EFFECT OF FINANCIAL RISK ON FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN KENYA

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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This research project has been submitted for presentation with my approval as University Supervisor

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DEDICATION

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LIST OF ABBREVIATIONS

AMFI	Association of Microfinance Institutions
ANOVA	Analysis of Variance
CRM	Credit Risk Management
DT-SACCOs	Deposit Taking Savings and Credit Cooperative Societies
FP	Financial Performance
MFI	Micro Finance Institution
NIM	Net Interest Margin
NPL	Non- Performing Loans
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
SACCOs	Savings and Credit Cooperative Societies
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factors

ABSTRACT

Micro finance institutions in Kenya play a role in financial intermediation which has included 2.9% Kenyans. Despite this, the financial risk for most MFIs has increased but focus has mostly been on the banks. The MFIs in Kenya have recorded a rise in the level of NPLs in the last decade which signifies rising credit risk. The MFIs have also recorded a rise in liquidity risk which lenders them vulnerable to customers withdrawal. Financial risk management is said to be an enabler of financial performance among financial institutions. The main aim of this study was to determine the effect of financial risk on financial performance of MFIs in Kenya. The independent variables for the research were credit risk, liquidity risk, operating risk and interest rate risk. Capital adequacy and MFI size were the control variables while the dependent variable was financial performance measured as ROA. The study was guided by information asymmetry theory, shiftability theory and financial intermediation theory. Descriptive research design was utilized in this research. The 47 MFIs in Kenya as at December 2021 served as target population. The study collected secondary data for five years (2017-2021) on an annual basis from CBK and individual MFIs annual reports. Descriptive, correlation as well as regression analysis were undertaken and outcomes offered in tables followed by pertinent interpretation and discussion. The research conclusions yielded a 0.530 R square value implying that 53% of changes in MFIs ROA can be described by the six variables chosen for this research. The multivariate regression analysis further revealed that individually, both credit risk and liquidity risk have a negative effect on ROA of MFIs as shown by (β=-157, p=0.000) and (β=-0.160, p=0.000) respectively. Operating risk and interest rate risk displayed non-statistically significant influence on ROA. Capital adequacy and firm size exhibited a positive and significant influence on ROA as shown by (β=0.739, p=0.000) and (β=0.293, p=0.000) respectively. The study recommends that MFIs should implement effective measures of managing financial risk. Specifically, the MFIs should work at reducing their liquidity risk and credit risk as these two adversely affects ROA. Future research ought to focus on other financial institutions in Kenya to corroborate or refute the conclusions of this research.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Financial risk can lead to failure of financial institutions in attempts of realizing expected level of financial performance. This is a result of the unpredictability that make it challenging to carry out financial goals successfully. The usage of the available assets is also severely impacted by the possibility of credit commitment defaults, changes in foreign exchange rates, liquidity issues also volatility in interest rates, which have an impact on financial performance (Sadgrove, 2016). Mohammed (2017) makes the claim that a company's potential to achieve strong and long-lasting financial performance is determined by the financial dangers it faces. The underlying idea is that businesses should be aware of the risks involved since they have a substantial impact on performance metrics if they want to diversify their markets and increase profits (Naz & Naqvi, 2016).

This research was under guidance of; information asymmetry theory, financial intermediation theory and shiftability theory. The information asymmetry theory by Akerlof (1970) is the anchor theory of this study as it expounds on instances where Micro Finance Institutions (MFIs) cannot separate the safe from risky borrowers. The application of information asymmetry theory during this study assists in elaborating how the Financial Performance (FP) of a firm is affected by financial risk. Financial intermediation theory by Diamond (1984) aids in addressing MFI performance because they consider a lot of risk measures using technology advancements in the field of credit management by obtaining private information, treating, screening and effective monitoring of borrowers. To comprehend managing liquidity risk effect on MFI financial performance, the study also applies Mouton (1918) Shiftability theory.

Because the microfinance sector is crucial to the development of financial markets and the improvement of the majority of Kenyans' access to financial services and products, the research will focus on MFIs in Kenya. The microfinance institutions are essential since they lend to 45% of Kenya's informal sector (Association of Microfinance Institutions, 2022). The financial risk for most MFIs has increased but focus has mostly been on the banks (CBK, 2020). It would be necessary to also investigate financial risk among MFIs in Kenya due to their enormous contribution towards financial intermediation plus inclusion.

1.1.1 Financial Risk

Financial risk refers to the unforeseen or unexpected changes in financial transactions and it is normally caused by loan defaults, illiquidity, risks arising from operations and movements in rates of interest (Sufi & Qaisar, 2015). Bhattarai (2016) defined financial risk as any occurrence that results in a financial loss to either all the parties involved or just one of the parties. The risk is caused by factors such as exchange rate movements, interest rate movements, financial shocks, loan defaults, illiquidity among others. Raad (2015) identifies the main financial risk components as liquidity, operating and credit risk.

Financial risk is an important aspect among financial institutions as it is the factor that informs financial decisions (Shukla, 2016). Without risks, financial transactions would be simplified but this would also imply low returns on investments as higher risk is associated with better proceeds. Financial institutions are however mandated to control financial risks as failure to monitor them would lead to collapse of the institutions and this would have a multiplying effect on the entire economy. The future of financial

institutions and financial transactions is therefore dependent on stringent and effective management of financial risks (Ahmed, 2015).

Financial risk has been operationalized differently by different researchers. Raad (2015) operationalized financial risk as; liquidity risk, credit risk, operating risk also interest rate risk. Noor and Abdalla (2014) operationalized financial risk into three components namely; liquidity risk, credit risk plus operating risk. Credit risk is obtained by diving NPLs by total loan advances. Liquidity Risk is derived from dividing total assets by liquid assets while Operating Risk is as a result of dividing operating expenses by operating income. The current study operationalized financial risk into; liquidity risk, credit risk, interest rate risk & operating risk.

1.1.2 Financial Performance

Financial performance is described as ability of an entity to achieve a set of financial goals (Abernathy & Utterback, 2015). FP stands for the extent firm financial goals have been met. It shows how successfully financial objectives have been attained (Nzuve, 2016). The health of the economy as a whole, as well as shareholders and investors, depends on financial performance. Investors receive a total return on their investment, and a solid company can increase investors' earnings over the long run (Fatihudin & Mochklas, 2018). The financial performance of an enterprise is crucial to both its survival and prosperity. When a business performs well, it shows that it manages its assets effectively and efficiently for operations, investments, as well as financial transactions (Karajeh & Ibrahim, 2017).

The focus on financial performance is of importance as it majorly touches on items that directly change financial statements or the company’s reports (Omondi & Muturi, 2013). The company's FP is the primary evaluation apparatus used by external

stakeholders (Bonn, 2000). Consequently, the company's FP is used as a metric. How successfully the company meets its financial objectives determines its financial performance. The performance of a company is the outcome of accomplishing both internal and external goals (Nyamita, 2014).

Financial performance is appraised via multiple techniques which ought to be reconciled. There are elements recognized as measures of financial performance like; ROS, ROA, entity size including ROE. Measures that are recognized mostly are; ROE plus ROA. As per Mwangi and Murigu, (2015), with the aid of total assets, ROA assesses the FP of an entity, while ROE appraises the manner in which a firm utilizes shareholder's equity. Market-based measures such as market capitalization, market to equity par value, dividend yield, and earnings per share can also be used in FP measurement (Baba & Nasieku, 2016). Being the most widely used measure of financial performance, ROA was used in the current study (Fatihudin & Mochklas, 2018).

1.1.3 Financial Risk and Financial Performance

The information asymmetry theory gives a broader perspective on the feasible rationale for managing risks like bad debt. Indirect evidence is provided by a financial distress hypothesis. According to the adverse selection theory, principals incur agency costs in order to reduce dispute. These are the monitoring costs shareholders incur in supervising managers and lowering the divergent activities of agents, connection costs used for optimum contracts as security that their actions shall not contradict principal's interests as well as loss costs from the divergence of decisions of agents and those that will maximize the principal's interests (Shukla, 2016).

Financial risk in the financial sector is the result of moral hazards and adverse selection owing to asymmetric information. Financial institutions' profitability is influenced by the firm's financial risk because most of their revenue is from loans which attract interest. Nonetheless, financial risk has an effect on the institutions' efficiency. As a result, the risk must be effectively controlled (Bhattarai, 2016). From prior studies, risk is a financial institutions' efficiency predictor in finance. For example NPL which is a proxy for credit risk can destabilize a bank's general system of credit lowering its value (Afriyie & Akotey, 2012).

According to proponents of the loanable funds theory, increasing savings through reduced consumption and deficits would result in increased credit availability, a larger capital stock,greater investment, higher future income plus lower interest rates (Lindner, 2013). They used the supply as well as demand of loanable capital to describe the rate of interest. Firms looking to invest are the ones placing the demand. The number of lucrative ventures rises as the rate of interest falls. As a result, the demand curve for money will be in a downward slope (Mishkin, 2004).

1.1.4 Microfinance Institutions in Kenya

Deposit-taking and non-deposit-taking microfinance entities are the two basic categories into which the CBK classifies the microfinance institutions. The CBK issues licenses and regulates deposit-taking microfinance institutions (DTMs), which are authorized to collect, process, or lend public deposits. The DTMs opened branches in numerous areas of Kenya and the region, which helped to further financial inclusion (CBK, 2020). Additionally, they have created brand-new financial solutions that are responsive to customer demands and driven by demand. Examples include KWFT, SMEP, and Faulu Kenya. The National Treasury, which oversees the Ministry of

Finance, forbids the non-deposit accepting microfinance institutions from using public funding (Association of Microfinance Institutions, 2022).

Kenyan microfinance is governed by a number of legislations, notably the Microfinance Act, that was passed in 2006 and revised in 2013. Therefore, the Central Bank of Kenya Act also Microfinance Act 2006 regulates the microfinance sector (Muganga, 2010). The Microfinance Act aims at providing a framework for regulatory, legal including oversight of deposit-taking microfinance institutions (DTMs).

Low-income groups and micro and small businesses can get financial services from microfinance organizations because they typically lacks access to the nation's main financial establishments. The microfinance sector is crucial in developing financial markets and improving the majority of Kenyans' access to financial services and goods. The microfinance institutions are essential since they lend to 45% of Kenya informal sector (Association of Microfinance Institutions, 2022).

The primary objectives of MFIs are to offering financial support to low-income earners also micro plus small ventures, which typically do not have access to traditional financial institutions. Because these objectives are challenged by financial risk, management of these risks is necessary. The main cause of failures in MFIs is poor management of financial risk (Mugo et al., 2019). The yields from making investments in a venture are the reward for risk taken by business owners. Proper financial risk management practices can assist MFIs in lowering their general exposures to finance risks. This will ensure they can compete in the sector (Odhiambo, 2019).

1.2 Research Problem

Financial risk is a major factor among financial institutions. Microfinance institutions should make sure that their exposure to risks is lowered because they influence their

main goal which is to lend credit and enable clients to save funds efficiently (Kariuki, 2017). Mohammed (2017) posits that financial risks determine the capacity a firm in realizing high efficiency which leads to superior performance and sustainability of a firm. The premise is that businesses ought to be aware of the risks involved that have a substantial effect on their daily operations in order to diversifying their business and improve financial performance (Naz & Naqvi, 2016).

MFIs in Kenya contribute towards financial intermediation which has included 2.9% Kenyans (FinAccess, 2019). Despite this, the financial risk for most MFIs has increased but focus has mostly been on the banks (CBK, 2020). The MFIs in Kenya have recorded growth in relation to NPLs in the last decade which signifies rising credit risk (Association of Microfinance Institutions, 2022). The MFIs have also recorded a rise in liquidity risk which lenders them vulnerable to customers withdrawal (AMFI, 2021). Financial risk management is said to be an enabler of financial performance among financial institutions. Kenyan MFIs offer a good context to investigate the level of financial risk and how this influences financial performance.

Empirical evidence exists on how financial risks affect financial performance of institutions like banks though few if any have focused on financial risk and performance of MFIs. The studies have also produced varied results. Moslehpour et al. (2022) surveyed financial risks influence on global financial markets. The empirical findings demonstrate that financial risks affect the global financial markets negatively. Orichom and Omeke (2020) probed the extent to which the performance of Uganda's microfinance institutions is linked to credit risk management (CRM) and showed that CRM improves performance. Gadzo et al. (2019) did an examination of how the performance of Ghanaian banks is affected by credit alongside operational risk.

Conclusions depicted credit risk and operational risk adversely impact the banks' performance.

Locally, Ochieng (2021) sought to establish financial risk management practices effect on ROA of DT-Savings and credit cooperative societies in Nairobi County, Kenya. The results proved adverse influence on ROA due to presence of credit risk plus liquidity risk while operating risk and interest rate risk showed insignificant effects on ROA. Gitau (2021) investigated how financial risk impacts performance of Dairy cooperatives within Nyamira, Kisii, Kericho besides Bomet Counties, Kenya. From the findings, it was noted that the performance of dairy cooperatives is significantly affected by financial risk. Otanga, Mule and Momanyi (2020) examined the manner in which the performance of DT-SACCOs in Western Kenya is impacted by credit risk discovering that it causes a substantial adverse influence on performance. Bwire and Omagwa (2019) examined the relation amidst credit risk and performance of Nairobi's SACCOs. Findings showed a substantial positive relation between credit monitoring, appraisal and control on performance.

This research was inspired by the fact that despite the existence of prior studies shows that there exists contextual, conceptual and methodological gaps that need to be filled. Conceptually, prior studies have operationalized financial risk differently as majority have not considered interest rate risk and operating risk which will be considered in this study. Contextually, majority of the available surveys are on commercial banks and therefore need to investigate if similar findings hold for MFIs. Methodologically, most of the previous studies have employed ordinary least square to which has its shortcomings when dealing with panel data. The current study will employ a panel regression model. The research gaps led to the current survey which attempts to respond

to the research question; how does financial risk influence financial performance of microfinance institutions in Kenya?

1.3 Research Objective

To determine how financial risk influences the financial performance of Kenya's microfinance entities.

1.4 Value of the Study

This study's outcomes will contribute to the existing theoretical and empirical literature on financial risk and financial performance. Additionally, the results will expound deeply regarding the disadvantages besides relevance of the current theories to the variables of the study hence assisting in developing the theory. On the basis of the suggestions for additional research, additional research may also be conducted.

The conclusions of the research may be helpful to the government also the regulator in creating policies for the population under investigation. Investors who are interested in the population under research will gain from the research findings because they will be able to learn more about the performance impact of these organizations' intrinsic risk and return tradeoffs.

The conclusions will aid investors as well as practitioners comprehend the link amidst the two variables, that is important for ensuring strong management team with diverse viewpoints and competences streamlining operations as well as managing financial risk, besides building confidence amid corporate stakeholders, that will ultimately heighten performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theories that underpin financial risk and financial performance are explained in this chapter. It also reviews the prior empirical research, identifies knowledge gaps, and summarizing with a conceptual framework and hypotheses illustrating the anticipated link between the variables under research.

2.2 Theoretical Framework

This section surveys the theories that underpin the survey of financial risk plus financial performance. Theoretical reviews enclosed are information asymmetry theory, financial intermediation theory and shiftability theory.

2.2.1 Information Asymmetry Theory

The current study is anchored by this theory and it was proposed by Akerlof (1970). The theory has been used as it expounds on instances where financial firms cannot separate the safe from risky borrowers. The research makes use of information asymmetry theory in comprehending how financial risk impact the FP of a firm. The theory states that when borrowers and lenders interact, there is an information asymmetry. The assumption arises from borrowers who request for loans with no information on the possible risks associate with investment options on which the loan will be used. The lender on the other hand has no prior information on the investment by the borrower (Edward & Turnbull, 2013). Because none of them is privy to such information, adverse selection is generated thereby creating moral hazard issues (Horne, 2012).

Horne (2012) criticizes the theory stating two main reasons: signals influence information asymmetry which is not correct and investors that are heavily impacted upon by information asymmetry problems are ambiguously identified or misidentified. Stiglitz (1970) state that financial institutions write loan contractual terms seeking to attract borrowers to agree to their terms including attracting low risk credit borrowers. The effect of this is the setting of rates of interest for which loan demand exceeds loan supply. The credit amount and the collateral amount also have an impact on credit-seeker character and distribution of the credit issued, and returns to lenders (Moti et al., 2012).

This theory is crucial in creating an understanding on the need to disclose information upon issuing loans in the sector. Increase in credit risk in the market is attributed to undisclosed factors that impact bank efficiency. The study hence seeks to examine how MFIs can make better appraisals of such determinants to lower the amount of losses and improve bank efficiency by maintaining good loans that are not declared delinquent. The theory was useful in explaining competitive market behavior. It has been utilized in many scenarios thereby confirming its credibility.

2.2.2 Financial Intermediation Theory

Diamond's (1984) theory plays a central role in the financial intermediation process specifically among banks to moderate information asymmetry that lies between borrowers and lenders, hence their constant interaction assists lenders in producing credit worthy information to borrowers. Information that is provided gives creditors and loan officers a strong incentive in assessing and appraising credit to those that require it. Modern theories state that the business of financial intermediation is pegged on economic imperfections from 1970s with limited contributions (Jappelli & Pagano,

2006). The existence of the intermediaries is based on their ability to lower transaction and information costs from asymmetries (Tripe, 2003).

The biggest criticism of the financial intermediation theory is its inability to give recognition to the role of lenders in the process of risk management (Levine et al., 2000). Scholtens and Van Wensveen (2000) stated that they do not recognize credit risk as an important feature in the financial industry and emphasizing the participation costs concept. They suggested future developments in the financial intermediation theory to understand challenges in the financial sector.

The theory is useful in examining the performance of MFIs as they take a number of risk measurements using modern technology in credit which involves the efficient collection of private details, treating, screening and monitoring borrowers (Jappelli & Pagano, 2006). Financial intermediaries are useful in lowering transactional costs brought about by information asymmetry. They hence play a central role in effective functioning of financial markets. The theory was useful in understanding how financial risk and performance relate.

2.2.3 Shiftability Theory

Mouton (1918) created the shiftability theory and published it in his article titled Commercial banking and capital formation. The following primary themes underpin the theory: A bank must set up its portfolio in order to have the appropriate liquidity; The majority of investments are made in secondary money market instruments, which allow for liquidity with little to no value loss; these securities include treasury bills, commercial paper, and securities issued by reputable corporations; By retaining the tools as security, the central bank can offer cash to the bank in times of need (Ngwu, 2009).

There are parts of this theory that are true. Banks now acknowledge reliable assets that can be transferred to different banks. Treasury bills, bills of exchange, major company shares, and debentures are all recognized as liquid assets. This has prompted banks to offer term loans. The need to retain reserves of a significant amount of idle cash balance has decreased as a result of the shiftability theory. It has offered a different approach to the real bill doctrine or theory, where there is a chance of risk due to an economic downturn while buying and selling commercial products alongside raw materials. The chances of gaining income can be raised whereas the likelihood of risk can be decreased with the use of shiftability theory (Cai & Anjan, 2008).

The Shiftability theory is used in the study to comprehend how the performance of MFIs is impacted by the management of liquidity risk. One could claim that an MFI's liquidity is assured if it has assets that can be transferred before maturity when necessary, such as to pay loans and even call deposits or member deposits to outgoing members (Acharya & Naqvi, 2012).

2.3 Determinants of Financial Performance

There are numerous predictors affecting an institution's efficiency that can be discovered inside or outside the company. Firm-specific internal variables that can be changed internally. They are interest rate risk, capital adequacy, operating risk, credit risk, asset base and liquidity risk. External elements such as inflation, GDP, political stability, and interest rates might affect a company efficiency (Athanasoglou et al., 2005).

2.3.1 Credit Risk

This indicates a MFI’s asset risk and stability. It estimates the asset quality magnitude among the characteristics that impact banks’ health. The value of assets under the

control of a MFI is heavily dependent on credit risk, and the quality of the assets owned by the MFI heavily relies on specific risks, level of NPLs, and debtors cost to the MFI. This ratio should be at the lowest level. If lending is susceptible to risk in a well-functioning bank, the indicator in this case would be the applied interest margins. A low ratio shows an insufficient risk cover by the margins (Athanasoglou et al., 2009).

A Sacco's assets primarily consist of a loan portfolio, current as well as fixed assets, and other investments. The quality of assets mostly improves with the age and bank size (Athanasoglou et al., 2005). The primary assets that generate income for Saccos' are loans. The loan portfolio quality hence determines bank performance. Good quality assets reduce losses arising from NPLs, and this subsequently impacts performance (Dang, 2011).

2.3.2 Liquidity Risk

Liquidity refers to a company's ability, in this case, an MFI, to pay its debts that are accrued in a year by using cash and quickly convertible short-lived assets into cash. Therefore, it happens in the event of the capacity to satisfy debt obligations to creditors without liquidating their other assets (Adam & Buckle, 2013).

Insufficient liquid assets, as per Liargovas and Skandalis (2008), make it difficult for businesses to finance their operations and make investments. Companies having this level of liquidity are able to cover unforeseen liabilities and commitments that must be paid. According to Almajali et al. (2012), a bank's liquidity has a significant impact on the loan amounts it can afford to make to customers; as a result, saccos should maintain more liquid assets and less short-term liabilities. A rise in MFI liquidity, according to Jovanovic (1982), may be detrimental to the companies.

2.3.3 Operating Risk

The operating risks facing a firm influence its efficiency. An increase in operating risk which is often assessed as operating expenses to income ratio implies a decline in efficiency as more expenses are being incurred relative to the revenues generated. Management of operating risk is a critical requirement in all firms as failure to address this might lead to bankruptcy as uncontrolled expenses might exceed the revenues generated (Ongore & Kusa, 2013).

Operating risk need to be effectively managed for a firm to achieve the desired level of efficiency as there is a notable negative influence of the risk on efficiency of firms (Athanasoglou, Sophocles & Matthaois, 2009). Failure to manage operating risk leads to a reduction in gross profit margin which essentially leads to losses. These losses are attributed to low efficiency in converting inputs to outputs (Ongore & Kusa, 2013).

2.3.4 Interest Rate Risk

The interest rate is regarded as funds outlay and a rise or reduction in the rate of interest may affect the financiers' savings decisions (Olweny & Omondi, 2016). Consequently, due to high production cost as well as hazards rate, as per Rehman, Sidek, and Fauziah (2009), the interest cap implementation drives banks to reduce loans and forces several of these basics to abandon rural zones. As a result, the banks' growth will be delayed. Banks may substantially increase fees and other taxes to prevent the situation from getting worse. As per Barnor (2014), an unexpected shift in interest rate increases the default rate.

According to Khan and Sattar (2014), depending on how it moves, the interest rate affects the NPLs positively or adversely. A decrease in depositor interest rates and an increase in spread deter saving. The investment is negatively impacted by a rise in the

depositor's interest rate. Because the majority of bank revenues come from interest rate differentials that banks charge and reimburse to depositors, the banking sector is more susceptible to interest rate swings than other industries.

2.3.5 Firm Size

Size of the entity predicts the extent legal in addition to financial features impact a MFI. Since large companies collect cheap capital and produce huge income, MFI size is closely linked to capital adequacy (Amato & Burson, 2007). The net book value of the bank's total assets is usually used to determine its size. Also, bank size has positive correlation with ROA which indicates possibility of huge banks accumulating economies of scale causing minimized operating costs thus raising the volume of loans (Amato & Burson, 2007). MFI size is correlated with capital rations, as shown by Magweva and Marime (2016), while profit-realization increases with size.

Amato and Burson (2007) mentioned that a firm's size is dependent on the assets owned by the organization. The argument can be that the ability of a MFI to own more assets leads to more investments which results to higher generation of returns which is contrary to smaller ventures owning less assets. Additionally, a larger firm can have more collateral which can be used as security for more credit facilities related to smaller ones (Njoroge, 2014). As opined by Lee (2009), the profitability level of the institution is influenced by the assets the firm controls from one period to another.

2.3.6 Capital Adequacy

Also called the capitalization ratio, the adequacy ratio shows how equity and total assets are related. It shows the ability of a bank to remain solvent by regulating risks. Berger and DeYoung (1997) in an investigation showed an adverse relation amid capital adequacy and performance. In imperfect capital markets, institutions with sufficient

capital ought to reduce borrowing to back a specific asset class, hence lowering the predicted bankruptcy costs hence incur less financing costs.

A financial institution with sufficient capital signals the market that a superior performance is to be anticipated. According to the findings of Athanasoglou et al. (2005), capital holdings are positively correlated with bank profitability, demonstrating the financial stability of Greek banks. Berger et al. (1987) a positive causal relationship between capital contributions and profitability was also demonstrated.

2.4 Empirical Review

The link among financial risk plus financial success has been established by local and international studies; the objectives, methods, and results of these earlier studies are examined in this segment.

2.4.1 Global Studies

Mogga et al. (2018) examined how CRM utilized by banks in Sudan influenced performance. The context of the study was in Juba on a total of six. The investigation involved the uses of questionnaires in collecting data which was further analyzed via descriptive statistics as well as linear regression. The conclusion was that many of the banks identified with risk identification as a credit risk management process that impacted performance, risk identification has had a minimal impact on performance, while risk analysis and appraisal did not significantly impact bank performance, risk monitoring significantly affected financial showed a substantial impact on performance, and credit approval was also a significant factor.

Gadzo et al. (2019) did an examination of how the performance of Ghanaian banks is influenced by credit alongside operational risk. The source of datum was 24 universal banks with no missing variables. Results demonstrated an adverse correlation amidst

credit risk alongside performance in comparison to previous surveys following the information asymmetry assumption of lemon theory. Also, there was an adverse association amid operational risk plus banks performance. Although the study took into account credit risk, how the risk was managed and its effect on efficiency was not investigated.

Dayasagar (2019) analyzed credit risk practices impact on performance of mahila cooperative banks in Kalaburagi district, India. The objectives were establishing how analysis, credit risk identification, monitoring besides reduction impacted the performance of women cooperative banks. Based on the results, credit analysis, mitigation and identification had substantial positive impact on performance. It was hence recommended that women cooperative banks should implement stricter credit analysis techniques and adopt credit-monitoring practices. The research was performed in India whose economic as well as social cultural environment is diverse as compared to Kenya's where the current survey will take place.

Orichom and Omeke (2020) with a focus on the agency theory probed on how the performance of Uganda's microfinance institutions (MFIs) is impacted by CRM, capital adequacy also efficiency. 64 MFIs in the country were assessed with the aid of a cross–sectional. Datum analyses was performed using correlation alongside multiple regression analysis. According to the outcomes, CRM and performance are positively related. Therefore, monitoring, credit risk review besides mitigation were vital in attainment of entities performance. The recommendation highlighted that for purposes of lowering credit risks plus attaining performance amidst MFIs, managers ought to employ risk preventive including control mechanisms.

Moslehpour et al. (2022) investigated impact of financial risks on international financial markets. In order to pinpoint systemic crises, the paper examines how the COVID-19 epidemic has affected both the international and Vietnamese stock markets. The empirical results show that the volatile systemic risks transmission across the universal security market and different exchanges evolves and becomes more significant over time as the COVID-19's global spread deepens. At the time of COVID-19, the worldwide industrial market was broader than the Vietnamese stock market while the Vietnamese's constituted less of a threat to the international market. Looking closely at the relationship amidst the world stock index and the Vietnam value-at-risk range index sample reveals a notable level of downside risk integration in important monetary systems, especially during the COVID-19 period. The results of this study cannot be generalized because it was carried out in a place whose social alongside economic structure is distinct from Kenya's.

2.4.2 Local Studies

Orang'i (2018) utilized a descriptive research model to seek the manner in which the performance of Kenyan banks is affected by CRM. The study utilized all banks operating between 2013 and 2017. With the help of descriptive statistics, correlation & regression methods which are globally approved in descriptive studies, data was analyzed. According to the results, there is insignificance amidst risk identification and performance whereas there is positivity and substantial correlation amid risk monitoring and performance. Due to the nature of its independent variable operationalization, the survey used interval scale whereas ratio scale will be used in the current research. Further, the study focused on only one aspect of financial risk.

Bwire and Omagwa (2019) scrutinized how the FP of DT-SACCOs in Nairobi is influenced by credit risk. The source of datum was from 40 deposit taking SACCOs and the survey followed a descriptive design. The researchers administered 120 questionnaires to interviewees within Nairobi City County using purposive sampling. Credit monitoring had a substantial impact on SACCOs performance. Additionally, it was determined that credit appraisal along with credit risk control had a substantial influence on performance. Hence, the conclusion was that CRM is critical in the FP of DT SACCOs in Nairobi.

Otanga, Mule and Momanyi (2020) wanted to establish operational risk management effect on financial performance with a particular focus on DT-SACCOs in Western Kenya. A census of the 19 DTSACCOs for the years 2013 to 2017 was chosen using a correlational research design, producing 95 data points. Regression on hierarchical panel data aided to analyze the datum. The outcomes demonstrate that operational risk management, as assessed by the cost income ratio, significantly negatively affects financial performance. This research just examined one dimension of financial risk, leaving out the other elements.

Gitau (2021) investigated the influence that financial risk had on FP of Kenya's Dairy cooperatives. The research employed a descriptive panel model in which secondary datum was utilized. Census sampling was chosen as a method of obtaining a sample and secondary data from a period spanning ten years from 2009 to2018 obtained. With the aid of multiple panel regression models, data that had been assembled using a secondary data collection sheet was analyzed. Outcomes depicted that credit management significantly impacted the ROI, which measured the dairy marketing

cooperatives' performance whose appraisals for substantiality also indicated that the variables were statistically important.

Ochieng (2021) sought to establish financial risk management practices influence on ROA of DT- SACCOs within Nairobi County, Kenya. The 43 MFIs in Kenya as at December 2020 served as target population. The study collected secondary data for five years (2016-2020). The multivariate regression analysis revealed that individually, both credit plus liquidity risk have an adverse impact on ROA of DT-SACCOs. Operating risk and interest rate risk displayed non-statistically substantial influence on ROA. The study presents a contextual gap as the focus was on DT-SACCOs which operate differently from MFIs.

2.5 Summary of the Literature Review and Research Gaps

Theoretical analyses demonstrated the anticipated link amid financial risk and financial institution FP. Significant FP influencers have been examined. Different findings have been drawn about the connection between financial risk and performance from the studies that have been analyzed. The discrepancies across the studies can be attributed to the various ways that researchers operationalized risk, demonstrating that the operationalization model affects the conclusions.

The previous research also concentrated on the influence of financial risk on the FP of banks and SACCOs, leaving Microfinance subject of the current study out of the picture. Moreover, several research used various designs, some of which depended on empirical analysis to draw conclusions and others of which relied on existing literature to measure how the variables related. This demonstrates the need for additional study in subsequent studies in order to close the gap by conceptualizing how financial risk affects financial performance.

2.6 Conceptual Framework

Figure 2.1 depicts the projected relationship among the variables. The predictor variable is financial risk given by standard deviation of credit risk, liquidity risk, operating risk and interest rate risk. Company size including capital adequacy are the control variables. The response variable is FP given by ROA.

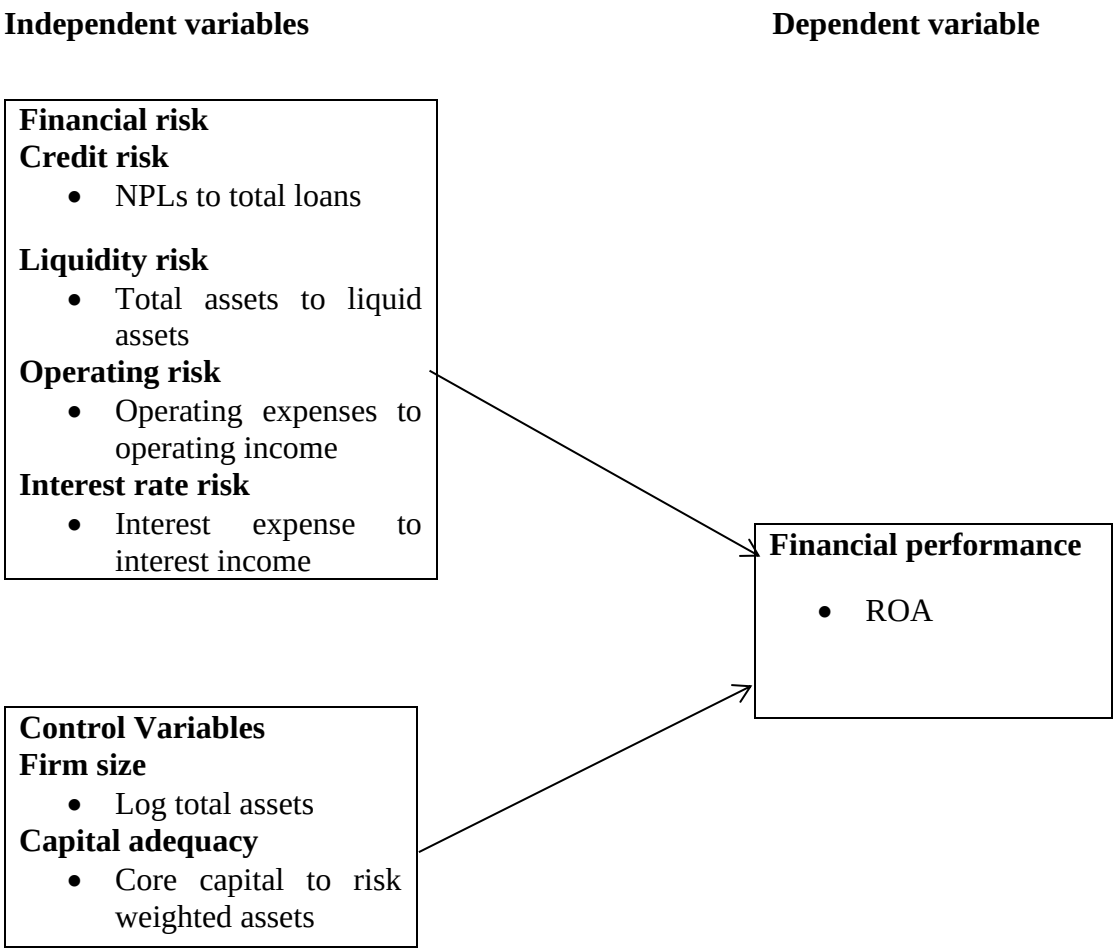

Figure 2.1: The Conceptual Model

Source: Researcher (2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the techniques used in order to accomplish the study objective which was to establish how financial risk impacts FP of MFIs in Kenya. Particularly, the chapter addresses the; the design, data assembling, as well as analyses.

3.2 Research Design

To ascertain the association among financial risk and MFIs' financial performance, a descriptive approach was used. This design was suitable since the researcher was particularly interested in the phenomenon nature (Khan, 2008). Additionally, it was adequate for describing how the occurrences are related to one another. Additionally, this design validly and accurately represented the variables, providing satisfactory answers to the research questions (Cooper & Schindler, 2008).

3.3 Population

The 47 MFIs in Kenya who are members of the AMFI as at December 2021 forms the study population (see appendix I). Because of relatively small population, a census technique was employed where all the 47 MFIs in Kenya were taken into account.

3.4 Data Collection

The source of data was published annual financial statements of the MFIs covering year 2017-2021 where secondary data was extracted and captured in data collection forms. The five-year period was chosen since it offered the most recent market trends and sufficient data for reliable regression analysis. Using the CBK financial publications of the specific MFIs and AMFI reports, the reports were obtained. Data extracted particularly entailed total assets, net income, interest income, other incomes, NPLs,

gross outstanding loans, total loans, total assets, net operating income, total debt, core capital, risk weighted assets, liquid assets,.

3.5 Diagnostic Tests

The linear regression was based on a number of assumptions including linearity, no auto-correlation, no or little multi-collinearity, homoscedasticity and multivariate normality. The diagnostic tests to be performed are outlined in Table 3.1

Table 3.1: Diagnostic Tests

Test	Meaning	Statistical method	Interpretation	Diagnosis
Autocorrelation	It is as a result of lack independence between residues.	Durbin-Watson statistic	When the test outcomes fall within critical values (1.5<d<2.5) there is no autocorrelation	Correlogram (Auto Correlation Function-ACF plot) Review model specifications
Multicollinearity	How closely related are the independent variables of the study	Variance Inflation Factors (VIF)	VIF less than 10 implies that there is no multicollnearity	Data that was causing Multicollinearity was adjusted using log transformation
Heteroscedasticity	When data lacks similar variance as assumed by standard linear regression model	Breusch Pagan Test Levene Test Normal P-P plots	Data split into high and low value. If data differ significantly, there is an element of heteroscedasticity	Non-linear transformation
Normality Test	When linear regression analysis for all variables is multivariate normal	Goodness of fit test Shapiro-Wilk test	Kolmogorov-Smirnov test prob.> 0.05. If the test is not substantial, the distribution is possibly normal.	Data that had an abnormal distribution was adjusted for using log transformation and non-linear log transformation.

Stationarity	a unit-root test to establish if the data was stationary	Levin-Lin Chu unit root test	A p value less than 0.05 implies that the data is stationary	Robust standard errors were used where data failed the test.

3.6 Data Analysis

SPSS software version 24 assisted in data analyses. The results were displayed quantitatively using tables alongside graphs. Measures of central tendency and dispersion were calculated using descriptive statistics, and standard deviation provided for each variable. During inferential statistics, Correlation also regression methods were applied. The size of the association amidst the research variables was determined by correlation, while cause plus impact relationships between the variables were established via regression. Using multivariate regression, the link amidst dependent and independent variables was established linearly.

3.6.1 Analytical Model

The equation shown below will be appropriate:

$$Y= \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \varepsilon$$

Where: Y = Financial performance given by the ratio of net income to total assets on an annual basis

β_0 =y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$=are the regression coefficients

X_1 = Credit risk as measured by the ratio of NPLs to total loans outstanding on an annual basis

X_2 = Liquidity risk as measured by the ratio of total assets to liquid assets on an

annual basis

X_3 = Operating risk as measured by the ratio of operating expenses to operating income on an annual basis

X_4 = Interest risk as measured by the ratio of interest expense to interest income on an annual basis

X_5 = Firm size as measured by the natural logarithm of total assets

X_6 = Capital adequacy as given by the ratio of total core capital to risk weighted assets

ε =error term

3.6.2 Tests of Significance

Parametric tests established importance of the overall model and variables. ANOVA was used to do the F-test, which identified the relevance of the model, and a t-test, which established the significance of each variable.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

4.1 Introduction

This chapter presents descriptive statistics and the results and interpretations of various tests namely; test of normality, Multicollinearity, heteroskedasticity tests, autocorrelation and stationarity test. The chapter also presents the results of Pearson correlation alongside regression analysis.

4.2 Descriptive Statistics

This section covers the descriptive findings from the collected data. The descriptive results include mean and standard deviation for all the survey variables. The analyzed data was obtained from CBK also individual MFIs annual records covering 5 years period (2017 to 2021). The number of observations is 210 (42*5) as 42 MFIs provided complete data for the 5 year period. Table 4.1 depicts the outcomes

Table 4.1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	210	.0015	.3650	.111186	.0861992
Credit risk	210	.0000	.5700	.091332	.0901119
Liquidity risk	210	1.0237	10.0893	2.357211	1.4603364
Operating risk	210	.0074	3.2957	1.074641	.5380086
Interest rate risk	210	.0246	1.1388	.457990	.2167400
Capital adequacy	210	.0227	1.9617	.261818	.2545613
MFI size	210	6.0724	8.7303	7.773748	.5705492
Valid N (listwise)	210				

Source: Field data (2022)

4.3 Diagnostic Tests

As rationalised in chapter three, the scholar undertook a diagnostic tests to ensure there are no violation of the Classic Linear Regression Model (CLRM) assumptions and to obtain the appropriate models for assessing infringement of CLRM hypotheses. Pre-approximation besides post-approximation analyses were carried out before processing regression model. Post-estimation tests incorporate; test for autocorrelation, normality test, test for heteroskedasticity whereas pre- approximation tests undertaken in scenarios like this entails; multicollinearity test plus unit root tests. To refrain from factitious regression results, the survey instituted these analyses.

4.3.1 Normality Test

The normality of data can be tested using a variety of methods. The most commonly relied upon mechanisms entail; skewness, histogram, Shapiro–Wilk test, Q–Q Plot, kurtosis, Kolmogorov–Smirnov test, P–P Plot, box plot, mean including standard deviation. The most extensively utilized normality tests are the Kolmogorov–Smirnov test plus the Shapiro–Wilk test. The Shapiro–Wilk test is better for small sample sizes ($n < 50$ samples), while it can also be used on more extensive samples selections, whereas the Kolmogorov–Smirnov test is better for $n > 50$ samples. As a result, the study used the Kolmogorov–Smirnov test as the numerical method of determining normality. For both of the above tests, the null hypothesis says that the data are obtained from a normally distributed population. The null hypothesis is not accepted if P-value is less than 0.05, and the data are said to be not normally distributed. If any violation of the assumption of normality was detected, necessary correction measures were applied.

Table 4.2: Test for Normality

	Kolmogorov-Smirnov	P-value
ROA	0.869	0.178
Credit risk	0.918	0.202
Liquidity risk	0.881	0.194
Operating risk	0.874	0.191
Interest rate risk	0.892	0.201
Capital adequacy	0.923	0.220
MFI size	0.874	0.194

Source: Research Findings (2022)

From Table 4.2 results, all the study variables have a p value more than 0.05 and therefore were normally distributed.

4.3.2 Multicollinearity Test

Multicollinearity occurs when there is substantial linkage amidst independent variables in a regression model. Multicollinearity was assessed using the VIF and tolerance indices. When the VIF value is higher than ten and the tolerance score is less than 0.2, multicollinearity is present, and the assumption is broken. The VIF values are less than 10, indicating no problem with multicollinearity.

Table 4.3: Multicollinearity

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Credit risk	0.587	1.704
Liquidity risk	0.782	1.279
Operating risk	0.535	1.869
Interest rate risk	0.601	1.664
Capital adequacy	0.598	1.672
MFI size	0.621	1.610

Source: Research Findings (2022)

4.3.3 Heteroskedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated with the aid of Ordinary Least Squares (OLS) method(s). Homoskedasticity refers to constant variance, whereas heteroscedasticity refers to non-constant variance (Field, 2009). The study used the Breusch-Pagan/Cook-Weisberg test to check if the variation was heteroskedastic. The null hypothesis implies constant variance, indicating that the data is homoscedastic. Table 4.4 highlights the findings.

Table 4.4: Heteroskedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(1)	=	0.8219
Prob > chi2	=	0.6374

Source: Research Findings (2022)

Table 4.4 reveals that there was no rejection of the null hypothesis since the p-value was 0.6374, which was statistically significant (p>0.05). As a result, the dataset had homoskedastic variances. Since the P-values of Breusch-Pagan's test for homogeneity of variances were higher than 0.05. The appraisal thus confirmed homogeneity of variance. The data can therefore be used to conduct panel regression analysis.

4.3.4 Autocorrelation Test

Serial correlation, also known as autocorrelation, makes the standard errors of coefficients appear to be less than in linear panel data models, resulting in higher R-squared and erroneous hypothesis testing Autocorrelation was tested using Durbin-Watson test. Error terms of regression variables are uncorrelated if Durbin-Watson test is equivalent to 2 (i.e. between 1 and 3). The closer the value to 2 is; the better. The outcomes are displayed in Table 4.5.

Table 4.5: Test of Autocorrelation

Durbin Watson Statistic
1.923

Source: Research Findings (2022)

The findings depicted in Table 4.7 prove that the Durbin-Watson statistic was 1.923. This shows that the error terms of regression variables are uncorrelated as the Durbin-Watson statistic was close to 2.

4.3.5 Stationarity Test

The research variables were subjected to a panel data unit-root test aiming at identifying any stationarity in the datum. Levin-Lin Chu unit root test was utilized. At a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis shows every panel has a unit root, and the alternative hypothesis is that at least one panel is stationary. The outcomes of Levin-Lin Chu unit root test are presented in Table 4.6.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	**Hypothesis**	**p value**	**Verdict**
ROA	Ho: Panels contain unit roots	0.0000	Reject Ho
Credit risk	Ho: Panels contain unit roots	0.0000	Reject Ho
Liquidity risk	Ho: Panels contain unit roots	0.0000	Reject Ho
Operating risk	Ho: Panels contain unit roots	0.0000	Reject Ho
Interest rate risk	Ho: Panels contain unit roots	0.0000	Reject Ho
Capital adequacy	Ho: Panels contain unit roots	0.0000	Reject Ho
MFI size	Ho: Panels contain unit roots	0.0000	Reject Ho

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that there stationarity of data at a 5% level of statistical substantiality since the p-values all fall below 0.05.

4.4 Correlation Results

The strength besides direction of correlation amidst each predictor variable as well as the response variable was assessed via correlation analysis. Summary of the findings are in Table 4.7.

Table 4.7: Correlation Results

		ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
ROA	Pearson Correlation	1						
	Sig. (2-tailed)							
Credit risk	Pearson Correlation	-.567**	1					
	Sig. (2-tailed)	.000						
Liquidity risk	Pearson Correlation	-.575**	-.140	1				
	Sig. (2-tailed)	.000	.057					
Operating risk	Pearson Correlation	.021	-.234**	-.146*	1			
	Sig. (2-tailed)	.085	.001	.048				
Interest rate risk	Pearson Correlation	.067	-.057	.046	.184*	1		
	Sig. (2-tailed)	.438	.441	.534	.012			
Capital adequacy	Pearson Correlation	.467**	-.049	.114	-.113	.155*	1	
	Sig. (2-tailed)	.000	.508	.124	.126	.036		
MFI size	Pearson Correlation	.585**	-.147*	-.545**	.268**	-.034	-.174*	1
	Sig. (2-tailed)	.000	.046	.000	.000	.643	.018	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
c. Listwise N=215

Source: Research Findings (2022)

The conclusions relating to the nature of correlation amidst the survey variables in regarding the strength plus direction are highlighted in Table 4.7. The outcomes disclose that credit risk and ROA have an adverse as well as substantial correlation (r=-0.5677) at 5 % significance level. Liquidity risk alongside ROA were notably and adversely correlated (r=-0.5755) with a significance level of 5 %. The results also reveal that operating risk and interest rate risk have insignificant but positive linkage to ROA

with a significance level of 5%. Both capital adequacy and size showed positivity as well as significant relation with ROA as depicted by p values below 0.05.

4.5 Regression Results

The performing of regression analysis aided in establishing the magnitude at which ROA is expounded by the chosen variables. Table 4.8-4.10 displays the regression findings.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728[a]	.530	.502	.008115

a. Predictors: (Constant), MFI size, Capital adequacy, Operating risk, Interest rate risk, Credit risk, Liquidity risk

Source: Research Findings (2022)

According to the conclusions as shown by the adjusted R^2, the studied independent variables expounded variations of 53% in ROA amidst Kenya's MFIs. Thus, the 53% of the variations in ROA amid Kenya's MFIs is as a result of the six variables while the unstudied elements caused the 47%.

Table 4.9: ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.035	6	.172	62.900	.000[b]
	Residual	.570	203	.003		
	Total	1.605	209			

a. Dependent Variable: ROA

b. Predictors: (Constant), MFI size, Capital adequacy, Operating risk, Interest rate risk, Credit risk, Liquidity risk

Source: Research Findings (2022)

According to ANOVA statistics in Table 4.9 the significance level of data is 0.000 which permits the model to be fit for summarizing on the variables.

Table 4.9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.472	.052		7.038	.000
	Credit risk	-.157	.042	-.150	-3.376	.000
	Liquidity risk	-.160	.003	-.162	-3.587	.000
	Operating risk	.003	.007	.021	.480	.632
	Interest rate risk	-.010	.017	-.026	-.610	.542
	Capital adequacy	.739	.014	.695	16.630	.000
	MFI size	.293	.006	.286	6.723	.000

a. Dependent Variable: ROA

Source: Research Findings (2022)

The coefficient of regression model was as below;

$$\mathbf{Y = 0.472 - 0.157X_1 - 0.160X_2 + 0.739X_3 + 0.293X_4}$$

Where:

Y = ROA X_1 = Credit risk; X_2=Liquidity risk X_3= Capital adequacy; X_4 = MFI size

4.6 Discussion of Research Findings

This research's agenda was to determine the influence of financial risk on ROA of Kenya's MFIs. A descriptive design was utilized during the survey and a population of 47 MFIs in Kenya. Complete data was obtained from 42 MFIs in Kenya and which were considered adequate for regression analysis. The research utilized secondary data retrieved from CBK as well as individual MFI yearly records. The particular variables of financial risk under consideration entailed; credit risk, liquidity risk, operating risk plus interest rate risk. The control variables were firm size and capital adequacy. Both descriptive along with inferential statistics were useful during data analyses. The outcomes are expounded in this section.

Multivariate regression outcomes revealed that the R square was 0.530 implying 53% of changes in ROA of MFIs are due to five variables alterations selected for this study. This means that variables not considered explain 53% of changes in ROA. The entire model was also statistically notable since the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, both the liquidity plus credit risk have an adverse influence towards ROA of MFIs as shown by (β=-0.157, p=0.000) and (β=-0.160, p=0.000) respectively. Operating risk and interest rate risk showed non statistical significance although positivity in effects on ROA. The control variables which were capital adequacy and entity size exhibited a notable including positive ROA impact as shown by (β=0.739, p=0.000) and (β=0.293, p=0.000) respectively.

The outcomes concede with those of Ochieng (2021) who sought to establish financial risk management practices effect on ROA of dt-SACCOs in Nairobi County, Kenya. The 43 MFIs in Kenya as at December 2020 served as target population. The study collected secondary data for five years (2016-2020). The multivariate regression analysis revealed that individually, both credit in addition to liquidity risk are negatively affecting the ROA of DT-SACCOs. Operating risk and interest rate risk displayed non-statistically substantial influence on ROA.

The research findings also concur with Gadzo et al. (2019) who did an examination of how the performance of Ghanaian banks is influenced by credit besides operational risk. The source of data was 24 universal banks with no missing attributes. Results demonstrated presence of adverse nexus amid credit risk and performance in

comparison with previous surveys following the information asymmetry assumption of lemon theory. Furthermore, there was an adverse correlation among operational risk and banks performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The core agenda of conducting this survey was to determine how financial risk influences the financial performance of Kenyan MFIs. The summary of the findings from the prior chapter is in this section, including the conclusions also limitations of the research. Also, it recommends policies which could be useful to policymakers. Additionally, the chapter highlights recommendations applicable in future researches.

5.2 Summary of Findings

The objective of this survey was evaluating how ROA of Kenyan MFIs is influenced by financial risk. Interest rate risk, liquidity risk, capital adequacy, credit risk, company size besides operating risk are the opted attributes under probe. The survey made use of a descriptive research model. CBK reports were the source of secondary data which was analyzed via SPSS. A five year (2017-2021) data was collated from annual reports of 42 MFIs.

The first goal was in explaining how the ROA amidst Kenya's MFIs is influenced by credit risk. The correlation outcome with a significance level of 5 % indicate that credit risk had a negative association correlation with ROA. Implying a rise in credit risk would result to ROA decrease. Regression findings (β=-0.157, p=0.000) highlights presence of negative along with notable impact of credit risk on ROA amid MFIs in Kenya.

The second agenda was in evaluating how the ROA amid MFIs in Kenya is impacted by liquidity risk. According to correlation outcomes with a significance level of 5 %, there is adverse association amid liquidity risk plus ROA. Therefore, increase in

liquidity risk causes a corresponding decrease in ROA. The findings (β=-0.160, p=0.000) indicated that liquidity risk in addition to ROA amidst Kenyan MFIs are statistically notable and negatively correlated.

The third agenda was in appraising the impact of operational risk on ROA amid MFIs, Kenya. The correlation outcomes with a significance level of 5% indicate that operating risk plus ROA are positively associated. Although, the affiliation was not statistically notable. According to regression outcomes (β=0.003, p=0.632) the operating risk plus ROA amid Kenyan MFIs are positively although lacks significance in their correlation.

The fourth goal aimed at explaining how the ROA among Kenya's MFIs is impacted by interest rate risk. According to correlation findings whose significance level is 5%, the operating risk is adversely linked to ROA. The affiliation was however not statistically substantial. Regression outcomes (β=-0.010, p=0.542) depict presence of a negative but not notable impact of interest rate risk on ROA amid MFIs in Kenya.

The fifth agenda intended to assess how capital adequacy affects the ROA amidst Kenyan MFIs. According to correlation outcomes whose significance level is 5%, the capital adequacy and ROA are positively linked. However, the affiliation had a statistic significance. Regression findings (β=0.739, p=0.000) highlight that capital adequacy alongside ROA amid Kenya's MFIs are substantially plus positively related.

The sixth goal aimed at assessing firm size effects on ROA amongst Kenyan MFIs. As shown by the correlation outcomes whose significance level is 5%, firm size in addition to ROA are positively associated. Thus, any increase in firm size yields a corresponding increase in ROA. Regression outcomes (β=0.293, p=0.000) indicate presence of a positive as well as notable influence of firm size on ROA amid MFIs, Kenya.

5.3 Conclusions

The intention of the research was in identifying the correlation among financial risk and ROA of MFIs in Kenya. The findings indicated that financial risk showed an adverse in addition to substantial effect on ROA. This may imply that MFIs with high credit risk have low levels of ROA. Credit risk management is therefore necessarily to achieve the targeted performance.

Additionally, the outcomes unveiled that liquidity risk besides ROA are negatively and significantly linked. This suggests that entities with low levels of liquid assets compared to their assets end up having a lower ROA. This can be explained by the inability of illiquid firms to benefit from investment opportunities when they occur. Additionally, the survey unveiled that operating risk positively affects the ROA although not substantial impact.

The study conclusions revealed that capital adequacy along with ROA are significantly and positively correlated. This may mean that the MFIs that have adequate capital are capable of paying their financial liabilities when they fall due and are also capable of benefitting from investment opportunities that might arise in the course of doing business and therefore high levels of ROA compared with firms that has less capital adequacy.

The research outcomes further depicted that MFI size had a notable including positive correlation with ROA which might mean that an increase in asset base of an MFI leads to enhanced ROA. This is explainable by the fact that bigger MFIs are likely to have developed structures to monitor the internal operations of a firm leading to better ROA. Bigger MFIs are also likely to have better governance structure which can also explain the high ROA associated with firm size.

5.4 Recommendations for Policy and Practice

According to the results of the survey, the ROA is negatively plus significantly affected by financial risk. Thus, the survey suggests to managers of MFIs to minimize the NPLs. This is attainable by inventing a suitable financial risk management technique which will be able to distinguish good borrowers from bad ones.

Moreover, liquidity risk was discovered to possess a positive and notable impact on ROA. Henceforth, the research commends that management of MFIs in Kenya ought to ensure that they do not over commit their assets by giving excess loans as this will likely lead to reduced ROA. The MFIs should come up with effective liquidity risk management strategies. Regulators should ensure that the MFIs do not led beyond a certain set limit of their asset base.

From the study findings, capital adequacy was found to enhance ROA of MFIs, this study recommends that MFIs should keep adequate capital levels to sustain their obligations when they fall due whereas simultaneously time enjoying short term investment chances which may arise. The policy makers should set a limit of the capital adequacy level that MFIs should have as too much capital adequacy is also disadvantageous as it comes with opportunity costs.

5.5 Limitations of the Study

The focus was on various attributes which are considered to influence ROA of Kenya's MFIs. Particularly, the survey paid attention to six explanatory attributes. Although, in certainty, there is presence of other variables probable to influence ROA of firms including internal like corporate governance attributes and management ROA whereas others are beyond the control of the firm like interest rates as well as political stability.

The research covered a duration of 5 years that is from 2017-2021. The findings of a longer duration has not been proved to remain the same. Moreover, beyond 2021 the same findings cannot be proved whether it will hold. The longer the duration covered the more reliable the results are due to inclusion of circumstances of vital economic shifts for instance recessions in addition to booming.

Data quality was the greatest limiting factor during the survey. The findings in this research does not mirror the actual circumstance at hand. During the study, the accuracy of the datum was fictitious. Furthermore, during measurement of the data owing to the existing situations there has been a lot of incoherence. The survey made use of secondary data in contrast to primary datum. Effecting some of the drivers of growth has taken place although the restriction of data availability has limited the others.

Regression techniques aided in finalizing the analyses of data. The investigators would be hindered from generalizing the outcomes exactly because of restrictions associated with the model utilization for instance erroneous as well as deceptive conclusions emanating from a change in value of variable. Once datum is added to a regression model, it is impossible to run it via the previous model.

5.6 Suggestions for Further Research

This survey paid attention to MFIs in Kenya. More researches can focus on a wide scope by covering other MFIs in Kenya to back or criticize the results of the current study. Further, this study focused on four measures namely; operating risk, liquidity risk, interest rate risk together with credit risk. Future studies should focus on other financial risk measures that were not considered in this study.

The study intended to establish the manner in which the microfinance institutions in Kenya was being affected by financial risk. For purposes of identifying qualitative

features which may be overlooked in this survey, it is recommended to undertake a study paying attention to primary data or a mixture of primary in addition to secondary data.

The availability of data was a limiting factor forcing the investigation to focus on the last five years. Moreover, in order to be able to validate the additional data, the investigation ought to use a broader range of data. Also, it was restricted to only MFIs instituted in Kenya. Further investigations should be conducted involving other establishments. Lastly, in confirming besides rejecting results, the investigator utilized a regression model, while future scholars should confirm or reject the outcomes based on different mechanisms.

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APPENDICES

Appendix I: Microfinance Institutions in Kenya

1. ASA International MFI Limited
2. BIMAS MFI Limited
3. Caritas MFI Limited
4. Century MFI Limited
5. Choice MFI Limited
6. Daraja MFI Limited
7. Diversity MFI Limited
8. Eclof Kenya MFI Limited
9. Faulu MFI Limited
10. Fincredit MFI Limited
11. Greenland Fedha MFI Limited
12. Habitat for Humanity MFI Limited
13. Hand in Hand Eastern Africa MFI Limited
14. Hazina Development Trust MFI Limited
15. Jitegemea MFI Limited
16. Jiweze MFI Limited
17. Juhudi Kilimo MFI Limited
18. Kenya Women MFI Limited
19. Kipepeo MFI Limited
20. Letshego MFI Limited
21. Liberty Afrika Technologies MFI Limited
22. Longitude Finance MFI Limited
23. Maisha MFI Limited

24. Momentum MFI Limited

25. Money Worth Investment MFI Limited

26. Musoni MFI Limited

27. My Credit MFI Limited

28. NEEMA- HEEP MFI Limited

29. Nyali capital MFI Limited

30. PAWDEP MFI Limited

31. Platinum Credit MFI Limited

32. Premier Credit MFI Limited

33. Progressive Capital MFI Limited

34. Rafiki MFI Limited

35. Real people MFI Limited

36. Remu MFI Limited

37. Select MFI Limited

38. SMEP MFI Limited

39. SpringBoard Capital MFI Limited

40. Sumac MFI Limited

41. U & I MFI Limited

42. Ushind Bora MFI Limited

43. Uwezo MFI Ltd

44. Vision Fund MFI Limited

45. Weighbridge Ventures MFI Limited

46. Yehu MFI Limited

47. ZENKA MFI Limited

Source: CBK (2021)

Appendix II: Research Data

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
1	2017	0.0826	0.1600	3.9703	0.7526	0.5125	0.1723	8.2162
1	2018	0.1139	0.0600	3.9512	0.7788	0.4556	0.1645	8.2177
1	2019	0.1465	0.1500	3.9318	0.9003	0.6756	0.1528	8.2509
1	2020	0.1945	0.0400	3.9120	1.2190	0.7448	0.1560	8.2695
1	2021	0.1736	0.0500	3.8918	0.7812	0.7232	0.1844	8.3168
2	2017	0.2410	0.1400	3.9120	1.5348	0.2742	0.1592	8.3379
2	2018	0.1590	0.1500	3.8918	1.2537	0.3254	0.1639	8.4239
2	2019	0.0644	0.1200	3.8712	1.8550	0.2887	0.1616	8.4141
2	2020	0.0604	0.0900	3.8501	1.6321	0.2953	0.1578	8.4557
2	2021	0.0310	0.1100	3.8286	3.2957	0.2754	0.1602	8.4859
3	2017	0.0279	0.0100	4.3944	0.6206	0.6428	1.8796	8.2067
3	2018	0.0248	0.0200	4.3820	0.6118	0.6662	1.9617	8.2879
3	2019	0.0139	0.0200	4.3694	1.1138	0.6639	0.3053	8.3768
3	2020	0.0019	0.0400	4.3567	1.0363	0.6526	0.3229	8.4253
3	2021	0.1050	0.0600	4.3438	1.5372	0.6372	0.3466	8.4516
4	2017	0.0840	0.1300	3.1781	1.4935	0.1158	0.1596	7.5576
4	2018	0.1331	0.1200	3.1355	1.1013	0.1323	0.1840	7.6198
4	2019	0.1709	0.1300	3.0910	0.7508	0.1656	0.1786	7.5878
4	2020	0.0574	0.1700	3.0445	0.8794	0.1472	0.1803	7.5652
4	2021	0.1230	0.2200	2.9957	1.1345	0.1270	0.1638	7.5406
5	2017	0.0887	0.0400	2.0794	0.5897	0.7007	0.3941	8.0577
5	2018	0.0937	0.0500	1.9459	0.6198	0.6912	0.4230	8.1238

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
5	2019	0.0986	0.0100	1.7918	0.5994	0.7020	0.4574	8.1659
5	2020	0.0999	0.0100	1.6094	0.7079	0.6503	0.5397	8.2286
5	2021	0.1514	0.0700	1.3863	0.5240	0.5377	0.4392	8.3287
6	2017	0.0609	0.1000	3.5835	1.8238	0.7331	0.2730	8.5767
6	2018	0.2966	0.0800	3.5553	1.5769	0.6613	0.2832	8.6278
6	2019	0.2323	0.0200	3.5264	1.1119	0.5954	0.2637	8.6514
6	2020	0.2298	0.3900	3.4965	1.2749	0.6081	0.2555	8.6986
6	2021	0.1657	0.0600	3.4657	1.3443	0.5497	0.2764	8.7303
7	2017	0.0105	0.0400	3.9703	0.9830	0.3826	0.1791	8.0019
7	2018	0.0572	0.1500	3.9512	1.0618	0.3554	0.1792	8.0506
7	2019	0.0125	0.3100	3.9318	1.7404	0.4025	0.1845	8.0485
7	2020	0.0912	0.0200	3.9120	1.2006	0.5734	0.1732	8.1428
7	2021	0.0185	0.1100	3.8918	0.9407	0.5605	0.1573	8.1599
8	2017	0.1863	0.3500	3.9120	1.3215	0.2890	0.1099	7.9815
8	2018	0.0950	0.1800	3.8918	0.7600	0.5506	0.0939	8.0263
8	2019	0.1526	0.3900	3.8712	0.6879	0.4309	0.0790	8.0767
8	2020	0.1072	0.1900	3.8501	0.9920	0.7651	0.0509	8.1894
8	2021	0.0096	0.0500	3.8286	1.0697	0.5803	0.0280	8.2824
9	2017	0.0175	0.1000	4.3944	0.2677	0.2478	0.1883	8.0201
9	2018	0.0041	0.1100	4.3820	0.3491	0.2405	0.1551	8.0438
9	2019	0.1415	0.1200	4.3694	0.3323	0.3577	0.2285	7.9725
9	2020	0.1548	0.0400	4.3567	0.2661	0.2284	0.1477	7.9744
9	2021	0.1681	0.0500	4.3438	0.3119	0.2211	0.1451	7.9950

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
10	2017	0.0296	0.0200	3.1781	1.1178	0.5144	0.2165	8.1877
10	2018	0.0382	0.0200	3.1355	1.1099	0.5296	0.2126	8.2356
10	2019	0.0419	0.1900	3.0910	0.9898	0.5866	0.2277	8.2709
10	2020	0.0275	0.0200	3.0445	0.8495	0.6934	0.0227	8.3291
10	2021	0.0570	0.0300	2.9957	1.0610	0.6071	0.1618	8.3508
11	2017	0.0402	0.0900	2.0794	0.8533	0.5346	0.2345	8.3898
11	2018	0.0415	0.0900	1.9459	0.9362	0.5924	0.2442	8.4802
11	2019	0.2296	0.1000	1.7918	0.1414	0.5076	0.2508	8.5279
11	2020	0.2144	0.0400	1.6094	0.1037	0.6935	0.2355	8.5719
11	2021	0.1606	0.0200	1.3863	1.1535	0.7629	0.2456	8.6261
12	2017	0.1440	0.0200	2.3571	0.2616	0.7952	0.2291	7.2060
12	2018	0.1219	0.0200	2.2968	0.2229	0.7848	0.1463	7.1988
12	2019	0.0957	0.0300	2.6813	0.2479	0.6970	0.1850	7.2236
12	2020	0.2794	0.0400	2.3480	0.2867	0.6677	0.1901	7.3186
12	2021	0.2788	0.0300	2.6204	0.2803	0.6829	0.2111	7.3549
13	2017	0.1096	0.0600	1.3164	0.8533	0.3073	0.4230	7.7230
13	2018	0.0593	0.1900	1.1960	0.9362	0.2291	0.4574	7.6766
13	2019	0.2438	0.1900	1.1739	1.1535	0.0328	0.5397	7.5374
13	2020	0.1236	0.0200	1.2056	0.5988	0.8101	0.7005	7.4993
13	2021	0.1261	0.0400	1.2276	0.8328	0.7456	0.2990	7.4789
14	2017	0.1169	0.3000	1.0562	0.9120	0.1556	0.3184	7.6874
14	2018	0.0870	0.2400	1.0962	1.0407	0.1738	0.2496	7.7237
14	2019	0.0850	0.2000	1.1120	0.6973	0.3356	0.1944	7.5611

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
14	2020	0.0769	0.1700	1.1601	1.0418	0.3222	0.1599	7.6254
14	2021	0.0621	0.1400	1.1233	0.9047	0.3771	0.1659	7.6188
15	2017	0.0665	0.0000	4.5106	0.5927	0.3930	0.2120	8.2162
15	2018	0.0515	0.2000	6.2963	1.1535	0.4443	0.2018	8.2177
15	2019	0.0227	0.0100	10.0893	0.6937	0.3845	0.1966	8.2509
15	2020	0.0227	0.0200	4.2579	0.7149	0.3275	0.2041	8.2695
15	2021	0.2837	0.1200	8.8431	0.5761	0.2696	0.2041	8.3168
16	2017	0.0015	0.0200	1.1065	1.1737	0.1425	0.2691	7.3921
16	2018	0.0337	0.0300	1.1464	0.9834	0.1037	0.1441	7.3912
16	2019	0.1402	0.1300	1.3815	1.3268	0.0904	0.2078	7.4269
16	2020	0.0819	0.3800	1.5359	1.1912	0.1881	0.1986	7.4953
16	2021	0.3061	0.0100	1.4639	1.2957	0.2950	0.1952	7.6089
17	2017	0.1685	0.0500	1.2832	2.6058	0.5820	0.1125	7.7088
17	2018	0.2919	0.0500	1.1679	1.9871	0.5287	0.1145	7.7925
17	2019	0.2136	0.0700	1.3048	1.7572	0.5689	0.1399	7.7958
17	2020	0.0041	0.0500	1.1971	1.5740	0.4618	0.1534	7.8087
17	2021	0.0041	0.0500	1.1606	1.5548	0.5065	0.0911	7.7387
18	2017	0.1179	0.0700	1.5853	1.3073	0.4366	0.2335	8.1416
18	2018	0.2618	0.0600	1.9464	1.2215	0.4653	0.2649	8.2161
18	2019	0.1030	0.0500	1.0851	2.6804	0.4858	0.2547	8.2482
18	2020	0.1341	0.0400	1.0237	2.2625	0.4953	0.2387	8.2873
18	2021	0.0918	0.0300	1.4691	0.6313	0.6154	0.2597	8.2934
19	2017	0.0045	0.2100	1.9836	1.2513	1.0060	0.1712	7.0270

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
19	2018	0.0527	0.0500	1.3339	1.0568	0.7975	0.1763	6.9998
19	2019	0.0538	0.0500	1.5404	1.2442	0.9662	0.1904	6.9773
19	2020	0.0737	0.0800	1.2591	0.9423	0.3658	0.2022	6.9368
19	2021	0.0201	0.0300	1.1154	1.0481	0.4455	0.2275	6.9339
20	2017	0.0475	0.5700	4.1442	1.0131	0.4193	0.1351	6.8581
20	2018	0.0879	0.5300	7.9538	1.1560	0.8674	0.1577	6.8614
20	2019	0.1244	0.0800	8.4745	1.5957	0.5202	0.1872	6.9607
20	2020	0.0180	0.0600	3.3451	1.3150	0.4751	0.1620	7.0390
20	2021	0.0180	0.0000	1.9506	1.0811	0.4664	0.1866	7.1179
21	2017	0.1605	0.0600	1.0966	1.1535	0.3808	0.2022	8.3379
21	2018	0.1071	0.0700	1.4218	0.7844	0.3826	0.3213	8.4239
21	2019	0.0045	0.0600	1.4858	1.0194	0.3937	0.3911	8.4141
21	2020	0.0225	0.0400	1.7358	0.8533	0.4708	0.1700	8.4557
21	2021	0.0400	0.1200	1.2374	0.9362	0.2786	0.1534	8.4859
22	2017	0.0397	0.1300	1.9502	1.1157	0.2851	0.3909	8.3379
22	2018	0.0421	0.1600	1.9346	0.0074	0.2948	0.1813	8.4239
22	2019	0.1185	0.2000	1.9684	1.2995	0.2659	0.1769	6.7611
22	2020	0.0468	0.2300	1.2242	1.1102	0.2797	0.1700	6.7943
22	2021	0.0662	0.0200	1.6434	0.8008	0.2771	0.1534	8.2879
23	2017	0.1105	0.0600	1.0320	0.9872	0.2403	0.1885	8.2067
23	2018	0.0800	0.0600	1.9226	0.7481	0.2615	0.2020	8.2879
23	2019	0.0468	0.1000	1.8973	0.7565	0.2405	0.1815	8.3768
23	2020	0.0759	0.0800	1.1574	0.7018	0.2165	0.1858	8.4253

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
23	2021	0.2283	0.1200	1.5021	0.6975	0.8202	0.1793	8.4516
24	2017	0.2214	0.1600	1.4648	0.6772	0.8878	0.2610	8.4859
24	2018	0.3650	0.1400	1.5627	0.9922	0.8005	0.1625	8.3379
24	2019	0.0561	0.1100	1.4005	0.8564	0.8552	0.2008	8.4239
24	2020	0.0168	0.1100	1.0634	0.3208	0.8684	0.1933	6.0724
24	2021	0.1243	0.1700	1.6245	1.1535	0.0783	0.1915	6.5049
25	2017	0.1145	0.0500	1.7402	2.5763	0.0910	0.2101	7.5107
25	2018	0.1364	0.0100	4.3944	2.2844	0.1478	0.1536	7.5376
25	2019	0.0400	0.0900	4.3820	0.2538	0.1914	0.1801	7.5084
25	2020	0.0199	0.1000	4.3694	0.2260	0.2388	0.1663	7.6403
25	2021	0.0111	0.0300	2.2050	0.2058	0.2651	0.1955	7.6508
26	2017	0.2872	0.0500	2.5238	0.8533	0.2212	0.1945	8.3898
26	2018	0.0267	0.0100	3.3740	0.9362	0.2289	0.4270	8.4802
26	2019	0.0035	0.0900	2.8332	0.7533	0.2535	0.3933	8.5279
26	2020	0.1599	0.0300	3.0200	2.0736	0.3028	0.5708	8.5719
26	2021	0.1599	0.0500	4.4016	0.8535	0.2939	0.4494	8.6261
27	2017	0.1966	0.0100	2.3280	1.3268	0.2801	0.4576	7.6734
27	2018	0.2632	0.0700	1.7710	1.1912	0.2843	0.3498	7.7973
27	2019	0.0323	0.0900	1.8952	1.2957	0.3822	0.3869	7.6170
27	2020	0.0706	0.0700	2.1309	2.6058	0.2833	0.3316	7.6754
27	2021	0.1038	0.0800	1.9554	1.9871	0.2710	0.3093	7.6856
28	2017	0.1004	0.0100	1.2192	1.7572	0.2674	0.1393	7.1251
28	2018	0.0773	0.0000	1.1561	1.1535	0.2358	0.1399	7.0917

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
28	2019	0.0718	0.0800	1.1158	1.1457	0.2410	0.0715	7.1023
28	2020	0.0745	0.0700	1.0780	1.3058	1.1388	0.0542	7.1695
28	2021	0.0365	0.2500	1.5236	1.5680	0.9389	0.0370	7.1649
29	2017	0.0635	0.1400	1.4882	1.6418	0.7282	0.2104	7.4691
29	2018	0.0277	0.1600	1.2774	1.4860	0.6733	0.2059	7.4211
29	2019	0.0882	0.0000	1.2997	0.9118	0.5869	0.2304	7.4344
29	2020	0.0327	0.0100	1.1003	0.7956	0.4759	0.2227	7.4408
29	2021	0.0327	0.0000	1.6298	0.6188	0.4368	0.1869	7.4577
30	2017	0.2284	0.0300	1.5950	1.0494	0.3876	0.2545	7.1018
30	2018	0.3270	0.0100	1.4871	0.7956	0.3467	0.2412	7.0967
30	2019	0.2227	0.0300	1.2846	0.6495	0.3458	0.2741	7.0904
30	2020	0.2210	0.0400	1.4099	0.6850	0.3484	0.2946	7.1179
30	2021	0.2283	0.0300	1.0780	0.8274	0.3469	0.2853	7.1249
31	2017	0.2175	0.0200	1.5236	0.6214	0.3099	0.1676	7.1984
31	2018	0.2715	0.0400	1.4882	1.2494	0.3569	0.1729	7.2791
31	2019	0.2842	0.0600	1.0983	0.9985	0.3686	0.2216	7.3376
31	2020	0.2461	0.2300	1.0861	1.4241	0.6834	0.2248	7.4162
31	2021	0.2692	0.0300	2.3685	1.5200	0.6793	0.3729	7.4263
32	2017	0.3188	0.0300	2.2713	0.5531	0.5936	0.2056	6.5049
32	2018	0.3282	0.1000	1.8378	0.7350	0.7626	0.2468	7.5107
32	2019	0.3134	0.0300	2.3583	0.5475	0.7537	0.2325	7.5376
32	2020	0.0600	0.0400	2.5221	0.8323	0.3686	0.1646	7.5084
32	2021	0.0642	0.0400	1.3097	1.2338	0.6834	0.1440	7.6403

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
33	2017	0.0383	0.1000	1.1747	0.8533	0.6793	0.1723	7.6508
33	2018	0.0409	0.0000	1.1699	0.9362	0.9063	0.1870	8.3898
33	2019	0.1052	0.0300	1.1666	0.7038	0.8892	0.1812	8.4802
33	2020	0.1249	0.0800	1.1380	1.5759	0.5301	0.1684	8.5279
33	2021	0.1203	0.0300	2.5641	1.5392	0.5264	0.1723	8.5719
34	2017	0.2358	0.0000	1.0423	2.2120	0.5370	0.1982	8.6261
34	2018	0.1874	0.0000	1.0590	2.2265	0.4524	0.2116	7.6734
34	2019	0.1596	0.1100	1.1121	2.2665	0.4029	0.2091	7.7973
34	2020	0.1253	0.1000	1.1251	3.0110	0.0457	0.1852	7.6170
34	2021	0.1372	0.0900	1.0611	1.2633	0.0748	0.1947	7.6754
35	2017	0.0661	0.1600	1.1587	1.1535	0.0748	0.1071	7.6856
35	2018	0.0758	0.1900	1.1441	1.0683	0.0843	0.1745	7.1251
35	2019	0.0722	0.2300	1.1447	0.7225	0.3640	0.1627	7.0917
35	2020	0.0795	0.1900	1.0939	0.5202	0.5597	0.1265	7.1023
35	2021	0.0795	0.2600	1.0332	1.1515	0.5245	0.2201	7.1695
36	2017	0.0868	0.2700	1.2705	0.9985	0.5261	0.2773	7.1649
36	2018	0.0940	0.2300	1.2776	0.8278	0.5548	0.2164	7.4691
36	2019	0.0215	0.2200	1.1715	0.8314	0.0246	0.2230	7.4211
36	2020	0.0961	0.0600	1.1658	0.6253	0.7179	0.2908	7.4344
36	2021	0.0562	0.2300	1.5334	0.9044	0.7097	0.2111	7.4408
37	2017	0.0812	0.1200	1.6234	0.6952	0.6361	0.5862	7.4577
37	2018	0.0910	0.0500	1.6385	0.7589	0.5670	0.2379	7.1018
37	2019	0.0507	0.0600	1.6048	1.1507	0.4912	0.3868	7.0967

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
37	2020	0.0743	0.0500	1.5050	0.4991	0.4925	0.3878	7.0904
37	2021	0.0581	0.0900	1.2653	0.6157	0.4482	0.3316	7.1179
38	2017	0.0650	0.1300	1.2875	0.9182	0.4229	0.2908	7.1249
38	2018	0.0540	0.1700	1.2781	1.3433	0.4367	0.1723	7.1984
38	2019	0.0468	0.1200	1.2225	1.6103	0.4861	0.2545	7.2791
38	2020	0.0138	0.0400	1.1691	1.8041	0.3917	0.2274	7.3376
38	2021	0.0138	0.0300	1.1254	1.6465	0.2804	0.2109	7.4162
39	2017	0.3482	0.0400	1.0996	1.3569	0.5297	0.1592	7.4263
39	2018	0.2536	0.0498	1.0417	0.5875	0.4680	0.1639	8.2161
39	2019	0.0833	0.0389	1.2396	1.0541	0.4500	0.1616	8.2482
39	2020	0.0851	0.0387	2.2624	1.5925	0.4420	0.1578	8.2873
39	2021	0.0991	0.0360	2.9326	2.1825	0.3410	0.1602	8.2934
40	2017	0.2214	0.0284	3.5336	1.6103	0.2830	1.8796	7.0270
40	2018	0.3650	0.0498	2.5000	1.8041	0.4000	1.9617	6.9998
40	2019	0.0561	0.0389	3.1447	0.8533	0.3180	0.3053	6.9773
40	2020	0.0168	0.0387	2.5063	0.9362	0.3990	0.3229	6.9368
40	2021	0.1243	0.0360	2.5000	1.1110	0.4000	0.3466	6.9339
41	2017	0.0912	0.0284	2.9851	1.4241	0.3350	0.1596	6.8581
41	2018	0.1378	0.0449	3.0675	1.5200	0.3260	0.1840	6.8614
41	2019	0.1111	0.0446	2.9586	0.5531	0.3380	0.1786	6.9607
41	2020	0.0781	0.0471	2.6596	0.7350	0.3760	0.1803	7.0390
41	2021	0.0672	0.0278	2.9674	0.5475	0.3370	0.1638	7.1179
42	2017	0.0664	0.0374	2.1739	0.8323	0.4600	0.3941	8.3379

MFI	Year	ROA	Credit risk	Liquidity risk	Operating risk	Interest rate risk	Capital adequacy	MFI size
42	2018	0.0664	0.0417	1.4728	1.2338	0.6790	0.4230	8.4239
42	2019	0.0673	0.0414	2.4155	0.8533	0.4140	0.4574	8.4141
42	2020	0.0547	0.0427	1.3569	0.9362	0.7370	0.5397	8.4557
42	2021	0.0547	0.0386	1.8315	0.7038	0.5460	0.4392	8.4859