

Central Bank Regulations and the Financial Sustainability of National Microfinance Banks in Nigeria

¹Abdulaziz Aliyu; ²Nasamu Gambo Ph.D ; ³Ozigi Emmanuel Enesi ; ⁴Musa Ibrahim

^{1,2,3}Department of Business Administration, Faculty of Management Science, Nile University of Nigeria.

⁴Department of Banking and Finance, Prince Abubakar Audu University, Anyigba, Nigeria

doi: <https://doi.org/10.37745/ejaaf.2013/vol11n107397> Published October 09 2023

Citation: Aliyu A., Gambo N., Enesi O.E., Ibrahim M. (2023) Central Bank Regulations and the Financial Sustainability of National Microfinance Banks in Nigeria, *European Journal of Accounting, Auditing and Finance Research*, Vol.11, No. 10, pp.73-97

ABSTRACT: *This study examines the impact of Central Bank Regulations on the Financial Sustainability of National Microfinance Banks in Nigeria. The study employed the ex-post-facto research design. Data was collected from the central bank bulletins and the financial reports of the sample seven national Microfinance banks. The data collected was analysed using Multivariate Analysis of Variance (MANOVA). The findings derived from the empirical analysis revealed significant relationships between the Minimum Capital Requirement, and the financial sustainability indicators, including returns on assets (ROA) and returns on equity (ROE) and confirmed that the Minimum Capital Requirement imposed by the central bank has a significant impact on the financial sustainability of microfinance institutions. Based on the findings of the study, the following policy recommendations can be made; Policymakers and regulators should continue to enforce and monitor the Minimum Capital Requirement for microfinance banks. Adequate capitalization is essential for the financial sustainability and profitability of microfinance institutions. However, the capital requirement should be flexible enough to accommodate the specific needs and characteristics of microfinance banks, considering their focus on serving the underserved segments of the population. And Microfinance banks should prioritize maintaining an adequate level of capital to ensure their ability to generate returns on assets. This can be achieved through effective capital management strategies, including attracting additional capital from investors, optimizing internal capital generation, and ensuring efficient use of capital in productive activities.*

KEYWORDS: financial sustainability, minimum capital requirements, returns on assets (ROA) and returns on equity (ROE)

INTRODUCTION

Microfinance banks (MFBs) play a vital role in the Nigerian economy by providing financial services to low-income individuals and micro-enterprises who are typically

excluded from traditional banking services (Gambo et al., 2022). MFBs provide financial services to people who are excluded from traditional banking services, thereby promoting financial inclusion. This helps to reduce poverty by providing access to credit, savings, insurance, and other financial services. It provides loans to small businesses, which helps to create jobs and stimulate economic growth (Ngumo et al., 2020). By providing access to credit, MFBs can help small businesses expand their operations, hire more workers, and increase their productivity. Equally, MFBs play a critical role in providing financial services to rural communities in Nigeria. By providing access to credit and other financial services, MFBs can help rural communities develop their economies, increase their incomes, and improve their standard of living.

The Central Bank of Nigeria (CBN) plays a critical role in regulating MFBs in Nigeria by setting licensing criteria, prudential regulations, supervising their operations, enforcing regulations, and building their capacity (Seun et al., 2020). The CBN is responsible for issuing licenses to MFBs in Nigeria. MFBs must meet certain requirements and criteria before they can be licensed to operate. The CBN sets these criteria and oversees the licensing process. Equally, the Bank sets prudential regulations that MFBs must adhere to in order to ensure their financial stability and protect the interests of depositors. These regulations cover areas such as capital adequacy, asset quality, liquidity, and risk management. The essence of the regulation to some extent is to enhance financial sustainability of the MFBs (Chmelíková & Redlichová, 2020). Sustainability refers to the long-term continuation of the Microfinance programme after the project activities have been discontinued. It entails that appropriate systems and processes have been put in place that will enable the Microfinance services to be available on a continuous basis and the clients continue to benefit from these services in a routine manner. This also would mean that the programme would meet the needs of the members through resources raised on their own strength, either from among themselves or from external sources.

The outcome of regulating the Microfinance Banks has remained contentious over the years, and hence the need to critically examine the regulatory framework. The rapid failure of Microfinance banks (MFBs) in Nigeria in 2010 led to the withdrawal of 103 microfinance banks licenses by Central Bank of Nigeria (CBN). This failure has cast doubt on the ability of MFBs in Nigeria to be financially sustainable. The persistent failure of MFBs resulting from weak management, poor internal control mechanism and lack of adequate risk management has necessitated the need for setting up good corporate governance structure and improvement in financial sustainability (Adeyemi & Fagbemi, 2019). While regulations have helped professionalise the microfinance sector, their effectiveness in promoting social goals remains doubtful due to poorly designed regulations (Siwale and Okoye, 2017).

However, empirical evidence on the effects of regulation on MFBs social and financial performance remains very limited, particularly in Nigeria (Alobari et al., 2019). Only a few known studies focus on this aspect of MFB regulation but some are global in nature while others used less rigorous methodologies based largely on qualitative studies (Kundu, 2016). Meanwhile, MFB regulation varies significantly across countries and this would likely impact their financial and social performance differently across continents. This study makes an interesting empirical contribution to our understanding of the effect of regulations and the extent to which, if inappropriate can enhance financial sustainability. Specifically, the study focused on the regulatory provisions that have a bearing on the financial and social sustainability of the microfinance banks. This study is therefore timely from a policy perspective as it throws light on unintended consequences and the tensions that arise within the sector and MFBs where regulations are found to be poorly designed. Focusing on National Microfinance Banks is interesting because it gives space for retrospection as it focuses on post-regulation experiences of the Banks. This study examined the impact of Central Bank Regulation on Financial Sustainability of National Microfinance Banks in Nigeria. The specific objectives of the study are to:

- i. determine the impact of Minimum Capital Requirement on Returns on Assets in National Microfinance Banks
- ii. assess the impact of Minimum Capital Requirement on Returns on Equity in National Microfinance Banks

The study test the following hypotheses postulated in null forms;

HO₁: Minimum Capital Requirement has no significant impact on Returns on Assets in National Microfinance Banks

HO₂: Minimum Capital Requirement has no significant effect on Returns on Equity in National Microfinance Banks

LITERATURE REVIEW

Conceptual Review

Microfinance

Microfinance is the provision of financial services to low-income individuals and households, as well as micro, small and medium enterprises (Tehulu, 2021). The idea of Microfinance started back in 1974 by Professor M. Yunus by lending 27 USD to 40 Women and later forming the Grameen Bank, today, the microcredit concept is practiced in more than 100 countries. According to Yunus “Microcredit provides a sustainable business model to solve the world's problems.

Microfinance can be seen as institutions developed to make available small-scale financial services specifically to unbanked and low-income individual, that is, “a broad range of financial services such as deposits, loans, payments services, money transfers and insurance, to the poor and low-income households and their farm or non-farm micro-enterprises” (Tehulu, 2021). This definition is in consistent with the definition by propounded by the Asian Development Bank (ADB), which posit that microfinance deals with making the availability of a wide range of specifically financial services such as money transfers, payment services, insurance services, loans and deposits to low income and poor people and microbusinesses.

There are different types of Microfinance Banks in Nigeria, depending on the scope of coverage of the Bank. Specifically, there National, State, Tier 2 Unit, and Tier 1 Unit Microfinance Banks in Nigeria. As at June 2021, there are about 876 Microfinance Banks under the regulation of the CBN. The rapid growth and development of the informal financial sector in many rural areas to provide financial services to the poor and less-privileged people outside the conventional financial services encouraged government action through new policies aimed at regulating microfinance institutions in Nigeria. This study is based on the National microfinance Banks.

Financial Sustainability of Microfinance Banks

Sustainability according to Hussain et al (2020) is generally seen as permanence, they define it as the ability to be consistent in performance over time. Sustainability allows a microfinance institution or provider to sustain its operations of providing financial services to those in need. This is largely dependable on the sustainability of the institutions themselves, their market and their legal policy and their consistency on the impact the have on their target consumers. The definition accorded sustainability in this study is a limited one. “Sustainability” implies a means to maintain an existing structure (Mutua et al., 2020). The identification of such means and the continuous provision for such means is sustainability. Financial sustainability is the key to organizational survival. Finance requires maintaining the continuous existence of an organization’s programmes.

There are several dimensions in which the Sustainability of microfinance institutions depending on the requirement of the users. These are: financial sustainability, human resource sustainability, mission sustainability and programme sustainability. Programme sustainability refers to the situation where customers (clients) have the perception that the services available to them are valuable and sufficiently important and they are willingly ready to take ownership and responsibility of them. The mission sustainability can be seen as its sustainability in its mission. In the long-term mission sustainability will keep the microfinance in its chosen path. Human resource sustainability is when there is an availability of well-qualified manpower capable of support and delivering the financial services as needed to meet the microfinance institution’s mission (Mahajan, 2019).

Financial sustainability can be defined as the scenario in which the microfinance institutions have the operations capacity to generate income that is capable to cover all its costs (costs incurred for current operations and growth support) without any dependance on external support like subsidies. Financial sustainability is also seen by Dunford (2023) as the ability of the microfinance to continuously move towards its objective on its own. These definitions focused on, the ability of the MFB to be self-dependent operationally and also the possibility of profit from its operations. Moreover, Financial sustainability is defined as the “ability of a microfinance provider to cover all of its costs. Achieving financial sustainability means reducing transaction costs, offering better products and services that meet client needs, and finding new ways to reach the unbankable poor. Financial self-sufficiency and operational sustainability are the two stages that financial sustainability can be measured. Accounting-based measurement is generally considered an effective indicator of the company’s financial sustainability (Al-Matari, et al., 2020). Accounting-based measures are the most common and readily available means of measuring organizational performances (Makhija, & Trivedi, 2020). Conventionally, accounting-based performance measures like ROA, ROE, and EPS have commonly been used by shareholders, managers, investors, analysts, and other interested parties to assess current company performances (Khamis et al., 2015). This study measures the financial sustainability of microfinance banks using Return on Assets (ROA) and Return on Equity (ROE).

Theoretical Underpinning

To examine the impact of Central Bank Regulation on Financial Sustainability of National Microfinance Banks in Nigeria, an appropriate theoretical framework would be the Agency Theory. The Agency Theory is concerned with the relationship between principals (such as shareholders or depositors) and agents (such as management or the board of directors) and the potential conflicts of interest that may arise between them. In the case of National Microfinance Banks in Nigeria, the principals are the depositors who entrust their savings to the banks, while the agents are the bank management and the board of directors who are responsible for managing the funds.

Central Bank Regulation plays a vital role in shaping the behaviour of National Microfinance Banks in Nigeria. The regulatory framework provides guidelines and standards for financial institutions' operations, including capital adequacy, risk management, governance, and liquidity requirements. The impact of Central Bank Regulation on financial sustainability can be examined using some components of Agency Theory.

Principal-Agent Relationship which refers to the relationship between depositors (the principal) and the bank management and board of directors (the agents). Central Bank Regulation seeks to align the interests of the depositors and the agents by setting guidelines

for corporate governance and risk management. Also, there is information asymmetry, being the situation where one party (usually the agent) has more information than the other party (usually the principal). Central Bank Regulation seeks to address this by requiring banks to provide timely and accurate information to depositors, shareholders, and other stakeholders.

Equally, there is monitoring and control, which is the mechanisms that principals use to monitor and control the behaviour of agents. Central Bank Regulation provides a framework for monitoring and controlling the behaviour of National Microfinance Banks in Nigeria, including the use of prudential ratios, on-site examinations, and off-site supervision. Equally, there is incentive alignment. This refers to the mechanisms that principals use to align the interests of agents with their own interests. Central Bank Regulation seeks to align the interests of National Microfinance Banks in Nigeria with the interests of depositors by setting standards for capital adequacy, risk management, governance, and liquidity requirements.

Hence, the Agency Theory provides an appropriate theoretical framework for examining the impact of Central Bank Regulation on the Financial Sustainability of National Microfinance Banks in Nigeria. The theory's components can be used to analyze the principal-agent relationship, information asymmetry, monitoring and control, and incentive alignment in the context of Central Bank Regulation.

Empirical Review

This section presents a review of prior empirical studies that explored the relationship between regulations and the performance of Micro-Finance Banks. The reviewed empirical studies were based on the broad and specific objectives of the study. Morales and Rivera (2020) explored the effects of microfinance on education outcomes among low-income households. The study combines survey data with administrative records to examine the relationship between microfinance participation and children's school enrolment, attendance, and educational attainment. Morales and Rivera (2020) provide insights into the impact of microfinance on education outcomes for low-income households. The combination of survey data and administrative records strengthens the study's empirical basis. The findings underscore the potential of microfinance to break the cycle of poverty by promoting educational opportunities and enhancing human capital development among disadvantaged communities.

Gambo et al. (2022) evaluated the profitability of microfinance banks operating in Nigeria as a precondition of financial sustainability. Profitable banks tend to maintain adequate capital, high deposit base, high liquidity status and high loan quality. Correlational research design was adopted for the study and balanced panel data was used. Financial sustainability microfinance banks were profiled on size, capital adequacy and liquidity status, deposit base and loan quality following a balanced panel design. Multiple regression was used to

analyze the data collected. The study reveals low level of profitability and sustainability, and hence recommends that Government and Monetary authorities (CBN) should increase the capital requirements for the establishment of Microfinance Banks as the current requirements are inadequate; embark on effective monitoring of the activities of Microfinance Banks; and promulgate policies that will enhance transparency, proper accountability, and competition in the sector to attract more credible investors.

Kayembe et al. (2021) investigating the factors that influence the sustainability of MFBs in Malawi. A cross-sectional survey was conducted from November to December 2020 among the MFBs employees in the central region of Malawi. Convenience and purposive sampling techniques were used to collect data online using a google form sent via social media platforms. Data were analysed using IBM SPSS software with Statistical significance placed at 0.05. study argues that through commercialization, standardized reporting, and effective loan portfolio management systems, stakeholder-based approach to corporate governance, and favoured board independence through scale and cost management is critical to improving MFBs financial sustainability.

Adams & Tewari (2020) investigated the impact of MFB regulation on their sustainability and outreach performance in selected sub-Saharan African countries using 551 observations covering 71 MFBs across 10 countries for a period of 10 years. Using the dynamic generalized method of moment estimation technique, the study found empirical evidence that regulations have positive significant impacts on both the sustainability and depth of outreach performance of MFBs. In terms of magnitude, the impacts are greater on sustainability than on the depth of outreach. The study recommends that managers and board of directors of unregulated MFBs should take steps to get them regulated through proper budgeting to meet regulatory costs, minimum capital requirements, and engage more with regulatory authorities. Also, regulatory authorities (central banks) should step up the monitoring and supervision and ensure full compliance with regulatory guidelines by MFBs to help protect depositors and the financial system as a whole.

Mutua et al. (2020) investigated the relationship between financial outreach and financial sustainability of deposit taking microfinance institutions (DTMFBS) in Nairobi County, Kenya. The study used a positivism research philosophy and a static panel linear regression model with fixed effects to analyse the data obtained from the Central Bank of Kenya's audited financial statements. The study found that the number of active clients had a statistically significant positive relationship with financial sustainability, while the average loan size and age of the firm had an insignificant relationship. The study also found that credit risk management had a moderating effect on the relationship between financial outreach and financial sustainability. The study recommended that the government should formulate policies to enhance savings with DTMFBs and encourage financial inclusion, and DTMFBs should engage in vigorous financial education to boost financial facilities'

awareness and mitigate credit risk. The study's limitations include the small sample size and the use of secondary data. The policy implication is that policymakers should focus on promoting financial inclusion and credit risk management to enhance the financial sustainability of DTMFBs.

Tehulu (2021) investigated the impact of legal status and location on the financial performance of microfinance institutions (MFBs) in sub-Saharan Africa (SSA). The study uses a panel dataset of 138 MFBs in 31 SSA countries from 2004 to 2014. The study finds that legal status and location significantly influence the capitalization, portfolio quality, profitability, liquidity, and deposit mobilization of MFBs. The study also finds that location moderates the legal status-performance nexus of MFBs within SSA. The study recommends that policymakers should consider the legal status and location of MFBs when designing policies to promote financial inclusion. The limitations of the study include the use of secondary data and the inability to capture all the factors that affect the performance of MFBs. The policy implication of the study is that policymakers should create an enabling environment for MFBs to operate and expand their outreach to underserved communities.

Ngumo et al. (2020) examined the determinants of financial performance of microfinance banks in Kenya. The theory behind the study is that operational efficiency, capital adequacy, firm size, liquidity risk, and credit risk are important factors that affect the financial performance of microfinance banks. The study used secondary data from 7 microfinance banks for a period of 5 years from 2011 to 2015. The data was analysed using correlation and regression analysis. The findings of the study showed that operational efficiency, capital adequacy, and firm size have a positive and statistically significant relationship with financial performance. However, liquidity risk and credit risk were found to have an insignificant negative relationship with financial performance. The study concluded that there is a direct relationship between operational efficiency, capital adequacy, firm size, and financial performance of microfinance banks in Kenya. The study recommends that microfinance banks should focus on improving their operational efficiency and capital adequacy to enhance their financial performance. The limitations of the study include the use of secondary data and the small sample size. The policy implication of the study is that policymakers should focus on creating an enabling environment for microfinance banks to improve their operational efficiency and capital adequacy.

Hussain et al. (2020) examined the impact of competition freedom on the efficiency of microfinance institutions (MFBs) in both social and financial aspects. The study uses data envelopment analysis (DEA) and panel multiple regression analysis to measure the efficiency level of MFBs and examine the effect of competition freedom and other determinants on MFBs' efficiency. The findings suggest that the main reason for MFBs'

inefficiency is both social and financial managerial inefficiency. The level of financial efficiency in MFBs is significantly higher than social efficiency. The freedom of business and monetary factors is found to be significantly negative for MFBs' social efficiency only. Investment freedom and financial freedom are statistically positive for financial efficiency, but negative for the social efficiency of MFBs. The study recommends that policymakers can adapt the empirical findings to formulate policies and strategies to improve the efficiency level of MFBs and make them accessible to the poor. The limitations of the study include the use of secondary data and the limited number of variables considered.

Memon et al. (2022) explored the financial sustainability of microfinance institutions (MFBs) in South Asia and how macroeconomic decisions affect the micro-level decisions in the microfinance sector. The study uses data from 409 South Asian MFBs and macroeconomic variables from respective countries over the period 1999-2017. The empirical analysis uses a fixed-effect model (FEM), two-stage least squares (2SLS) model, and System Generalized Method of Moment (GMM) to address potential endogeneity and overidentification bias. The findings reveal that economic indicators such as foreign investment, human development, inflation, interest rate, private credit, and GDP growth significantly affect the financial sustainability of MFBs. The study concludes that policymakers should consider macroeconomic factors when designing policies for the microfinance sector. The limitations of the study include the use of secondary data and the exclusion of some important variables. The policy implication is that policymakers should focus on creating a stable macroeconomic environment to ensure the financial sustainability of MFBs.

Pham & Doan (2020) investigated the relationship between financial inclusion and financial stability in Asian economies using country-level and bank-level data from 42 countries in 2011, 2014, and 2017. Financial inclusion is assessed by two dimensions: usage of financial services and access to the financial system, while financial stability is proxied by Bank Z-score. The study employs fixed effects regression and random effects regression to capture the impacts of financial inclusion on financial stability. The empirical findings show a weak positive influence of financial inclusion on financial stability. The study provides insightful information for financial institutions and governments to improve their financial development strategy and regulatory framework to enhance financial stability. However, the study has some limitations, such as the use of a single proxy for financial stability and the limited number of variables included in the analysis. The policy implication is that policymakers should focus on promoting financial inclusion to enhance financial stability.

Jungo et al. (2020) examined the impact of financial inclusion and competitiveness on the financial stability of banks in Sub-Saharan African (SSA) and Latin American and Caribbean (LAC) countries, with a focus on the moderating role of financial regulation.

The study uses a sample of 41 SSA countries and 31 LAC countries from 2005-2018. The findings suggest that financial inclusion enhances bank stability in both regions, while competitiveness negatively impacts financial stability. Financial regulation moderates the negative effect of competitiveness on financial stability in both regions, but only contributes to increasing financial stability in LAC countries. The study recommends fostering financial inclusion to improve the welfare of households and the stability of the financial system. The limitations of the study include the use of aggregate data and the potential for endogeneity. The policy implication is that policymakers should focus on promoting financial inclusion and implementing effective financial regulation to enhance financial stability.

Muithya & Muathe (2020) examined the effect of dynamic capabilities on the performance of Micro Finance Institutions (MFBs) in Kenya. The study will be based on various theories, including Resource Based View, Dynamic Capabilities, Theory of Strategic Choice, Institutional Theory, and Balanced Score Card. The study will adopt a positivist approach and a combined descriptive and explanatory cross-sectional research design. The target population will comprise 13 licensed MFBs in Kenya between the year 2017 and 2018. The study will use semi-structured self-administered questionnaires for both quantitative and qualitative data. The findings of the study will provide insights into the challenges faced by MFBs in Kenya and the strategies they can adopt to improve their performance. The study will also have limitations, including the small sample size and the potential for response bias. The policy implication of the study is that policymakers should create an enabling environment for MFBs to thrive and provide financial services to the poor in the society.

Nourani et al. (2021) examined the efficiency of microfinance institutions (MFBs) in achieving financial inclusion objectives of Sustainable Development Goals (SDGs) and providing continuous financial support to the unbanked population. The study uses a unique production process and network data envelopment analysis (NDEA) technique to estimate three different types of efficiencies (operational, financial, and outreach) of 90 MFBs from 2013 to 2018. The findings suggest that the overall efficiency of the MFBs was not up to the required standard, and it became even worse when the financial and social outreach efficiencies were considered. However, operational efficiency (ability to generate intermediaries) was relatively better and remained high among the regulated MFBs. On the contrary, the financial and social outreach efficiencies were found to be better among the unregulated MFBs. The study highlights the divergence in efficiency between regions, legal status, and regulatory environment, with projection analysis suggesting a simultaneous reduction in input and an increase in output of inefficient MFBs to facilitate their attainment of efficiency. The study recommends that policymakers should focus on improving the financial and social outreach efficiencies of MFBs, especially the regulated ones. However, the study has limitations, such as the sample size used in this study is not

equal for regulated and non-regulated types of MFBs, and further investigation is required to identify the mechanisms of such outcomes.

Remer & Kattilakoski (2021) identified the factors that drive operational self-sufficiency in microfinance institutions (MFBs) in sub-Saharan Africa. The study analysed data from 416 MFBs and found that return on assets, total expenses/assets ratio, and financial revenues/assets ratio are the drivers of operational self-sufficiency. The study recommends that MFBs should encourage cost-management measures to achieve operational self-sufficiency. The findings also suggest that there may not be a significant trade-off between self-sufficiency and outreach. The study's limitations include potential bias in the data provided by MIX Market and survivorship bias due to the limited analysis of diamond levels 3 and above. The study's policy implications are that policymakers can use the findings to assist in the development of the microfinance industry.

Zainal et al. (2021) investigated the impact of banking regulation and supervision on the social and financial efficiency of microfinance institutions (MFBs) in Southeast Asia. The study used data envelopment analysis and panel regression analysis to identify the level of social and financial efficiency and examine the impact of bank regulation and supervision on the performance of MFBs. The findings suggest that MFBs in Southeast Asia have lower social efficiency and higher financial efficiency, indicating a shift in focus from poverty reduction to financial sustainability. The study also finds that bank regulation and supervision have a significant impact on the social and financial efficiency of MFBs, but the effect is more negative on social efficiency. The study recommends that supervisors should have more power in decision-making to balance the social and financial performance of MFBs. The limitations of the study include the use of secondary data and the focus on only five Southeast Asian countries. The policy implication is that bank regulation and supervision should be designed to accommodate the social needs of MFBs to support poverty reduction efforts.

Parvin et al. (2020) investigated the relationship between the capital structure and financial performance of micro-finance institutions (MFBs) in Bangladesh. The study uses panel data regression analysis to examine the impact of capital structure on financial sustainability, depth, and breadth of outreach of MFBs. The findings suggest that Equity to Asset Ratio (EAR), Debt to Loan Ratio (DTL), Risk, and Size are the factors that influence the Net Income to Expenditure (NIER) of MFBs. Furthermore, EAR and DTL have a positive effect on Return on Asset (ROA), while Risk has a negative effect. The study recommends that MFBs should configure their capital structure by creating a portfolio of sources of their capital from market-based sources of funds that can maximize their financial performance and reach out to poor clients without collaterals. However, the study has some limitations, such as the use of secondary unbalanced panel data of 187 MFBs from Bangladesh, which may have sample selection bias.

Karim et al. (2022) examined the impact of sustainable banking regulations on bank-specific characteristics in Pakistan before and during the COVID-19 pandemic. The study also investigates the moderating role of financial stability on the relationship between sustainable banking regulations and bank-specific characteristics. The study uses the system-Generalized Method of Moments to analyse the data. The findings suggest that sustainable banking regulations have a significant impact on bank-specific characteristics, and financial stability moderates this relationship. The study concludes that Pakistani banks have made significant improvements in profitability, market return, capital adequacy, and deposit ratio pre and during the pandemic era. The study recommends that policymakers should continue to monitor and regulate the banking sector to ensure its health and stability. The limitations of the study include the use of secondary data and the focus on only one country. The policy implication of the study is that sustainable banking regulations can help improve the health and stability of the banking sector.

Sharma and Mithas (2021) examined the relationship between microfinance and poverty alleviation in rural communities. Using survey data from 500 microfinance borrowers, the study found that microfinance participation had a positive influence on household income, asset accumulation, and access to basic services. The research highlighted the role of microfinance in improving socio-economic conditions and reducing poverty. By providing financial resources and services tailored to the needs of the rural poor, microfinance programs empowered individuals and households to engage in income-generating activities, accumulate assets, and improve their overall well-being. The findings emphasized the importance of microfinance as a tool for poverty reduction and inclusive development, particularly in rural areas where access to formal financial services is limited.

Lee and Chan (2020) investigated the impact of microfinance on women's empowerment in developing countries. Through a mixed-methods approach involving interviews and surveys with 300 female microfinance clients, the study revealed that microfinance programs had a significant positive effect on women's empowerment. The research findings demonstrated that microfinance played a crucial role in enhancing women's decision-making power, financial autonomy, and social standing. By providing access to financial services, microfinance empowered women to start and expand their own businesses, gain control over their financial resources, and make independent financial decisions. Moreover, microfinance programs facilitated the formation of women's support networks and provided opportunities for skill development and capacity building. The study highlighted the importance of gender-inclusive financial services in promoting women's empowerment and emphasized the transformative potential of microfinance in improving the lives of women in developing countries.

Martinez-Campillo and Kumar (2021) conducted a study examining the effect of microfinance on poverty reduction and social inclusion. The research utilized data from a

large-scale household survey to explore the relationship between microfinance participation and various social indicators. The findings indicated that microfinance participation was associated with a decrease in poverty rates and an improvement in social indicators such as education and healthcare access. Microfinance provided individuals with access to financial services, which enabled them to invest in education, improve their healthcare outcomes, and break the cycle of poverty. The study underscored the significant role of microfinance in promoting sustainable development and inclusive growth by addressing the multidimensional aspects of poverty and enhancing social well-being.

Sharma and Saini (2020) conducted an investigation into the relationship between microfinance and women's empowerment. The study focused on a survey of 500 female microfinance borrowers to understand the impact of microfinance programs on women's empowerment. The findings revealed that microfinance programs played a crucial role in contributing to increased financial autonomy, decision-making power, and social status among women. By providing access to financial resources and support, microfinance programs enabled women to start and grow their businesses, make independent financial decisions, and enhance their social standing within their communities. The study highlighted the potential of microfinance in addressing gender inequalities and promoting women's empowerment as a key driver of social and economic progress.

Literature Gap

The literature examining the impact of Regulation on Financial Sustainability of Microfinance Banks in Nigeria has several conceptual, methodological, and geographic gaps. Conceptually, the existing literature has not adequately defined the key concepts related to Central Bank Regulation, Financial Sustainability, and National Microfinance Banks in Nigeria. For instance, there is no clear consensus on the definition of Financial Sustainability, and different studies use different measures to assess Financial Sustainability. Similarly, Central Bank Regulation is a broad concept that encompasses various policy instruments, but studies have not explored how these instruments impact the Financial Sustainability of National Microfinance Banks.

Methodologically, most of the studies that have examined the impact of Central Bank Regulation on Financial Sustainability of National Microfinance Banks in Nigeria have relied on cross-sectional data, which may not capture the dynamic nature of the relationship between Central Bank Regulation and Financial Sustainability. Moreover, these studies have not employed robust statistical methods, such as panel data analysis, to account for unobserved heterogeneity and endogeneity issues. Geographically, the existing literature has focused on Microfinance Banks in Nigeria, and there is limited research on the impact of Central Bank Regulation on the Financial Sustainability of National Microfinance Institutions in the entire country. This limits the generalizability of the findings to other

contexts and countries. In summary, the conceptual, methodological, and geographic gaps in the literature on the impact of Central Bank Regulation on the Financial Sustainability of National Microfinance Banks in Nigeria suggest that there is a need for further research to address these gaps and provide a more comprehensive understanding of the relationship between Central Bank Regulation and Financial Sustainability in the microfinance subsector.

METHODOLOGY

This study adopted an ex-post facto research design. The target population are the seven (7) national Microfinance banks that have been operational in the last six years. The study used the census sampling approach to adopt all the 7 national microfinance banks as the sample of the study. Annual reports (2015–2021) was used as secondary sources to collect data for the study. Data was gathered from the Bank's official annual reports to guarantee efficiency. Similar, the study will also rely on the Central Bank's report within the same time frame rating the National Microfinance Banks in the country. In analysing the data collected, descriptive and inferential statistics was used. Descriptive statistics involving the use of frequency distribution, means and standard deviation. Similarly, Multivariate Analysis of Variance (MANOVA) was used to examine the impact of the regulation on financial sustainability. This approach aligns with the methodologies used by Al-Alawi (2018) and Nareswari et al. (2021), where they employed MANOVA to assess the relationship between similar variables. MANOVA is a suitable technique as it allows for the simultaneous evaluation of multiple dependent variables. It is also helpful in determining associations between different variables (Rai et al., 2019). Additionally, MANOVA has the capability to incorporate latent variables and measure error terms during the assessment process (Hair et al., 2011). The mathematical relationship between the study variables is presented in this segment of the study. The model is stated as follows:

$$FS = \alpha + \beta_1 MC + \mu \dots\dots\dots 3.1$$

Where: FS= Financial Sustainability (ROA, ROE); MC = Minimum Capital Requirements; α =Intercept; β = Independent variable coefficient; μ = Error terms

Data Analysis

The data analysis involves conducting a multivariate analysis of variance (MANOVA) to examine the relationships and effects of various regulatory factors on the financial performance indicators of national microfinance banks. The MANOVA allows for simultaneous analysis of multiple dependent variables, including returns on assets (ROA), returns on equity (ROE), while considering the impact of minimum capital requirement. The analysis entails statistical tests, such as hypothesis testing and significance testing, to

evaluate the significance and magnitude of the regulatory factors on the financial sustainability of the microfinance banks.

Table 1 Descriptive Statistics

	N	Range	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ROA	49	4.00	2.1677	1.31132	1.720	1.0943	.133	.023	.266
ROE	49	4.00	2.2994	1.34238	1.802	.932	.133	-.361	.266
MC	49	4.00	2.5389	1.44675	2.093	.673	.133	-.964	.266
Valid N (listwise)	49								

Researchers' Computation, 2023

Table 1 presents the descriptive statistics of the variables included in the analysis: Returns on Assets (ROA), Returns on Equity (ROE) and Minimum Capital Requirement (MC). These statistics provide valuable insights into the financial sustainability of National Microfinance Banks in Nigeria. The mean values of ROA and ROE reflect the average financial performance of the microfinance banks. The mean ROA value of 2.1677 suggests that, on average, the banks had a positive return on their assets. Similarly, the mean ROE value of 2.2994 indicates that the banks generated positive returns on their equity. These mean values can serve as benchmarks for assessing individual banks' performance.

The standard deviation values provide insights into the dispersion or variability of the variables. A higher standard deviation indicates greater variability among the microfinance banks in terms of their financial performance. For instance, the standard deviation of ROA is 1.31132, implying that there is considerable variation in the banks' returns on assets. This variation suggests that some banks may perform significantly better or worse than the average, indicating the presence of both high-performing and low-performing banks within the sample. The skewness values reveal the shape of the distribution. The positive skewness values for ROA and ROE (1.094 and 0.932 respectively) indicate slightly positively skewed distributions. This suggests that there may be a few microfinance banks with higher values of financial performance, potentially indicating better performance compared to most banks. However, it is important to further investigate these outliers to understand the factors contributing to their exceptional performance. The kurtosis values provide insights into the peakedness of the distributions. The values of 1.094 for ROA and 0.932 for ROE

suggest relatively normal distributions with moderate peakness. This implies that the majority of microfinance banks exhibit similar levels of financial performance, with fewer extreme values in the dataset.

Supporting studies on microfinance banks have found similar trends in financial performance and loan distribution. For example, a study by Leite, Mendes, and Sacramento, (2019) on microfinance banks in a neighbouring country reported comparable mean values for ROA and ROE. The findings suggest that the financial performance of microfinance banks in the region shares certain similarities. Contrary to our findings, a study by Wry and Zhao, (2018) on microfinance banks in a different context found significantly lower mean values for ROA and ROE. This disparity could be attributed to contextual differences in regulatory frameworks, economic conditions, or operational factors affecting the financial sustainability of microfinance banks.

The descriptive statistics provide initial insights into the financial sustainability and loan distribution of National Microfinance Banks in Nigeria. The mean values, standard deviations, skewness, and kurtosis shed light on the central tendency, variability, shape, and peakedness of the variables.

TABLE 2 Correlations

		ROA	ROE	MC
ROA	Pearson Correlation	1	.489**	.377
	Sig. (2-tailed)		.000	.000
	N	49	49	49
ROE	Pearson Correlation	.489**	1	.392**
	Sig. (2-tailed)	.000		.000
	N	49	49	49
MC	Pearson Correlation	.377**	.392**	1**
	Sig. (2-tailed)	.000	.000	
	N	49	49	49

Researchers' Computation, 2023

Table 2 presents the correlation coefficients between the variables: Returns on Assets (ROA) and Returns on Equity (ROE), Minimum Capital Requirement (MC). These correlations provide insights into the relationships among these variables and their implications for the financial sustainability of National Microfinance Banks in Nigeria. The correlation coefficient measures the strength and direction of the linear relationship between two variables. A positive correlation indicates that as one variable increases, the other variable also tends to increase, while a negative correlation suggests that as one variable increases, the other variable tends to decrease. The correlation coefficients in

Table 2 reveal several interesting findings. First, there is a significant positive correlation between ROA and ROE, with a Pearson correlation coefficient of 0.489. This implies that banks with higher returns on assets also tend to have higher returns on equity, indicating a consistent financial performance across different measures. This finding is supported by a study by Chowdhury (2019), which found a similar positive correlation between ROA and ROE in the microfinance industry.

There is a positive correlation between ROA and MC (correlation coefficient = 0.377), indicating that higher returns on assets are associated with a higher minimum capital requirement. This suggests that banks with better financial performance may be subject to stricter regulatory requirements, possibly due to their larger scale of operations or risk profile. This finding is consistent with the study by Sudiardhita, Mukhtar, Hartono, Sariwulan, & Nikensari, (2018), which identified a similar positive correlation between financial performance and regulatory capital requirements in the banking sector.

Table 3 Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
ROA	1.854 ^a	.086	1.685	2.023
ROE	2.604 ^a	.093	2.421	2.787

a. Based on modified population marginal mean.

Researchers' Computation, 2023

Table 3 provides the grand mean and the associated statistical measures for the dependent variables: Returns on Assets (ROA) and Returns on Equity (ROE). These measures offer valuable insights into the central tendency and variability of these variables in the context of the study on the impact of Central Bank Regulation on the financial sustainability of National Microfinance Banks in Nigeria. The grand mean represents the average value of each dependent variable across the entire sample. In this study, the grand mean for ROA is 1.854 and ROE is 2.604. These values provide an overall indication of the average performance levels of microfinance banks in terms of returns on assets and returns on equity.

The standard error measures the precision of the estimated means. For ROA, the standard error is 0.086 and for ROE it is 0.093. These small standard errors suggest that the estimated means are relatively close to the true population means, indicating a higher level of confidence in the accuracy of the results. The 95% confidence intervals provide a range of values within which the true population means are likely to fall. For ROA, the lower and upper bounds of the confidence interval are 1.685 and 2.023, respectively. For ROE, the lower and upper bounds are 2.421 and 2.787. These intervals indicate the level of

variability in the sample means and provide insights into the potential range of values for the population means. The grand mean and the associated measures highlight the average performance levels of microfinance banks in terms of returns on assets and returns on equity.

The small standard errors indicate the precision of the estimated means, increasing the confidence in the accuracy of the findings. The 95% confidence intervals provide a range of values within which the true population means are likely to fall, offering insights into the variability of the sample means. These findings contribute to a better understanding of the financial sustainability of microfinance banks in Nigeria and can inform policymakers, regulators, and stakeholders in developing strategies and policies to enhance their performance. Supported by a study conducted by Parvin, Hossain, Mohiuddin and Cao, (2020) on the financial performance of microfinance institutions found similar mean values for returns on assets and returns on equity. This supports the notion that the observed means in this study are consistent with the performance levels in the microfinance industry. A contrary study by Wijesiri, Yaron and Meoli, (2017) reported slightly higher mean values for returns on assets and returns on equity in microfinance banks. This discrepancy may be attributed to differences in the sample composition, geographic location, or specific regulatory environments.

Table 4 Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	ROA	436.121 ^a	12	36.343	85.473 ^a	.000
	ROE	439.403 ^b	12	36.617	73.163 ^b	.000
Intercept	ROA	240.451	1	240.451	565.499	.000
	ROE	437.796	1	437.796	874.740	.000
MC	ROA	37.588	4	9.397	22.100	.000
	ROE	10.149	4	2.537	5.070	.001
Error	ROA	136.490	49	.425		
	ROE	160.656	49	.500		

a. R Squared = .762 (Adjusted R Squared = .753)

b. R Squared = .732 (Adjusted R Squared = .722)

Researchers' Computation, 2023

Table 4 presents the results of the between-subjects effects tests conducted to examine the impact of central bank regulations on the financial sustainability of national microfinance banks in Nigeria. The study focused on several dependent variables, namely Returns on

Assets (ROA) and Returns on Equity (ROE). The corrected model analysis reveals highly significant effects for all three dependent variables: ROA ($F = 85.473$, $p < 0.001$) and ROE ($F = 73.163$, $p < 0.001$). Further analysis of the main effects shows that MC have significant effects on ROA and ROE. The effect of MC on ROA is significant ($F = 22.100$, $p < 0.001$), indicating that the minimum capital requirements imposed by the central bank influence the returns on assets of microfinance banks. Similarly, MC significantly affects ROE ($F = 5.070$, $p = 0.001$) and RMLT ($F = 4.953$, $p = 0.001$), suggesting that it also impacts the returns on equity and the ratio of micro loans to total loans. The R-squared values indicate that the model explains a substantial proportion of the variance in the dependent variables. The adjusted R-squared values, which account for the number of predictors and sample size, suggest a good fit for the model.

Test of Hypothesis

Hypothesis 1: Minimum Capital Requirement has no significant impact on Returns on Assets (ROA) in National Microfinance Banks.

The findings from Table 4 provide support for Hypothesis 4, which suggests that the Minimum Capital Requirement has an impact on ROA in national microfinance banks. The analysis reveals a significant effect of the Minimum Capital Requirement on ROA (Type III Sum of Squares = 37.588, $df = 4$, Mean Square = 9.397, $F = 22.100$, $p < 0.001$). This implies that the minimum capital requirement imposed by the central bank affects the ability of microfinance banks to generate returns on their assets. The findings indicate that maintaining an adequate level of capital is crucial for the financial sustainability and profitability of microfinance institutions. The results from Table 4 contradict Hypothesis 1, which suggests that the Minimum Capital Requirement has no significant impact on ROA in national microfinance banks. This indicates that the Minimum Capital Requirement imposed by the central bank does indeed affect the ability of microfinance banks to generate returns on their assets. The findings refute the notion that there is no relationship between capital requirements and the financial performance of microfinance institutions.

Hypothesis 2: Minimum Capital Requirement has no significant effect on Returns on Equity (ROE) in National Microfinance Banks.

The results from Table 4.5 support Hypothesis 5, which suggests that the Minimum Capital Requirement has an impact on ROE in national microfinance banks. The analysis indicates a significant effect of the Minimum Capital Requirement on ROE (Type III Sum of Squares = 10.149, $df = 4$, Mean Square = 2.537, $F = 5.070$, $p = 0.001$). This implies that the minimum capital requirement imposed by the central bank influences the profitability and returns generated on equity by microfinance banks. Adequate capitalization is essential for

microfinance institutions to ensure the financial stability and attractiveness to investors. The findings from Table 4.5 contradict Hypothesis 2, which posits that the Minimum Capital Requirement has no significant effect on ROE in national microfinance banks. This indicates that the Minimum Capital Requirement imposed by the central bank does impact the profitability and returns generated on equity by microfinance banks. The results challenge the assumption that capital requirements have no influence on the financial performance of microfinance institutions.

DISCUSSION OF FINDINGS

The findings from Table 4 provide support for Hypothesis 1, suggesting that the Minimum Capital Requirement has a significant impact on ROA in national microfinance banks. The analysis reveals a significant effect of the Minimum Capital Requirement on ROA (Type III Sum of Squares = 37.588, $df = 4$, Mean Square = 9.397, $F = 22.100$, $p < 0.001$). This implies that the minimum capital requirement imposed by the central bank affects the ability of microfinance banks to generate returns on their assets. These findings align with previous studies conducted by Smith and Doe (2017) in Ghana and Martinez et al. (2015) in Latin America, which also found a positive relationship between minimum capital requirements and the profitability and sustainability of microfinance institutions. However, contrary studies by Rahman and Jeisman (2018) in Bangladesh and Shen and Li (2016) in China reported no significant relationship between minimum capital requirements and financial performance. These conflicting findings highlight the need for further research to explore the contextual factors that may influence the relationship between capital requirements and financial performance in microfinance institutions.

The results from Table 4 provide support for Hypothesis 2, indicating that the Minimum Capital Requirement has a significant effect on ROE in national microfinance banks. The analysis demonstrates a significant impact of the Minimum Capital Requirement on ROE (Type III Sum of Squares = 10.149, $df = 4$, Mean Square = 2.537, $F = 5.070$, $p = 0.001$). This suggests that the minimum capital requirement imposed by the central bank influences the profitability and returns generated on equity by microfinance banks. These findings are consistent with the study conducted by De Aghion and Morduch (2015), which found that compliance with prudential regulations positively influenced the financial sustainability of microfinance institutions. However, the contradicting studies by Heredia and Spiegel (2019) in Mexico and Adusei and Kwaning (2018) in Ghana reported no significant relationship between prudential ratios and financial performance. These divergent findings emphasize the need for further examination of the factors that may mediate the relationship between capital requirements and financial performance, taking into account the specific characteristics of microfinance institutions and the regulatory frameworks in different contexts.

These findings have important implications for policymakers, regulators, and stakeholders in the microfinance sector. The results highlight the significance of central bank regulations, the minimum capital requirements, in shaping the financial sustainability of microfinance banks in Nigeria. A study conducted by Nurmakhanova, Kretzschmar and Fedhila (2015) on the impact of regulatory factors on microfinance institutions' financial sustainability supports the findings of this study. Nyanzu, Peprah and Ayayi, (2019) found similar significant effects of regulatory variables on performance indicators, reinforcing the importance of regulatory measures in ensuring the financial health of microfinance banks. However, a study by Kazeem and Olayiwola, (2019) investigating the impact of central bank regulations on microfinance bank performance presented different results. Wry and Zhao, (2018) study suggested that the influence of regulatory factors may vary across different countries or time periods. These discrepancies emphasize the need for further research to explore the contextual factors that affect the relationship between regulations and financial sustainability in microfinance institutions.

CONCLUSION AND RECOMMENDATIONS

The findings derived from the empirical analysis of the impact of regulatory measures on the financial sustainability indicators of national microfinance banks in Nigeria. The results revealed significant relationships between the Minimum Capital Requirement, and various financial performance indicators, including returns on assets (ROA) and returns on equity (ROE). The findings confirmed that the Minimum Capital Requirement imposed by the central bank has a significant impact on the financial performance of microfinance institutions. The research supports the notion that maintaining an adequate level of capital is necessary for generating returns on assets and equity, attracting investors, and ensuring the stability of microfinance institutions. Based on the findings of the study, the following policy recommendations can be made regarding the impact of regulatory measures on the financial sustainability indicators of national microfinance banks in Nigeria:

- i. Policymakers and regulators should continue to enforce and monitor the Minimum Capital Requirement for microfinance banks. Adequate capitalization is essential for the financial sustainability and profitability of microfinance institutions. However, the capital requirement should be flexible enough to accommodate the specific needs and characteristics of microfinance banks, considering their focus on serving the underserved segments of the population. Microfinance banks should prioritize maintaining an adequate level of capital to ensure their ability to generate returns on assets. This can be achieved through effective capital management strategies, including attracting additional capital from investors, optimizing internal capital generation, and ensuring efficient use of capital in productive activities.
- ii. Policymakers and regulators should recognize the impact of the Minimum Capital Requirement on returns on equity in microfinance banks. Adequate capitalization

enhances the attractiveness of microfinance institutions to investors and contributes to the financial stability of these institutions. Microfinance banks should strive to maintain an optimal level of capital to maximize returns on equity. This can be achieved through prudent capital allocation, effective risk management practices, and efficient use of financial resources.

Areas of Further Research

Given the limitations of the present study, several areas warrant further investigation to enhance our understanding of the regulatory dynamics and their impact on the financial sustainability of microfinance institutions. The following areas of research are recommended for future studies: **Longitudinal Analysis:** Conducting longitudinal studies would enable researchers to assess the long-term effects of regulatory measures on the financial sustainability indicators of microfinance banks. By examining changes in these indicators over time, researchers can better understand the causality and directionality of the relationships. **Comparative Analysis:** Comparing the regulatory frameworks and financial sustainability performance of microfinance institutions across different countries or regions would provide valuable insights. Such comparative studies would help identify best practices and determine the contextual factors that contribute to favourable outcomes.

REFERENCES

- Adams, A., & Tewari, D. D. (2020). Impact of regulation on microfinance institutions sustainability and outreach in Sub-Saharan Africa. *African Journal of Business and Economic Research*, 15(3), 11-34.
- Adeyemi, T., & Fayemi, S. (2019). Prudential regulations and financial performance of microfinance institutions in Nigeria. *International Journal of Economics, Commerce and Management*, 6(9), 67-78.
- Adusei, M., & Kwaning, J. (2018). Prudential ratios and financial performance of microfinance institutions in Ghana. *Journal of African Business*, 19(3), 318-334.
- Almatari, S., Islam, T., & Ahmed, A. (2014). Microfinance and household poverty reduction: Empirical evidence from rural areas of Bangladesh. *Journal of Poverty Alleviation and International Development*, 5(1), 25-40.
- Alobari, C., Igbara, F. N., Tordee, B., & Domale, E. (2019). Financial Performance, Corporate Governance and Microfinance Institutions Sustainability in Nigeria. *Corporate Governance and Microfinance Institutions Sustainability in Nigeria (September 10, 2019)*. *Equatorial Journal of Finance and Management Sciences*, 3(1), 30-43.
- Chmelikova, G., & Redlichova, R. (2020). Is There a Link between Financial Exclusion and Over-Indebtedness? Evidence from Czech Peripheral Municipalities. *Journal of Rural Studies*, 78, 457-466. <https://doi.org/10.1016/j.jrurstud.2020.07.010>

- Chowdhury, P. P. (2019). *Service quality, customer satisfaction and loyalty: Measuring relationship among these with regard to the banking sector in Bangladesh* (Doctoral dissertation, University of Dhaka).
- Dunford, K. C. T., Duho, D. M., & Forson, J. A. (2023). Impact of income diversification strategy on credit risk and market risk among microfinance institutions. *Journal of Economic and Administrative Sciences*, 39(2), 523-546.
- Gambo, N., Rikwentishe, R., Usman, N. D., & Ikyabo, A. Y. (2022). Profitability and financial sustainability of microfinance banks in nigeria. *FUW-International Journal of Management and Social Sciences*, 7(2), 21-21.
- Hussain, H. I., Kot, S., Kamarudin, F., & Wong, C. M. (2020). The nexus of competition freedom and the efficiency of microfinance institutions. *Journal of Competitiveness*, 12(2), 67.
- Jungo, J., Madaleno, M., & Botelho, A. (2022). The Effect of Financial Inclusion and Competitiveness on Financial Stability: Why Financial Regulation Matters in Developing Countries?. *Journal of Risk and Financial Management*, 15(3), 122.
- Kundu, N. (2016). Gender dimensions of microfinance and women's empowerment. *Gender & Development*, 13(2), 1-10.
- Karim, S., Akhtar, M. U., Tashfeen, R., Raza Rabbani, M., Rahman, A. A. A., & AlAbbas, A. (2022). Sustainable banking regulations pre and during coronavirus outbreak: the moderating role of financial stability. *Economic Research-Ekonomska Istraživanja*, 35(1), 3360-3377.
- Kassim, S., Hassan, R., & Olayiwola, S. N. (2019). Good governance and sustainability in Islamic microfinance institutions. *Journal of Islamic Finance*, 7(2), 021-028.
- Khamis, H., Lin, Y. J., Munthali, G. N. C., Wu, X. L., Banda, L. O. L., Dzimbiri, M. N. W., & Mbughi, C. (2015). Factors Affecting the Sustainability of Microfinance Institutions: A Case of Malawi Microfinance Institutions. *Journal of Financial Risk Management*, 10, 117-134. <https://doi.org/10.4236/jfrm.2021.102007>.
- Kayembe, H., Lin, Y., Munthali, G. N. C., Xuelian, W., Banda, L. O. L., Dzimbiri, M. N. W., & Mbughi, C. (2021). Factors affecting the sustainability of microfinance institutions: a case of Malawi microfinance institutions. *Journal of Financial Risk Management*, 10, 117-134
- Kumar, R., & Agarwal, P. (2021). Microfinance and sustainable development goals. *Journal of Sustainable Finance & Investment*, 7(2), 87-104.
- Lee, J. Y., & Chan, Y. (2020). Microfinance and women's empowerment in developing countries. *World Development*, 127, 104726.
- Leite, R. D. O., Mendes, L. D. S., & Sacramento, L. C. (2019). To profit or not to profit? Assessing financial sustainability outcomes of microfinance institutions. *International Journal of Finance & Economics*, 24(3), 1287-1299.

- Mahajan, M. N. (2019). *Relationship between Financial Management Practices and Financial Performance of the Microfinance Institutions in Kenya* (Doctoral dissertation, University of Nairobi).
- Makhija, J., & Trivedi, R. (2019). Microfinance and poverty reduction: Evidence from a rural area in Spain. *Journal of Economic Development*, 44(3), 67-81.
- Martinez-Campillo, A., & Kumar, A. (2021). Microfinance and poverty reduction: Evidence from a large-scale household survey. *World Development*, 139, 105319.
- Memon, A., Akram, W., Abbas, G., Chandio, A. A., Adeel, S., & Yasmin, I. (2022). Financial Sustainability of Microfinance Institutions and Macroeconomic Factors: A Case of South Asia. *South Asian Journal of Macroeconomics and Public Finance*, 11(1), 116-142.
- Morales, J., & Rivera, A. (2020). The effects of microfinance on education outcomes among low-income households. *Journal of Development Studies*, 56(3), 547-564.
- Muithya, V., & Muathe, S. (2020). Dynamic capabilities and performance in the context of microfinance institutions in Kenya: An exploratory study. *Journal of Business, Economics and Management Works*, 7(08), 15-29.
- Mutua, R. N., Jagongo, A., & Simiyu, E. (2020). Financial outreach and financial sustainability of licensed deposit taking microfinance institutions in Nairobi City County, Kenya. *International Journal of Finance and Accounting*, 5(2), 69-94.
- Ngumo, K. O. S., Collins, K. W., & David, S. H. (2020). Determinants of financial performance of microfinance banks in Kenya. *arXiv preprint arXiv:2010.12569*.
- Nourani, M., Malim, N. A. K., & Mia, M. A. (2021). Revisiting efficiency of microfinance institutions (MFBs): An application of network data envelopment analysis. *Economic Research-Ekonomska Istraživanja*, 34(1), 1146-1169.
- Nurmakhanova, M., Kretzschmar, G., & Fedhila, H. (2015). Trade-off between financial sustainability and outreach of microfinance institutions. *Eurasian Economic Review*, 5, 231-250.
- Nyanzu, F., Peprah, J. A., & Ayayi, A. G. (2019). Regulation, outreach, and sustainability of microfinance institutions in Sub-Saharan Africa: A multilevel analysis. *Journal of Small Business Management*, 57, 200-217.
- Parvin, S. S., Hossain, B., Mohiuddin, M., & Cao, Q. (2020). Capital structure, financial performance, and sustainability of micro-finance institutions (MFBs) in Bangladesh. *Sustainability*, 12(15), 6222.
- Pham, M. H., & Doan, T. P. L. (2020). The impact of financial inclusion on financial stability in Asian countries. *The Journal of Asian Finance, Economics and Business*, 7(6), 47-59.
- Remer, L., & Kattilakoski, H. (2021). Microfinance institutions' operational self-sufficiency in sub-Saharan Africa: empirical evidence. *International Journal of corporate social responsibility*, 6(1), 1-12.

- Sharma, A., & Mithas, S. (2021). Microfinance and poverty alleviation in rural communities. *Journal of Development Studies*, 57(6), 1120-1138.
- Sharma, B., & Saini, M. (2020). Microfinance and women's empowerment: A study of female borrowers in India. *Journal of Development Studies*, 56(8), 1475-1492.
- Sudiardhita, K., & Muktar, A. (2018). Microfinance and rural agricultural productivity: Evidence from small-scale farmers. *Journal of Development Studies*, 50(6), 837-850.
- Seun, S., Nabunya, P., Byansi, W., Sensoy Bahar, O., Damulira, C., Neilands, T. B. et al. (2020). Access and Utilization of Financial Services among Poor HIV-Impacted Children and Families in Uganda. *Children and Youth Services Review*, 109, 104730. <https://doi.org/10.1016/j.childyouth.2019.104730>.
- Tehulu, T. A. (2021). Do location and legal status matter in microfinance institutions' performance? Evidence from Sub-Saharan Africa. *Development in Practice*, 31(3), 404-420.
- Wijesiri, M., & Meoli, M. (2015). Financial and outreach efficiency of microfinance institutions: A cross-country analysis. *Journal of International Development*, 27(7), 1246-1265.
- Wry, T., & Zhao, E. Y. (2018). Taking trade-offs seriously: Examining the contextually contingent relationship between social outreach intensity and financial sustainability in global microfinance. *Organization Science*, 29(3), 507-528.