Corporate governance, firm age and financial stability of microfinance banks in Kenya

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ABSTRACT

Financial stability has remained a major challenge of the microfinance banks in Kenya. Statistics from the Central Bank of Kenya show that for the period 2018-2022, the aggregate net incomes of these institutions have been negative with return on equity (ROE) and return on asset (ROA) values averaging at 13.24% and -1.55% respectively. This implies that these institutions have been posting losses hence providing a pointer of concern about their financial stability. The instability of these microfinance banks is detrimental to the survival of the entire financial sector and the economy at large. The general objective of the study was to establish the effect of firm age on corporate governance and financial stability of microfinance Banks in Kenya. The following specific objectives guided the proposed study. To establish the relationship between board independence and financial stability of microfinance banks in Kenya; to determine relationship between ownership concentration and financial stability of microfinance banks in Kenya; to analyze the relationship between CEO compensation and financial stability of microfinance banks in Kenya and to assess the moderating effect of firm age on the relationship between corporate governance and financial stability of microfinance banks in Kenya. The agency theory, stewardship theory provided anchorage to the study. This study adopted explanatory design to meet the formulated objectives. The target population comprised of 12 Microfinance banks licensed by the Central Bank of Kenya (CBK) and census was adopted, Secondary data was gathered in this study with the aid of the questionnaire that was in structured format. The analysis was done through panel data and findings presented through tables. It was established that board independence had p-value of p=0.016 i.e. p<0.05, ownership concentration had p-0.015<0.05 and chief executive officer (CEO) compensation had p= 0.028<0.05 hence all of them were significant. It was concluded that corporate governance significantly affects financial stability. The study recommended that shareholders and policy makers at the Central Bank of Kenya should balance between independent and non-independent director among microfinance banks in Kenya. Shareholder working with Microfinance Institution (MFIs) in Kenya should restructure their shareholding structures and composition so as to balance the interests of shareholders. Shareholders of microfinance banks should provide competitive remuneration package to the CEO which should be tied to their performance.

Keywords: Board Independence, CEO Compensation, Corporate Governance, Financial Stability, Firm Age, Microfinance Banks, Ownership Concentration

I. INTRODUCTION

Financial stability has been a key issue of concern by regulators especially for firms providing financial services like microfinance banks. An important reason for the increased recognition of financial stability of these institutions is because they hold deposits of customers and their long-term instability may put the said deposits at risk leading to significant losses by their customers. According to Thoha et al. (2022), financial stability of lending institutions like microfinance banks is hinged on a number of factors including the corporate governance mechanisms that are in place. In Malaysia, Lassoued (2018) pointed out that the size and independence of the board as well as ownership concentration are critical components of corporate governance that promote financial stability of financial institutions.

In Africa and specifically in Ghana, Li et al. (2020) shared that corporate governance aspects like board independence and compensation of the chief executive officer (CEO) helps in reducing possibility and risk of insolvency hence contributing towards financial stability. Locally in Kenya, Mwangi (2013) indicated that corporate governance enhances financial stability of firms in the financial sector. Musau (2020) was of the view that independence and ownership concentration are significant predictors of financial stability of financial institutions. Chege (2021) attribute collapse of institutions in the financial sector in Kenya in the last decade to their poor corporate governance mechanisms and practices.

Corporate governance is the interaction between the board, management and shareholders of the firm to ensure it attains its goals and objectives. It can also be defined as collection of systems under which a corporation is managed and

controlled (Affes & Jarboui, 2023). Separation of ownership from management is associated with conflict of interests and hence the need for corporate governance mechanisms through the board to provide an oversight role. In corporate governance, each of the said parties including the management, board and shareholders has specific role to play in ensuring the firm attains its objectives (Khan et al., 2023).

Financial stability is defined as a state where there is fluctuation in the process of financial intermediation such that confidence is established among customers (Kiemo et al., 2019). It is also defined as the smooth operation of the system involved in the financial intermediation process in an economy (Ndinda, 2023). Financial stability plays a critical role in an economy by facilitating exchange in value. It helps in facilitating the movement of funds from units having surplus to those with deficits in a way that is efficient hence supporting the growth and development of an economy (Ngaira & Miroga, 2018). One of the widely documented measures of financial stability is the use of Z-score through credit risk that incorporates non-performing loans as well as insolvency risk. This is usually determined on the basis of computed values of returns on assets (ROA) as well as equity (ROE) (Koskei, 2020). Thus, financial stability in the present study will be measured using ROE.

Firm age is the number of years which an institution has been in operations since the year of establishment. This results into categorization of firms as under young or mature/older enterprises. There could exist some differences in financial stability of the new and relatively older firms (Memon & Samo, 2019). New firms in the industry are expected to be less stable compared to the relatively older firms that have been in operation for a significant period of time (Gunu & Adamade, 2015).

Age of the firm is reflected in the number of years that an enterprise has been in operation. Young firms are relatively less stable and they and they can withstand significant period of uncertainties and instabilities that are usually evident in an economy. The relationship between firm age, corporate governance and financial stability is gaining momentum. Kieschnick and Moussawi (2018) indicated that firm age positively enhances the use of debts by management to achieve financial stability.

Microfinance is a financial institution that provides customized credit facilities to customers depending on their specific needs. They are special financial institutions designed to provide small credit facilities to people drawn from low income class or groups (Karanja & Simiyu, 2022).The reason why these low-income individuals are targeted by the microfinance is because they are unable to obtain similar credit facilities from large financial institutions like commercial banks. In Kenya, the microfinance sector is structured into credit only institutions and those that are allowed to accept deposits from customers (microfinance banks). This study will focus on microfinance banks in Kenya that are regulated by the Central Bank of Kenya (CBK) alongside other commercial banks (Ndirangu et al., 2020). Financial stability has remained a key challenge of these microfinance banks in Kenya in the last decade with most of them posting losses (Ndirangu & Kimani, 2022). The loss making trend of these institutions has negatively eroded their ROE and ROA which are key in determination of Z-score when determining their financial stability. This therefore provides the basis and justification of conducting the proposed study.

1.1 Statement of Problem

Financial stability has remained a major challenge of the microfinance banks in Kenya. Statistics from the Central Bank of Kenya show that for the period 2018-2022, the aggregate net incomes of these institutions have been negative with return on equity (ROE) and asset (ROA) values averaging at 13.24% and -1.55% respectively. This implies that these institutions have been posting losses hence providing a pointer of concern about their financial stability. The instability of these microfinance banks is detrimental to the survival of the entire financial sector and the economy at large. Effective corporate governance is envisaged to help these institutions to solve the aforementioned challenges and concerns about corporate governance. All these issues that provide strong justification of the current problem of financial instability in the microfinance banking sector which deserve urgent measures to address hence the need of this proposed study.

The available studies include Thoha et al. (2022) who determined how good corporate governance affected financial stability in Indonesia. Nguyen et al. (2022) evaluated the effect of corporate governance on financial stability of commercial banks in Vietnam. Affes and Jarboui (2023) studied how corporate governance affected financial performance in UK. Li et al. (2020) studied how corporate governance and banking stability were linked to each other using evidence from Universal Banks in Ghana. Musau (2020) analyzed how corporate governance affected financial performance of savings and credit cooperatives in Nairobi. Chege (2021) covered listed banks in Kenya and determined how corporate governance affected their financial performance.

However, the aforementioned studies like Affes and Jarboui (2023) and Li et al. (2020) were done in UK and Ghana away from Kenya. Other studies like Musau (2020) used financial performance and not financial stability as the dependent

variable. All these create gaps that will be filled by the present study which sought to establish the effect of firm age on corporate governance and financial stability of microfinance Banks in Kenya.'

1.2 Research Hypotheses

The study tested the following hypotheses:

H01: There is no statistically significant relationship between board independence and financial stability of microfinance banks in Kenya

H02: There is no statistically significant relationship between ownership concentration and financial stability of microfinance banks in Kenya

H03: There is no statistically significant relationship between CEO compensation and financial stability of microfinance banks in Kenya

H04: Firm age has no statistically significant moderating effect on the relationship between corporate governance and financial stability of microfinance banks in Kenya

II. LITERATURE REVIEW

2.1 Theoretical Review

This study was guided by the agency theory and the stewardship theory as discussed below:

2.1.1 Agency theory

Jensen and Meckling (1976) formulated this theory, and it describes the relationship existing between the management as the agents and the shareholders as principals. In this interaction, the theory regards managers as opportunistic and self-interested individuals whose interests may not fully be aligned with the owners of the firm (Panda & Leepsa, 2017). The theory provides the board and the costs incurred to maintain the same in terms of compensation as critical in allowing it carry out its oversight role to check the actions of the managers (Shogren et al., 2017).

The theory regards directors of the firm to be having fiduciary role to the company. In this regard, they are expected to demonstrate highest level of trust to the company which they manage and control as agents. However, the already indicated self-interested behavior of the directors may complicate their ability to act and operate as stewards and hence fail to demonstrate their fiduciary role to the company (Bendickson et al., 2016). In aligning the interests of the owners of the firms with those in management, some costs are incurred. These are referred to agency costs and they increase as the firm also expands and increase in size. The aspects of these agency costs include the expenses incurred to monitor behavior of managers for ensuring their interests are well aligned with owners of the firm. The relevance of this theory to the present study is that it will underpin the broad independent variable of the study being corporate governance and its proxies like board independence, CEO remuneration and ownership concentration. Thus, a significant relationship is predicted between this agency theory and financial stability.

2.1.2 Stewardship theory

This theory was developed by Davies et al. (2007) and it argues that managers being agents are trustworthy and thus effectively utilize the resources provided to them including assets. This is theory where managers are not motivated to realize their individual and selfish goals but those that are well aligned with objectives of the principal. In this theory, managers are believed to give their value to reputation. The theory notes that stewards under the theory derive their satisfaction and motivation whenever the firm remains successful (Davis et al., 2007). The theory provides an incentive for managers to exercise autonomy when working in effort to maximize returns of their shareholders. The relevance of this theory to the present study is that it will help to establish if corporate governance plays a significant role in promoting financial stability.

2.2 Empirical Review

2.2.1 Board Independence and Financial Stability

The focus of the study in Vietnam by Ngo et al. (2023) was on independence of the board and its implication on financial performance where the moderator variable was market competition. Non-executive members and duality role were measures of independence of the board and gathering of information was from auxiliary sources on the time period from 2016 to 2020. Panel data was adopted for processing of the obtained information where it became apparent after analysis that the duality role of the CEO was negatively linked with financial performance while the proportion of non-executive members had positive relationship with financial performance.

Sanni (2019) analyzed the link between independence of the board, management of risk and financial performance of deposit taking banks in Nigeria. The embraced design in this study was correlational in nature and the period considered was 2009 to 2018. In total, 14 banks were covered from which 12 were sampled purposively. Leveraging panel data, board independence and financial performance were found to be having positive interplay with each other.

In Kenya, Ombaba et al. (2018) covered corporate entities and determined the link between board independence and financial sustainability. Exploratory design was used and panel data methodologies were incorporated. In total, 39 listed entities were covered in the period from 2004 all through to 2013. The processed data indicated existence of inverse nexus between independence of the board and financial distress. The study conducted by Abdifatah (2020) was an evaluation of the relationship existing between the independence of the board and performance in operational terms. The study focused on the Kenyan listed construction firms. Descriptive survey was adopted with collection of secondary data. The analysis was able to point out that board independence significantly determines operational performance at firm level.

2.2.2 Ownership Concentration and Financial Stability

Gupta et al. (2022) focused on Indian banks and did an analysis of the link between ownership concentration and financial performance. The time period was 2009-2019 and information gathering was from auxiliary sources. It was noted after data processing that the shareholder with highest shareholding exerts greater effect on financial performance of the bank. Ozili and Uadiale (2017) aimed at determining how ownership concentration was connected with profitability of the bank. The total direct equity shares by the majority shareholder proxied ownership concentration. It was shown that financial entities having higher concentration in ownership are characterized by higher returns generated on assets as well as their net interest margins are also high

In a study that was done by Kiruga et al. (2023), the main focus was on ownership concentration and its nexus with financial performance taking evidence from listed entities in Kenya. The period considered was 2016-2020 and gathering of information was reinforced by auxiliary sources. The analysis was able to point out existence of significant nexus between ownership concentration and performance in monetary terms. In particular, both local and government ownership concentration were found to have negative nexus with financial performance in the studied firms.

The focus of the study by Muriungi et al. (2021) was ownership concentration and its effect on financial decision and value of the firm. The study covered listed firms in Kenya. The time period considered was 2008 all through to 2017. The agency theory and institutional monitoring theory guided the study variables. The analyzed findings indicted existence of significant effect of ownership concentration on investment decisions. Enkirisai (2018) explored the relationship existing between ownership structure of the firm and the link with performance focusing on State owned entities in the NSE. The adopted design was quantitative in nature. Among the theories that were adopted included the stakeholder theory and the theory of growth of the firm. Total of 11 listed parastatals were covered. The collected information afteranalysis indicted that ownership structure was significant predictor of performance.

2.3.3 Chief Executive Officer Compensation and Financial Stability

Ahamed (2022) was interested in determining how compensation of the CEO was linked with financial performance of banks with focus on Bangladesh. The period of consideration was 2010 all through to 2020. The analyzed results were that a positive and significant connection is evident between compensation to CEO and financial performance. Chatterjee et al. (2023) determined how remuneration to the CEO and financial distress were linked with the lifecycle of the firm. The time period was 2004 all through to 2021 and the processed information shoed that the state of financial distress of an enterprise and remuneration to the CEO are inversely linked with each other.

Jeff-Boakye et al. (2020) covered alternative investment markets in the United Kingdom and determined how compensation of CEO affected financial performance. The specific emphasis of this inquiry was on 201 AIM listed entities in UK. The time considered was 2011 running all through to 2016. The processed data provided evidence of existence of nexus between remuneration of the CEO and financial performance.

Tarus (2014) covered the nexus existing between compensation of the CEO and financial performance with focus on insurance firms. The approach adopted in this study was quantitative in nature and gathering of information was from auxiliary sources. It was noted that there existed non-significant but inverse link between compensation of CEO and financial performance. The interpretation of the inverse connection gave suggestion for the need to cap the compensation of CEO for maximization of shareholders' wealth.

Omamo et al. (2022) focused on establishing the effect of CEO compensation on financial performance. The study was conducted focusing on listed firms in Kenya that were 65 in total. The study utilized data from primary sources. Once information had been gathered and analyzed, the findings were that competitive remuneration packages paid to the CEO is motiving tor them to achieve the goals of the firm hence driving better financial performance outcomes. Kahuko (2018)

covered listed banks in Kenya will collection of secondary data to determine the effect of CEO compensation on financial performance. The timeframe was 2012 all through to 2027. The analyzed findings indicated that annual bonuses for CEO, their fixed salaries and allowances had significant effect on financial performance.

2.2.4 Firm Age, Corporate Governance and Financial Stability

Kieschnick and Moussawi (2018) focused on the age of the firm, corporate governance issues and the choices of capital structure. The processed information indicated existence of correlation between the use off debts and the age of the firm. Memon and Samo (2019) covered corporate governance concerns, the age of the firm and leverage and the connection between them borrowing evidence from China among its listed entities. It emerged that the duality role of the CEO and commissions to the board significantly determined leverage. On the other hand, the independence of the board and leverage was found to be negative.

Mallinguh et al. (2020) concentrated on medium sized entities and determined how the sector of the firm and its age affected its financial performance. The analysis of the data indicated that firm age significantly affected leverage at firm level. Rwakihembo et al. (2023) covered listed entities in Uganda and examined the nexus between age of the firm and financial performance. Cross sectional design was adopted, and information was obtained from primary sources aided with questionnaire. It was noted after analysis that the age of the firm and financial performance is positively linked with each other. Ali et al. (2021) focused on Pakistan and determined how corporate governance, the age of the firm and capital structure were linked. Panel data of non-financial firms listed within Pakistan's context was used. It was shown that the age of the firm and its size are positively linked with financial performance.

2.3 Conceptual Framework

In Figure 1, the broad independent variable of the study being corporate governance was proxy by board independence, ownership concentration as well as CEO concentration. On the other hand, firm age was the moderator variable. Financial stability was taken as the dependent variable. The essence of the present study was determining the implication of board independence, ownership concentration and CEO compensation all in relation to financial stability with firm age as a suitable moderator variable.

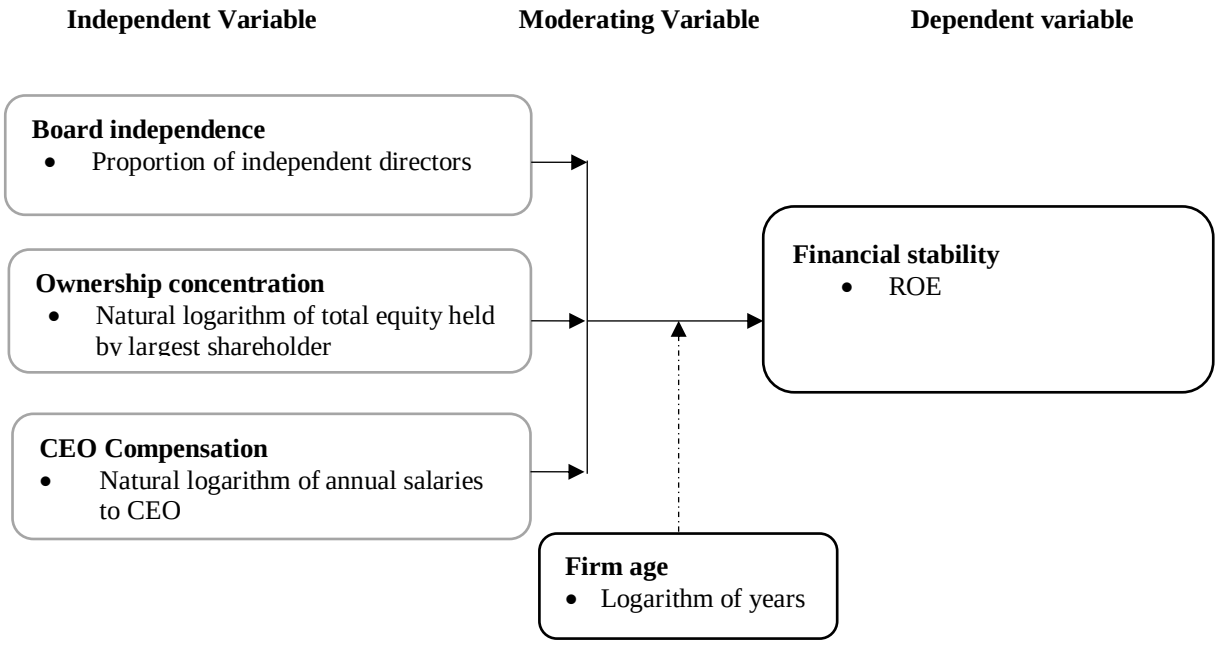

Figure 1
Conceptual Framework
Source: Author 2024)

III. METHODOLOGY

3.1 Research Design

Research design is a structure or plan that determines how the study is to be conducted in terms of data collection and processing (Harris et al, 2019). It is an outline that provide clear picture from the start to the end of the study. This study adopted explanatory design to meet the formulated objectives. According to Liamputtong (2019), explanatory design usually quantitative techniques and is more idea in testing of hypotheses. The present study was guided by null hypotheses and their analysis and testing to determine whether they are accepted or rejected was taken care of by this explanatory design.

3.2 Target Population

Target population is a collection of individuals having similar observable attributes that of great interest to the researcher (Strijker et al., 2020). This study targeted 12 Microfinance banks licensed by CBK (appendix I). Since the population was small and could easily be accessed, census was undertaken. N/B: While the above 12 MFIs could be small to support generalization of the findings, the adoption of cross-sectional approach involving a 5-year period meant a total of 60 data points that were adequate to support generalization of the results of the study.

3.3 Sample Size and Sampling Techniques

The selection of representative units from the target population is called sampling. It is usually done to save on money and time (Dźwigoł, 2019). In this study, census was undertaken hence no sampling was required. Thus, all the 12 microfinance banks licensed by CBK were included in the analysis.

3.4 Research Instrument

The study collected secondary data with the aid of the data collection sheet. This secondary data was collected from secondary sources like CBK reports and financial statements of respective institutions. The study focused on a 5-year period (2019-2023). This period was selected because it is more current and up to date.

3.5 Data Collection Procedure

The study accessed secondary data through online reports and publications from CBK and respective institutions. The reports were downloaded and saved after which an excel file was opened and relevant information keyed in. Care was exercised to ensure information gathered from the reports isas accurate as possible.

3.6 Data Analysis and Presentation

This study adopted panel data. The analysis was performed through means and standard deviations, correlation and regression analysis and presented through tables and figures.

3.6.1 Model Specification

Below is the regression model that aided in the analysis of results:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 FA_{4it} + \beta_5 CG*FA_{4it} + \varepsilon$$

Where:

Yit = financial stability of microfinance bank i at time t

B_0 = *Constant*

β_1 β_2 β_3 β_4 *and* β_5 *are Coefficients*

ε = *error term*

FA_4it = *Firm age of microfinance bank i at time t*

$CG*FA_4it$ = *Interaction term of microfinance bank i at time t*

3.6.2 Diagnostic tests

The assumptions of regression analysis were tested before the actual data was keyed and processed to generate results. More specifically, the study tested for multicollinearity test, autocorrelation and heteroskedasticity Test. Each of these tests will be interpreted appropriately.

3.6.1.1 Multicollinearity Test

Multicolinearity arises whenever one of explanatory variable has high correlation with others which need not to be the case (Strijker et al., 2020). This condition is undesirable unless it is treated. The study determined the values of Variance

of Inflation Factors (VIF) to test for multicollinearity and as noted by Bougie and Sekaran (2019), such values in the range of 1-10 signifies absence of this condition.

3.6.1.2 Autocorrelation Test

Autocorrelation is the presence of serial correlation in the sample data, and it should not be case (Dźwigoł, 2019). In this study, the presence of serial correlation was determined through Durbin Watson statistic with values ranging approaching 2 signifying absence of this condition as observed by Harris et al. (2019).

3.6.1.3 Heteroskedasticity Test

The presence of this assumption was tested in this study through Breusch Pagan test with the recommendation by Eden and Nielsen (2020) that p>.05 means absence of this condition.

3.7 Panel Data Analysis

Since this study was conducted using 12 microfinance banks as licensed by CBK on the period of 5 years (2019-2023), panel data methodologies were adopted. This implies a total of (12*5) data points. To begin with, the data was first entered into excel and key ratios measuring each variable being appropriately determined. Thereafter, it was exported to Stata software version for performing panel data analysis. Efforts were made to ensure that the resultant dataset from excel is balanced before exporting to Stata. Diagnostic tests listed above were then followed after which determination of fixed or random effect was conducted as discussed below:

Fixed effect (FE) model: This is a model where all time variant differences are controlled between individuals to avoid biasness of its estimated coefficients due to omitted time variant attributes. The only limitation with FE model is that it cannot be used to analyze time-variant causes of the dependent variables. Thus, these models are suitable for investigating and determining the causes of changes within an individual or organization. The fixed effect model of an entity generally takes the following form:

$Y\_it = \alpha_i + \beta X_{it} + u_i + e_{it}$

$i = 1...n \; ; \; t = 1...T$

Where:

Y_{it}*: outcome variable (for entity i at time t).*

α_i*: is the unknown intercept for each entity (n entity-specific intercepts).*

X_{it}*: is a vector of predictors (for entity i at time t).*

u_i*: within-entity error term;* e_{it}*: overall error term.*

Interpretation of a β coefficient: for a given entity, when a predictor changes one unit over time, the outcome will increase/decrease by βunits (assuming no transformation is applied).* Here, βrepresents a common effect across entities controlling for individual and time heterogeneity.

Random effect (RE) model: This is a model where variation across entities is assumed to be uncorrelated and random within the independent/predictor variables that have been incorporated in the model. An assumption made by RE model is that the error term of an entity is not correlated with the predictors such that time invariant variables can act as explanatory variables. The RE model can take the following form:

$Y_{it} = \alpha_i + \beta X_{it} + \gamma Z_i + e_{it}$

Where:

Y_{it} is the dependent variable of firm *i* at time *t*

X_{it} and Zi represent number of predictor variables in a sample study while e_{it} is the error term

Hausman test: To choose between RE and FE model, Hausman-test is used where the null hypothesis is that the models are not random. The p-values after running this test can be interpreted appropriately based on the said null hypothesis so as to choose between RE or FE model. If Prob > chi2 is < 0.05, one should use fixed effects

Langrage multiplier (LM) test: This test is conducted to decide whether to use RE or simple ordinary least square model (discussed under 3.7.1 under model specification). When using LM test, the null hypothesis is that variances across entities are equal to zero that is, there is no significant difference across units (i.e. no panel effect). When Prob > chibar2 < 0.05, we fail to accept the null hypothesis and conclude that random effects are needed.

IV. FINDINGS & DISCUSSION

4.1 Summary of Descriptive Statistics

Table 1 presents a summary of descriptive statistics.

Table 1

Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Boardindep~e	60	0.393711	0.0734674	0.272727	0.5454545
Ownershipc~n	60	2.525906	0.5128237	0.778151	3.600319
CEOCompens~n	60	0.707206	0.5430089	0	2.255273
Firmage	60	0.769514	0.3059625	0	1.146128
CorporateG~e	60	3.626823	0.8347407	1.564034	6.144643
Interacton~m	60	2.894493	1.35018	0	5.86348
Financials~y	60	-0.26475	0.6971007	-4.13514	0.565097

The findings in Table 1, the mean value of board independence stood at 0.3937111. This implies that overall, 39.37% of the directors working with microfinance banks in Kenya were independent while the rest were non-independent. The role played by independent directors of the firm on soundness and stability cannot be underscored. In Kenya, Ombaba et al. (2018) covered corporate entities and determined the link between board independence and financial sustainability. The processed data indicated existence of inverse nexus between independence of the board and financial distress. The analysis was able to point out that board independence significantly determines operational performance at firm level.

The mean value of ownership concentration stood at 2.525906, CEO compensation at 0.7072063 and firm age at 0.7695137.This shows that on overall, there was concentration in the board of the firms that were covered in this study. The findings further indicate that CEOs of the studied institutions received considerable remuneration which perhaps acted as a reward for their efforts. The entire score of corporate governance across all the studied microfinance banks stood at 3.626823 with financial stability standing at - 0.2647463. The most surprising findings in this study is the negative value under financial stability. This could be an indication that the financial stability of the studied banks was being threatened. Huang (2023) determined how ownership concentration was linked with stability of the bank with evidence from China. The specific focus of the inquiry was listed banks in Chinese context. The measure of financial stability was z-score. Auxiliary information was gathered and processed and the results were that ownership concentration and financial stability were positively linked with each other. This positive effect was found to be more pronounced for banks that were smaller in their relative sizes.

The focus of the study by Muriungi et al. (2021) was ownership concentration and its effect on financial decision and value of the firm. The study covered listed firms in Kenya. The time period considered was 2008 all through to 2017. The agency theory and institutional monitoring theory guided the study variables. The analyzed findings indicted existence of significant effect of ownership concentration on investment decisions.

4.2 Diagnostic Tests

The assumptions of regression analysis will be tested before the actual data is keyed and processed to generate results. More specifically, the study will test for multicollinearity test, autocorrelation and Heteroskedasticity Test. Each of these tests will be interpreted appropriately.

4.2.1 Multicollinearity test

The study will determine the values of Variance of Inflation Factors (VIF) to test for multicollinearity and as noted by Bougie and Sekaran (2019), such values in the range of 1-10 signifies absence of this condition. The findings of the test are as presented in Table 2

Table 2

Multicollinearity Test

Variable	VIF	1/VIF
Firmage	1.98	0.504714
Ownershipc~n	1.71	0.584239
CEOCompens~n	1.54	0.648382
Interacton~m	1.44	0.692323
Boardindep~e	1.23	0.813742
CorporateG~e	1.15	0.870515
Mean VIF	1.51	

Table 2 gives average VIF figure as 1.51, which is still within the range of 1-10. This is a clear indication that there is absence of multicollinearity in the sample data that was used in study.

4.3.2 Autocorrelation test

Table 3 gives an overview of results of autocorrelation.

Table 3

Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.245[a]	0.06	-0.027	0.706539806	2.194

a. Predictors: (Constant), Interaction term, Board independence, CEO compensation, Ownership concentration, Firm age
b. Dependent Variable: Financial stability

Table 3 indicate the value of Durbin Watson statistic as 2.194 which is in line with Harris et al. (2019).

4.3.3 Heteroskedasticity test

Breusch Pagan test was adopted to test for this condition and according to Eden and Nielsen (2020), $p<0.05$ mean absence of this condition. The finding was determined and presented as shown in Table 4.

Table 4

Heteroskedasticity Test

Breusch-Pagan/ Cook-Weisberg test for heteroskedasticity Ho: Constant variance Variables: fitted values of Financial Stability	
chi2(1)	= 37.15
Prob > chi2	= 0.0000

From the findings in Table 4, probability p=37.15, with $p<0.05$. This implies that Heteroskedasticity as a condition was not in the data that was gathered and analyzed in this study.

4.4 Panel Data Analysis

Since this study will be conducted using 12 microfinance banks as licensed by CBK on the period of 5 years (2019-2023), panel data methodologies were adopted. This implied a total of (12*5) data points. To begin with, the data was first entered into excel and key ratios measuring each variable being appropriately determined. Thereafter, it was exported to Stata software version for performing panel data analysis. Efforts were made to ensure that the resultant dataset from excel is balanced before exporting to Stata. Visualization of panel data was then conducted with the help of graphs and pie charts followed by a common to run descriptive statistics covering means, standard deviations, skewness and kurtosis among others. Diagnostic tests listed above were then followed after which determination of fixed or random effect will be conducted as discussed below:

4.4.1 Fixed Effect (FE) Model

This is a model where all time variant differences are controlled between individuals to avoid biasness of its estimated coefficients due to omitted time variant attributes. The only limitation with FE model is that it cannot be used to analyze time-variant causes of the dependent variables. Thus, these models are suitable for investigating and determining the causes of changes within an individual or organization. The fixed effect model of an entity generally takes the following form:

$$Y\_it = \alpha_i + \beta X_{it} + u_i + e_{it}$$

$$i = 1...n \; ; \; t = 1...T$$

Where:

Y_{it}: *outcome variable (for entity i at time t).*

α_i: *is the unknown intercept for each entity (n entity-specific intercepts).*

X_{it}: *is a vector of predictors (for entity i at time t).*

u_i: *within-entity error term;* e_{it}: *overall error term.*

The interpretation of a βcoefficient: for a given entity, when a predictor changes one unit over time, the outcome will increase/decrease by βunits (assuming no transformation is applied).* Here, βrepresents a common effect across entities controlling for individual and time heterogeneity. The findings of FE are in Table 5.

Table 5

Fixed Effect (FE) Model

Fixed-effects (within) regression				Number of obs	= 60	
Group variable: NameofMFI1				Number of groups	= 12	
R-sq:				Obs per group:		
within = 0.2478				min	= 5	
between = 0.0004				avg	= 5.0	
overall = 0.1571				max	= 5	
				F(6, 42)	= 2.31	
corr(u_i, Xb) = -0.3180				Prob > F	=0.0516	
Financialstability	Coef.	Std. Err.	t	P>|t	[95% Conf.	Interval]
Boardindependence	7357476	1.730181	0.43	0.673	-2.755898	4.227394
Ownershipconcentration	.0600418	.2694884	0.22	0.825	-.4838079	.6038915
CEOCompensation	.2495416	.2325879	1.07	0.289	-.2198397	.718923
Firmage	-.8579094	.5422813	-1.58	0.121	-1.952277	.2364586
CorporateGovernancescore	.1662006	.1237497	1.34	0.186	-.0835364	.4159375
Interactonterm	-.1410994	.0860914	-1.64	0.109	-.314839	.0326401
_cons	-.4167514	.9739669	-0.43	0.671	-2.382296	1.548793
Sigma_u	.32862563					
Sigma_e	.66954392					
rho	.19413614 (fraction of variance due to u_i					

F test that all u_i=0: F(11,42) = 0.78 Prob > F = 0.6570

The F – test tests whether the overall fixed effects model is a good fit. If the p – value < 0.05, then the fixed effects model is a good fit. From the output in Table 5, ($F_{(5,43)} = 2.31$; p – value = 0.0516). This implies that the FE model is not a good fit for the panel data since the derived P – value > 0.05.

4.4.2 Random Effect (RE) Model

This is a model where variation across entities is assumed to uncorrelated and random within the independent/predictor variables that have been incorporated in the model. An assumption made by RE model is that the error term of an entity is not correlated with the predictors such that time invariant variables can act as explanatory variables. The RE model can take the following form:

$Y_{it} = \alpha_i + \beta X_{it} + \gamma Z_i + e_{it}$

Where:

Y_{it} is the dependent variable of firm i at time t

X_{it} and Zi represent number of predictor variables in a sample study while e_{it} is the error term. The findings of Random effect were established as shown in Table 6:

Table 6

Random Effect (RE) Model

Random-effects GLS regression — Number of obs = 60
Group variable:NameofMFi1 — Number of groups = 12

R-sq: — Obs per group:
within = 0.2033 — min = 5
between = 0.2487 — avg = 5.0
overall = 0.2090 — max = 5

corr(u_i X) = 0 (assumed) — Wald chi2(6) = 14.00
Prob > chi2 = 0.0296

Financialstability	Coef.	Std. Err.	z	P> |z|	[95% Conf.	Interval]
Boardindependence	-0.38179	0.185004	-2.06	0.016	-2.90035	2.136772
Ownershipconcentration	-0.01258	0.002599	-4.84	0.015	-0.45166	0.399983
CEOCompensation	0.429169	0.194769	2.2	0.028	0.047428	0.81091
Firmage	-0.16098	0.391789	-0.41	0.681	-0.92887	0.606913
Corporate Governancescore	0.249807	0.109346	2.28	0.022	0.035492	0.464121
Interactonterm	-0.10457	0.075805	-1.38	0.168	-0.25314	0.044008
_cons	-0.83214	0.755505	-1.1	0.271	-2.3129	0.648624
sigma_u	0					
sigma_e	0.669544					
rho	0	(fraction of variance due to u_i)				

In essence, $p < 0.05$ signify model fitness. From Table 6, the p-value is given as p=0.0296, i.e $p<0.05$. Thus, the study inferred that RE is favorable compared to fixed effect model earlier presented.

4.4.2.1 Hausman Test

To choose between RE and FE model, Hausman-test is used (Green, 2008) where the null hypothesis is that the models are not random. The p-values after running this test can be interpreted appropriately based on the said null hypothesis so as to choose between RE or FE model. If Prob > chi2 is < 0.05, one should use fixed effects

Table 7

Hausman Test

. hausman fe re

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Boardindep~e	0.735748	-0.38179	1.117537	1.158573
Ownershipc~n	0.060042	-0.02584	0.08588	0.1594433
CEOCompens~n	0.249542	0.429169	-0.17963	0.1271302
Firmage	-0.85791	-0.16098	-0.69693	0.3749273
CorporateG~e	0.166201	0.249807	-0.08361	0.0579434
Interacton~m	-0.1411	-0.10457	-0.03653	0.040809

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha efficient under Ho; obtained from xtreg

Test ho: difference in coefficients not systematic
chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 5.86
Prob>chi2 = 0.4387

The Hausman Test is done to determine between fixed effects and random effects model on which model to adopt. The test assumes a null hypothesis of non-systematic difference in coefficients. The decision is made by examining the

derived p – value against the scale of 0.05. Thus, p< 0.05, FE is desirable. This means the FE model would be appropriate. Otherwise the RE model becomes appropriate.From the output in Table 7, the derived P – value = 0.4387>0.05, this implies that we accept the null hypothesis and hold the RE model appropriate. Thus the RE model is appropriate and this is further specified below:

4.4.2.2 Langrage Multiplier (LM) Test

This test is conducted to decide whether to use RE or simple ordinary least square model. When using LM test, the null hypothesis is that variances across entities are equal to zero that is, there is no significant difference across units (i.e. no panel effect). When Prob > chibar2 < 0.05, RE is desirable.

Table 8

Langrage Multiplier (LM) Test

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

Financialstability[NameofMFI1, t] = Xb + u [NameofMFI1] + e [NameofMFI1 t]

Estimated results:

	Var	sd = sqrt(Var)
Financi~y	.4859494	.6971007
e	.4482891	.6695439
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00

Prob > chibar2 = 1.0000

H_0: The variances across the groups is zero. If we accept the null hypothesis, POLS regression is appropriate. We run the OLS model using regress command. In this case, we accept the null hypothesis (Chisq = 0 and its p – value = 1). Thus, the most appropriate model that was adopted in this study was the random effect one and its detailed interpretation is as indicated in the subsequent sections:

4.4.3 RE Model Fitting and Interpretation

From the foregoing discussion, it emerged that RE was the most effective and preferred model in this study. This decision made after conducting relevant tests including Hausman and Langrage Multiplier (LM) Test as presented in earlier sections. Table 9 gives RE findings:

Table 8

RE Model fitting and Interpretation

Random-effects GLS regression		Number of obs =	60
Group variable: NameofMFI1		Number of groups =	12
R-sq:		Obs per group:	
within - 0.2033		min =	5
between - 0.2487		avg =	5.0
overall - 0.2090		max =	5
corr(u_i X) - 0 (assumed)		Wald ch12(6) =	14.00
		Prob > ch12 =	0.0296

Financialstability	Coef.	Std. Err.	z	P> |z|	[95% Conf. Interval]	
BoardIndependence	-0.38179	0.185004	-2.06	0.016	-2.900351	2.136772
Ownershipconcentration	-0.01258	0.002599	-4.84	0.015	-0.4516597	0.3999833
CEOCompensation	0.429169	0.194769	2.2	0.028	0.0474284	0.8109095
Firmage	-0.16098	0.391789	-0.41	0.681	-0.928871	0.6069131
CorporateGovernancescore	0.249807	0.109346	2.28	0.022	0.0354923	0.4641207
Interactonterm	-0.10457	0.075805	-1.38	0.168	-0.2531409	0.0440084
_cons	-0.83214	0.755505	-1.1	0.271	-2.312903	0.6486235
sigma_u	0					
sigma_e	0.669544					
rho	0	(fraction of variance due to u_1)				

From Table 9, the overall R^2 =2090 shows the amount of variation in the dependent variable (Financial Stability) that is explained by the independent variables. This implies that 20% of variation in financial stability of the studied microfinance banks can be explained by variation in their corporate governance moderated by their relative age.

$$\mathbf{Y_{it}=-0.8321397-0.3817898X_{1it}-0.0258382X_{2it}+0.429169X_{3it}+\varepsilon}$$

Where $\mathbf{Y_{it}}$= financial stability

β_1, β_2, β_3, β_4 and β_5 are Coefficients

ε = error term

X_{1it}= Board independence

X_{2it}= Ownership Concentration

X_{3it}= CEO Compensation

In order to establish the moderating effect of firm age, the following regression model will be used:

$$\mathbf{Y_{it}= -0.8321397-0.3817898X_{1it}-0.0258382X_{2it}+0.429169X_{3it}-0.160979FA_{4it}-0.1045663CG*FA_{5it}+\varepsilon}$$

Where $\mathbf{Y_{it}}$= financial stability

β_1, β_2, β_3, β_4 and β_5 are Coefficients

ε = error term

X_{1it}= Board independence

X_{2it}= Ownership Concentration

X_{3it}= CEO Compensation

In order to establish the moderating effect of firm age, the following regression model will be used:

FA_{4it}= Firm age of microfinance bank i at time t

$CG*FA_{4it}$ = Interaction term of microfinance bank i at time t

As per the model fitted above, it can be inferred that when all other factors are held constant, financial stability of microfinance banks in Kenya would be at -0.832139 units. A unit increase in board independence would reduce financial stability of microfinance banks in Kenya by 0.3817898 units or 38.2%. A unit reduction in ownership concentration of microfinance banks in Kenya would improve their financial stability by 0.0258382 or 2.6%. Increasing CEO compensation of microfinance bank in Kenya would increase their financial stability by 0.429169 units or 42.9%. A unit increase in the

number of years operated by microfinance banks in Kenya (represented by their ages) would reduce their financial stability by 0.160979 or 16.1%. This therefore means that CEO compensation is more sensitive (42.9%) on financial stability of microfinance banks in Kenya followed by their board independence (38.2%), their age (16.1%) and lastly their ownership concentration (2.6%).

4.4.3 1 Hypotheses Testing

The first hypothesis was **H01:** there is no statistically significant relationship between board independence and financial stability of microfinance banks in Kenya. From the findings in Table 4.9, board independence had p-value as p=0.016 i.e. p<0.05. Thus, this study rejects hypothesis **H01** deducing that a significant relationship exists between board independence and financial stability of microfinance banks in Kenya.

The study had the second hypothesis being **H02** there is no statistically significant relationship between ownership concentration and financial stability of microfinance banks in Kenya. According to results in Table 4.9, the p-value of ownership concentration was p-0.015, which is less than 0.05 hence **H02** was rejected.

The third hypothesis of the study was **H03** there is no statistically significant relationship between CEO compensation and financial stability of microfinance banks in Kenya. As per the findings in Table 4.9, the p-value of CEO compensation was 0.028, i.e. p<0.05 and thus **H03** was rejected.

The last hypothesis, results in Table 9 give p-value under firm age and the interaction term as 0.681 and 0.168 respectively all of which are greater than 0.05. Thu, the study accepts hypothesis **H04** and deduced that firm age was an insignificant.

4.5 Discussion

The first hypothesis was **H01:** there is no statistically significant relationship between board independence and financial stability of microfinance banks in Kenya. From the findings in Table 4.9, board independence had p-value as p=0.016 i.e. p<0.05. Thus, this study rejects hypothesis **H01** deducing that a significant relationship exists between board independence and financial stability of microfinance banks in Kenya. The focus of the study in Vietnam by Ngo et al. (2023) was on independence of the board and its implication on financial performance where the moderator variable was market competition. Non-executive members and duality role were measures of independence of the board. Panel data was adopted for processing of the obtained information where it became apparent after analysis that the duality role of the CEO was negatively linked with financial performance while the proportion of non-executive members had positive relationship with financial performance.

The study had the second hypothesis being **H02** there is no statistically significant relationship between ownership concentration and financial stability of microfinance banks in Kenya. According to results in Table 9, **H02** was rejected. Ozili and Uadiale (2017) aimed at determining how ownership concentration was connected with profitability of the bank. The total direct equity shares by the majority shareholder proxied ownership concentration. It was shown that financial entities having higher concentration in ownership are characterized by higher returns generated on assets as well as their net interest margins are also high.

The third hypothesis of the study was **H03** there is no statistically significant relationship between CEO compensation and financial stability of microfinance banks in Kenya. As per the findings in Table 4.9, the p-value of CEO compensation was 0.028, i.e. p<0.05 and hence rejection of **H03**. Ahamed (2022) was interested in determining how compensation of the CEO was linked with financial performance of banks with focus on Bangladesh. The period of consideration was 2010 all through to 2020. The analyzed results were that a positive and significant connection is evident between compensation to CEO and financial performance.

In view of the last hypothesis, results in Table 9 give p-value under firm age and the interaction term as 0.681 and 0.168 respectively all of which are greater than 0.05. Thu, the study accepts hypothesis **H04** and deduced that firm age was an insignificant. Rwakihembo et al (2023) covered listed entities in Uganda and examined the nexus between age of the firm and performance of firm in monetary terms. Cross sectional design was adopted. It was noted after analysis that the age of the firm and financial performance is positively linked with each other. Ali et al. (2021) focused on Pakistan and determined how corporate governance, the age of the firm and capital structure were linked. Panel data of non-financial firms listed within Pakistan's context was used. It was shown that the age of the firm and its size are positively linked with financial performance.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

An increase in board independence would reduce financial stability of microfinance banks in Kenya. A significant relationship exists between board independence and financial stability of microfinance banks in Kenya.

A unit reduction in ownership concentration of microfinance banks in Kenya would improve their financial stability of microfinance banks in Kenya. A statistically significant relationship exists between ownership concentration and financial stability of microfinance banks in Kenya.

Increasing CEO compensation of microfinance bank in Kenya would increase their financial stability. CEO compensation was significant.

The age of the firm is usually reflected in the number of years it has been in operation. An increase in the number of years operated by microfinance banks in Kenya (represented by their ages) would reduce their financial stability Firm age was not established to be a significant moderator variable.

5.2 Recommendations

The independence of the board is indicated by number of independent directors that are in place. In the present study, it was noted that although it had negative relationship, board independence was significant. Hence, this study recommends shareholders to balance between independent and non-independent director of the said institutions.

The study demonstrated that ownership concentration was a significant predictor variable although with negative beta coefficient. Hence, this study recommends that shareholders restructure their shareholding structures and composition so as to balance the interests of shareholders.

It emerged that CEO compensation had direct nexus with financial stability. Thus, this study recommends that shareholders of microfinance banks should provide competitive remuneration package to the CEO which should be tied to their performance. Mechanisms like share bonus, monetary and non-monetary rewards can be adopted to motive CEOs of these firms to maximize the wealth of their shareholders hence contributing towards financial stability.

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