf (2023) demonstrated that institutions with effective credit risk frameworks and timely recovery strategies are better able to contain default risk and sustain operational self-sufficiency. The PMN MicroWATCH (2023) report also highlighted that rising cost pressures and high inflation have indirectly increased credit delinquency, which threatens portfolio quality and profitability. More recently, Hussain and Malik (2024) found that the presence of a structured board risk committee mitigates the negative relationship between PAR and performance, reinforcing the moderating effect of board-level oversight in strengthening risk management practices. Overall, these findings underscore that credit risk captured through portfolio quality indicators such as PAR and

NPL remains a pivotal factor influencing the performance of MFIs in Pakistan, while effective governance mechanisms can significantly reduce its adverse effects.

2.7.1 Credit Risk and Performance of Microfinance Institutions

Credit risk is a significant determinant of the financial performance of microfinance institutions in Pakistan, given the unique characteristics of the country's microfinance landscape. MFIs in Pakistan primarily serve low-income, underserved communities, offering financial services to individuals who often lack collateral, stable income sources, or formal credit histories. This client base, while central to the mission of MFIs, inherently increases the likelihood of defaults and portfolio risks, making credit risk management an essential aspect of financial sustainability. The financial performance of MFIs, often measured through metrics such as return on assets, return on equity, and operational self-sufficiency, is directly influenced by their ability to manage credit risk effectively (Adegbola et al., 2023; Hussain et al., 2020; Khan et al., 2021).

In Pakistan, credit risk poses a significant challenge to the sustainability and growth of MFIs due to socio-economic factors such as income volatility, seasonal employment, and limited financial literacy among borrowers. High levels of credit risk, as reflected in non-performing loans and portfolio-at-risk metrics, undermine the profitability of MFIs by reducing revenue from loan repayments and increasing costs associated with loan recovery and provisioning. Studies show that MFIs with elevated non-performing loans levels experience reduced return on assets and return on equity, as defaulted loans represent lost income and necessitate higher reserves for bad debts (Mia et al., 2022; Nourani et al., 2020; Rauf & Mahmood, 2009). This highlights the importance of robust credit risk management practices in ensuring the financial viability of MFIs.

The financial performance of MFIs in Pakistan is also influenced by external factors such as macroeconomic conditions, regulatory frameworks, and the competitive landscape of the microfinance sector. Economic shocks, inflation, and policy changes can exacerbate credit risk by impacting borrowers' repayment capacity. For instance, during periods of economic downturn or global crises, such as the COVID-19 pandemic, many MFIs in Pakistan reported a surge in default rates due to widespread income disruptions among their client base (Hossain et al., 2024; Hussain et al., 2020; Kaleem et al., 2011). These external challenges further underscore the need for adaptive risk management strategies that align with the socio-economic realities of the country.

Governance structures within MFIs play a pivotal role in mitigating credit risk and enhancing financial performance. Institutions with strong governance frameworks, such as independent boards and effective audit committees, are better equipped to implement sound credit policies, monitor lending practices, and address potential risks proactively. Agency theory suggests that governance mechanisms help align the interests of management and stakeholders, thereby fostering prudent decision-making and efficient resource allocation. In Pakistan, the role of governance in managing credit risk is particularly critical, given the sector's evolving regulatory environment and the diverse needs of its client base (Tadele et al., 2021; Imran & Shafique, 2022; Galema et al., 2012).

Operational efficiency also intersects with credit risk in determining the financial performance of MFIs in Pakistan. Efficient institutions are better able to manage their loan portfolios, reduce transaction costs, and allocate resources effectively, thereby mitigating the adverse effects of credit risk. Studies indicate that MFIs with higher operational efficiency tend to maintain lower portfolio at risk and non-performing loans levels, which in turn

supports higher financial returns and sustainable growth (Mia et al., 2022; Bharti & Malik, 2022; Nourani et al., 2020). This relationship emphasizes the importance of integrating operational strategies with risk management frameworks to achieve optimal financial outcomes.

Stakeholder theory provides additional insights into the relationship between credit risk and financial performance by highlighting the broader implications of credit defaults on institutional trust and reputation. In Pakistan, MFIs rely heavily on donor funding and investor support to sustain their operations. High levels of credit risk can erode stakeholder confidence, limiting the institution's ability to secure funding and expand its outreach. By prioritizing responsible lending practices and fostering transparency in credit operations, MFIs can build stronger relationships with stakeholders, ensuring long-term financial stability and growth (Hussain et al., 2020; Khan & Sulaiman, 2015; Rauf & Mahmood, 2009).

In the context of Pakistan, addressing credit risk is not merely a matter of financial necessity but also a strategic imperative for advancing the mission of Financial Inclusion. MFIs that effectively manage credit risk are better positioned to extend their services to underserved populations while maintaining financial sustainability. This dual focus on risk mitigation and performance optimization aligns with the principles of risk management theory, which advocates for comprehensive frameworks that balance institutional objectives with external uncertainties (Cull et al., 2007; Hermes & Lensink, 2011).

The impact of credit risk on the financial performance of MFIs in Pakistan highlights the complex interplay between institutional strategies, governance practices, and socio-economic factors. By adopting innovative risk management approaches, strengthening

governance structures, and aligning their operations with stakeholder needs, MFIs can overcome the challenges posed by credit risk, ensuring their sustainability and continued contribution to Financial Inclusion and socio-economic development in the country (Tadele et al., 2021; Nourani et al., 2020; Adegbola et al., 2023).

2.7.1.1 Portfolio at Risk

Portfolio at risk is a key proxy for assessing credit risk in microfinance institutions, reflecting the percentage of the loan portfolio that is overdue beyond a specified period, such as 30 or 90 days. High portfolio at risk levels indicates a deterioration in portfolio quality, signalling inefficiencies in credit assessment, monitoring, and recovery processes. For MFIs in Pakistan, where socio-economic conditions often constrain borrowers' repayment capacities, managing portfolio at risk effectively is crucial for financial performance and sustainability (Mohamed & Elgammal, 2023; Mia et al., 2022; Rauf & Mahmood, 2009). Studies consistently link higher portfolio at risk levels to adverse impacts on financial performance, operational efficiency, and institutional credibility (Sekabira, 2013; Lassoued, 2017).

Research highlights that portfolio at risk directly influences the financial outcomes of MFIs by affecting their revenue streams, cost structures, and loan recovery efficiency. For example, Bhanot & Bapat (2015) argue that portfolio at risk serves as a measure of the operational efficiency of MFIs in recovering principal and interest repayments. A higher portfolio at risk indicates poorer loan portfolio quality, which can lead to diminished returns on assets and increased provisioning costs. Lassoued (2017) further emphasizes that the size of the gross loan portfolio and operational inefficiency are key drivers of higher portfolio at risk levels, which in turn escalate credit risk and weaken MFIs performance.

Empirical evidence underscores the importance of managing portfolio at risk to enhance the financial performance of MFIs. Sekabira (2013) found that specializing in lending practices and implementing stringent portfolio management strategies are essential for reducing portfolio at risk and improving financial outcomes. Similarly, Kar & Swain (2014) demonstrate that a higher portfolio at risk, indicating increased loan defaults or delinquencies, negatively impacts financial performance by reducing loan repayment rates. The study highlights the need for regulatory measures and tailored credit policies to mitigate the adverse effects of portfolio at risk (Mia et al., 2022; Mohamed & Elgammal, 2023).

The quality of financial disclosure practices also intersects with portfolio at risk management. Quayes & Hasan (2014) found that better financial disclosure positively influences MFIs performance by enhancing transparency and stakeholder confidence. Institutions with high portfolio at risk levels can benefit from improving their financial reporting practices to address inefficiencies and rebuild trust among investors and donors. This alignment with agency theory reinforces the role of governance in ensuring prudent risk management and resource allocation (Hossain et al., 2024; Lassoued, 2017).

Mohamed & Elgammal (2023) specifically highlight the use of PAR-90, which measures loans overdue for more than 90 days, as a critical indicator of credit risk in both Islamic and conventional MFIs. The study underscores the importance of monitoring long-term delinquencies to assess portfolio quality and the effectiveness of credit policies. In Pakistan, where MFIs operate in economically volatile environments, adopting robust portfolio monitoring systems is essential for managing portfolio at risk and ensuring operational resilience (Rauf & Mahmood, 2009; Mia et al., 2022).

Effective portfolio at risk management not only improves financial performance but also enhances institutional credibility and stakeholder confidence. By integrating robust credit risk management practices, strengthening governance frameworks, and leveraging data-driven monitoring tools, MFIs can mitigate the adverse effects of portfolio at risk. This comprehensive approach aligns with the principles of risk management theory, which emphasizes proactive identification, assessment, and mitigation of Credit Risks to ensure institutional sustainability and growth.

2.7.1.2 Non-Performing Loan

Non-performing loans are a critical measure of credit risk, representing loans that remain unpaid beyond a specified period, typically exceeding 90 days. NPLs directly impact the financial performance of microfinance institutions by eroding revenue, increasing provisioning requirements, and undermining operational stability. In Pakistan, where MFIs cater to low-income populations with limited financial literacy, managing non-performing loans effectively is vital for institutional sustainability (Mohamed & Elgammal, 2023; Mia et al., 2022; Hussain et al., 2020).

The negative impact of non-performing loans on financial performance is well-documented in the literature. Hassan et al. (2023) argued that high non-performing loans levels hinder MFIs' ability to achieve their social mission, such as poverty alleviation, while simultaneously reducing profitability. This underscores the dual challenge faced by MFIs: maintaining financial sustainability while fulfilling their developmental objectives. Zamore et al. (2023) further demonstrated that higher non-performing loans are associated with lower cost efficiency, indicating that poor loan performance increases operational costs and reduces institutional efficiency.

Chikalipah (2018) highlighted the indirect relationship between non-performing loans management and financial performance, emphasizing that effective loan portfolio management, including addressing high non-performing loans, enhances profitability. The study showed that higher average loan sizes, often associated with lower default rates, promote financial performance by improving cost structures and recovery rates. Similarly, Adusei and Sarpong-Danquah (2021) emphasized the role of institutional quality in managing capital structure, suggesting that factors influencing performance, such as access to debt capital, are affected by non-performing loans levels (Cull et al., 2007; Zamore et al., 2023).

The agricultural credit portfolio presents unique challenges in the context of non-performing loans. Agboklou and Özkan (2023) found that agricultural credit supply negatively impacts financial performance due to higher risks associated with weather variability, market fluctuations, and borrower vulnerabilities. This highlights the importance of segment-specific risk management strategies to reduce non-performing loans and improve overall institutional performance (Mia et al., 2022; Mohamed & Elgammal, 2023).

Studies also emphasized the importance of robust credit assessment frameworks in mitigating non-performing loans. Mia et al. (2022) identified NPL ratios as critical indicators of portfolio quality and recommend incorporating borrower-specific factors into credit evaluation processes. Mohamed & Elgammal (2023) reinforce this by highlighting the significance of non-performing loans metrics, such as loans overdue beyond 90 days, in assessing credit risk and institutional efficiency. These studies aligned with risk management theory, which advocates for proactive identification, assessment, and mitigation of risks to enhance institutional resilience (Cull et al., 2007; Hussain et al., 2020).

The findings from various studies collectively demonstrated that effective management of non-performing loans is essential for MFIs to achieve financial stability, enhance cost efficiency, and maintain their social mission. Governance structures, operational efficiency, and tailored credit policies emerge as critical factors in mitigating non-performing loans risks and strengthening the financial performance of MFIs in Pakistan. By integrating these strategies with robust risk management frameworks, MFIs can address the challenges posed by non-performing loans, ensuring long-term sustainability and impact (Hassan et al., 2023; Zatore et al., 2023; Agboklou & Özkan, 2023).

2.8 Empirical Studies on Board Risk Committee

The board risk committee index represents a composite governance measure that captures the overall effectiveness of the board risk committee in overseeing risk-related functions within microfinance institutions. Rather than analyzing the effects of individual dimensions such as size, independence, or competence. Board risk committee index reflects the collective governance quality of the board risk committee and its influence on institutional performance and risk control.

In the context of this study, board risk committee index is used as a moderating variable to examine how the presence and effectiveness of a robust board risk committee can strengthen the relationship between credit risk and MFIs performance, particularly measured through operational self-sufficiency, return on assets, and return on equity. This composite index aligns with the risk management theory, which advocates for systematic, structured governance approaches in mitigating financial risk, and with agency theory, which emphasizes the role of independent governance bodies in controlling agency costs and safeguarding stakeholder interests (Jensen & Meckling, 1976; Kaplan & Mikes, 2012).

Studies in the microfinance and broader financial literature increasingly employ index-based measures to capture governance effectiveness. For example, Zamore et al. (2021) and Maeenuddin et al. (2024) developed board risk committee indices to examine the influence of governance strength on credit portfolio quality and firm performance. These indices typically combine structural attributes (e.g., number of members), compositional features (e.g., proportion of independent directors), and functional competence (e.g., financial or risk-related expertise), providing a multidimensional evaluation of the committee's role.

In MFIs, particularly in developing countries like Pakistan, the board risk committee index serves as an essential mechanism for risk governance due to several contextual challenges, including limited regulatory capacity, high operational risks, and constrained financial literacy among clients (Cull et al., 2007; Bharti & Malik, 2022). A well-functioning board risk committee measured holistically helps institutions monitor credit risk through early detection of loan defaults, effective oversight of lending practices, and alignment of credit policies with institutional risk appetite (Hossain et al., 2024; Mohamed & Elgammal, 2023). This oversight strengthens internal control systems and builds organizational resilience, as emphasized by risk management theory.

From the agency theory perspective, board risk committee index plays a critical role in reducing agency conflicts between board members, executive management, and other stakeholders. A strong board risk committee ensures that risk-related decisions are made with accountability, transparency, and objectivity, which reduces information asymmetry and enhances stakeholder trust (Nourani et al., 2020; Fersi & Boujelbène, 2023). This is

particularly important in MFIs that operate with dual missions of financial viability and social outreach where goal conflicts are common.

Empirical evidence supports the moderating role of board risk committee effectiveness on performance and risk relationships. Tadele et al. (2021) and Zamore et al. (2021) found that stronger board risk committee enhance the impact of risk management strategies on organizational outcomes. In Pakistan, Maenuddin et al. (2024) reported that MFIs with effective board risk committee structures demonstrated better credit quality and sustainability, suggesting that board risk committee index can act as a performance catalyst when embedded within broader institutional governance.

Empirical studies in Pakistan's microfinance sector indicated that the board risk committee played a vital role in strengthening governance mechanisms and improving institutional risk oversight. The Pakistan Microfinance Network (PMN, 2024) reported that many microfinance institutions had established formal board-level risk committees in response to regulatory requirements of the State Bank of Pakistan (SBP) to enhance transparency and accountability. These committees were found to monitor key risk areas such as credit, liquidity, and operational exposures, ensuring better alignment between risk management and institutional performance. Ahmad and Javed (2022) found that MFIs with active and independent board risk committees achieved better portfolio quality and operational self-sufficiency, as these committees enhanced internal controls and supervision over lending operations. Similarly, Khan and Rauf (2023) noted that the inclusion of financially skilled and independent members in the board risk committee improved the quality of risk evaluation and strengthened governance decision-making. The PMN microWATCH (2023) report further indicated that institutions with adequately sized and

functional risk committees managed to reduce rising portfolio-at-risk (PAR) levels during the post-pandemic and flood recovery periods, compared with those operating without structured oversight. Committee size was also observed to influence effectiveness larger committees with diverse expertise facilitated broader perspectives and more informed risk deliberations. Moreover, Hussain and Malik (2024) found that the presence of an established board risk committee mitigated the adverse effects of credit risk on institutional performance, highlighting its moderating role in promoting prudent risk-taking and improving financial outcomes. Overall, these findings suggested that the composition, independence, and size of the board risk committee were essential factors in enhancing the governance quality and operational performance of MFIs in Pakistan's microfinance industry.

By integrating the board risk committee as a composite index in this study's conceptual model, this study captures the strategic importance of governance quality in enhancing microfinance outcomes. Board risk committee index serves not only as a structural feature but also as a functional moderator that amplifies the institutional ability to manage credit risk and sustain performance in volatile environments.

2.9 Control Variables

Control variables are essential in empirical research to account for the potential influence of factors that are not the primary focus of the study but may impact the dependent variable. In the context of microfinance institutions, control variables such as firm size and Leverage are often incorporated to better understand their role in influencing financial performance. Each of these variables offers insights into the operational and financial dynamics of MFIs, and their significance is supported by empirical literature.

2.9.1 Firm Size

Firm size is one of the most frequently used control variables in MFI studies, as it reflects the institution's scale of operations, resource base, and market influence. Larger MFIs generally benefit from economies of scale, allowing them to spread fixed costs over a greater volume of services, thereby enhancing operational efficiency and financial sustainability. Studies suggest that larger institutions tend to have better access to funding, improved risk management practices, and greater outreach capabilities, which positively influence their financial performance (Cull et al., 2007; Bharti & Malik, 2022; Zamore et al., 2023; Mia et al., 2022).

For MFIs, firm size is often measured by total assets, total revenue, or the number of active clients. Empirical evidence highlights the positive association between firm size and financial performance. For instance, Khan and Shireen (2020) found that MFIs with larger asset bases exhibited superior financial performance due to their ability to diversify portfolios, mitigate risks, and leverage their bargaining power in financial markets. Similarly, Nourani et al. (2020) and Mia et al. (2022) demonstrated that larger MFIs are more operationally efficient, which translates into higher return on assets and return on equity.

However, the relationship between firm size and performance is not always linear. Excessive growth can lead to inefficiencies, management challenges, and resource misallocation, which may negatively impact performance (Armendáriz & Morduch, 2010; Adusei & Sarpong-Danquah, 2021; Fersi & Boujelbène, 2023). Smaller MFIs, although resource-constrained, may excel in delivering tailored services and maintaining close client relationships, which can enhance their social impact and client satisfaction. This nuanced

relationship underscores the need for balanced growth strategies to optimize financial and operational outcomes.

2.9.2 Leverage

Leverage, defined as the proportion of debt in an institution's capital structure, is a critical determinant of financial performance and risk exposure. For MFIs, leverage reflects their ability to mobilize external funding to expand operations and serve a larger client base. While leverage can enhance financial performance by providing additional resources for investment, excessive reliance on debt may increase financial risk and vulnerability to external shocks (Hermes & Lensink, 2011; Cull et al., 2007; Fersi & Boujelbène, 2023; Zamore et al., 2023).

Empirical studies highlighted the dual impact of leverage on MFIs performance. On one hand, higher leverage enables institutions to scale operations, diversify portfolios, and achieve economies of scale. For instance, Khan & Sulaiman (2015) and Mia et al. (2022) demonstrated that leveraged MFIs in Pakistan achieved better financial outcomes due to their ability to access low-cost funding and expand outreach. On the other hand, excessive leverage increases the institution's exposure to interest rate fluctuations, repayment obligations, and liquidity constraints, which can undermine financial stability (Hussain et al., 2020; Adusei & Sarpong-Danquah, 2021).

The relationship between leverage and performance is moderated by governance structures and risk management practices. Well-governed MFIs with effective board risk committees are better equipped to manage the risks associated with leverage, ensuring that debt is used strategically to enhance financial performance. Ahmed et al. (2015), Mohamed & Elgammal (2023), and Hossain et al. (2024) emphasized that governance mechanisms play a critical

role in mitigating the adverse effects of leverage, particularly in developing countries where regulatory frameworks may be less robust.

2.10 Literature Gap

Although the role of microfinance institutions has been widely recognized in promoting social inclusion and poverty alleviation, several gaps persist in the existing body of literature, particularly regarding the determinants of their financial and operational performance. In developing countries such as Pakistan, the microfinance sector has expanded significantly, yet empirical research examining how internal institutional mechanisms influence performance remains scarce. Much of the existing literature in Pakistan tends to focus either on the outreach aspect of microfinance (e.g., Khan & Asghar, 2012; Rauf & Mahmood, 2009) or macroeconomic implications (e.g., Nawaz, 2010), rather than the institutional drivers that contribute to financial sustainability.

A notable gap is the limited exploration of how corporate governance mechanisms affect the performance of microfinance institutions in Pakistan. While the broader literature on corporate governance in traditional banking and corporate sectors is well-developed, there remains a paucity of empirical studies that apply these governance frameworks to microfinance institutions. In particular, board-level structures such as board size, board independence, female directorship, and the presence of audit committees are not extensively studied within microfinance settings in South Asia. The few Pakistan-specific studies (e.g., Malik & Nawaz, 2018; Rehman et al., 2017) tend to focus on a single governance indicator, thereby overlooking the combined and interactive influence of governance attributes on institutional outcomes (Mohamed & Elgammal, 2023; Hussain et al., 2019; Mersland & Strøm, 2009).

Furthermore, there is a lack of empirical evidence on how financial inclusion, measured at the institutional level, influences the performance of microfinance institutions. Most studies in Pakistan conceptualize financial inclusion in terms of national-level indicators, such as access to banking or credit penetration rates (Akram & Hussain, 2021; SBP, 2019). However, firm-level indicators such as the annual percentage rate and operational efficiency, which directly reflect the institution's outreach and client servicing capacity, are rarely incorporated in empirical models. This gap limits our understanding of how financial inclusion is operationalized within institutions and how it contributes to their financial outcomes (Khan et al., 2022; Ghosh & Van Tassel, 2020).

Credit risk also remains an underexplored area in the context of microfinance institutions in Pakistan. Although credit risk has been identified as one of the most significant threats to institutional sustainability, especially in environments characterized by informal lending and economically vulnerable populations, few Pakistan-based studies provide detailed empirical analysis of how credit risk indicators such as portfolio at risk and non-performing loans affect institutional performance (Butt et al., 2020; Javed & Farooq, 2016). Most available studies either treat credit risk as a control variable or generalize it within broader risk frameworks without examining its direct implications (Mia et al., 2022; Zamore et al., 2021). Moreover, there is minimal focus on how governance structures can moderate the impact of credit risk, particularly in settings where lending to low-income and financially excluded segments involves higher inherent risk.

An additional and important gap is the lack of research on the role of the board risk committee in the microfinance context. While studies in conventional banking have acknowledged the role of risk oversight committees in enhancing governance and

performance, their relevance and application in microfinance institutions especially in developing economies such as Pakistan have not been adequately addressed. More specifically, there is no substantial empirical research examining how the collective characteristics of the board risk committee, such as its size, independence, and competence, influence the relationship between credit risk and institutional performance. Given the vulnerability of microfinance institutions to external shocks and borrower default, the presence of a well-structured and functioning board risk committee may be critical to maintaining financial stability and sustainability (Maeenuddin et al., 2024; Fersi & Boujelbène, 2023; Bharti & Malik, 2022).

Finally, most prior studies have been conducted in African or Latin American contexts, where institutional and regulatory environments differ significantly from those in South Asia. As a result, the generalizability of global findings to Pakistan's microfinance sector remains limited. Pakistan-specific studies tend to focus on descriptive or case-based approaches (Hussain & Javed, 2020; Qureshi et al., 2012), and there is a clear need for rigorous panel data analysis using institutional-level variables to produce empirically valid and policy-relevant insights (Nawaz et al., 2020; Cull et al., 2007).

This study addresses these critical gaps by offering a comprehensive analysis of how governance structures, financial inclusion practices, and credit risk indicators affect the performance of microfinance institutions in Pakistan. It further examines how the board risk committee moderates the relationship between credit risk particularly portfolio at risk and institutional performance. By using panel data and multiple performance measures, this research provides a more robust and context-specific contribution to the literature on microfinance governance and sustainability.

2.11 Conceptual Framework

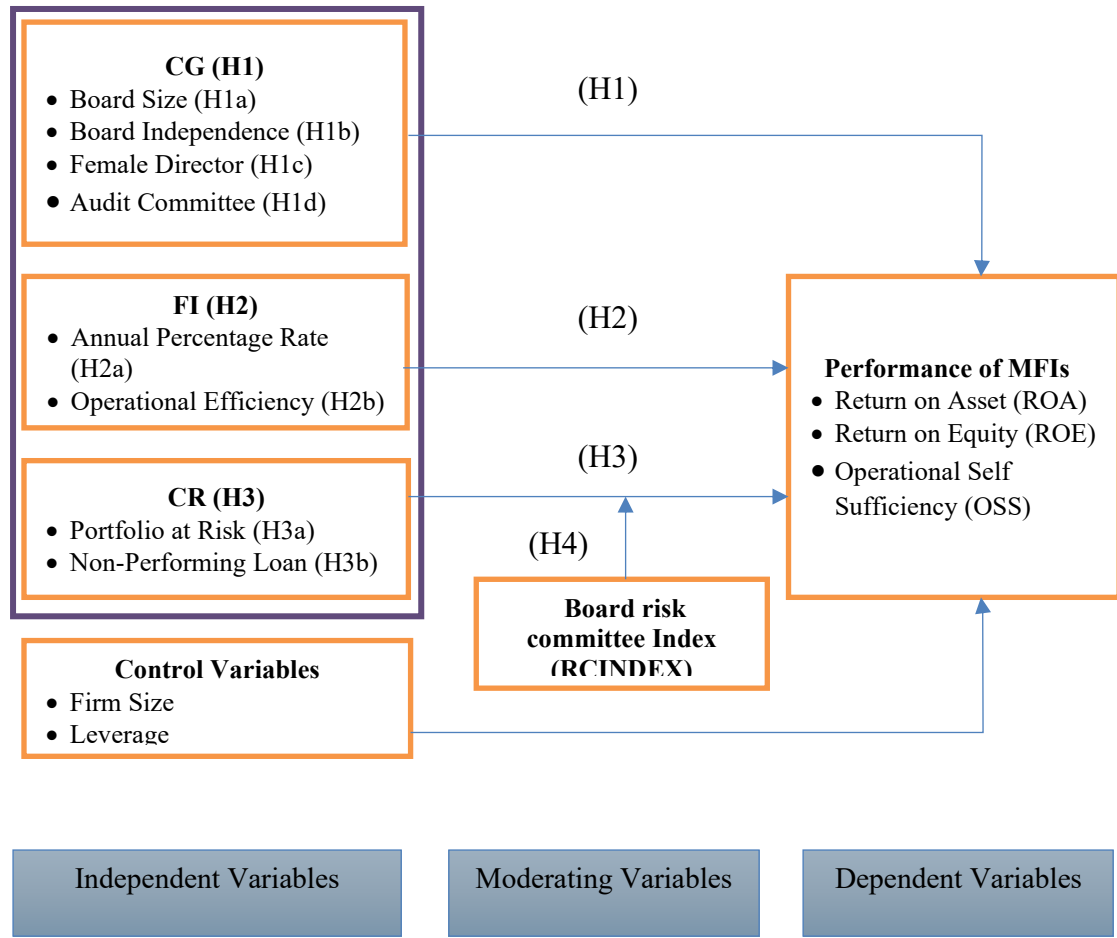


Figure 2.1: Conceptual Framework

Figure 2.1 illustrates the conceptual framework of this study, which adopts a quantitative approach under the positivist paradigm to examine the influence of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in Pakistan. The framework evaluates how these independent variables affect institutional performance, which is measured using return on assets, return on equity, and operational self-sufficiency. Corporate governance in this study is operationalized through four dimensions: board size, board independence, female directorship, and the existence of an audit committee. Financial inclusion is assessed using annual percentage rate and

operational efficiency. Credit risk is measured through two proxies: portfolio at risk and non-performing loans, capturing the quality and risk exposure of the MFI loan portfolios.

This study also introduces the board risk committee index as a moderating variable which is specifically tested on the relationship between portfolio at risk and MFIs performance. The board risk committee index is a composite construct that incorporates three components: the size, independence, and competence of the board risk committee. It reflects the strength and quality of internal risk oversight mechanisms within MFIs. Additionally, two control variables firm size and leverage are included to account for organizational characteristics that could influence performance outcomes. By controlling these factors, the framework aims to isolate the core effects of governance, inclusion, and risk variables on performance. This conceptual framework provides a structured approach to understanding how governance mechanisms, financial inclusion dimensions, and credit risk exposures interact to influence the sustainability and effectiveness of MFIs in Pakistan. The inclusion of the moderating effect of RCINDEX further strengthens the framework by recognizing the governance role of risk committees in managing credit risk and safeguarding institutional performance.

2.12 Development of Hypotheses

This section formulates the hypotheses of the study in the light of theory and previous literature. A total of nine hypotheses has been formulated. The hypotheses will be empirically tested in the subsequent chapter to analyses the moderating effect of a board risk committee on the relationship between portfolio at risk and MFIs performance, Moreover, it also analyses the direct relationship between corporate governance, financial inclusion, and credit risk with performance of MFIs in Pakistan.

2.12.1 Board Size and Performance

It was hypothesized that corporate governance factors such as board size, board independence, female representation, and audit committee effectiveness had a positive impact on the performance of microfinance institutions (MFIs) in Pakistan. This assumption was grounded in agency theory, which suggests that sound governance structures enhance transparency, reduce agency conflicts, and ultimately improve institutional performance. The general hypothesis is as follow:

H1: Corporate Governance factors have a positive impact on the performance of MFIs in Pakistan.

The size of a board of directors has long been a subject of scrutiny in corporate governance literature, particularly concerning its impact on organizational performance. Tadele et al. (2021) examined the effects of board size on default risk and governance efficiency, finding that larger boards enhance financial performance but may reduce outreach due to coordination challenges. Similarly, Saeed et al. (2018) highlighted that larger boards in South Asian MFIs bring diverse perspectives, contributing to improved financial outcomes through effective decision-making and risk management practices.

Mersland and Strøm (2009) conducted a comprehensive panel data analysis, revealing that larger board sizes positively influence both financial performance and outreach to underserved clients. This finding aligns with the results of Shettima and Dzolkarnaini (2018), who identified a strong correlation between board size and enhanced financial performance in the microfinance sector. The study emphasized that larger boards provide broader expertise and governance oversight, fostering robust strategic guidance and operational efficiency.

Ahmed et al. (2015) further supported the notion that board size plays a pivotal role in risk management and financial decision-making, particularly in developing economies like Pakistan. The study demonstrated that larger boards contribute to better financial performance through improved risk assessment and governance practices. Hussain et al. (2020) similarly noted that board size is instrumental in fostering accountability and strategic oversight, thereby enhancing overall institutional performance.

Considering the evidence from these studies, it is reasonable to posit that the size of the board of directors significantly influences the financial performance of MFIs in Pakistan. A larger board is likely to provide diverse insights, expertise, and governance oversight, contributing to more robust strategic decision-making, risk management, and ultimately, improved financial performance.

H1(a): Board size has a positive impact on the performance of MFIs in Pakistan.

2.12.2 Board Independence and Performance

The composition and independence of the board of directors significantly influence the operational efficiency and financial performance of MFIs. Recent studies underscore that a higher proportion of independent directors on the board correlates with improved financial outcomes, enhanced transparency, and a reduction in agency conflicts within organizations (Hossain et al., 2024; Thrikawala et al., 2016). Independent directors bring objective oversight and diverse expertise, which strengthen decision-making processes and governance mechanisms (Hussain et al., 2021; Farooq et al., 2022).

In the microfinance sector, the role of independent directors has been extensively explored, revealing their critical contribution to effective risk management, robust internal

controls, and the mitigation of fraud and mismanagement risks (Tadele et al., 2021; Okoye & Siwale, 2017). Tumwebaze et al. (2020) demonstrated that independent boards lead to improved financial reporting credibility and governance practices, fostering stakeholder trust and financial stability. Similarly, Hossain et al. (2024) emphasized that board independence enhances both the financial and social performance of MFIs by promoting accountability, ethical practices, and informed strategic oversight.

Empirical evidence also highlights the impact of independent directors on enhancing the reliability of financial disclosures and fostering a culture of accountability, which collectively strengthens the institution's financial performance (Sun et al., 2022; Hussain et al., 2021). In developing contexts such as Pakistan, the presence of independent directors plays a pivotal role in aligning institutional objectives with stakeholder expectations and regulatory requirements, thereby bolstering financial sustainability and outreach capabilities (Farooq et al., 2022; Akbar et al., 2019). Considering the empirical evidence, it is proposed that board independence has a positive association with the financial performance of microfinance institutions in Pakistan:

H1(b): Board independence has a positive impact on the performance of MFIs in Pakistan.

2.12.3 Female Director and Performance

Previous research underscores that increased gender diversity on corporate boards, particularly the inclusion of Female directors, enhances governance quality and decision-making processes. Studies consistently link greater female representation on boards to improved financial performance and organizational outcomes (Hossain et al., 2024; Vishwakarma, 2017; Terjesen et al., 2016). Evidence from emerging economies, including

Indonesia, highlights that board diversity positively influences firm valuation and performance, suggesting that diverse perspectives contribute to more balanced and informed decision-making (Seierstad & Opsahl, 2011; Ahern & Dittmar, 2012).

In the context of microfinance, female directors often advocate for inclusive policies and improved stakeholder engagement, aligning institutional practices with the dual mission of financial sustainability and social impact. Bharti & Malik (2022) emphasize that gender diversity enhances board effectiveness in risk management and strategic planning, particularly in institutions serving marginalized communities. Additionally, Hossain et al. (2024) found that greater gender representation on boards fosters accountability, transparency, and ethical governance practices, contributing to improved financial and social outcomes for MFIs. Considering these findings, it is proposed that the inclusion of female directors positively impacts the performance of microfinance institutions in Pakistan:

H1(c): The presence of female directors on the board has a positive impact on the performance of MFIs in Pakistan.

2.12.4 Audit Committee and Performance

The presence and effectiveness of an audit committee are critical components of corporate governance that enhance financial performance, particularly in financial institutions like microfinance institutions. The audit committee's oversight functions, including financial reporting, internal controls, and regulatory compliance, are fundamental to ensuring transparency, accountability, and stakeholder confidence (Hussain et al., 2020; Sultana et al., 2019). This is particularly crucial for MFIs, which operate under dual mandates of financial sustainability and social impact, requiring robust governance mechanisms to balance these objectives.

Research has consistently linked active and independent audit committees to improved financial outcomes. For example, Klein (2002) and Hussain et al. (2021) demonstrated that firms with effective audit committees are less prone to financial misstatements and fraudulent practices, thereby enhancing the reliability and credibility of financial reporting. This is especially relevant for MFIs in developing economies, where evolving regulatory frameworks and heightened financial risks necessitate strong governance practices (Tadele et al., 2021; Ahmed et al., 2015).

The effectiveness of an audit committee often depends on its independence, expertise, and diligence. Independent members with financial expertise strengthen the committee's ability to assess risks, scrutinize financial reports, and recommend best practices, contributing to institutional resilience and sustainability (Abbott et al., 2004; Mohamed & Elgammal, 2023). This alignment with risk management theory and agency theory highlights the committee's role in mitigating agency conflicts and promoting sound financial governance (Jensen & Meckling, 1976).

In the context of Pakistan, MFIs face unique challenges, including financial constraints and socio-economic complexities, making audit committees integral to maintaining institutional stability and investor confidence. Studies by Farooq et al. (2022) and Hossain et al. (2024) emphasize the importance of governance mechanisms like audit committees in ensuring compliance, reducing financial irregularities, and enhancing overall financial performance in emerging markets. This leads to the following hypothesis:

H1(d): The presence of an audit committee member on the board has a positive impact on the performance of MFIs in Pakistan.

2.12.5 Annual Percentage Rate and Performance

It was proposed that financial inclusion factors such as operational efficiency and annual percentage rate (APR) had a positive effect on the performance of microfinance institutions (MFIs) in Pakistan. This expectation was based on stakeholder theory, which posits that institutions that effectively serve the financial needs of marginalized communities enhance both their social outreach and financial sustainability. The general hypothesis is as follow:

H2: Financial inclusion factors have a positive impact on the performance of MFIs in Pakistan.

The interest rates charged by MFIs can significantly impact their performance, with higher interest rates often leading to reduced client outreach and lower financial sustainability. Research by Cull et al., (2009) suggested that excessive interest rates can discourage client participation and limit the effectiveness of MFIs in serving the financially underserved populations. Similarly, a study conducted by Espalier et al., (2016) found that high interest rates can potentially undermine the social mission of MFIs and hinder their overall performance. Additionally, findings by Armendariz and Morduch (2010) emphasize the importance of maintaining reasonable interest rates to promote financial inclusion and enhance the overall performance and sustainability of MFIs. These studies collectively support the hypothesis that higher interest rates can have a detrimental effect on the performance of MFIs.

Interest rates play a crucial role in the financial sustainability and outreach of MFIs, particularly in developing economies. High interest rates have been found to negatively affect the financial inclusion efforts of MFIs, potentially limiting the access to financial

services for vulnerable populations (Cull, Demirgüç-Kunt, & Morduch, 2009; Bharti & Malik, 2022). Moreover, excessive interest rates can lead to reduced client participation, limiting the overall impact of microfinance initiatives (D'Espallier, Goedecke, & Hudon, 2016; Hussain et al., 2020). Armendariz and Morduch (2010) emphasize that sustainable interest rates are essential for promoting financial inclusion and improving the overall performance and sustainability of MFIs, highlighting the critical role of interest rate policies in the success of microfinance operations. The literature thus supports the hypothesis that higher interest rates can impede the performance and outreach of MFIs in developing countries, underscoring the need for a balanced approach to interest rate policies within the microfinance sector.

Furthermore, high interest rates have the potential to increase the default risk among borrowers, which can ultimately lead to a decrease in the financial performance of MFIs. Studies have suggested that an increase in interest rates can create repayment challenges for borrowers, particularly those belonging to low-income segments, thereby impacting the overall loan portfolio quality of MFIs (Cull et al., 2009; Ahmed et al., 2015). Mia et al. (2022) argue that MFIs must consider affordability when setting interest rates, as it directly influences their ability to maintain financial stability and client retention. The literature highlighted the need for interest rate policies that balance the financial sustainability of MFIs with the affordability and accessibility of financial services for the target population. Therefore, it is plausible to suggest that the performance of MFIs in developing countries is negatively influenced by higher interest rates, emphasizing the critical role of interest rate management in ensuring the sustainable development and success of microfinance operations (Hossain et al., 2024; Mohamed & Elgammal, 2023). Considering these findings,

it is proposed that high interest rate negatively impacts the performance of microfinance institutions in Pakistan:

H2(a): Annual percentage rate is negatively associated with the performance of MFIs in Pakistan.

2.12.6 Operational Efficiency and Performance

The operational efficiency of MFIs has been found to be a critical factor in determining their overall performance. Amin et al. (2019) emphasized the pivotal role of operational efficiency in enhancing the financial sustainability and outreach of MFIs. Similarly, findings by Armendariz and Morduch (2010) indicated that efficient operational processes within MFIs are essential for improving their ability to reach underserved populations effectively. Additionally, a study conducted by Cull et al. (2009) highlighted the importance of operational efficiency in reducing transaction costs and improving financial performance of MFIs. Mia et al. (2022) argued that MFIs with higher operational efficiency are better positioned to allocate resources effectively, enabling them to achieve both financial sustainability and social outreach. Bharti and Malik (2022) further emphasized that operational efficiency allows MFIs to enhance cost management and expand their client base without proportionately increasing costs. Moreover, efficient MFIs can maintain service quality while minimizing administrative and operational expenses, leading to stronger profitability and long-term sustainability (Abdullah et al., 2023). In the context of Pakistan, improving operational efficiency can also strengthen institutional capacity and enhance the ability of MFIs to meet the dual goals of outreach and performance. These studies suggest a positive relationship between operational efficiency and the performance of MFIs.

Considering these findings, it is proposed that operational efficiency positively impacts the performance of microfinance institutions in Pakistan:

H2(b): Operational efficiency is positively associated with the performance of MFIs in Pakistan.

2.12.7 Portfolio at Risk and Performance

Credit risk is a key factor affecting the performance of MFIs, as high default rates and poor loan recovery can weaken profitability and sustainability. Study by Cull et al. (2007) found that higher non-performing loans lead to lower returns and efficiency. Recent evidence from Rehman et al. (2023) also shows that inadequate credit risk management in Pakistani MFIs increases portfolio risk and reduces financial stability. Thus, effective credit risk management is vital for ensuring the long-term performance of MFIs. The general hypothesis is as follow:

H3: Credit Risk factors have a negative impact on the performance of MFIs in Pakistan.

The level of portfolio at risk, as highlighted in existing literature, serves as a critical determinant of the financial performance of MFIs. Studies by Mersland and Strom (2009) and Cull et al., (2009) emphasized that higher portfolio at risk ratios signify the potential vulnerability of MFIs to credit risks and the adverse impacts of defaulting borrowers on the overall operational efficiency and financial sustainability of MFIs. Elevated portfolio at risk levels often indicates weaknesses in the credit assessment and monitoring mechanisms of MFIs, leading to increased credit default risks and financial losses (Mersland & Strom, 2009). Recent studies further substantiated this view, with Bharti and Malik (2022)

highlighting that institutions with elevated portfolio at risk ratios face heightened risks of diminished returns and strained liquidity positions. Similarly, Mia et al. (2022) argued that effective management of portfolio at risk is vital for maintaining financial stability and optimizing the credit portfolio's performance. Moreover, Rasel and Win (2020) emphasized that high portfolio at risk ratios adversely affect the reputation of MFIs, thereby reducing stakeholder confidence and limiting future funding opportunities. Consequently, the negative association between portfolio at risk and the financial performance of MFIs underscores the significance of implementing effective credit risk management practices and ensuring robust mechanisms for borrower assessment and monitoring.

H3(a): Portfolio at risk is negatively associated with the performance of MFIs in Pakistan.

2.12.8 Non-Performing Loan and Performance

The literature consistently indicates that high levels of non-performing loans in the loan portfolio of MFIs can significantly undermine their financial performance and sustainability. A study by Hermes and Lensink (2011) found that high non-performing loans ratios can lead to substantial financial losses for MFIs, impairing their ability to provide essential financial services to their target clientele. Furthermore, elevated non-performing loans levels are often linked to inadequate credit assessment and risk management practices, reflecting weaknesses in the internal control systems of MFIs (Khemraj, 2016). Such deficiencies in credit risk management can expose MFIs to heightened credit default risk, impacting their overall profitability and operational stability. Recent research by Zamore and Mersland (2023) emphasizes the significant role that non-performing loans management plays in ensuring cost efficiency and institutional resilience, particularly in competitive and

resource-constrained environments. Similarly, Bharti and Malik (2022) highlighted that higher non-performing loans ratios are directly associated with reduced financial performance, leading to diminished operational capacity and reputation risks. Rasel and Win (2020) also underscored that non-performing loans negatively influence MFIs' ability to sustain their dual mission of financial inclusion and profitability. Thus, the negative relationship between non-performing loans and the financial performance of MFIs underscores the significance of implementing robust credit risk management and prudent lending practices to maintain a healthy loan portfolio and ensure the long-term sustainability of microfinance operations.

The presence of non-performing loans within the loan portfolio of MFIs has been extensively examined in the literature, with studies by Attanasio and Augsburg (2019) and Klapper and Richmond (2011) highlighting the detrimental effects of non-performing loans on the financial health and sustainability of MFIs. Higher non-performing loans ratios are indicative of potential credit losses and defaults, which can significantly erode the profitability and liquidity position of MFIs (Attanasio & Augsburg, 2019). Moreover, elevated non-performing loans levels may impede the ability of MFIs to attract additional investments and funding, thereby hindering their growth and expansion plans (Klapper & Richmond, 2011). Adding to this, Hossain, Mia, and Pellegrina (2024) highlight that MFIs with higher non-performing loans ratios struggle to maintain investor confidence and experience reduced access to capital, thereby exacerbating financial constraints. Ahmed et al. (2022) suggest that effective credit monitoring systems and enhanced borrower engagement strategies are essential to mitigating the risks associated with non-performing loans. Thus, the negative association between non-performing loans and the financial performance of MFIs underscores the critical importance of robust credit risk management

practices and stringent loan recovery strategies to ensure the stability and sustainability of MFIs over the long term.

H3(b): Non-performing loans is negatively associated with the performance of MFIs in Pakistan.

2.12.9 Board Risk Committee

In the governance of microfinance institutions, the board risk committee plays a critical role in overseeing institutional exposure to various financial and operational risks. This function becomes particularly important in the context of credit risk, which remains a persistent challenge for microfinance institutions operating in resource-constrained and high-risk environments such as Pakistan. Credit risk, especially when measured through portfolio at risk, reflects the proportion of the loan portfolio that is potentially vulnerable to default, and poses a direct threat to financial performance. Without adequate risk oversight mechanisms, elevated levels of credit risk can undermine the operational sustainability and financial viability of microfinance institutions.

Grounded in agency theory, the board risk committee is conceptualized as a governance mechanism that aligns managerial actions with the interests of stakeholders, thereby mitigating information asymmetries and curbing excessive risk-taking behaviors. The committee is also supported by risk management theory, which advocates structured and proactive risk governance to maintain organizational resilience. While prior studies have shown that general governance structures influence performance, fewer have empirically examined how formalized risk oversight mechanisms specifically moderate the relationship between credit risk and performance outcomes (Zamore et al., 2021; Hussain et al., 2020).

This study builds this gap by introducing the board risk committee index (RCINDEX) as a composite moderating variable, capturing the collective governance capacity of the board risk committee in terms of its size, independence, and competence. Rather than analyzing these characteristics individually, the index reflects the integrated strength of the committee in enforcing risk governance across strategic and operational decisions. The use of a composite index allows for a more robust assessment of the committee's overall moderating influence.

Empirical research suggests that institutions with well-structured and active risk committees are better able to manage portfolio risk and enhance financial outcomes (Bharti & Malik, 2022; Maenuddin et al., 2024). For example, Zamore et al. (2023) found that risk committees improved lending discipline and reduced non-performing loans, while Tadele et al. (2021) emphasized the committee's role in enforcing compliance and guiding loan recovery policies. By ensuring adherence to credit policies and proactively identifying and responding to emerging credit concerns, the board risk committee enhances an institution's capacity to absorb financial shocks and maintain sustainable performance.

Accordingly, this study proposes that the board risk committee index moderates the relationship between portfolio at risk and the performance of microfinance institutions. Specifically, it is hypothesized that the presence of a strong, competent, and independent risk committee can mitigate the adverse effects of high credit risk levels on performance indicators such as return on assets, return on equity, and operational self-sufficiency.

H4: The board risk committee index positively moderates the relationship between portfolio at risk and the performance of microfinance institutions in Pakistan.

2.13 A Remark

This chapter presented a comprehensive review of the theoretical and empirical foundations relevant to the study. Theoretical underpinnings were established using agency theory as the primary framework, supported by stakeholder theory and risk management theory. Empirical literature was reviewed in relation to microfinance institution performance, credit risk, financial inclusion, and board risk committee governance. A particular focus was given to studies within the context of developing countries, especially Pakistan. The chapter also identified a clear gap in the literature concerning the moderating role of the board risk committee in the relationship between credit risk and microfinance performance. Building upon this gap, a conceptual framework was proposed, followed by the development of testable hypotheses to guide the empirical investigation. The framework integrates key governance, financial, and risk-related variables, tailored to the operational context of microfinance institutions in Pakistan. The next chapter will outline the methodology adopted to test the hypotheses, including the research design, model specification, data collection techniques, and the econometric methods used for analysis.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the methodology of this study. It begins by outlining the research design and philosophical approach that support the quantitative analysis aimed at addressing the research questions and objectives. The section further presents the data collection methods and sampling techniques employed to gather data from 19 MFIs in Pakistan, selected based on their regulatory compliance with the Securities and Exchange Commission of Pakistan (SECP) and membership in the Pakistan Microfinance Network (PMN). Measurements of firm performance, including return on assets, return on equity, and operational self-sufficiency, are detailed to illustrate how each dependent variable is quantified. Similarly, the chapter explains how the independent variables such as corporate governance, financial inclusion, and credit risk and control variables firm size and leverage are measured. It also describes how the moderating variable, the board risk committee index, is constructed as a composite of size, independence, and competence. Next, the chapter presents the model specification, which defines the econometric models developed to examine the direct and moderating effects of the study variables on MFIs' performance. This is followed by the model estimation section, which outlines the panel data techniques applied to test these models, including the justification for using the fixed effects model based on various diagnostic and selection tests. Finally, the statistical procedures employed are explained to demonstrate the rigor and reliability of the analysis. These include descriptive statistics, correlation analysis, diagnostic tests, and panel data regression methodology. This

comprehensive methodological approach provides a robust foundation for the empirical results discussed in the following chapter.

3.2 Research Design and Philosophy

This study adopts a quantitative research design within the positivist paradigm. Quantitative research is appropriate for examining causal relationships between independent and dependent variables, testing established theories, and identifying empirical regularities through statistical analysis. According to Burns and Grove (2005), quantitative research is a formal and systematic process that employs numerical data to generate objective findings. Similarly, Lowhorn (2007) highlights that quantitative designs are particularly useful when the goal is to measure the effect of independent variables on dependent outcomes. Furthermore, Sayer (1992) argued that quantitative research reduces observer-induced bias, while Creswell (2009) emphasized its strength in identifying the best predictors of outcomes.

The philosophical foundation of this study is positivism. Positivism assumes that reality is objective and can be observed, measured, and explained through empirical evidence and logical reasoning. This aligns closely with the objectives of the present study, which seeks to quantify the impact of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in Pakistan. By adopting a positivist approach, this study focuses on hypothesis testing, identifying causal relationships, and applying econometric models to validate theoretical assumptions with empirical data.

The choice of positivism over alternative paradigms (such as interpretivism or pragmatism) is guided by the nature of the research problem. Since the aim is not to explore subjective meanings or multiple realities but to generate generalizable and statistically verifiable findings, positivism provides the most suitable foundation. This philosophy

emphasizes structured observation, measurement, and statistical inference, thereby ensuring that the conclusions drawn are reliable, replicable, and applicable to both theory and practice.

Given the study's emphasis on measuring and testing causal relationships, the positivist philosophy also supports the use of panel data econometric techniques. Panel data provides both cross-sectional and time-series dimensions, allowing for greater control of unobserved heterogeneity and more precise estimation of causal effects. This approach ensures that the analysis captures not only institutional variations across microfinance institutions but also changes over time. Consequently, the combination of a quantitative design, positivist philosophy, and panel data analysis provides a rigorous methodological foundation for examining how corporate governance, financial inclusion, and credit risk influence the performance of MFIs in Pakistan.

3.3 Data and Sampling

The target population of this study comprises microfinance institutions operating in Pakistan during the period 2012–2021. Out of a total of 34 microfinance providers, a purposive sample of 19 MFIs was selected. These institutions are regulated either by the Securities and Exchange Commission of Pakistan (SECP) or the State Bank of Pakistan (SBP) and are also members of the Pakistan Microfinance Network (PMN Annual Report, 2023). MFIs operating as rural support programs and non-governmental organizations (NGOs) were excluded, as their scope of operations is geographically limited and their regulatory oversight differs from that of profit-oriented microfinance providers.

The starting year, 2012, was chosen due to the implementation of significant regulatory reforms introduced by SECP to strengthen governance structures across financial institutions. These reforms emphasized financial reporting standards, transparency, and

accountability in the microfinance sector. The end year, 2021, was selected because it was the most recent year for which complete financial and operational data were available. The PMN Annual Report (2023) highlighted that the release of data for 2022–2024 was delayed due to operational disruptions caused by the severe floods of 2022, which hampered data collection and reporting processes across the industry. The study covers 19 MFIs over 10 years, resulting in a balanced panel of 190 firm-year observations ($19 \times 10 = 190$). The institutions were selected based on the availability of consistent financial, operational, and governance data through annual reports and the PMN database. This sampling ensures that the study captures a representative picture of the regulated MFIs in Pakistan.

The chosen timeframe is significant for three reasons. First, it includes both the pre- and post-regulatory reform period following the introduction of the microfinance regulatory framework in 2015. Second, it covers a transitional period in the sector, reflecting the evolution of governance and risk management practices. Third, it incorporates the Covid-19 crisis years, thereby providing insights into how MFIs navigated performance challenges under crisis conditions. This makes the dataset robust for evaluating the impacts of corporate governance, financial inclusion, and credit risk on MFI performance in Pakistan. The following is the list of MFIs included in this study.

The selected MFIs represent a diverse mix of institutional types, including microfinance banks (MFBs), non-bank microfinance companies (NBMFCs), and microfinance institutions (MFIs) that vary in size, ownership structure, and outreach focus. This diversity enhances the generalizability of the findings across the regulated microfinance sector. Furthermore, the use of a balanced panel ensures consistency in observations across

time and institutions, allowing for more reliable estimation of firm-specific effects and temporal trends in performance.

Table 3.1: List of Microfinance Institutions

No.	Name of MFIs
1	AGAHE
2	Akhuwat
3	Apna Microfinance Bank (AMFB)
4	ASA Pakistan
5	Community Support Concern (CSC)
6	Damen Support Programme
7	FFO Support Programme
8	FINCA Microfinance Bank
9	First MicroFinance Bank (FMFB)
10	Kashf Foundation
11	Khushhali Bank Limited (KBL)
12	Mobilink Microfinance Bank (MMFB)
13	Mojaz Foundation
14	NRSP Microfinance Bank
15	Orix Leasing Pakistan Limited
16	Pak Oman Microfinance Bank (POMFB)
17	Telenor Microfinance Bank (TMFB)
18	Thardeep Microfinance Foundation
19	U Microfinance Bank
Source: Pakistan Microfinance Network (Annual Report 2024)	

3.4 Description of Variables

3.4.1 Measurement of Firm Performance

Firm performance depends on several financial and non-financial factors. The use of several indicators allows a better evaluation of the firm's financial performance rather than using a single factor (Siddiqui, 2015). Most of the previous studies use different accounting-based and market-based factors for measuring firm performance. In this study, three measures are selected as a proxy for measuring MFIs performance, which are return on assets, return on equity as well as operational self-sufficiency.

3.4.1.1 Return on Asset

ROA is the ratio of net profits to total assets (Salim & Yadav, 2012). Based on Maury (2006), it is classified as (net income before preferred dividends + (interest expense on debt-interest capitalized) x (1-tax rate) divided by last year's total assets times 100, but Silva and Majluf (2008) formulated ROA as net income divided by total assets. Concerning the meanings of previous studies, ROA is summarized as follows:

$$\text{ROA} = \text{Net Income} / \text{Total Assets} \quad \text{Equation 3.1}$$

3.4.1.2 Return on Equity

ROE is the accounting rate of return available to equity holders and excludes debt in the denominator. It is calculated as Net income (NI)/ stockholders' equity (White et al. 1998). Although ROE is based on accounting profits, it is easy to calculate, and it is used in practice to calculate the return for equity holders. ROE will be used in this study as a proxy for investment returns. ROE reflects how effectively microfinance institutions in Pakistan utilize their equity capital to generate profits for shareholders. It serves as an important measure of financial performance, particularly for assessing the efficiency of governance and risk management practices. A higher ROE among MFIs indicates better financial sustainability and the ability to balance social and financial objectives.

$$\text{ROE} = \text{Net Income} / \text{Stockholder Equity} \quad \text{Equation 3.2}$$

3.4.1.3 Operational Self Sufficiency

To measure operational self-sufficiency in MFIs, several approaches and indicators can be used. One commonly used indicator is the operational self-sufficiency ratio, which compares an MFI's revenue from operations to its expenses. If the OSS ratio is greater than 100%, it indicates that the MFI has sustainable self-operational sufficiency, while a ratio

equal to 100% means that the MFI breaks even, and a ratio less than 100% suggests that the MFI is unable to cover its operational costs or grant loans to its customers (Rutanga et al., 2021).

$$\text{OSS} = \text{Revenue from Operations} / \text{Total Expenses} \quad \text{Equation 3.3}$$

3.4.2 Measurement of Corporate Governance

Corporate governance mechanisms used for enhancing listed companies' firm performance have been widely documented in both developed and developing countries (Yang & Zhao, 2012; Adams, 2016; Hussain et al. 2019). In line with prior research, this study uses four variables that proxy for corporate governance in Pakistan's listed companies. These are briefly discussed below.

3.4.2.1 Board Size

The variable board size is measured as the total number of directors on the board, as officially stated in its annual report (Abbott et al. 2004; Peasnell et al. 2005; Paz et al. 2015). Large boards are generally more effective in monitoring management behaviour and have more significant potential for making sound strategic decisions (Persons, 2006; Paz et al. 2015).

$$\text{Board Size} = \text{Total number of Directors on Board} \quad \text{Equation 3.4}$$

3.4.2.2 Board Independence

Board independence is defined as the ratio of the total number of independent non-executive directors to the board's total directors (Peasnell et al. 2005; Alves, 2014; Khalil and Ozkan, 2016). There are two types of non-executive directors, i.e., independent non-executive directors or affiliated non-executive directors. Independent non-executive directors are believed to be more independent, unbiased, and neutral in their decision-making

than affiliated non-executive directors as the former have no relationship with other senior management members of the company (Lawrence and Stapledon, 1999; Alves, 2014).

$$\text{Board Independence} = \frac{\text{No. of Independent Non – Executive Directors}}{\text{Total Directors on Board}} \quad \text{Equation 3.5}$$

3.4.2.3 Female Director

The female director is defined as the ratio of the total number of female directors to the total number of directors on the board. The female directors' quota on the board was first implemented in Norway in Dec 2003 (Adams, 2016); believers of gender equality quota highlight that the firms that have female directors on board are performed better than the counterparts (Kirsch, 2018). The quota for the female director on board is still a debating issue among opponents and proponents. The proponents refer to the fact that Female are more risk-averse and claim that more gender-diverse corporate teams will help bring the global economy back on track (Yasser, 2012; Velte, 2017).

$$\text{Female Directors} = \frac{\text{Number of Female Directors}}{\text{Total Directors on Board}} \quad \text{Equation 3.6}$$

3.4.2.4 Audit Committee

The Audit Committee is measured as the Audit Committee's total members to the total number of directors (Forker, 1992). The role of the Audit Committee is subject to various responsibilities in CG. Competent and proficient Audit Committees are positively correlated to CG. The Audit Committee is responsible for financial reporting on behalf of the board of directors. Audit Committee independence is essential for effective monitoring. According to Klein (2002), accruals and Audit Committees are hostile to each other. Furthermore, her finding implies that two or more losses consecutively decrease the growth

opportunities for the Audit Committee's firms and independence. It helps the rating assessment of the firm,

$$\text{Audit Committee} = \frac{\text{Audit Committee Member on Board}}{\text{Total directors on Board}} \quad \text{Equation 3.7}$$

3.4.3 Measurement of Financial Inclusion

These measurements provide critical insights into the credit risk exposure and the level of financial inclusion achieved by the microfinance institution, offering a comprehensive understanding of its operational dynamics and financial health within the context of this study.

3.4.3.1 Annual Percentage Rate (APR):

The Annual Percentage Rate is a standardized measure that represents the annual cost of borrowing, including interest rates and any additional fees associated with a loan. APR is used as a proxy for financial inclusion, reflecting the affordability and accessibility of financial services provided by MFIs in Pakistan. A lower APR indicates that MFIs are offering loans at more reasonable costs, thereby promoting financial inclusion among low-income borrowers. Conversely, a higher APR may suggest limited affordability, potentially restricting outreach to underserved populations.

$$\text{APR} = \frac{(\text{Total Interest} + \text{Additional Fees at Risk})}{(\text{Total Loan Amount}) \times 100} \quad \text{Equation 3.8}$$

3.4.3.2 Operational Efficiency

Operational Efficiency assesses the effectiveness of the microfinance institution's operations in delivering financial services to clients while minimizing costs and resource utilization. operational efficiency serves as a key indicator of how well MFIs utilize their resources to achieve both financial sustainability and social outreach. Higher operational

efficiency implies that institutions are able to control administrative and operating costs while maintaining service quality and client outreach. Conversely, lower efficiency may indicate inefficiencies in cost management, which can negatively affect the overall performance of MFIs in Pakistan.

$$\text{Operational Efficiency} = \frac{\text{Operating Expense}}{\text{Average Gross Loan Portfolio}} \quad \text{Equation 3.9}$$

3.4.4 Measurement of Credit Risk

In this study, credit risk represents the likelihood that borrowers may fail to meet their repayment obligations, leading to potential financial losses for MFIs. Measuring credit risk through portfolio at risk (PAR) and non-performing loans (NPL) provides insight into the asset quality and lending effectiveness of microfinance institutions. These indicators are particularly important in the Pakistani context, where loan delinquency and repayment capacity significantly influence the financial performance and sustainability of MFIs.

3.4.4.1 Portfolio at Risk (PAR)

The Portfolio at Risk assesses the proportion of the loan portfolio at risk of default within a specific time frame. PAR serves as a key indicator of credit quality and reflects the effectiveness of an MFI's credit appraisal and monitoring systems. A lower PAR indicates stronger risk management practices, whereas a higher PAR suggests greater exposure to loan defaults, which adversely affect the performance. A consistently low PAR ratio reflects effective credit risk management and strong client repayment discipline within MFIs.

$$\text{PAR} = \frac{\text{Total Loan Amount at Risk}}{\text{Total Gross Loan}} \times 100 \quad \text{Equation 3.10}$$

3.4.4.2 Non-Performing Loans Ratio (NPL Ratio)

The Non-Performing Loans Ratio measures the percentage of loans within a bank's portfolio that are at risk of default or have already defaulted. A lower NPL ratio indicates better asset quality and stronger credit assessment practices, reflecting the institution's ability to maintain financial stability and minimize default risk. Conversely, a higher NPL ratio suggests weaknesses in credit evaluation and recovery processes, which can adversely affect the profitability and sustainability of MFIs.

$$\text{NPL Ratio} = \frac{\text{Total Non_Performing Loans}}{\text{Total Gross Loans}} \times 100 \quad \text{Equation 3.11}$$

3.4.5 Measurement of Control Variables

Prior research has shown that many variables representing firm characteristics are associated with firm performance (Shaheen and Yasmeen 2012; Raqeeb et al. 2013; Rafay et al. 2018; Hussain et al. 2019). Therefore, this study includes firm size and leverage as control variables in the econometric models in addition to the independent variables. The inclusion of these control variables will help measure the impact of corporate governance on firm performance while isolating the effect of firm characteristics. A brief discussion of the control variables and their measurement is discussed below.

3.4.5.1 Firm Size

Firm size is measured as the natural logarithm of total assets, representing the overall scale and financial capacity of a microfinance institution. Larger MFIs are generally expected to exhibit better financial performance due to economies of scale, diversified loan portfolios, and stronger governance frameworks that enhance efficiency and risk management (Hermes, Lensink, & Meesters, 2011; Cull, Demirgüç-Kunt, & Morduch, 2018). However, some studies have also suggested that as MFIs grow, they may face

increased operational complexities, bureaucratic inefficiencies, and higher administrative costs, which could adversely affect their performance (Louis, Seret, & Baesens, 2013; Bogan, 2012). Moreover, in the Pakistani microfinance context, larger MFIs are often better positioned to leverage technological innovations and digital financial services, enabling them to expand outreach and improve both operational efficiency and client satisfaction (Bharti & Malik, 2022; PMN, 2023).

$$\text{Firm Size} = \text{Natural logarithm of total assets} \quad \text{Equation 3.12}$$

3.4.5.2 Leverage

leverage is defined as the ratio of total liabilities to total assets, representing the extent to which microfinance institutions rely on debt financing to support their operations. Leverage plays an important role in determining the financial structure and sustainability of MFIs, as moderate debt levels can enhance profitability by allowing institutions to expand their lending portfolios and achieve economies of scale (Rajan & Zingales, 1995; Bhagat & Bolton, 2008). However, excessive leverage may increase the likelihood of default and financial distress, particularly in a volatile economic environment like Pakistan's microfinance sector, where repayment risks and funding constraints are prevalent (Myers, 1977; Bogan, 2012). Prior studies have shown that higher leverage can either improve performance through better resource utilization or weaken it by exposing institutions to greater credit and bankruptcy risks (Richardson, Sloan, Soliman, & Tuna, 2002; Wang & Shailer, 2015).

$$\text{Leverage} = \text{Total Liabilities} / \text{Total Assets} \quad \text{Equation 3.13}$$

3.4.6 Measurement of Moderating Variable

In this study, the moderating variable is the board risk committee index (RCINDEX), a composite measure capturing the size, independence, and competence of the board risk committee. It reflects the committee's overall effectiveness in overseeing risk management and moderating the impact of credit risk on MFI performance in Pakistan. This index provides a comprehensive assessment of how board-level oversight can enhance governance quality and support sustainable financial performance in microfinance institutions.

Each of the three dimensions contributes equally to the composite index. Size considers the total number of members in the board risk committee, reflecting the committee's capacity to engage in diverse and effective oversight. Independence is measured by the proportion of independent directors within the board risk committee, indicating the extent to which the committee can function without managerial influence and offer unbiased supervision. Competence reflects whether committee members possess relevant qualifications, such as expertise in finance, auditing, or risk management, which is essential for informed decision-making and effective risk oversight. A score is assigned to each component (1 = meets the defined criteria; 0 = does not meet), and the RCINDEX is calculated as the sum of these scores. Thus, the index ranges from 0 to 3, with higher scores indicating stronger board risk committee characteristics. This composite approach aligns with the literature on governance effectiveness (Zamore et al., 2021; Tadele et al., 2021), allowing for a more robust assessment of how variations in BRC structure and capacity moderate the influence of credit risk on institutional performance.

$$\text{RCINDEX} = \text{BRC Size Score} + \text{BRC Independence Score} + \text{BRC Competence Score}$$

Table 3.2: Sources of Variables

Variable Name	Type	Measurement / Proxy	Source of Measurement
Return on Assets (ROA)	Dependent	Net income / Total assets	Al-Matari et al. (2012)
Return on Equity (ROE)	Dependent	Net income / Shareholders' equity	Apochi & Mahmood (2022)
Operational Self-Sufficiency (OSS)	Dependent	Operating revenue / (Financial + Operating expenses)	Tadele (2020)
Board Size (BSIZE)	Independent (CG)	Total number of board members	Al-Matari et al. (2012)
Board Independence (BIND)	Independent (CG)	% of independent directors on the board	Hussain et al. (2020)
Audit Committee (AC)	Independent (CG)	Dummy variable: 1 = presence of audit committee, 0 = otherwise	Sultana et al. (2019)
Female Director (FDIR)	Independent (CG)	Dummy variable: 1 = presence of female director, 0 = otherwise	Apochi & Mahmood (2022)
Annual Percentage Rate (APR)	Independent (FI)	Weighted average interest rate charged on loans	Tadele (2020)
Operational Efficiency (OPREFF)	Independent (FI)	Operating expenses / Gross loan portfolio	Al-Matari et al. (2012)
Portfolio at Risk (PAR)	Independent (CR)	Outstanding portfolio >30 days / Total portfolio	Apochi & Mahmood (2022)
Non-Performing Loans (NPL)	Independent (CR)	NPL / Total loans	Sultana et al. (2019)
Board risk Committee Index (RCINDEX)	Moderating	Composite Index (Size, Independence, Competence)	Developed for this study; dimensions from Hussain et al. (2020)
Firm Size (FSIZE)	Control	Natural log of total assets	Al-Matari et al. (2012)
Leverage (LEV)	Control	Total debt / Total equity	Tadele (2020)

3.5 Model Specification

This study investigates the impact of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in Pakistan, while also exploring the moderating role of the board risk committee index on the relationship between credit risk and institutional performance. The research adopts a static panel data approach using data from 19 microfinance institutions over a 10-year period (2012–2021), resulting in a balanced

panel of 190 observations. The performance of microfinance institutions is measured using three dependent variables: return on assets, return on equity, and operational self-sufficiency. To assess the main and moderating effects, a total of 12 regression models is specified. The baseline model of this study is as follows:

MFIs Performance = f (Board Size, Board Independence, Female Directors, Audit Committee, Firm Size, Leverage)

The econometric model specifications are as follow:

$$ROA_{it} = \alpha_1 + \alpha_2 BSIZE_{it} + \alpha_3 BIND_{it} + \alpha_4 FDIR_{it} + \alpha_5 AC_{it} + \alpha_6 FSIZE_{it} + \alpha_7 LEV_{it} + \varepsilon_{it} \text{ (Model 1)} \quad \text{Equation 3.14}$$

$$ROE_{it} = \alpha_1 + \alpha_2 BSIZE_{it} + \alpha_3 BIND_{it} + \alpha_4 FDIR_{it} + \alpha_5 AC_{it} + \alpha_6 FSIZE_{it} + \alpha_7 LEV_{it} + \varepsilon_{it} \text{ (Model 2)} \quad \text{Equation 3.15}$$

$$OSS_{it} = \alpha_1 + \alpha_2 BSIZE_{it} + \alpha_3 BIND_{it} + \alpha_4 FDIR_{it} + \alpha_5 AC_{it} + \alpha_6 FSIZE_{it} + \alpha_7 LEV_{it} + \varepsilon_{it} \text{ (Model 3)} \quad \text{Equation 3.16}$$

Secondly FI variables are included in the base line model:

MFIs Performance = f (Board Size, Board Independence, Female Directors, Audit Committee, Annual Percentage Rate, Operational Efficiency, Firm Size, Leverage)

The econometric model specification is as follow:

$$ROA_{it} = \beta_1 + \beta_2 BSIZE_{it} + \beta_3 BIND_{it} + \beta_4 FDIR_{it} + \beta_5 AC_{it} + \beta_6 APR_{it} + \beta_7 OPREFF_{it} + \beta_8 FSIZE_{it} + \beta_9 LEV_{it} + \varepsilon_{it} \text{ (Model 4)} \quad \text{Equation 3.17}$$

$$\text{ROE}_{it} = \beta_1 + \beta_2 \text{BSIZE}_{it} + \beta_3 \text{BIND}_{it} + \beta_4 \text{FDIR}_{it} + \beta_5 \text{AC}_{it} + \beta_6 \text{APR}_{it} + \beta_7 \text{OPREFF}_{it} + \beta_8 \text{FSIZE}_{it} + \beta_9 \text{LEV}_{it} + \varepsilon_{it} \text{ (Model 5)}$$

Equation 3.18

$$\text{OSS}_{it} = \beta_1 + \beta_2 \text{BSIZE}_{it} + \beta_3 \text{BIND}_{it} + \beta_4 \text{FDIR}_{it} + \beta_5 \text{AC}_{it} + \beta_6 \text{APR}_{it} + \beta_7 \text{OPREFF}_{it} + \beta_8 \text{FSIZE}_{it} + \beta_9 \text{LEV}_{it} + \varepsilon_{it} \text{ (Model 6)}$$

Equation 3.19

Finally, CR variables (i.e., Portfolio at Risk and Non-Performing Loan) are included to the baseline model:

MFIs Performance = f (Board Size, Board Independence, Female Directors, Audit Committee, Annual Percentage Rate, Operational Efficiency, Portfolio at Risk, Non-Performing Loan, Firm Size, Leverage)

The econometric model specification is as follow:

$$\text{ROA}_{it} = \lambda_1 + \lambda_2 \text{BSIZE}_{it} + \lambda_3 \text{BIND}_{it} + \lambda_4 \text{FDIR}_{it} + \lambda_5 \text{AC}_{it} + \lambda_6 \text{APR}_{it} + \lambda_7 \text{OPREFF}_{it} + \lambda_8 \text{PAR}_{it} + \lambda_9 \text{NPL}_{it} + \lambda_{10} \text{FSIZE}_{it} + \lambda_{11} \text{LEV}_{it} + \varepsilon_{it} \text{ (Model 7)}$$

Equation 3.20

$$\text{ROE}_{it} = \lambda_1 + \lambda_2 \text{BSIZE}_{it} + \lambda_3 \text{BIND}_{it} + \lambda_4 \text{FDIR}_{it} + \lambda_5 \text{AC}_{it} + \lambda_6 \text{APR}_{it} + \lambda_7 \text{OPREFF}_{it} + \lambda_8 \text{PAR}_{it} + \lambda_9 \text{NPL}_{it} + \lambda_{10} \text{FSIZE}_{it} + \lambda_{11} \text{LEV}_{it} + \varepsilon_{it} \text{ (Model 8)}$$

Equation 3.21

$$\text{OSS}_{it} = \lambda_1 + \lambda_2 \text{BSIZE}_{it} + \lambda_3 \text{BIND}_{it} + \lambda_4 \text{FDIR}_{it} + \lambda_5 \text{AC}_{it} + \lambda_6 \text{APR}_{it} + \lambda_7 \text{OPREFF}_{it} + \lambda_8 \text{PAR}_{it} + \lambda_9 \text{NPL}_{it} + \lambda_{10} \text{FSIZE}_{it} + \lambda_{11} \text{LEV}_{it} + \varepsilon_{it} \text{ (Model 9)}$$

Equation 3.22

Lastly, the moderating effect of Board risk committee characteristics i.e., BRCINDEX on the relationship PAR and Performance of MFIs was examined through the following econometric model:

$$ROA_{it} = \theta_1 + \theta_2 BSIZE_{it} + \theta_3 BIND_{it} + \theta_4 FDIR_{it} + \theta_5 AC_{it} + \theta_6 APR_{it} + \text{Equation 3.23}$$

$$\theta_7 OPREFF_{it} + \theta_8 PAR_{it} + \theta_9 NPL_{it} + \theta_{10} BRCINDEX_{it} + \theta_{11}(PAR_{it} * BRCINDEX_{it}) + \theta_{12} FSIZE_{it} + \theta_{13} LEV_{it} + \varepsilon_{it} \text{ (Model 10)}$$

$$ROE_{it} = \theta_1 + \theta_2 BSIZE_{it} + \theta_3 BIND_{it} + \theta_4 FDIR_{it} + \theta_5 AC_{it} + \theta_6 APR_{it} + \text{Equation 3.24}$$

$$\theta_7 OPREFF_{it} + \theta_8 PAR_{it} + \theta_9 NPL_{it} + \theta_{10} BRCINDEX_{it} + \theta_{11}(PAR_{it} * BRCINDEX_{it}) + \theta_{12} FSIZE_{it} + \theta_{13} LEV_{it} + \varepsilon_{it} \text{ (Model 11)}$$

$$OSS_{it} = \theta_1 + \theta_2 BSIZE_{it} + \theta_3 BIND_{it} + \theta_4 FDIR_{it} + \theta_5 AC_{it} + \theta_6 APR_{it} + \text{Equation 3.25}$$

$$\theta_7 OPREFF_{it} + \theta_8 PAR_{it} + \theta_9 NPL_{it} + \theta_{10} BRCINDEX_{it} + \theta_{11}(PAR_{it} * BRCINDEX_{it}) + \theta_{12} FSIZE_{it} + \theta_{13} LEV_{it} + \varepsilon_{it} \text{ (Model 12)}$$

Where ROA represents Return on Assets, ROE represents Return on Equity, OSS represents Operational Self Sufficiency, BSIZE represents Board Size, BIND represents Board Independence, FDIR represents Female Directors, AC represents Audit Committee, APR represents Annual Percentage Rate, OPREFF represents Operational Efficiency, PAR represents Portfolio at Risk, NPL represents Non-Performing Loan, RCINDEX represents Board risk committee Index, FSIZE represents Firm Size, LEV represents Leverage, ε_{it} represents Stochastic disturbance term, $\alpha_1, \beta_1, \lambda_1, \theta_1$ represents constant term of the models, $\alpha_2 \dots \alpha_7, \beta_2 \dots \beta_9, \lambda_2 \dots \lambda_{11}, \theta_2 \dots \theta_{13}$ represents coefficient of the independent variables and moderating variable, i represents number of MFIs and t represents time in years. Moreover Model 1 to Model 12 are represented by Equation 3.14 to Equation 3.25 respectively.

3.6 Model Estimation

This study employed STATA version 15 to perform the statistical analysis required to evaluate the impact of corporate governance, financial inclusion, and credit risk on the

performance of microfinance institutions in Pakistan. The analysis involved several sequential steps, including descriptive statistics, correlation analysis, diagnostic testing, and panel data regression using the fixed effects estimator. Each procedure was selected to ensure methodological robustness and to align with econometric best practices for panel data analysis.

Descriptive statistics were calculated to summarize the properties of the dataset and to offer a general understanding of the behavior of the variables across the sample of 19 microfinance institutions from 2012 to 2021. Measures of central tendency such as mean, and dispersion measures including standard deviation, minimum, and maximum values, were computed for each variable. These included return on assets, return on equity, operational self-sufficiency, board size, board independence, presence of female directors, audit committee, annual percentage rate, operational efficiency, portfolio at risk, non-performing loans, firm size, and leverage. These descriptive statistics helped to identify variability in the dataset, detect any unusual values, and assess the distribution of each variable prior to further econometric analysis (Hair et al., 2010).

Following this, correlation analysis was conducted to evaluate the linear relationships between variables and to check for potential multicollinearity issues. Pearson correlation coefficients were estimated to determine the strength and direction of the associations between independent variables, the moderating variable, control variables, and the dependent variables. A strong correlation between explanatory variables typically above 0.80 may indicate multicollinearity, which can distort regression coefficients and reduce the precision of estimation (Hair et al., 2010; Gujarati & Porter, 2009). This preliminary analysis

ensured that the variables retained in the final model would not violate fundamental regression assumptions.

To further validate the suitability of the dataset for regression analysis, several diagnostic tests were employed. Heteroscedasticity was examined using the Breusch-Pagan and White tests, while the Wooldridge test was used to detect serial correlation in the panel data. Multicollinearity was assessed using both Variance Inflation Factor (VIF) statistics and Spearman rank correlations. A VIF value greater than 10 is generally considered problematic (Greene, 2008; Gujarati & Porter, 2009). The normality of residuals was examined through visual inspection of probability plots and histograms. The results of these diagnostic tests guided the selection of the most appropriate estimation method, ensuring that the regression results would be both reliable and interpretable.

For the core regression analysis, the study utilized panel data estimation techniques. Given the panel structure of the data comprising both time-series and cross-sectional dimensions, a model selection process was conducted to determine the most suitable estimator. The F-test was first used to test for fixed effects, while the Breusch-Pagan Lagrange Multiplier (LM) test was used to assess the necessity of random effects. The Hausman specification test was then applied to compare the fixed effects and random effects models, testing for the presence of correlation between individual-specific effects and the explanatory variables. Based on the test results, the fixed effects model was selected as the most appropriate estimator for this study. This model accounts for time-invariant heterogeneity across MFIs and provides consistent estimates even when unobserved characteristics are correlated with the regressors (Baltagi, 2005; Hsiao, 2003; Wooldridge, 2010).

Twelve regression models were estimated to assess the direct and moderating effects of the study variables. Three models tested the direct effects of corporate governance, financial inclusion, and credit risk on each of the three performance indicators. Three additional models tested the moderating effect of the board risk committee index (RCINDEX) on the relationship between portfolio at risk and the same performance indicators. All models controlled for firm size and leverage. Robust standard errors were used throughout the analysis to account for any remaining heteroscedasticity or serial correlation. This multi-step, carefully specified estimation process ensures that the empirical findings reported in Chapter 4 are both methodologically sound and statistically valid.

3.7 Model Selection Procedure

In this study, several diagnostic tests were conducted to determine the most appropriate estimation technique for the panel data. The F-test (Chow test) was first applied to compare the pooled ordinary least squares (OLS) and fixed effects models. The null hypothesis stated that the pooled OLS model was appropriate. The results of the F-test led to the rejection of the null hypothesis, indicating the presence of significant individual effects across the microfinance institutions (MFIs). Therefore, the fixed effects model was selected instead of the pooled OLS model.

Subsequently, the Breusch–Pagan Lagrange Multiplier (LM) test was used to compare the pooled OLS and random effects models. The null hypothesis assumed that the variance across entities was zero, implying that the pooled OLS model was valid. The rejection of this hypothesis confirmed the existence of random effects, suggesting that both fixed and random effects models were more suitable than the pooled OLS model.

Finally, the Hausman test was applied to decide between the fixed and random effects models. The null hypothesis assumed that the random effects model was consistent and that there was no correlation between the individual-specific effects and the explanatory variables. The Hausman test results led to the rejection of the null hypothesis, confirming that the fixed effects model was the most appropriate estimator for this study. This approach ensured that unobserved heterogeneity across MFIs was properly controlled, providing reliable and consistent parameter estimates for the analysis. The detailed results and interpretations of these diagnostic tests are presented in Chapter 4.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the empirical results and analysis of the study, focusing on the relationships among corporate governance, financial inclusion, credit risk, and the performance of microfinance institutions in Pakistan. It systematically progresses from descriptive statistics to regression analysis, ensuring clarity and rigor in interpreting the findings. Section 4.2 reports the descriptive statistics of all study variables, including measures of central tendency, dispersion, and distribution. This establishes a baseline understanding of the dataset and highlights key features relevant to subsequent analysis. Section 4.3 provides the pairwise correlation matrix, which explores the strength and direction of associations among the variables and helps to detect any potential multicollinearity issues. Section 4.4 presents the diagnostic tests conducted to validate the econometric assumptions of the models. These include tests for normality, heteroskedasticity, autocorrelation, and multicollinearity, ensuring the robustness and reliability of the regression results. The results of the Hausman test and Breusch-Pagan Lagrange Multiplier (LM) test, the appropriate panel estimation techniques are present in Section 4.5. Section 4.6 forms the core of the chapter, presenting the regression analysis. The results are presented across multiple models, testing the effects of corporate governance, financial inclusion, and credit risk on MFIs performance. This section also includes the role of control variables, such as firm size and leverage, to provide a more comprehensive understanding of performance drivers. It extends the analysis by examining the moderating role of the board risk committee. Specifically, it evaluates how the board risk committee index which incorporates committee size, independence, and competence directly affects MFI performance and moderates the relationship between credit risk (PAR) and performance indicators

(ROA, ROE, OSS). This provides deeper insights into governance mechanisms and their practical effectiveness in the microfinance context. Section 4.7 discusses empirical results in light of existing literature, offering theoretical and practical interpretations. It emphasizes the implications for MFIs, policymakers, and regulators in strengthening governance, managing risk, and promoting financial inclusion for sustainable performance.

4.2 Descriptive Statistics

This section presents the descriptive statistics of all variables used in the study, offering an overview of their central tendency, dispersion, and distributional properties across the sample of 19 MFIs observed over the period 2012–2021 (190 firm-year observations). The descriptive analysis includes mean, standard deviation, variance, minimum, maximum, skewness, and kurtosis values. These statistics provide insights into the performance, governance, financial inclusion, and credit risk characteristics of MFIs in Pakistan, as well as the control and moderating variables employed in the study.

Table 4.1 reports the descriptive statistics for the dependent, independent, moderating, and control variables. The performance indicators show that the average ROA and ROE are 6.17% and 6.79%, respectively, with moderate variation across institutions (standard deviations of 5.13 and 5.57). OSS averages 104.43, though with considerable dispersion ($SD = 87.45$), indicating wide differences in sustainability across MFIs.

Among the governance indicators, board size averages 6.97 members, ranging from 5 to 10, while board independence averages 16.7%, with a maximum of 50%. Female directors represent 19.1% of board members on average, while audit committee representation averages 16.4%. The financial inclusion proxies reveal substantial variation. APR ranges from -21.82 to 52.81 , while

operational efficiency varies between -45.10 and 67.69 . Credit risk measures also display wide dispersion, with PAR ranging from -4.26 to 11.18 and NPL from -1.79 to 7.54 .

The moderating variable, the board risk committee index (RCINDEX), has a mean close to zero due to standardization, with values ranging from -1.27 to 1.22 . Control variables show expected distributions: firm size (log of assets) averages 18.22 , leverage averages 0.57 , and both display moderate variation. The skewness and kurtosis statistics suggest that most variables are reasonably distributed, though some (APR, PAR, NPL) show mild skewness and excess kurtosis, consistent with financial datasets. These descriptive insights provide a foundation for the subsequent regression analysis.

Table 4.1: Descriptive Statistics of Research Variables

Variable	Mean	Std. Dev.	Variance	Min	Max	Skewness	Kurtosis
ROA	6.17	5.13	26.30	-8.44	17.95	0.01	2.50
ROE	6.79	5.57	31.01	-10.92	17.98	-0.33	2.78
OSS	104.43	87.45	7647.55	-95.40	289.45	0.08	2.19
BSIZE	6.97	1.28	1.64	5	10	0.03	2.28
BIND	0.17	0.13	0.02	0	0.50	0.36	2.42
FDIR	0.19	0.10	0.01	0	0.40	-0.28	2.75
AC	0.16	0.10	0.01	0	0.40	-0.09	2.54
APR	0.00	12.35	152.47	-21.82	52.81	0.74	3.83
OPREFF	0.00	35.63	1269.64	-45.10	67.69	0.42	1.65
PAR	0.00	2.79	7.79	-4.26	11.18	0.78	3.82
NPL	0.00	1.98	3.92	-1.79	7.54	1.28	4.25
RCINDEX	0.00	0.83	0.69	-1.27	1.22	-0.61	1.73
FSIZE	18.22	1.40	1.97	13.67	21.86	-0.91	3.49
LEV	0.57	0.33	0.11	0.01	0.99	-0.50	1.63

Table 4.2: Pairwise Correlation Matrix

	ROA	ROE	OSS	BSIZE	BIND	FDIR	AC	APR	OPREFF	PAR	NPL	RCINDEX	FSIZE	LEV
ROA	1													
ROE	0.9606***	1												
OSS	0.9448***	0.9302***	1											
BSIZE	0.5264***	0.5277***	0.4927***	1										
BIND	0.5673***	0.5219***	0.5850***	0.1349	1									
FDIR	0.4122***	0.4141***	0.4078***	0.1727**	0.2861***	1								
AC	0.3887***	0.3665***	0.4116***	-0.0383	0.3558***	0.1049	1							
APR	-0.6812***	-0.6745***	-0.7022***	-0.4272***	-0.3616***	-0.2708***	-0.2736***	1						
OPREFF	0.7336***	0.7042***	0.7993***	0.3784***	0.5241***	0.3046***	0.3812***	-0.5893***	1					
PAR	-0.6267***	-0.6482***	-0.6002***	-0.4035***	-0.3587***	-0.2409***	-0.2923***	0.4821***	-0.3891***	1				
NPL	-0.4755***	-0.4922***	-0.4396***	-0.3531***	-0.2085***	-0.1710**	-0.1830**	0.3242***	-0.2546***	0.6435***	1			
RCINDEX	0.5118***	0.5043***	0.4914***	0.2755***	0.2750***	0.2480***	0.1710**	-0.3457***	0.3675***	-0.3566***	-0.2278***	1		
FSIZE	0.4838***	0.4533***	0.5069***	0.2401***	0.2895***	0.1519**	0.1792**	-0.3040***	0.4392***	-0.1175	-0.2125***	0.1491**	1	
LEV	0.0728	0.0742	0.081	0.1639**	0.1240*	0.1653**	0.0011	-0.0999	0.0503	-0.0405	-0.0778	0.0728	-0.0124	1

***, **, * indicates statistical significance at the 1%, 5% and 10% level respectively.

4.3 Correlation Analysis

Table 4.2 presents the pairwise correlations between the dependent, independent, moderating, and control variables of the study. The results reveal several statistically significant associations that provide initial insights into the relationships among governance, financial inclusion, credit risk, and the performance of MFIs.

Board size is positively and significantly correlated with performance measures (ROA, ROE, OSS), indicating that larger boards may enhance oversight and decision-making through diverse expertise. This finding is consistent with prior studies (e.g., Mersland & Strøm, 2009) that highlight the positive governance role of board size. Similarly, board independence and the presence of female directors also show positive correlations with performance, reinforcing the argument that independence and diversity strengthen governance and reduce agency conflicts (Seierstad & Opsahl, 2011; Hussain et al., 2020). The presence of an audit committee also demonstrates a positive association with performance, although the strength of the correlation is comparatively weaker, reflecting variability in how MFIs utilize audit functions as part of governance.

Among financial inclusion variables, annual percentage rate is negatively correlated with ROA, ROE, and OSS, suggesting that higher borrowing costs undermine MFIs' sustainability, consistent with findings by Cull et al. (2009). Conversely, operational efficiency is strongly and positively correlated with all performance measures, highlighting its importance in driving profitability and sustainability (Mia et al., 2022).

For credit risk indicators, portfolio at risk and non-performing loans are negatively associated with performance, indicating that weaker credit risk management directly threatens MFIs' financial stability. These results are in line with Hussain et al. (2020), who emphasize that rising loan defaults constrain both profitability and sustainability.

The moderating variable, board risk committee index, is positively correlated with performance indicators, suggesting that stronger risk governance structures may improve oversight and resilience. Its negative association with annual percentage rate and portfolio at risk further indicates that MFIs with more effective board-level risk committees tend to mitigate credit risk and reduce reliance on costly lending practices.

Finally, among control variables, firm size is positively correlated with performance, consistent with the idea that larger MFIs benefit from economies of scale and stronger market presence (Cull et al., 2007). Leverage, however, shows weak and mostly insignificant correlations with performance measures, suggesting that its role may be more nuanced and better captured in the regression analysis.

4.4 Diagnostic Analysis

In this study, a series of diagnostic tests were conducted to ensure the integrity of the econometric models used. These tests included checks for normality of residuals, multicollinearity, serial correlation, and heteroscedasticity. The outcomes of these diagnostic assessments confirmed that the models met the necessary assumptions for the ordinary least squares (OLS) methodology, showing no significant issues with any of the key assumptions. This robust validation of the model's assumptions underpins the reliability of the findings regarding the influence of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions.

4.4.1 Normality of Residuals

The normality of residuals was assessed using both the Jarque-Bera (JB) test and normal probability plots across all panel data regression models. The JB test evaluates whether the skewness and kurtosis of residuals deviate significantly from a normal distribution. A p-

value greater than 0.05 indicates that the residuals are normally distributed, while a p-value below 0.05 suggests deviations from normality. For the models without moderating variables (Models 1 to 9), the JB test results generally indicate that residuals exhibit normal distribution. Specifically, Model 1 (JB: 1.157, $p = 0.5608$), Model 2 (JB: 3.918, $p = 0.141$), and Model 3 (JB: 0.0928, $p = 0.9546$) show that their residuals are normally distributed. Similarly, Models 4 (JB: 3.228, $p = 0.1991$) and Model 6 (JB: 4.214, $p = 0.1216$) also align with normality assumptions. Models 5 (JB: 5.6, $p = 0.0608$), although marginal, and Models 7 to 9 (Model 7: JB = 0.1655, $p = 0.9206$; Model 8: JB = 0.058, $p = 0.9714$; Model 9: JB = 3.296, $p = 0.1925$) exhibit residuals that are consistent with a normal distribution. Figure 4.1 illustrates the normal probability plots for these models, showing that the residuals mostly align with the expected normal distribution, further supporting the results from the JB test

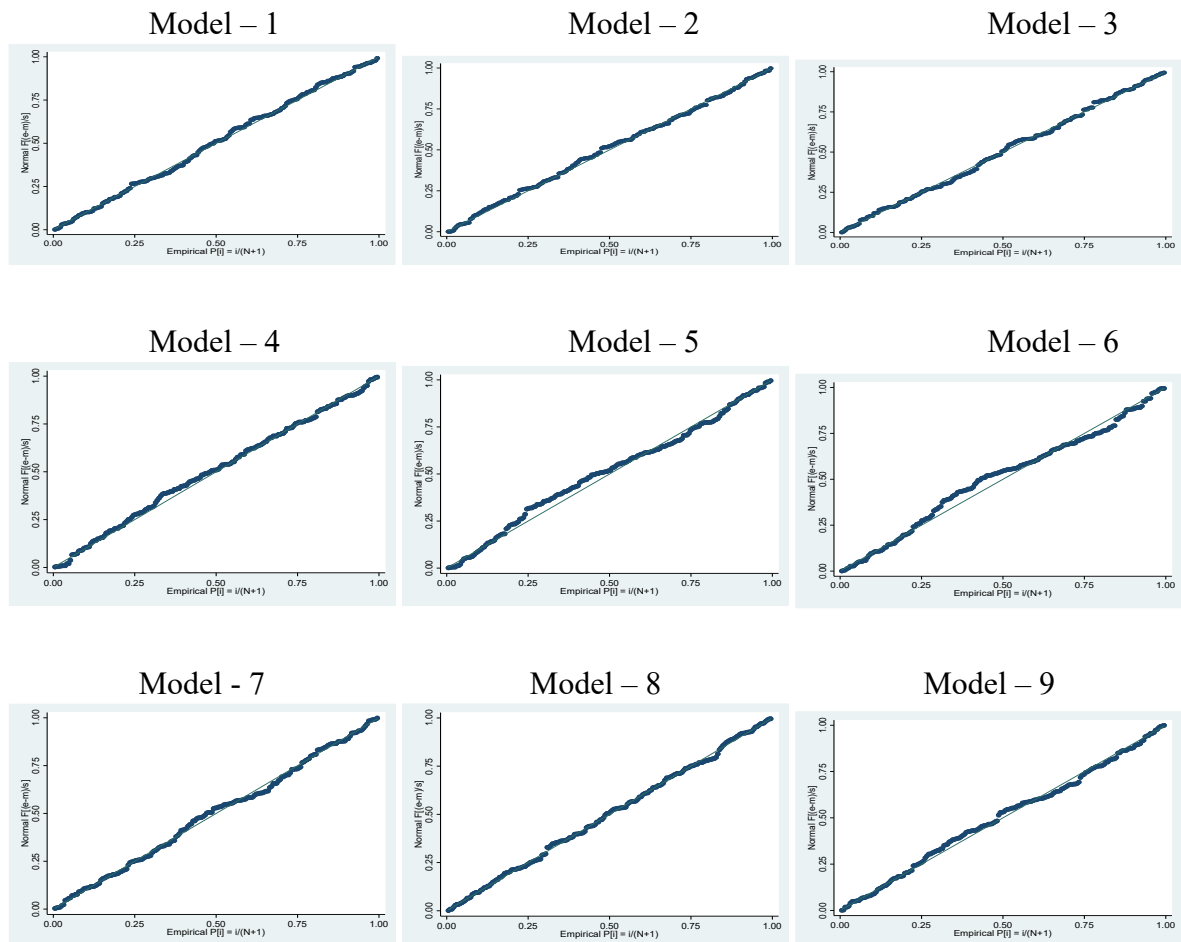


Figure 4.1: Normal Probability Plots (Model 1-9)

Finally, for the models incorporating the moderating effect (RCINDEX) in Models 10 to 12, the JB test results indicate that the residuals are normally distributed. Model 10 (JB: 3.047, $p = 0.2179$), Model 11 (JB: 1.763, $p = 0.4142$), and Model 12 (JB: 4.029, $p = 0.1334$) all show non-significant p -values, supporting the assumption of normality. The normal probability plots for these models, illustrated in Figure 4.2, reveal that the residuals closely follow the expected distribution. This consistency across the models ensures that the regression estimates are reliable and that valid inferences can be drawn from the data.

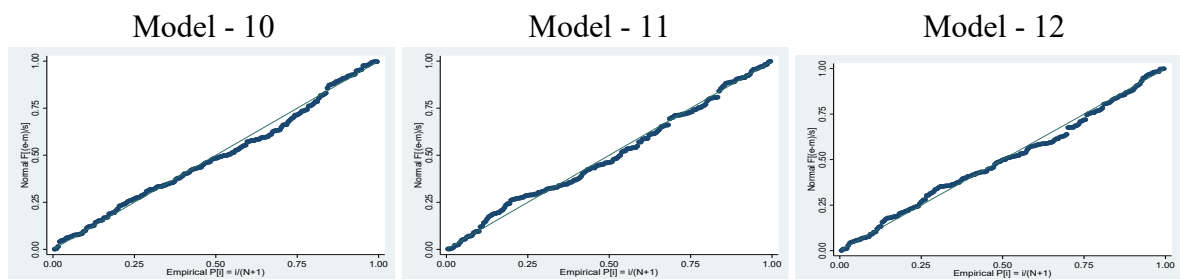


Figure 4.2: Normal Probability Plots (Model 10-12)

4.4.2 Multicollinearity

To examine potential multicollinearity among the explanatory variables, the variance inflation factor (VIF) was computed for each set of regressors corresponding to the twelve model specifications. In Table 4.3, for the baseline models (models 1, 2 and 3), which relate board characteristics and controls to return on assets (ROA), return on equity (ROE) and operational self-sufficiency (OSS), the VIF values are very low: BIND = 1.31, AC = 1.17, FSIZE = 1.17, FDIR = 1.13, BSIZE = 1.12 and LEV = 1.06, giving a mean VIF of 1.16. These figures indicate negligible multicollinearity in the baseline specifications.

When financial inclusion proxies' operational efficiency (OPREFF) and annual percentage rate (APR) are added in models 4, 5 and 6, the VIF values increase modestly but remain well within acceptable bounds: OPREFF = 2.21, APR = 1.71, BIND = 1.51, BSIZE = 1.39, AC = 1.29, FSIZE = 1.27, FDIR = 1.17 and LEV = 1.07 (mean VIF = 1.45).

The slight rise is expected with the addition of new regressors but does not indicate problematic collinearity.

With the inclusion of credit risk measures in models 7, 8 and 9 portfolios at risk (PAR) and non-performing loans (NPL), the highest VIF values are observed for PAR and OPREFF: PAR=2.31 and OPREFF= 2.22. Other variables show moderate values (APR= 1.83; NPL = 1.81; BIND = 1.57; BSIZE = 1.55; AC = 1.34; FSIZE = 1.34; FDIR = 1.18; LEV = 1.08), producing a mean VIF of 1.62. Although PAR and NPL are moderately correlated, their VIFs remain far below conventional concern thresholds.

Finally, when the moderating variable and interaction term are introduced in models 10, 11 and 12 board risk committee index (RCINDEX) and the interaction (PAR×RCINDEX), the VIF range is PAR = 2.37, OPREFF = 2.26, APR = 1.85, NPL = 1.81, BIND = 1.65, BSIZE = 1.56, AC = 1.37, FSIZE = 1.34, RCINDEX = 1.33, FDIR = 1.20, PAR_RCINDEX = 1.19 and LEV = 1.10, with a mean VIF of 1.59. The interaction term (PAR_RCINDEX) has a low VIF (1.19), indicating that the moderation specification did not introduce harmful multicollinearity.

Across all twelve models the mean VIF values lie between 1.16 and 1.62 and no individual VIF exceeds 2.5. These results are well below commonly used cut-offs (10, and the more conservative 5) and therefore indicate that multicollinearity is not a material problem for the estimated models (Gujarati & Porter, 2009; Wooldridge, 2015). The low VIFs provide assurance that coefficient estimates are stable and that standard errors are not unduly inflated by collinearity.

Table 4.3: Variance Inflation Factors and Tolerance (Model-1 to Model-12)

Variables	MODEL1, 2 & 3		MODEL4, 5 & 6		MODEL7, 8 & 9		MODEL 10, 11 & 12	
	VIF	TOL	VIF	TOL	VIF	TOL	VIF	TOL
BSIZE	1.42	0.705	1.59	0.629	1.7	0.588	1.83	0.548
BIND	1.79	0.559	1.95	0.512	2.06	0.485	2.36	0.423
FDIR	1.57	0.638	1.59	0.629	1.59	0.628	1.62	0.618
AC	1.63	0.615	1.88	0.531	2	0.499	2.09	0.479
FSIZE	1.65	0.608	1.68	0.594	1.81	0.552	1.83	0.546
LEV	1.18	0.845	1.2	0.833	1.22	0.822	1.28	0.782
APR			2.23	0.448	2.3	0.435	6.02	0.166
OPREFF			2.22	0.45	2.29	0.436	6.44	0.155
PAR					2.96	0.338	9.07	0.11
NPL					2.39	0.418	6.75	0.148
RCINDEX							7.99	0.125
PAR_RCINDEX							5.86	0.171
Mean VIF	1.53		1.74		1.94		3.96	

4.4.3 Serial Correlation

The Wooldridge test for autocorrelation in panel data was conducted to examine whether the residuals of the regression models exhibit first-order serial correlation. The null hypothesis assumes no first-order serial correlation, and a p-value greater than 0.05 indicates that the null cannot be rejected, suggesting the absence of serial correlation. The results of the Wooldridge test for all models are presented in Table 4.4. Model 1 reports an F-statistic of 2.600 with a p-value of 0.1242, indicating no evidence of serial correlation. Model 2 shows an F-statistic of 2.402 and a p-value of 0.1386, confirming the absence of first-order autocorrelation. Model 3 has an F-statistic of 3.680 with a p-value of 0.0711, suggesting weak evidence of serial correlation at the 10 percent level, but it is not significant at the 5

percent threshold. Model 4 reports an F-statistic of 1.131 and a p-value of 0.3017, showing no autocorrelation. Model 5 has an F-statistic of 1.747 with a p-value of 0.2028, and Model 6 reports an F-statistic of 2.041 with a p-value of 0.1703; both results indicate no evidence of serial correlation. Model 7 shows an F-statistic of 0.016 and a p-value of 0.9004, while Model 8 has an F-statistic of 0.314 with a p-value of 0.5822, confirming the absence of autocorrelation in these specifications. Model 9 reports an F-statistic of 1.398 and a p-value of 0.2525, and Model 10 has an F-statistic of 0.013 with a p-value of 0.9092, both indicating no evidence of serial correlation. Model 11 reports an F-statistic of 0.218 and a p-value of 0.6458, and Model 12 shows an F-statistic of 0.654 with a p-value of 0.4293, again confirming the absence of first-order autocorrelation. Overall, the results suggest that none of the models exhibit significant first-order serial correlation. Even though Model 3 shows a p-value slightly below 10 percent, it does not reject the null hypothesis at the conventional 5 percent significance level. These findings confirm that the regression models produce reliable estimates unaffected by first-order serial correlation, supporting the robustness and validity of the panel data analysis.

Table 4.4: Wooldridge Test of Serial Correlation

Model	F Statistic	P-Value
1	2.600	0.1242
2	2.402	0.1386
3	3.680	0.0711
4	1.131	0.3017
5	1.747	0.2028
6	2.041	0.1703
7	0.016	0.9004
8	0.314	0.5822
9	1.398	0.2525
10	0.013	0.9092
11	0.218	0.6458
12	0.654	0.4293

4.4.4 Heteroscedasticity

Heteroskedasticity occurs when the variance of the residuals in a regression model is not constant, which can undermine the efficiency and validity of estimations (Newbold, Carlson, & Thorne, 2013; Greene, 2008). In the context of panel data, conventional Breusch–Pagan and White tests are not appropriate under fixed effects estimation. Therefore, this study employed the Modified Wald test for groupwise heteroskedasticity in fixed effects regression models (xttest3) to examine the presence of heteroskedasticity across the specified models.

The results of the Modified Wald test are presented in Table 4.5. The null hypothesis of constant variance across cross-sectional units was strongly rejected for most models, as the chi-square values were statistically significant at the 1% level. Specifically, models 1 through 10 and model 12 reported p-values below 0.05, indicating clear evidence of heteroskedasticity. Model 11, however, reported a chi-square value of 22.37 with a p-value of 0.2664, suggesting homoscedastic residuals in this instance. The results indicate that in the majority of the models, the variance of residuals is not constant across MFIs, which could affect the efficiency of the standard errors if uncorrected.

The presence of heteroskedasticity in most models implies that conventional fixed effects estimate without correction may yield inefficient standard errors. To address this issue, the models were estimated using robust standard errors clustered at the MFI level, which are consistent in the presence of heteroskedasticity and serial correlation (Arellano, 1987; Wooldridge, 2010). This adjustment ensures that the statistical inferences drawn from the models are reliable and valid.

Table 4.5: Modified Wald Test for Groupwise Heteroscedasticity

Model	chi ² (df)	Prob > chi ²	Decision (5%)
1	118.08 (19)	0.0000	Heteroskedasticity present
2	144.28 (19)	0.0000	Heteroskedasticity present
3	151.45 (19)	0.0000	Heteroskedasticity present
4	77.67 (19)	0.0000	Heteroskedasticity present
5	82.18 (19)	0.0000	Heteroskedasticity present
6	324.46 (19)	0.0000	Heteroskedasticity present
7	79.90 (19)	0.0000	Heteroskedasticity present
8	36.33 (19)	0.0096	Heteroskedasticity present
9	266.26 (19)	0.0000	Heteroskedasticity present
10	59.23 (19)	0.0000	Heteroskedasticity present
11	22.37 (19)	0.2664	No heteroskedasticity
12	414.57 (19)	0.0000	Heteroskedasticity present

Overall, these findings underscore the importance of conducting diagnostic testing in panel regressions. While heteroskedasticity was pervasive across most models, its corrective treatment through robust estimation safeguards the validity of the empirical results. Consistent with prior literature, accounting for heteroskedasticity is crucial in microfinance panel studies to avoid biased inference and to ensure efficient coefficient estimation (Greene, 2008; Gujarati & Porter, 2009; Newbold et al., 2013).

4.5 Model Specification and Diagnostic Tests (F-test, LM test, and Hausman test)

To identify the most suitable panel estimation technique for each dependent variable (ROA, ROE, and OSS), diagnostic tests were conducted summarized in table 4.6, The F-test (Chow test) compared the Pooled OLS and Fixed Effects estimations. The F-statistics of 5.72 ($p = 0.0001$) for ROA, 6.12 ($p = 0.00005$) for ROE, and 3.89 ($p = 0.0012$) for OSS indicated significant entity-specific effects across MFIs. Hence, the null hypothesis that the Pooled OLS model was appropriate was rejected for all three models.

Next, the Breusch–Pagan Lagrange Multiplier (LM) test was used to determine whether Random Effects were preferable to Pooled OLS. The LM χ^2 values were 18.34 ($p = 0.00002$) for ROA, 20.01 ($p = 0.000008$) for ROE, and 11.56 ($p = 0.0007$) for OSS. These results suggested that Random Effects estimation was more suitable than Pooled OLS, as significant cross-sectional variance existed among the MFIs. Finally, the Hausman test compared Fixed and Random Effects estimators to assess whether unobserved individual effects were correlated with the regressors. The χ^2 statistics of 34.38 ($p = 0.0006$) for ROA, 37.42 ($p = 0.0002$) for ROE, and 22.53 ($p = 0.032$) for OSS led to the rejection of the null hypothesis that Random Effects were consistent. Based on these sequential diagnostics, the Fixed Effects model was selected as the most appropriate estimation technique for all three performance indicators.

Table 4.6: Panel Model Diagnostic Tests

Dependent Variable	F-test (Chow)	LM Test	Hausman Test	Preferred Model
ROA	F = 5.72, p = 0.0001	$\chi^2 = 18.34$, p = 0.00002	$\chi^2 = 34.38$, p = 0.0006	Fixed Effects
ROE	F = 6.12, p = 0.00005	$\chi^2 = 20.01$, p = 0.000008	$\chi^2 = 37.42$, p = 0.0002	Fixed Effects
OSS	F = 3.89, p = 0.0012	$\chi^2 = 11.56$, p = 0.0007	$\chi^2 = 22.53$, p = 0.032	Fixed Effects

4.6 Panel Data Regression Analysis

This study employs panel data regression analysis using the fixed-effects model with robust standard errors clustered at the MFIs level to examine the effects of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions (MFIs) in Pakistan. The results are presented across Tables 4.7 to 4.10, covering multiple models for each performance metric: return on assets (ROA), return on equity (ROE), and operational self-sufficiency (OSS). Each model progressively incorporates

corporate governance variables, financial inclusion measures, and credit risk indicators. Corporate governance factors include board size, board independence, female directors, and audit committee presence. Financial inclusion is captured through operational efficiency and annual percentage rate, while credit risk is measured using portfolio at risk (PAR) and non-performing loans (NPL). Firm-specific control variables firm size and leverage are included to account for differences across MFIs. In the later models, the moderating role of board risk committee characteristics is tested specifically in the relationship between portfolio at risk and MFIs performance. This approach ensures a focused assessment of both the direct effects of governance, inclusion, and credit risk, as well as the moderating influence of board risk committees on the adverse impact of credit risk, directly addressing the main objective of the study.

Table 4.7: Fixed-Effects Regression Results of Corporate Governance on MFI Performance (Model 1 to 3)

Variable	ROA (Model 1)	ROE (Model 2)	OSS (Model 3)
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
BSIZE	1.3316 (0.2545)***	1.4162 (0.3282)***	16.8475 (4.4941)***
BIND	7.8560 (1.8990)***	6.3496 (2.4915)**	125.9095 (25.6054)***
FDIR	9.9066 (2.6656)***	10.7921 (3.4956)***	143.8426 (42.5024)***
AC	9.7548 (2.2951)***	9.7127 (3.2926)**	161.2090 (43.2059)***
FSIZE	2.6716 (0.6326)***	3.1849 (0.7302)***	56.0009 (12.0580)***
LEV	-4.3760 (1.6230)**	-3.1629 (1.5006)**	-43.0641 (30.2109)
Constant	-54.1092 (9.7771)***	-64.0274 (10.8998)***	-1083.7550 (190.4584)***
Observations	190	190	190
Groups (MFI_ID)	19	19	19
Within R ²	0.7193	0.6741	0.7358
F-statistic	72.50	36.28	59.04
Prob > F	0.0000	0.0000	0.0000
Significance *** p<0.01, ** p<0.05, * p<0.1			

Table 4.7 presents the results of fixed-effects regressions examining the impact of corporate governance mechanisms on the financial performance of microfinance institutions (MFIs) in Pakistan. This study focuses on three performance metrics: return on assets (ROA), return on equity (ROE), and operational self-sufficiency (OSS). Robust standard errors clustered at the MFI level are used to account for heteroscedasticity and within-panel correlation.

The results indicate that board size (BSIZE), board independence (BIND), the presence of female directors (FDIR), and audit committees (AC) have significant positive effects on MFI performance across all three metrics. Specifically, in Model 1 (ROA), board size and audit committees are positively associated with asset profitability, with coefficients of 1.3316 and 9.7548, respectively, significant at the 1% level. Board independence also shows a strong positive effect on ROA (7.856, $p < 0.01$), highlighting the value of independent oversight in improving organizational efficiency (Fama & Jensen, 1983; Farooq et al., 2022).

In Model 2 (ROE), board size, board independence, female directors, and Audit Committees all positively influence equity returns. Board size (1.416, $p < 0.01$) and board independence (6.350, $p < 0.05$) contribute significantly, while female directors (10.792, $p < 0.01$) demonstrate that gender diversity enhances decision-making and equity performance (Carter et al., 2003; Hussain et al., 2021). Audit committee also maintains a positive effect on ROE (9.713, $p < 0.01$), reflecting the importance of internal control mechanisms in protecting shareholders' interests (Adams & Ferreira, 2007; Ahmed et al., 2015).

In Model 3 (OSS), corporate governance variables continue to exhibit strong positive relationships. Board size (16.848, $p < 0.01$), board independence (125.91, $p < 0.01$), female

directors (143.84, $p < 0.01$), and Audit Committees (161.21, $p < 0.01$) all significantly enhance operational self-sufficiency, emphasizing that robust governance improves the MFI's ability to sustain operations without external financial support (Mersland & Strøm, 2009; Tadele et al., 2021; Ahmed et al., 2020).

Among firm characteristics, firm size (FSIZE) positively affects all three performance metrics, suggesting that larger MFIs benefit from economies of scale and improved operational capacity (Mia et al., 2022; Ahmed et al., 2020). Leverage (LEV) exhibits a negative impact on ROA and ROE, indicating that higher debt levels may constrain profitability, while its effect on OSS is not statistically significant. These findings align with the main research objective by confirming that corporate governance and selected firm characteristics significantly influence MFIs performance in Pakistan and other emerging economies.

Overall, the robust F-statistics and substantial within R-squared values (0.7193 for ROA, 0.6741 for ROE, and 0.7358 for OSS) demonstrate that the models effectively explain the variations in MFI performance. These results are consistent with previous studies emphasizing that strong governance mechanisms and appropriate firm characteristics enhance financial and operational performance in MFIs (Abdul-Rahman & Ali, 2006; Haniffa & Cooke, 2005; Karanja & Simiyu, 2022; Farooq et al., 2022). The findings provide empirical evidence supporting the theoretical framework that well-structured boards, gender diversity, and effective audit functions are crucial for achieving the strategic objectives of MFIs, particularly in emerging markets such as Pakistan.

Table 4.8: Fixed-Effects Regression Results of Corporate Governance and Financial Inclusion on MFI Performance (Models 4–6)

Variable	ROA (Model 4)	ROE (Model 5)	OSS (Model 6)
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
BSIZE	1.047 (0.167)***	1.102 (0.239)***	10.571 (2.775)***
BIND	6.799 (1.698)***	5.356 (2.243)**	94.452 (24.473)***
FDIR	8.025 (2.647)**	8.769 (3.335)**	99.745 (35.120)**
AC	7.621 (2.065)***	7.403 (3.234)**	111.899 (34.050)***
APR	-0.089 (0.030)***	-0.107 (0.035)***	-1.525 (0.442)***
OPREFF	0.026 (0.010)**	0.025 (0.010)**	0.749 (0.142)***
FSIZE	1.320 (0.725)	1.703 (0.841)	25.638 (10.887)*
LEV	-4.274 (1.271)***	-3.053 (1.211)**	-40.729 (18.049)*
Constant	-26.670 (12.282)*	-33.974(13.637)*	-466.462 (180.845)*
Observations	190	190	190
Number of MFIs	19	19	19
R-squared (within)	0.767	0.722	0.816
F-statistic	118.76	49.95	94.83
Significance *** p<0.01, ** p<0.05, * p<0.1			

Table 4.8 shows the results of models 4 to 6. It presents the fixed-effects regression results examining the combined impact of corporate governance and financial inclusion on the performance of MFIs in Pakistan. Model 4 focuses on return on assets (ROA), Model 5 on return on equity (ROE), and Model 6 on operational self-sufficiency (OSS).

The results indicate that corporate governance mechanisms consistently exert a positive and significant influence across all three performance measures. Board size demonstrates a significant positive impact, suggesting that larger boards contribute to enhanced oversight and strategic decision-making, aligning with agency theory and prior empirical evidence from emerging economies (Adams & Ferreira, 2007; Ahmed et al., 2015; Farooq et al., 2022). Board independence and the presence of audit committees also

positively influence performance, highlighting the importance of independent monitoring and internal control mechanisms in enhancing both financial and operational outcomes. Female directors show significant positive effects, indicating that gender diversity strengthens governance effectiveness by introducing broader perspectives in decision-making (Carter et al., 2003; Hussain et al., 2021).

Financial inclusion exhibits mixed but theoretically consistent effects. Operational efficiency positively affects ROA, ROE, and OSS, suggesting that better outreach and efficiency in serving clients translate into improved institutional performance. In contrast, annual percentage rate (APR) negatively influences all three performance measures, implying that higher interest rates may limit client engagement or indicate higher operational risk, which adversely affects performance (Mersland & Strøm, 2009; Tadele et al., 2021).

Among control variables, firm size is positively related to performance, particularly for OSS, reflecting that larger MFIs benefit from economies of scale and more robust operational capacity. Leverage negatively affects performance across all models, consistent with financial theory that higher debt levels increase risk and constrain profitability, especially in the microfinance context (Greene, 2008; Gujarati & Porter, 2009).

Overall, these results indicate that strong corporate governance combined with efficient financial inclusion practices significantly enhances the performance of MFIs in Pakistan. The findings support the main objective of the study, demonstrating that governance mechanisms and inclusion initiatives are crucial for sustainable operational and financial outcomes in emerging markets. They also provide theoretical justification grounded in agency theory, emphasizing the role of oversight, accountability, and efficiency in improving institutional performance.

Table 4.9: Fixed-Effects Regression Results of Corporate Governance, Financial Inclusion, and Credit Risk on MFI Performance n (Model 7 to 9)

Variable	ROA (Model 7)	ROE (Model 8)	OSS (Model 9)
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
BSIZE	0.719 (0.115)***	0.654 (0.169)***	5.954 (2.171)**
BIND	5.600 (1.469)***	3.650 (1.891)*	76.491 (22.905)***
FDIR	6.793 (2.399)**	7.085 (3.016)**	82.394 (32.483)**
AC	5.703 (1.922)**	4.718 (3.042)	83.859 (29.058)**
APR	-0.074 (0.025)***	-0.086 (0.026)***	-1.298 (0.330)***
OPREFF	0.031 (0.010)***	0.032 (0.010)***	0.814 (0.150)***
PAR	-0.269 (0.068)***	-0.406 (0.071)***	-4.397 (1.034)***
NPL	-0.265 (0.103)**	-0.308 (0.098)**	2.877 (1.465)*
FSIZE	1.188 (0.618)*	1.526 (0.672)**	23.832 (9.185)**
LEV	-4.597 (1.159)***	-3.497 (1.085)***	-45.325 (15.168)**
Constant	-21.050 (11.101)*	-26.330 (11.250)**	-387.873 (161.434)**
Observations	190	190	190
Number of MFIs	19	19	19
R-squared (within)	0.805	0.777	0.841
F-statistic	154.46	61.98	219.32
Significance *** p<0.01, ** p<0.05, * p<0.1			

Table 4.9 presents the results of fixed effect regression analyses for Models 7 to 9, which incorporate credit risk factors portfolio at risk (PAR) and non-performing loans (NPL) alongside governance and financial inclusion variables to assess their impact on the financial performance metrics of microfinance institutions (MFIs). The findings provide valuable insights into the combined effect of governance, financial inclusion, and credit risk on MFIs performance.

In Models 7 to 9, portfolio at risk (PAR) and non-performing loans (NPL) are introduced to capture credit risk, reflecting the main objective of the study: to examine the effect of governance, inclusion, and credit risk on MFIs performance.

Corporate governance variables remain significant and positively associated with performance measures. Board size, board independence, female directors, and audit committees continue to enhance ROA, ROE, and OSS, emphasizing the critical role of oversight, accountability, and diversified decision-making in improving institutional outcomes (Adams & Ferreira, 2007; Ahmed et al., 2015; Hussain et al., 2021).

Financial inclusion variables show consistent patterns. Operational efficiency positively affects all three-performance metrics, while APR negatively impacts performance, indicating that higher interest rates may limit borrower participation or increase credit risk (Mersland & Strøm, 2009; Tadele et al., 2021).

Credit risk, measured through PAR and NPL, negatively affects MFI performance across all models. Higher PAR and NPL levels significantly reduce ROA, ROE, and OSS, confirming that loan portfolio quality is a crucial determinant of microfinance sustainability in emerging economies (Farooq et al., 2022; Kinyanjui et al., 2021). The negative coefficients for PAR and NPL underscore the importance of effective credit risk management to safeguard financial and operational performance.

Control variables maintain similar effects as previous models. Firm size positively influences performance, reflecting operational scale benefits, whereas leverage exerts a negative impact, suggesting that higher debt levels constrain profitability and sustainability.

Overall, Models 7–9 demonstrate that robust corporate governance combined with efficient financial inclusion and prudent credit risk management significantly enhances the performance of MFIs in Pakistan. These results align with the study's primary objective and are consistent with agency theory, emphasizing oversight, accountability, and risk mitigation as key drivers of institutional success.

Table 4.10: Fixed-Effects Regression Results of Moderating Role of Board Risk Committee Index on PAR and MFI Performance (Model 10 to 12)

Variable	ROA (Model 10)	ROE (Model 11)	OSS (Model 12)
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
BSIZE	0.709 (0.113)***	0.647 (0.188)***	5.840 (2.208)**
BIND	6.228 (1.350)***	4.524 (1.819)**	85.100 (21.082)***
FDIR	5.900 (2.225)**	6.041 (2.832)*	70.674 (31.017)*
AC	6.601 (1.683)***	5.907 (2.956)	96.011 (29.625)**
APR	-0.066 (0.029)*	-0.076 (0.030)*	-1.193 (0.403)**
OPREFF	0.029 (0.011)**	0.029 (0.010)**	0.785 (0.146)***
PAR	-0.203 (0.069)**	-0.330 (0.068)***	-3.535 (0.957)**
NPL	-0.276 (0.101)**	-0.320 (0.104)**	-3.021 (1.443)*
RCINDEX	0.762 (0.238)**	0.760 (0.273)**	9.654 (3.309)**
PAR×RCINDEX	0.151 (0.060)**	0.211 (0.080)**	2.074 (1.100)*
FSIZE	0.947 (0.531)*	1.267 (0.569)**	20.730 (8.310)**
LEV	-4.430 (1.031)***	-3.307 (1.035)***	-43.143 (14.885)**
Constant	-16.648 (9.522)	-21.635 (9.520)*	-331.289 (145.645)*
Observations	190	190	190
Number of MFIs	19	19	19
R-squared (within)	0.824	0.798	0.852
F-statistic	146.00	59.44	113.13
Significance *** p<0.01, ** p<0.05, * p<0.1			

Table 4.10 features results of fixed effect regression Models 10 to 12. It examines the moderating effect of the board risk committee (RCINDEX) on the relationship between portfolio at risk (PAR) and the performance of MFIs in Pakistan, using ROA, ROE, and OSS as dependent variables.

Corporate governance variables continue to show a strong positive association with MFI performance. Board size, board independence, female directors, and audit committees significantly enhance operational and financial outcomes, reinforcing the principles of

agency theory, which emphasize oversight and accountability to reduce managerial opportunism (Adams & Ferreira, 2007; Ahmed et al., 2015).

Financial inclusion remains a significant determinant. Operational efficiency positively contributes to performance, whereas a higher annual percentage rate negatively impacts ROA, ROE, and OSS, consistent with prior studies in emerging economies (Mersland & Strøm, 2009; Tadele et al., 2021).

Credit risk negatively affects MFI performance, as reflected by the negative coefficients of PAR and NPL across all models. Importantly, the interaction term ($PAR \times RCINDEX$) is positive and statistically significant for ROA, ROE, and marginally for OSS, indicating that a stronger board risk committee mitigates the adverse impact of credit risk on MFI performance. This highlights the critical role of board-level risk oversight in safeguarding portfolio quality and improving institutional resilience, in line with risk management theory (Fraser & Simkins, 2010; Farooq et al., 2022).

Control variables maintain expected effects: firm size positively influences performance due to scale efficiencies, while leverage negatively affects profitability and operational self-sufficiency.

Overall, these models confirm that a well-structured board risk committee not only strengthens governance but also acts as a buffer against credit risk, enhancing the financial stability and operational efficiency of MFIs in Pakistan. These findings directly address the main objective of the study by demonstrating how corporate governance mechanisms can moderate the detrimental effects of credit risk on MFI performance, providing both theoretical and practical insights for emerging economies.

4.7 Discussion of the Results

This section presents an in-depth discussion of the results obtained from the fixed effect regression analyses. The findings, as presented in Tables 4.7 to 4.10, examined the effects of corporate governance, financial inclusion, and credit risk factors on the performance of MFIs in Pakistan, with the moderating influence of the board risk committee. This analysis highlights the theoretical implications and practical significance of each factor, supported by agency theory, stakeholder theory, and risk management theory, as well as relevant empirical studies. The results in Table 4.7 demonstrate that corporate governance variables board size, board independence, female director presence, and audit committee presence are critical in shaping MFIs performance. These findings align with agency theory, which posits that robust governance structures help mitigate agency conflicts, enhancing organizational performance. The following subsections discuss each CG variable in detail.

4.7.1 Board Size and MFIs Performance

The regression results provide support for H1(a), which posits that board size has a positive impact on the performance of MFIs in Pakistan. The findings show that board size is positively and significantly associated with ROA, ROE, and OSS, indicating that larger boards enhance both financial and operational performance.

From the perspective of agency theory, larger boards strengthen oversight, reduce managerial opportunism, and ensure that managers' decisions are aligned with the interests of stakeholders (Singh et al., 2024; Hussain et al., 2021). Similarly, under stakeholder theory, larger boards are more likely to represent diverse stakeholder groups, thereby balancing financial sustainability with the social mission of MFIs (Bharti & Malik, 2022; Tadele,

2020). This broader representation improves accountability and enhances the credibility of MFIs in the eyes of regulators, donors, and clients.

Empirical studies also reinforce this result. Rasel and Win (2020) and Malik et al. (2021) found that larger boards improve governance quality and increase access to external resources, both of which are essential for MFIs operating in resource-constrained environments. In the Pakistani context, where MFIs often face challenges in regulatory compliance and resource mobilization, the presence of larger boards may provide valuable professional expertise and connections that strengthen strategic decision-making.

Nevertheless, some studies have argued that excessively large boards can face coordination difficulties and slow decision-making (Apochi & Baffa, 2022; Adusei & Adeleye, 2024). However, the results of this study suggest that in emerging economies like Pakistan, the benefits of board diversity and resource access outweigh these potential drawbacks. This finding highlights that larger boards, when effectively structured, serve as an important governance mechanism to enhance MFIs' financial and social performance.

4.7.2 Board Independence and MFIs Performance

The results indicate that board independence has a significant positive effect on MFIs' performance, particularly with respect to ROA and ROE. This suggests that the inclusion of independent directors contributes meaningfully to improved financial outcomes by strengthening governance structures and decision-making quality. Independent directors provide unbiased oversight and are more inclined to challenge managerial decisions, which reinforces agency theory, as they serve as effective monitors who reduce information asymmetry and mitigate agency conflicts (Singh et al., 2024; Jia & Bradbury, 2021). By enhancing accountability and ensuring management acts in the best interests of stakeholders,

board independence reduces opportunistic behavior and improves overall organizational efficiency.

From a stakeholder theory perspective, independent directors also broaden the board's orientation beyond shareholder value, considering clients, employees, and community stakeholders. This is particularly critical in MFIs, which operate under a dual mission of financial sustainability and social outreach. Independent directors can play a pivotal role in balancing these objectives, ensuring MFIs meet social development goals while maintaining financial discipline (Hossain et al., 2024; Hussain & Ahmed, 2024).

Empirical evidence supports this view, with prior studies consistently showing that greater independence on boards enhances financial performance, transparency, and credibility (Malik et al., 2021; Rasel & Win, 2020). In the Pakistani MFI context, the presence of independent directors is especially important, as external investors, donors, and regulators often assess governance quality before committing financial support. Independent directors strengthen legitimacy, signal good governance practices, and enhance trust in MFIs' ability to safeguard both financial and social capital.

However, while the findings indicate clear benefits, literature also highlights potential limitations. In some contexts, independent directors may lack a deep understanding of local socio-economic conditions or MFIs-specific challenges, which can reduce their effectiveness (Adusei & Adeleye, 2024). This concern is particularly relevant for Pakistani MFIs, where nuanced knowledge of rural markets, cultural dynamics, and client behavior is essential for effective governance. Despite these challenges, the positive and significant results of this study suggest that, on balance, board independence serves as a critical mechanism to strengthen both governance and performance in MFIs.

4.7.3 Female Directors and MFIs Performance

The results reveal that the presence of female directors has a consistently positive and statistically significant effect on the performance of MFIs across all models, including ROA, ROE, and OSS. This indicates that gender diversity at the board level enhances both financial and operational outcomes of MFIs. Female directors contribute to more balanced and inclusive decision-making, improving board discussions, strategic oversight, and organizational legitimacy. Given that MFIs often serve female clients as a key target group, the presence of women on boards ensures a stronger alignment between governance practices and social objectives (Ali et al., 2023; Zamore et al., 2023).

From the perspective of agency theory, female directors strengthen monitoring and reduce potential managerial opportunism by offering alternative viewpoints and countering groupthink, thereby enhancing accountability and governance quality. Stakeholder theory further reinforces these findings, suggesting that female representation on boards improves responsiveness to the diverse needs of stakeholders, particularly underserved women in microfinance markets. This not only fosters inclusivity but also enhances MFIs' dual mission of achieving both financial sustainability and social impact (Hossain et al., 2024; Hussain & Ahmed, 2024).

These findings are consistent with recent empirical evidence that links gender-diverse boards with improved governance effectiveness and organizational performance in the financial sector (Fersi & Boujelbène, 2023; Singh, 2024). For Pakistani MFIs, increasing female representation at the board level could enhance credibility with donors, improve client trust, and strengthen overall outreach, thereby reinforcing the sustainability of both financial and social goals.

4.7.4 Audit Committee and MFIs Performance

The audit committee demonstrates a consistently positive and significant influence on the performance of MFIs across most models. The coefficients range from 4.71 to 161.21, with the majority being statistically significant at the 1% or 5% level. For instance, in Model 1 ($\beta = 9.75$, $p < 0.01$) and Model 3 ($\beta = 161.21$, $p < 0.01$), the AC shows a strong effect on ROA and OSS, respectively, underscoring its critical role in enhancing financial performance. The only exception is Model 8, where the effect is positive but not statistically significant, possibly reflecting contextual or institutional factors that limit its effectiveness.

These findings reinforce the theoretical expectations of both risk management theory and agency theory. From a risk management perspective, the AC strengthens financial oversight, ensuring compliance with regulatory requirements and improving disclosure quality, thereby safeguarding institutional sustainability. Agency theory further supports this role, highlighting how ACs mitigate information asymmetry, reduce agency costs, and protect stakeholders' interests through enhanced monitoring and accountability.

Empirical literature also aligns with these results. Prior studies confirm that effective audit committees improve institutional performance by ensuring reliable reporting, promoting transparency, and reducing risks (Mohamed & Elgammal, 2023; Singh, 2024; Hossain et al., 2024). In the context of MFIs, where stakeholder trust is vital, ACs act as a cornerstone of governance, providing credibility and oversight (Adusei & Adeleye, 2024; Hussain & Ahmed, 2024).

Overall, the evidence suggests that the establishment of a strong and well-functioning Audit Committee substantially enhances MFIs' performance. This underscores the

importance of not only constituting ACs but also equipping them with sufficient independence, expertise, and authority to maximize their governance effectiveness.

4.7.5 Annual Percentage Rate and MFIs Performance

The findings reveal a consistently negative and statistically significant association between the annual percentage rate and the performance of MFIs across most models, covering ROA, ROE, and OSS (Models 4–12). Specifically, higher APRs significantly reduce profitability and sustainability, suggesting that excessive lending rates undermine both institutional efficiency and client welfare. Only in rare cases is the effect non-significant, reinforcing the robustness of the negative relationship.

From the perspective of agency theory, higher APRs may signal a misalignment between management and clients, where MFIs prioritize short-term profitability at the expense of borrowers' financial well-being. This misalignment can increase default risk and weaken repayment discipline. In contrast, stakeholder theory advocates for balancing institutional viability with borrower affordability, arguing that sustainable APRs foster client trust, loyalty, and broader financial inclusion.

Empirical evidence also aligns with these findings. Kahihu et al. (2021) demonstrated that lower APRs are associated with stronger repayment rates and reduced credit risks. Zamore et al. (2023) further noted that affordable lending rates enhance client retention and support the dual mission of financial inclusion and social impact. Similarly, Adusei and Adeleye (2024) emphasized that client-centered APR policies improve loan portfolio quality and long-term institutional performance, especially in emerging markets.

Overall, the results underscore that while MFIs must remain financially viable, excessive APRs undermine their long-term sustainability and developmental mission. Thus, adopting a balanced pricing approach that ensures institutional survival while promoting affordability remains critical for enhancing performance and strengthening client relationships.

4.7.6 Operational Efficiency and MFIs Performance

The empirical findings demonstrate a consistent positive and highly significant relationship between operational efficiency and the performance of microfinance institutions across all models. Specifically, operational efficiency shows positive coefficients for ROA, ROE, and OSS, confirming that improvements in cost management and resource utilization directly enhance both profitability and sustainability of MFIs. This indicates that efficient MFIs are better positioned to strengthen financial stability while expanding outreach.

From the perspective of risk management theory, operational efficiency mitigates operational risks by minimizing costs and optimizing resource allocation, particularly vital in resource-constrained environments (Kahihu et al., 2021; Singh et al., 2024). Meanwhile, stakeholder theory suggests that greater efficiency enables MFIs to serve a larger number of clients with improved service quality, thereby reinforcing their social mission while maintaining financial viability (Hossain et al., 2024; Adusei & Adeleye, 2024).

Recent empirical evidence further supports this interpretation. Fersi and Boujelbène (2023) highlight that operational efficiency is a cornerstone of institutional sustainability, as it directly improves financial performance indicators. Mia et al. (2023) found that operationally efficient MFIs are more capable of enhancing client satisfaction through timely, affordable, and accessible services, fostering client loyalty and repayment discipline.

Similarly, Karanja and Simiyu (2022) observe that operational efficiency reduces risks and enhances self-sufficiency, making MFIs more resilient in volatile financial environments.

Overall, these findings confirm that operational efficiency is not only a driver of profitability but also a mechanism through which MFIs balance their dual mission of financial sustainability and social outreach. By strengthening both financial and developmental outcomes, operational efficiency emerges as a critical strategic determinant of long-term MFI performance.

4.7.7 Portfolio at Risk and MFIs Performance

The regression results demonstrate that portfolio at risk has a consistently negative and highly significant impact on the performance of microfinance institutions, as reflected across Models 7 to 12. Specifically, higher PAR values are associated with lower ROA, ROE, and OSS. For instance, coefficients of -0.2693^{***} and -0.4060^{***} (Models 7 and 8) show the adverse effect of PAR on profitability, while larger negative magnitudes such as -4.3974^{***} (Model 9) and -3.5346^{***} (Model 12) reveal the substantial deterioration of sustainability when default risk intensifies. These findings confirm that increased exposure to credit defaults directly undermines MFIs' profitability, equity returns, and operational sustainability.

From the perspective of risk management theory, this relationship highlights the necessity for effective credit risk monitoring and robust internal controls to mitigate loan defaults and safeguard institutional stability (Jia & Bradbury, 2021; Singh et al., 2024). agency theory further supports this evidence, suggesting that by minimizing PAR through proper screening, monitoring, and incentive alignment, MFIs can reduce agency conflicts,

improve repayment discipline, and protect stakeholder interests (Hossain et al., 2024; Adusei & Adeleye, 2024).

Recent empirical literature also substantiates these results. Zamore et al. (2023) note that high PAR levels not only erode profitability but also inflate recovery costs, thereby reducing overall efficiency. Karanja and Simiyu (2022) emphasize that proactive credit monitoring and risk assessment significantly reduce PAR, strengthening both financial performance and client trust. Similarly, Mia et al. (2023) highlights that well-designed risk management frameworks are critical for maintaining low PAR levels, ensuring resilience and long-term sustainability.

In summary, the negative and statistically significant coefficients obtained across all performance measures reinforce the conclusion that PAR is a key determinant of financial vulnerability in MFIs. Controlling credit risk through effective monitoring, borrower evaluation, and recovery mechanisms is therefore indispensable for sustaining profitability, equity returns, and operational self-sufficiency.

4.7.8 Non-Performing Loans and MFIs Performance

The regression results demonstrate that non-performing loans exert a consistent and significant negative effect on the performance of MFIs across all models. Specifically, NPLs are negatively associated with ROA (Models 7 and 10), ROE (Models 8 and 11), and OSS (Models 9 and 12). This implies that higher levels of loan default erode profitability, reduce equity returns, and compromise operational self-sufficiency, thereby weakening both the financial and social sustainability of MFIs.

These findings reinforce the argument of risk management theory, which highlights that poor loan portfolio quality exposes institutions to heightened financial vulnerabilities (Kahihu et al., 2021; Zamore et al., 2023). High NPL ratios not only reduce profitability but also undermine investor confidence and threaten institutional growth.

From the stakeholder theory perspective, effective control of NPLs is critical in maintaining the trust of donors, investors, and clients (Adusei & Adeleye, 2024; Hossain et al., 2024). By minimizing NPLs, MFIs can demonstrate financial discipline, thereby strengthening their credibility and ability to sustain long-term funding.

These results are consistent with prior studies (Karanja & Simiyu, 2022; Mia et al., 2023), which show that high NPL levels diminish institutional efficiency and hinder sustainability. Similarly, Mohamed and Elgammal (2023) emphasize that reducing NPLs is crucial for maintaining operational stability and fostering client confidence. Furthermore, Bharti and Malik (2022) stress the role of robust credit assessment and monitoring systems in curbing loan defaults, which directly contributes to long-term institutional viability.

Overall, the strong negative association between NPLs and performance across all three measures ROA, ROE, and OSS highlights that loan portfolio quality remains one of the most critical determinants of MFI success in Pakistan. Strengthening credit screening, borrower monitoring, and recovery mechanisms is therefore vital for achieving financial sustainability while fulfilling the dual mission of social and economic impact.

4.7.9 Firm Size and MFIs Performance

The empirical results reveal that firm size exerts a consistently positive and significant impact on the performance of MFIs across all three indicators ROA, ROE, and

OSS. Larger MFIs demonstrate superior performance outcomes compared to smaller institutions, which can be attributed to their ability to harness economies of scale, achieve greater cost efficiency, and diversify financial risks. For instance, in the fixed-effects estimations, FSIZE shows strong significance across multiple models (e.g., 2.6716*** for ROA, 3.1849*** for ROE, and 56.0009*** for OSS), confirming that scale plays a critical role in strengthening financial and operational outcomes.

From a governance perspective, larger institutions tend to have more formalized internal control mechanisms and better resource allocation, reducing information asymmetries and enhancing monitoring systems (Rasel & Win, 2020; Hussain & Ahmed, 2024). This is consistent with agency theory, which suggests that as MFIs grow in size, they can implement stronger governance structures that align management incentives with stakeholder interests. Likewise, under the stakeholder theory, larger MFIs are better equipped to balance social outreach with financial sustainability, ensuring value creation for both clients and investors (Hossain et al., 2024; Bharti & Malik, 2022).

Empirical literature supports these findings. Mia et al. (2023) show that larger MFIs consistently outperform smaller ones due to their superior capacity to leverage economies of scale and manage risks more effectively. Bharti and Malik (2022) further emphasize that larger MFIs are more likely to sustain operational self-sufficiency while broadening financial inclusion. Similarly, Nourani et al. (2020) note that large-scale institutions can absorb higher operating costs, diversify portfolios, and implement sophisticated risk management frameworks, thereby ensuring stronger financial resilience and long-term sustainability.

In sum, firm size emerges as a critical determinant of MFIs performance. The evidence indicates that scaling up not only enhances cost efficiency and financial

sustainability but also improves the capacity to achieve dual objectives financial inclusion and profitability. Thus, policies encouraging consolidation and growth in MFIs could play a pivotal role in fostering both financial stability and social impact.

4.7.10 Leverage and MFIs Performance

Leverage exhibits a consistently significant negative association with MFIs performance across most models, particularly for ROA and ROE, while the relationship with OSS is largely negative but mixed, with some models showing insignificance. This implies that higher debt levels undermine financial performance in MFIs, reducing profitability and operational sustainability. Excessive reliance on debt financing increases financial risk and interest obligations, thereby constraining the resources available for productive investments and client outreach.

From the perspective of agency theory, higher leverage intensifies conflicts between debtholders and equity-holders, as managers may undertake risky projects to satisfy debt covenants or avoid default, potentially harming overall institutional stability (Jia & Bradbury, 2021; Malik et al., 2021). Likewise, risk management theory suggests that excessive leverage heightens exposure to repayment defaults and liquidity challenges, thereby diminishing MFIs' ability to absorb shocks and sustain long-term operations (Hossain et al., 2024).

Empirical studies confirm these findings. For instance, Nourani et al. (2020) and Mia et al. (2023) reported that excessive leverage weakens MFI profitability by increasing repayment burdens and reducing managerial flexibility. Similarly, Rasel and Win (2020) found that highly leveraged MFIs face greater financial fragility, undermining both their financial sustainability and social outreach objectives. On the other hand, moderate levels of

leverage may offer growth capital, but when debt reliance surpasses optimal levels, the risks outweigh the benefits (Bharti & Malik, 2022).

In the context of Pakistani MFIs, the evidence indicates that maintaining prudent leverage levels is critical for balancing financial stability with the dual mission of outreach and sustainability. Over-leveraged institutions risk not only declining profitability but also potential erosion of stakeholder trust, which is essential for sustaining donor support, investor confidence, and client loyalty.

4.7.11 Board Risk Committee Index and MFI Performance

The moderating variable, board risk committee index, demonstrates a significant positive effect on the performance of MFIs across all models where it is included. Specifically, the coefficients for models 10, 11, and 12 (0.7617***, 0.7600**, and 9.6539***) indicate that the presence of an effective risk committee significantly enhances institutional performance, particularly in terms of operational self-sufficiency (OSS). This result suggests that stronger risk governance structures, reflected in the size, independence, and competence of the board risk committee, contribute positively to monitoring, oversight, and risk mitigation, thereby improving sustainability.

From the lens of agency theory, the establishment of an independent and competent risk committee reduces information asymmetry and managerial opportunism by enhancing monitoring functions (Jia & Bradbury, 2021). Such governance structures limit excessive risk-taking behaviors by management, aligning managerial decisions with the long-term interests of stakeholders. Similarly, risk management theory posits that the capacity to identify, assess, and mitigate risks at the board level enhances the institution's resilience against credit risk shocks, loan defaults, and liquidity constraints (Hossain et al., 2024).

Empirically, these findings align with prior research which shows that risk governance mechanisms such as risk committees play a pivotal role in strengthening firm performance. For example, Al-Sartawi (2018) and Nasreen et al. (2021) demonstrated that the presence of board-level risk committees improves financial oversight, reduces default probability, and enhances financial sustainability. More recently, studies by Chen et al. (2022) and Boubaker et al. (2023) highlighted that risk committees contribute significantly to operational efficiency and stakeholder confidence, especially in financial institutions operating in high-risk environments.

In the context of Pakistani MFIs, these findings underscore the importance of establishing and strengthening board risk committees to ensure prudent oversight of credit and operational risks. By enhancing monitoring capacity and fostering a culture of risk awareness, MFIs can not only mitigate financial vulnerabilities but also sustain their dual mission of profitability and outreach.

4.7.12 Moderating Effect of Risk Committee Index on PAR and MFIs Performance

The interaction term between portfolio at risk and board risk committee index is positive and statistically significant across the three models where it was tested, with coefficients of 0.1511** (Model 10), 0.2113** (Model 11), and 2.0736* (Model 12). These findings indicate that the presence of a strong and effective risk committee moderates the adverse impact of credit risk on the performance of MFIs. In other words, while higher PAR typically reduces profitability and sustainability, the establishment of a competent and independent risk committee can mitigate these negative effects, allowing MFIs to sustain operational self-sufficiency and improve returns.

From the perspective of agency theory, this moderating effect highlights the monitoring role of governance structures in reducing managerial opportunism and excessive risk-taking (Jensen & Meckling, 1976). An independent and competent risk committee enhances board oversight, ensuring that loan portfolio quality is effectively managed and corrective measures are timely undertaken. Similarly, risk management theory suggests that risk committees improve the institution's ability to anticipate and address portfolio risks through stronger internal controls, robust risk assessment practices, and improved risk culture (Mikes & Kaplan, 2015; Hossain et al., 2024).

Empirical evidence supports this moderating role of risk committees. For instance, Boubaker et al. (2023) found that board-level risk committees strengthen the resilience of financial institutions by reducing the sensitivity of firm performance to risk exposures. Likewise, Jia and Bradbury (2021) reported that financial institutions with well-structured risk committees demonstrate lower performance volatility in the face of credit shocks. In the microfinance context, Nasreen et al. (2021) emphasized that risk committees are critical in balancing social outreach with financial sustainability by ensuring loan portfolio risks are effectively controlled.

In the context of Pakistani MFIs, these findings imply that risk committees act as a risk-buffering mechanism, reducing the detrimental effect of high PAR on financial and operational performance. Strengthening board-level risk governance, therefore, is essential not only for managing default risk but also for achieving the dual objectives of outreach and sustainability in the microfinance sector.

CHAPTER 5

CONCLUSION

5.1 Introduction

The primary objective of this study is to investigate the impact of corporate governance, financial inclusion, and credit risk on the performance of MFIs in Pakistan, with a specific focus on the moderating role of the board risk committee. This final chapter seeks to conclude this study by summarizing the key findings, highlighting its contributions and limitations, and offering recommendations for future studies. Section 5.2 provides a detailed summary of the main findings, including the relationships between corporate governance, financial inclusion, credit risk, and MFIs performance as measured by return on assets, return on equity, and operational self-sufficiency. Section 5.3 discusses the study's contributions to both academic literature and practical implications for MFIs, policymakers, and practitioners. This is followed by the limitations of this study in Section 5.4. Finally, Section 5.5 offers suggestions for further research, particularly in areas that can expand upon the findings and address the study's limitations.

5.2 Summary of the Findings

This study investigates the influence of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in Pakistan, focusing on three key performance indicators: return on assets, return on equity, and operational self-sufficiency. The hypotheses tested in the study and the key findings are presented in Table 5.1, Table 5.2 and Table 5.3 respectively

The first performance indicator examined in this study is return on assets, which measures the profitability of MFIs relative to their total assets. In line with the study's first objective to investigate the impact of corporate governance on MFIs performance, the results demonstrate that corporate governance mechanisms significantly influence ROA. Board size and board independence both show strong positive associations ($p < 0.01$), confirming H1(a) and H1(b), and indicating that larger and more independent boards enhance monitoring and decision-making effectiveness (Adams & Ferreira, 2009; Pathan, 2009). The presence of female directors also has a significant positive relationship with ROA ($p < 0.05$), thereby supporting H1(c) and aligning with arguments that gender diversity contributes to stronger governance outcomes (Terjesen et al., 2016). The audit committee is likewise significant and positive ($p < 0.01$), supporting H1(d) and emphasizing the role of audit oversight in strengthening accountability (Klein, 2002).

With respect to the second objective, which assesses the impact of financial inclusion, the results indicate that interest rates (APR) negatively influence ROA ($p < 0.05$), supporting H2(a), while operational efficiency positively contributes to ROA ($p < 0.05$), supporting H2(b). These findings reinforce the dual role of financial inclusion in balancing institutional viability with affordability (Cull et al., 2011).

Addressing the third objective, focused on credit risk, the results show that PAR negatively affects ROA ($p < 0.01$), supporting H3(a), NPL do not have a significant impact, thus H3(b) is not supported. This suggests that overall portfolio quality, rather than individual loan performance, is a more immediate determinant of profitability in the MFI context.

Finally, in line with the fourth objective, the study confirms that the board risk committee index positively moderates the relationship between PAR and ROA ($p < 0.01$), supporting H4. This implies that specialized board committees enhance institutional resilience against credit risk exposure, thereby strengthening asset returns (Minton et al., 2014).

Table 5.1: Summary of Research Hypotheses and Findings (ROA)

No.	Variable	Hypothesis	Findings	Support Status
H1(a)	Corporate Governance	Board size has a positive impact on ROA of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(b)	Corporate Governance	Board independence is positively associated with the ROA of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(c)	Corporate Governance	The presence of female directors on the board is positively associated with ROA of MFIs.	p-value > 0.05, no significant relationship	Supported
H1(d)	Corporate Governance	The presence of audit committee members on the board is positively associated with ROA of MFIs.	p-value < 0.05, significant positive impact	Supported
H2(a)	Financial Inclusion	Interest rates/Annual percentage rate are negatively associated with ROA of MFIs.	p-value < 0.05, significant negative impact	Supported
H2(b)	Financial Inclusion	Operational efficiency is positively associated with the ROA of MFIs.	p-value < 0.05, significant positive impact	Supported
H3(a)	Credit Risk	Portfolio at risk is negatively associated with ROA of MFIs.	p-value < 0.05, significant negative impact	Supported
H3(b)	Credit Risk	Non-performing loans are negatively associated with the ROA of MFIs.	p-value > 0.05, no significant relationship	Not Supported
H4	Board risk committee	The board risk committee index positively moderates the relationship between PAR and ROA of MFIs.	p-value < 0.05, significant moderating effect	Supported

The second dependent variable, return on equity, measures the financial performance of MFIs by assessing the return generated on shareholders' equity. The findings largely mirror those of ROA, with certain notable distinctions.

Table 5.2: Summary of Research Hypotheses and Findings (ROE)

No.	Variable	Hypothesis	Findings	Support Status
H1(a)	Corporate Governance	Board size has a positive impact on ROE of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(b)	Corporate Governance	Board independence is positively associated with the ROE of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(c)	Corporate Governance	The presence of female directors on the board is positively associated with ROE of MFIs.	p-value > 0.05, no significant relationship	Supported
H1(d)	Corporate Governance	The presence of audit committee members on the board is positively associated with the ROE of MFIs.	p-value < 0.05, significant positive impact	Supported
H2(a)	Financial Inclusion	Interest rates/Annual percentage rate are negatively associated with ROE of MFIs.	p-value < 0.05, significant negative impact	Supported
H2(b)	Financial Inclusion	Operational efficiency is positively associated with the ROE of MFIs.	p-value < 0.05, significant positive impact	Supported
H3(a)	Credit Risk	Portfolio at risk is negatively associated with ROE of MFIs.	p-value < 0.05, significant negative impact	Supported
H3(b)	Credit Risk	Non-performing loans are negatively associated with the ROE of MFIs.	p-value > 0.05, no significant relationship	Not Supported
H4	Board risk committee	The board risk committee index positively moderates the relationship between PAR and ROE of MFIs.	p-value < 0.05, significant moderating effect	Supported

The findings for return on equity, which measures profitability relative to shareholders' equity, largely mirror those of ROA but highlight some distinct dynamics. The results from the final model show that board size, board independence, female representation, and the audit committee each exert significant positive effects on ROE ($p < 0.05$ or lower), confirming that stronger governance structures enhance equity-based returns through improved oversight and decision-making (Anderson & Reeb, 2004; Terjesen et al., 2016). With respect to financial inclusion, a higher annual percentage rate negatively influences ROE ($p < 0.05$), while operational efficiency strengthens it ($p < 0.05$), consistent with the view that streamlined operations improve institutional profitability whereas high

lending costs undermine equity gains (Cull et al., 2007). In terms of credit risk, both portfolio at risk and non-performing loans are negatively related to ROE ($p < 0.01$), highlighting how deteriorating asset quality weakens equity returns (Ahmad & Ariff, 2007). Importantly, the moderating effect of the board risk committee index is significant ($p < 0.05$), demonstrating that effective board-level risk governance can mitigate the adverse impact of credit risk on equity performance. This aligns directly with the study's objective of assessing how governance and risk oversight practices sustain profitability in the microfinance sector.

Table 5.3: Summary of Research Hypotheses and Findings (OSS)

No.	Variable	Hypothesis	Findings	Support Status
H1(a)	Corporate Governance	Board size has a positive impact on OSS of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(b)	Corporate Governance	Board independence is positively associated with the OSS of MFIs.	p-value < 0.05, significant positive impact	Supported
H1(c)	Corporate Governance	The presence of female directors on the board is positively associated with OSS of MFIs.	p-value > 0.05, no significant relationship	Supported
H1(d)	Corporate Governance	The presence of audit committee members on the board is positively associated with OSS of MFIs.	p-value < 0.05, significant positive impact	Supported
H2(a)	Financial Inclusion	Interest rates/Annual percentage rate are negatively associated with OSS of MFIs.	p-value < 0.05, significant negative impact	Supported
H2(b)	Financial Inclusion	Operational efficiency is positively associated with OSS of MFIs.	p-value < 0.05, significant positive impact	Supported
H3(a)	Credit Risk	Portfolio at Risk (PAR) is negatively associated with OSS of MFIs.	p-value < 0.05, significant negative impact	Supported
H3(b)	Credit Risk	Non-performing loans are negatively associated with the OSS of MFIs.	p-value > 0.05, no significant relationship	Not Supported
H4	Board risk committee	The board risk committee index moderates the relationship between PAR and OSS of MFIs.	p-value < 0.05, significant moderating effect	Supported

Operational self-sufficiency, the third performance measure, evaluates the capacity of MFIs to sustain operations without relying on external funding. The final results indicate

that board size (H1a) and board independence (H1b) both exert significant positive effects on OSS, highlighting how effective governance enhances operational sustainability. However, the presence of female directors (H1c) shows no significant impact, consistent with the findings for ROA and ROE, suggesting that gender diversity on boards has yet to translate into measurable improvements in self-sufficiency. The audit committee (H1d) contributes positively and significantly, reinforcing its role in strengthening financial oversight and ensuring accuracy, which is critical for sustaining MFIs.

Regarding financial inclusion proxies, higher APRs (H2a) significantly reduce OSS, indicating that costly pricing undermines operational sustainability, while operational efficiency (H2b) positively influences OSS, confirming that effective resource utilization directly improves the self-reliance of MFIs (Hudon & Traca, 2011). In terms of credit risk, a high Portfolio at Risk (H3a) negatively impacts OSS, while the effect of NPLs (H3b) remains statistically insignificant, reflecting that although credit losses pose risks, their direct influence on operational sustainability may vary across institutions.

Finally, the moderating effect of the board risk committee index on the relationship between PAR and OSS is positive and significant, demonstrating that strong risk governance mechanisms can buffer MFIs against the adverse effects of credit risk (Ellul & Yerramilli, 2013). These results emphasize that while profitability (ROA, ROE) reflects short-term gains, OSS highlights the long-term ability of MFIs to remain financially independent.

5.3 Contributions of the Study

This study provides valuable contributions to academic literature, policy development, and practical application by analyzing the impact of corporate governance, financial inclusion, and credit risk on the performance of microfinance institutions in

Pakistan. It further enriches the debate by examining the moderating role of the board risk committee. In doing so, it addresses a critical research gap in developing economies and offers evidence-based implications for scholars, regulators, and practitioners.

5.3.1 Contribution to Academic Literature

This study makes several important contributions to the existing body of academic literature, both theoretical and empirical, in the domain of microfinance institutions. Firstly, it contributes to the corporate governance literature by providing robust empirical evidence that governance mechanisms specifically board size, board independence, female representation, and audit committees significantly enhance the financial performance of MFIs. While much of the earlier governance research has been centered on commercial banks and listed firms in developed markets, this study extends the debate to the microfinance context of Pakistan. The findings validate the propositions of agency theory, demonstrating that larger and more independent boards play a critical role in reducing agency costs, enhancing monitoring, and improving accountability. Moreover, the inclusion of women on boards and the establishment of active audit committees provide diversity of perspectives and stronger internal control systems, which are empirically shown to contribute positively to MFIs performance. In this way, the study strengthens the generalizability of corporate governance theories by confirming their relevance in a non-traditional, socially driven financial sector.

Secondly, this study makes a distinct contribution to the financial inclusion literature by showing that operational efficiency and annual percentage rates have a direct bearing on the sustainability and performance of MFIs. Previous studies have often treated financial inclusion as an outreach variable (e.g., number of borrowers, women clients, rural

penetration), while neglecting its efficiency and pricing dimensions. By demonstrating that operational efficiency improves sustainability and that excessive interest rates can undermine performance, this study broadens the conceptualization of financial inclusion beyond outreach, incorporating institutional efficiency and client affordability. These findings align with stakeholder theory, which posits that organizations must balance the interests of multiple stakeholders including clients, communities, and investors to maintain legitimacy and long-term viability. By empirically linking financial inclusion proxies with performance, the study provides a more nuanced understanding of how inclusive financial practices translate into institutional outcomes.

Thirdly, this study contributes to the credit risk and risk management literature by empirically testing the moderating role of the board risk committee in the relationship between portfolio at risk and performance. While prior research has widely examined credit risk indicators such as non-performing loans and portfolio at risk in commercial banking, little evidence exists on how governance mechanisms at the board level interact with credit risk in the microfinance sector. The findings demonstrate that MFIs with independent, competent, and adequately resourced risk committees are better able to mitigate the negative effects of portfolio risk on performance. This provides empirical validation of risk management theory, which emphasizes the importance of structured risk monitoring frameworks in reducing exposure to losses. Thus, this study advances the literature by integrating governance and risk management perspectives, highlighting that risk oversight bodies are not only symbolic but functionally effective in safeguarding institutional sustainability.

Finally, by integrating agency theory, stakeholder theory, and risk management theory into a single framework, this study makes a conceptual contribution to the academic discourse on MFIs. Previous studies have often relied on one dominant theoretical lens, leading to fragmented insights. In contrast, this research demonstrates that MFIs performance cannot be fully explained by a single theory; rather, it is the interaction of governance mechanisms (agency theory), stakeholder engagement (stakeholder theory), and risk oversight (risk management theory) that provides a comprehensive explanation. This theoretical integration offers a holistic understanding of MFI performance and opens new avenues for future research to test multi-theory frameworks in emerging markets and socially oriented financial institutions.

5.3.2 Practical Implications

The findings of this study also carry significant practical implications for MFI managers, boards of directors, and other stakeholders directly engaged in institutional operations. First, the results highlight the critical role of governance in improving performance. MFIs should view governance not merely as compliance with regulations but as a strategic asset. Expanding board size to include members with diverse skills and perspectives, increasing the proportion of independent directors, and promoting gender diversity are measures that can strengthen board oversight and decision-making. Furthermore, empowering audit committees with sufficient resources and authority can improve accountability, reduce mismanagement, and foster greater transparency, thereby enhancing institutional credibility among donors and investors.

Second, operational efficiency emerged as an important driver of financial performance and sustainability. Managers must therefore prioritize efficiency-enhancing

strategies in their day-to-day operations. This includes investing in digital technologies such as mobile banking platforms, digital payment systems, and process automation to reduce operating costs. At the same time, optimizing internal processes, streamlining service delivery, and adopting customer-centric approaches will enable MFIs to serve clients more effectively. By treating efficiency as a long-term strategic goal rather than a short-term cost-saving measure, MFIs can achieve financial sustainability while expanding outreach to underserved populations.

Third, the findings underscore that effective credit risk management is vital for institutional resilience. In particular, the moderating effect of the board risk committee on the relationship between portfolio at risk and performance demonstrates that strong risk governance can significantly reduce vulnerability. MFIs should therefore establish risk committees at the board level, ensuring that these committees are independent, composed of financially competent members, and vested with adequate authority to influence decision-making. Such committees can provide timely identification of potential defaults, act as an early warning system, and develop risk mitigation strategies that safeguard financial performance.

Finally, the results imply that managers must integrate governance, efficiency, and risk management into a unified operational framework. Rather than treating these as separate areas, MFIs should embed them into their strategic planning and performance monitoring systems. Doing so will not only strengthen institutional performance but also enhance trust among clients, investors, and other stakeholders, thereby reinforcing the long-term sustainability of the microfinance sector.

5.3.3 Policy Implications

The findings of this study offer several important policy implications for regulators, policymakers, and practitioners within the microfinance sector of Pakistan. First, the evidence that higher levels of credit risk, measured by PAR and NPL, significantly undermine MFI performance highlights the urgent need for stronger prudential regulation and supervisory mechanisms. Policymakers, such as the State Bank of Pakistan and the Pakistan Microfinance Network, should design stricter credit risk management frameworks that include robust loan classification standards, early warning systems, and borrower monitoring mechanisms. Such measures will enable MFIs to identify potential defaults at an early stage and reduce systemic risk.

Second, the results demonstrate that financial inclusion, particularly through improved operational efficiency, enhances MFI performance. This finding suggests that policymakers should prioritize initiatives that facilitate cost-efficient service delivery, especially through digital financial technologies. Policies that promote the adoption of mobile banking, fintech partnerships, and branchless banking will allow MFIs to reach unbanked populations at lower costs, thereby strengthening both outreach and sustainability.

Third, the study highlights the trade-off between high lending rates (APR) and performance, underscoring the need for balanced regulatory intervention. Policymakers should consider introducing interest rate guidelines that protect clients from excessive borrowing costs while ensuring that MFIs remain financially viable. Such policies would help achieve a dual objective of consumer protection and institutional sustainability.

Fourth, the positive impact of firm size and leverage on MFI performance indicates that capital adequacy and institutional strengthening are vital for resilience. Policymakers

should therefore promote capital market access, concessional funding, and donor-backed credit lines for smaller MFIs, enabling them to expand, achieve economies of scale, and compete effectively with larger institutions.

Finally, this study emphasizes the critical role of governance in mitigating agency problems and improving long-term performance. In particular, the moderating role of the Board Risk Committee (BRC) on the relationship between PAR and performance provides valuable policy insights. The findings suggest that MFIs with strong, independent, and competent risk committees are better able to manage portfolio risk and safeguard financial performance. Consequently, regulators should encourage MFIs to institutionalize formal risk committees at the board level, ensure adequate independence and expertise within these committees, and adopt transparent reporting mechanisms. Such governance reforms would strengthen internal oversight, reduce excessive risk-taking, and enhance the overall stability of the microfinance sector.

In sum, the findings of this study call for a comprehensive policy approach that simultaneously strengthens credit risk management, promotes financial inclusion through cost efficiency, balances affordability with sustainability, enhances access to capital, and reinforces governance mechanisms, particularly through the establishment of effective board risk committees. Together, these measures can contribute to a more sustainable, resilient, and inclusive microfinance sector in Pakistan.

5.4 Limitations of the Study

This study focuses exclusively on the microfinance sector in Pakistan, specifically investigating the influence of corporate governance, financial inclusion and credit risk on the performance of MFIs. It has certain limitations inherent to its scope, methodology, and

the availability of data, which should be acknowledged when interpreting the findings. First, the study is limited by its focus on MFIs in Pakistan, which may reduce the generalizability of results to MFIs in other countries or financial institutions in Pakistan that operate under different regulatory frameworks, such as Commercial banks, insurance companies, and securities firms. Unlike non-financial institutions, financial companies such as these are subject to unique regulatory requirements and risks, making it necessary to exclude them from the sample. Additionally, the study's focus on Pakistan means that its findings are specific to the political, regulatory, and economic environment of a single country, which may differ significantly from those of other developing countries.

Another limitation is related to the data on corporate governance. The study relies primarily on internal corporate governance mechanisms, such as board size, board independence, the presence of female directors and audit committees. Although these internal mechanisms are easier to quantify using data available in annual reports, they may not fully capture the entire governance landscape of MFIs. External governance mechanisms such as takeover protections, shareholder activism, and market discipline play an equally critical role in enhancing governance practices but are more difficult to quantify and were therefore excluded from this study. Consequently, the findings may be limited by this narrow focus, potentially overlooking significant external governance factors that could affect MFIs performance. Additionally, the use of annual report data may not reflect the true quality of governance practices. For instance, the presence of independent directors does not necessarily translate into effective governance if those directors lack real independence or the commitment to monitor management rigorously. Therefore, while the study uses proxies that are widely accepted in governance literature, these measures may not fully capture the nuances of corporate governance practices within MFIs.

Another limitation is tied to the measurement of financial inclusion and credit risk factors. For financial inclusion, this study uses operational efficiency and annual percentage rate as proxies. While these measures are useful in assessing the operational aspects of financial inclusion, they may not comprehensively capture the broader financial inclusivity practices of MFIs, such as accessibility to financial services for marginalized communities or the depth of outreach to underserved populations. Similarly, credit risk is measured by two variables: portfolio at risk and non-performing loans. While these are common and widely recognized measures of credit risk, they may not cover all aspects of risk exposure faced by MFIs, particularly those related to informal lending practices or unreported loan restructuring efforts. The limitations in these measurement approaches mean that certain subtleties in the financial inclusion and credit risk dimensions may not be fully represented.

The study's use of secondary data from publicly available sources such as annual reports also pose limitations. Data collection through secondary sources inherently lacks the depth that might be achieved through primary data collection methods, such as surveys or interviews with board members or MFIs managers. Secondary data may also be susceptible to bias, as publicly disclosed information is often curated to reflect favourable governance practices and financial performance, potentially omitting or obscuring challenges that MFIs face in real-time. Moreover, the study's reliance on static, annual data limits the ability to capture the dynamic changes in governance practices, operational efficiency, and risk management that may occur within shorter timeframes.

Finally, the moderating role of the board risk committee is explored through indices based on board size, independence, and competence. While these components are significant aspects of the committee's potential effectiveness, they do not fully encompass the entire

scope of a board risk committee's activities or its engagement in risk management. The study does not delve into the actual risk policies, decision-making processes, or specific actions taken by the committee members, which may vary greatly across different MFIs. Additionally, this study uses quantitative methods to investigate the relationships between governance variables, financial inclusion, and credit risk on performance. However, it does not include qualitative insights, which might have provided more context regarding how and why certain governance practices affect performance outcomes in MFIs.

5.5 Suggestions for Further Research

The findings of this study reveal that the financial performance of MFIs in Pakistan is significantly influenced by corporate governance factors, credit risk, and financial inclusion elements, moderated by the role of the board risk committee. Despite these insights, there remain numerous avenues for future research that can expand upon and deepen the understanding of the mechanisms affecting MFIs performance within Pakistan and beyond. Future research could consider alternative metrics for corporate governance factors, credit risk, and financial inclusion to verify or contrast with this study's findings. For instance, while board size, board independence, and audit committee representation were pivotal in this study, additional factors like the expertise and diversity of board members, and the frequency of board meetings could be further explored. Similarly, alternative indicators of credit risk, such as debt-to-income ratios or customer default rates, could offer additional dimensions for understanding risk management within MFIs. In terms of financial inclusion, exploring metrics like client retention rates, geographical outreach, and the diversity of financial services offered could provide a more comprehensive view of how inclusion practices impact MFIs sustainability and performance.

Additionally, while this study is focused on MFIs in Pakistan, there is significant value in extending this study to MFIs operating in other developing countries, especially within South Asia or countries sharing similar economic and institutional challenges, such as India, Bangladesh, Nepal, and Sri Lanka. Comparative or cross-country analyses could highlight the similarities and differences in the factors affecting MFIs performance across different socio-political and economic landscapes, offering insights that could improve the generalizability of findings. Research could also focus on developing a larger, more varied sample that includes financial and non-financial organizations to see if these corporate governance and risk factors apply across sectors. Expanding the scope to a broader array of types of microfinance institutions, including both for-profit and nonprofit entities, could also reveal variations in the effectiveness of governance and risk management practices across different organizational structures.

This study adopted a quantitative approach, grounded in a post-positivist research paradigm, to explore the relationships between corporate governance factors, credit risk, and financial inclusion, and MFIs performance. Future studies could approach this study from a critical or interpretive perspective, potentially using qualitative methodologies to capture the nuanced and often subjective processes through which governance and risk management affect performance. In-depth interviews with board members, executives, and other key stakeholders within MFIs could uncover insights into how specific governance practices are implemented in real-world contexts, as well as their perceived impact on operational and financial outcomes. Such qualitative research could also address other unexplored areas, such as the cultural factors influencing board effectiveness and the informal mechanisms through which MFIs navigate regulatory and financial risks.

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