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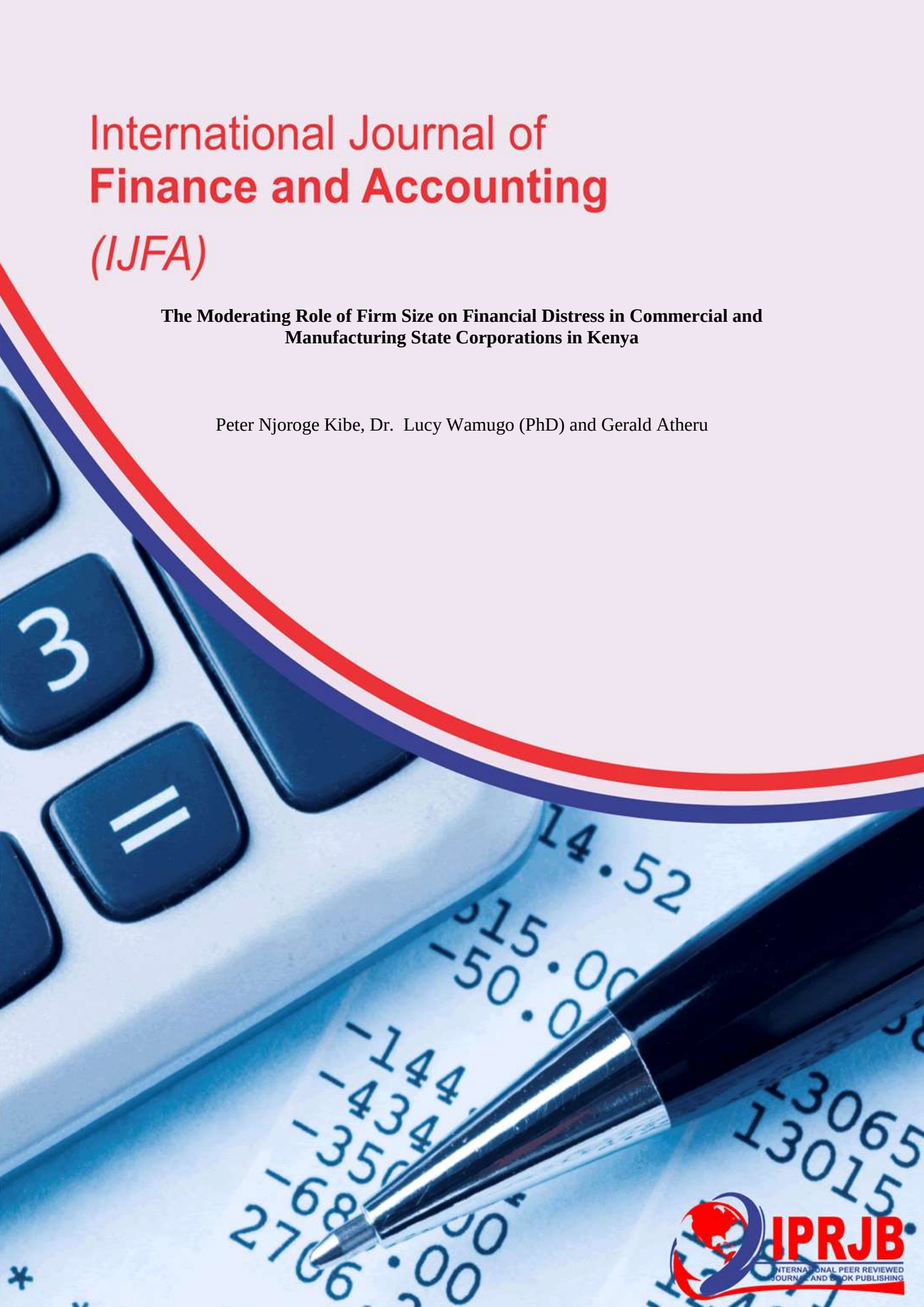

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The Moderating Role of Firm Size on Financial Distress in Commercial and Manufacturing State Corporations in Kenya

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Abstract

Purpose: The study attempted to investigate the moderating effect of firm size on relationship between profitability, leverage, efficiency, and financial distress in Commercial and Manufacturing State Corporations in Kenya.

Methodology: The study adopted positivist philosophy that required researcher to be independent of the study. Explanatory non-experimental research design was used in the study. For the purposes of this study, a census of all 25 Commercial and Manufacturing Corporations was employed in study. Study used Secondary data from audited accounts of State Corporations for period 2015-2021 in analysis. Data was obtained from office of auditor general and Kenya Parliament digital library. Researcher used Logit Regression Model to analyse quantitative data. Diagnostics tests included multicollinearity, heteroscedasticity and likelihood ratio tests and Hosmer-Lemeshow goodness of fit tests. Study used STATA Version 13.10 statistical software to analyse data and findings presented using tables

Findings: The study established that firm size did not moderate the relationship between profitability, leverage, efficiency and financial distress in commercial and manufacturing state corporations in Kenya. In summary, the size of State corporations did not influence financial distress. Financial distress equally affected both small and big Commercial and Manufacturing State Corporations contradicting the theory of small firms.

Unique Contribution to Theory, Practice and Policy: Top management of State Corporations should monitor key financial ratios including profitability, leverage and efficiency ratios. These ratios will assist those charged with governance in developing strategic plans and turnaround strategies to bring back to life the distressed state corporations so that they can contribute positively towards growth of the economy. The study concluded that there is a dire need by State Corporations to reduce reliance on government loans and bailouts by engaging efficiently in profitable ventures that would maximise the wealth of the firm. The study also concluded that profitability, leverage and efficiency were useful ratios to management and those charged in detection and mitigation of financial distress. The study recommended that in order to increase profitability, commercial and manufacturing state corporations should improve their operational efficiency and reduce use of debt particularly the government guaranteed loans.

Keywords: *Firm Size, Profitability, Leverage, Efficiency, Financial Distress*

JEL Code of Classification: *M41, G32,G38,G30*

INTRODUCTION

Over the past fiscal years, the government of Kenya has heavily invested in various State Corporations in Kenya. In spite of this state funding, various State Corporations continue to struggle financially and have resorted to the government for debt bailouts. On many occasions the accumulated losses have eat up State Corporations, leaving huge loans that are paid from the exchequer. Keeping these struggling State corporations in operation is a huge cost to the taxpayer and government (Harris et al, 2020). The mandate of Commercial and Manufacturing State Corporations is to perform a commercial role of wealth creation through profit maximisation (Fiebelkom et al., 2021). Despite their efforts to keep expenses down, these State Corporations continue to struggle financially, necessitating Government assistance (Mihyo & Mukuna, 2018).

Ikpesu (2019) identifies profitability, liquidity and Size to be firm specific predictors of financial distress among State Corporations in Nigeria. Baimwera and Muriuki (2014) identify profitability, leverage, and growth as major indicators of financial distress in Kenyan Security Exchange-listed companies. Continuing poor financial health among Commercial and Manufacturing State Corporations in Kenya, which have depended significantly on government for debt bailouts prompted this research. This study therefore seeks to investigate the moderating effect of firm size on the relationship between profitability, leverage and efficiency in Commercial and Manufacturing State Corporations in Kenya from fiscal years 2015 to 2021.

Financial Distress

Financial distress occurs when a company fails to fulfil its contractual commitments of its creditors (Amoa-Gyarteng, 2019). According to Tinoco & Wilson (2013), business bankruptcy is an option that may be necessary in the event of financial distress. According to El-Ansary & Bassam (2019) a company is considered financially distressed when its operational income is negative in two consecutive years. According to Sautner & Vladimirov (2016) managers need persuasive arguments to convince internal and external stakeholders to continue doing business with a financially challenged organization. Opler &Titman (1994) identifies failure, insolvency and bankruptcy as the typical circumstances that constitute financial distress. Large debts, abrupt and unplanned expansions in a tense competition could also lead to financial distress (Ngwa, 2016). A business environment with high inflation rates, political and civil unrests, high interest rates and corruption would bring about financial distress (Maina, 2018).

Firm Size

Various studies on effect of profitability, leverage, efficiency and liquidity on financial distress have yielded contradicting and ambiguous results. Some studies findings giving negative and others reporting positive relationships (Azeez, 2015). This ambiguity has resulted due to failure of researchers to model the role of firm size on relationship between predictor variables and financial distress (Ibhagui & Olokoyo, 2018). According to a study by Ibhagui & Olokoyo (2018), negative influence of leverage on financial performance is very evident and significant in small firms and evidence of negative effect reduces as the firm grows. The moderating effect of firm size on the relationship between profitability, leverage and efficiency in State Corporations was therefore incorporated in this study to better understand the role of firm size and its effect on financial distress.

According to study by Dirman (2020), firm size is the asset base a company holds and can be very useful in predicting financial distress because companies with a bigger asset base appear to be stronger and less likely to plunge into financial distress. According to Wangsih et al.,(2021), companies with huge asset base have a less probability of being financially unhealthy by the virtue of them having reached a maturity level.

Oktasari (2020) categorizes size as either log of assets, quantity of total assets, log or market valuation of firm's shares. In their study, size of a company can affect the ability of a firm to contain financial distress risk and size significantly and positively affects financial distress. Isayas (2021) measured firm size by logarithm of aggregate asset base and established that size significantly affected financial distress suggesting firms with big asset base were out of the financial distress zone. To measure the size of a Commercial and Manufacturing State Corporations, this study used the logarithms of total assets.

Statement of the Problem

State Corporations are key sector players expected to exercise their mandates to enable the actualization of Kenya vision 2030 by providing services and goods that will result into a thriving and globally competitive economy. The vision 2030 goals are thus only achievable when these State Owned Enterprises are financially sound. A review by Kenya State Corporation Review (2021) indicated that various State Corporations received grants and bailouts from the exchequer but failed to provide enough economic value to make a net gain to the Government. In Kenya, various studies on financial distress have laid emphasis mainly on effects of micro and macroeconomic factors on financial distress of Companies listed at country's stock exchange Market. Other scholars in Kenya explored impact of financial and non-financial factors and distress of Companies trading at the Kenyan Securities Market. The studies include those by; Kihooto et al., (2016), Muigai (2016), Maina & Sakwa (2017), Wangige (2016), Onchangwa (2019), Kanyugi (2016), Atosh & Iraya (2018), Muigai & Nasieku (2021). Other studies have focused on financial distress in Insurance firms and local authorities (Kosikoh, 2014) and (Ntoiti, 2013) respectively. The existing research on financial distress has predominantly focused on firms listed at Nairobi Securities exchange, insurance firms. Existing studies on effect financial distress in State corporations focused on one or two of the predictor variables in this study thereby creating a study gap. Moreover some of the studies reviewed on financial distress in state owned enterprises were conducted in different years and in different countries using different methodologies and research designs. To add to to existing knowledge on financial distress in state corporations, inform policy makers and those charged with governance in state corporations, this study seeks to investigate effect of profitability, leverage and efficiency on financial distress. The study also sought to establish the moderating role of firm size on the relationship between profitability, leverage, efficiency and financial distress.

Specific Objective

i. Establish the moderating effect of Firm Size on relationship between profitability, leverage, efficiency and financial distress in Commercial and Manufacturing State Corporations in Kenya.

Research Hypotheses

H_{O4}:Firm Size does not moderate the relationship between profitability, leverage and efficiency on financial distress in Commercial and Manufacturing State Corporations in Kenya.

LITERATURE REVIEW

Theoretical Review

This study relied on Agency, Stewardship, Efficiency, Pecking order and Trade-off theories.

Agency Theory

Postulated by (Jensen & Meckling, 1976), this theory relies on a Principal-Agent connection. According to Jensen and Mackling's agency theory (1976), managers may run their organisations to further their own agendas rather than the interests of shareholders. According to agency theory, debt financing inhibits managers' inclination towards self-serving and opportunistic conduct. According to (Monks & Sykes, 2017), a company's directors are obligated to manage the business to optimise cash flows, earnings, and long-term returns to shareholders. This theory was very vital in defining financial distress in Commercial and Manufacturing State Corporations because there exists contractual relationship between the State and all the State Corporations through performance contracting. According to (Jensen & Meckling, 2019), capital structure can reduce agency conflict by raising debt levels. Managers should make lucrative investments in order to maximise shareholder value. Selfish actions by the heads of State Corporations such as mismanagement, excess debts and poor liquidity management decisions may trigger financial distress in these government owned enterprises.

Stewardship Theory

Proposed by Donaldson & Davis (1991), the theory asserts that directors may achieve goals of a firm by utility maximization rather than fulfilling their self-interests. This theory asserts that if managers worked with discretion they would pursue interests of the firm. This theory states that managers carry out their duties because they want to perform to a satisfactory level. According to Donaldson & Davis (1991) managers are driven by a desire to succeed and find intrinsic fulfilment by taking on difficult tasks, exerting their power, and winning the respect of their subordinates and superiors.

In stewardship theory, agents prioritise the firm over their own interests by working effectively and considering themselves significant human resource to the firm. Stewardship theory contends that intangible or non-financial motivators prevent opportunistic managerial behaviour (Isaac, 2022). Since management and those charged with governance (Stewards) of Commercial and Manufacturing State Corporations are expected to protect and maximize shareholders' wealth through performance, the arguments of stewardship theory supports the financial distress variable in the study.

Efficiency Theory

Introduced by Demesetz in 1973, this theory is about "x-efficiency" and "scale efficiency" hypotheses. The first hypothesis asserts that management of organizations have in place adequate organizational practices where they are able to have control costs incurred while increasing earnings (Fisseha, 2015). Economic efficiency theory, which focuses on allocative and proactive efficiency and holds that firms should achieve their output by incurring the least possible costs on each output unit produced to realize economies of scale (Barus et al., 2017). Allocative efficiency occurs when all industry players charge an optimal price for their goods and services. With regard to commercial and manufacturing state corporations, productive efficiency is achieved when resources are employed efficiently to maximise production at lowest inputs without compromising quality. Productive efficiency in state corporations is realized by investing in low risk portfolio of assets such as government bonds and bills. In

view of this study, efficiency theory holds the view that the stability or financial distress of institutions is a function of internal decisions by managers and policies of an institution. It is worth noting that institutions are impacted by both internal and external attributes (Ang & Longstaff., 2013). Efficiency theory was therefore relevant in the study since it guides in cost reduction and making prudent investment decisions to reduce the risk of financial distress. Efficiency Theory's postulation therefore supported relationship between operating efficiency and financial distress in Commercial and Manufacturing State Corporations.

Empirical Review

Effect of Firm Size on Financial Distress

Karina and Soenarno (2022) investigated effect of firm size, sustainability disclosure and earnings management on financial distress in 61 firms in Malaysia, Indonesia and Thailand. Regression results revealed that size of company had significant effect on financial distress. However, researcher excluded other factors such as profitability, efficiency and leverage on financial distress and thereby left research gap. Wangsih et al. (2021) explored simultaneous effect of firm size, leverage and sales on distress of seventeen firms listed in Indonesia in from year 2016-2020. Logistic regression results indicated that size of firm had negative significant effect on financial distress while leverage had positive significant effect on financial distress. Sales growth did not have any significant effect on financial distress. Researcher did not consider effect of other variables like efficiency and profitability.

Isayas (2021) investigated effect of firm size, profitability, leverage and company age on financial distress in Ethiopian firms using panel data of 11 companies obtained from financial reports of 2008-2019. Study used quantitative research approach and explanatory research and analysis performed using random effect analysis. Results revealed that size of firm, profitability, leverage and firm age had negative effect on distress. Researcher did not look at effect of efficiency on financial distress thereby leaving a research gap. Liahmad et al., (2021) examined effect of size, liquidity, institutional-ownership and earnings on financial distress in 15 Indonesian insurance firms from 2017-2020. Descriptive and logistic regression analysis results revealed that firm size significantly influenced financial distress. The researcher excluded effect of other factors such as efficiency and profitability on financial distress. The study was hinged on insurance firms and not manufacturing state owned enterprises leaving research gap.

Sayidah and Assagaf (2020) assessed effect of firm size, investment, leverage and cash flows from operations on financial distress of state owned firms in Indonesia. Research was quantitative in nature and purposive sampling used to select 19 firms whose financial statements for years 2014-2017 were used for analysing. Regression analysis showed firm size, investment, leverage and cash flows negatively and significantly affected financial distress of state owned corporations of Indonesia. Profitability and efficiency were not incorporated in study leaving research gap. Abdioglu (2019) examined effect of size of firm and leverage on financial distress in Turkish companies between year 2007-2017. Panel regression outcome concluded that size and financial leverage variables were positively significant in distress prediction. However, effect of other variables such as efficiency and profitability were excluded in the study creating research gap. Gichaiya et al., (2019) explored moderating influence of firm-size and risk on distress of listed firms in Kenya. Using data from accounts of listed firms (non-financial) in Kenya in period 2006-2015 panel regression results showed that interactions terms firm Size and corporate risk and size and unsystematic risk had positive

insignificant effect on distress while corporate risk significantly and positively influenced financial distress. This study did not look into effects of other factors such Profitability, leverage and efficiency on financial distress. Ikpesu (2019) examined effect of firm size, liquidity, profitability and leverage on financial distress in 18 listed firms in Nigeria in the period 2010-2017. Researcher used fully modified least square model in analysis. Regression results indicated that firm size (proxied by log of assets) was significant in financial distress prediction. However, researcher did not look at effect of other factors such as operating efficiency on financial distress. The study was done in Nigeria and was hinged on manufacturing firms and not state owned enterprises.

TABLE 1 SUMMARY OF LITERATURE REVIEW AND RESEARCH GAPS

Author Year	Focus of Research	Findings	Research Gaps	Addressing Research Gaps
Pardeshi (2022)	Effect of profitability, working-capital and capital adequacy on distress in 27 engineering firms in India.	Found profitability, liquidity and capital adequacy to have significant effect on financial distress.	Moderating effect of firm size and leverage were not considered.	Current study incorporated effect of firm size on financial distress and focused on Commercial and Manufacturing State Corporations in Kenya.
Dwiantari and Artini (2021)	Effect of profitability, liquidity and leverage on financial distress in firms in Indonesian.	Profitability and liquidity was significant on firm's financial distress.	Did not consider effect of size on distress.	Current study included moderating effect of Size and efficiency on distress.
Finishtya (2019)	Influence of Profitability, cash flows and leverage on financial distress in Manufacturing firms listed in year 2016 in Indonesia Stock Exchange	Profitability measured Return on Assets were significant towards company's distress. Financial leverage had insignificant effect on distress.	Did not test effect of efficiency and moderating role firm size on financial distress.	This study addressed effect of moderating role of firm size on financial distress.
Saputri and Asrori (2019)	Effect of profitability, liquidity, leverage and moderating role of audit committee on financial distress in 20 firms in Indonesia.	Profitability, leverage and liquidity had no significant effect on distress.	Moderation effect of size on distress not featured.	Current study featured effect of efficiency and moderating role of size on distress. Focused on Commercial and Manufacturing State Corporation in Kenya.

Source: Researcher (2023)

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Conceptual Framework

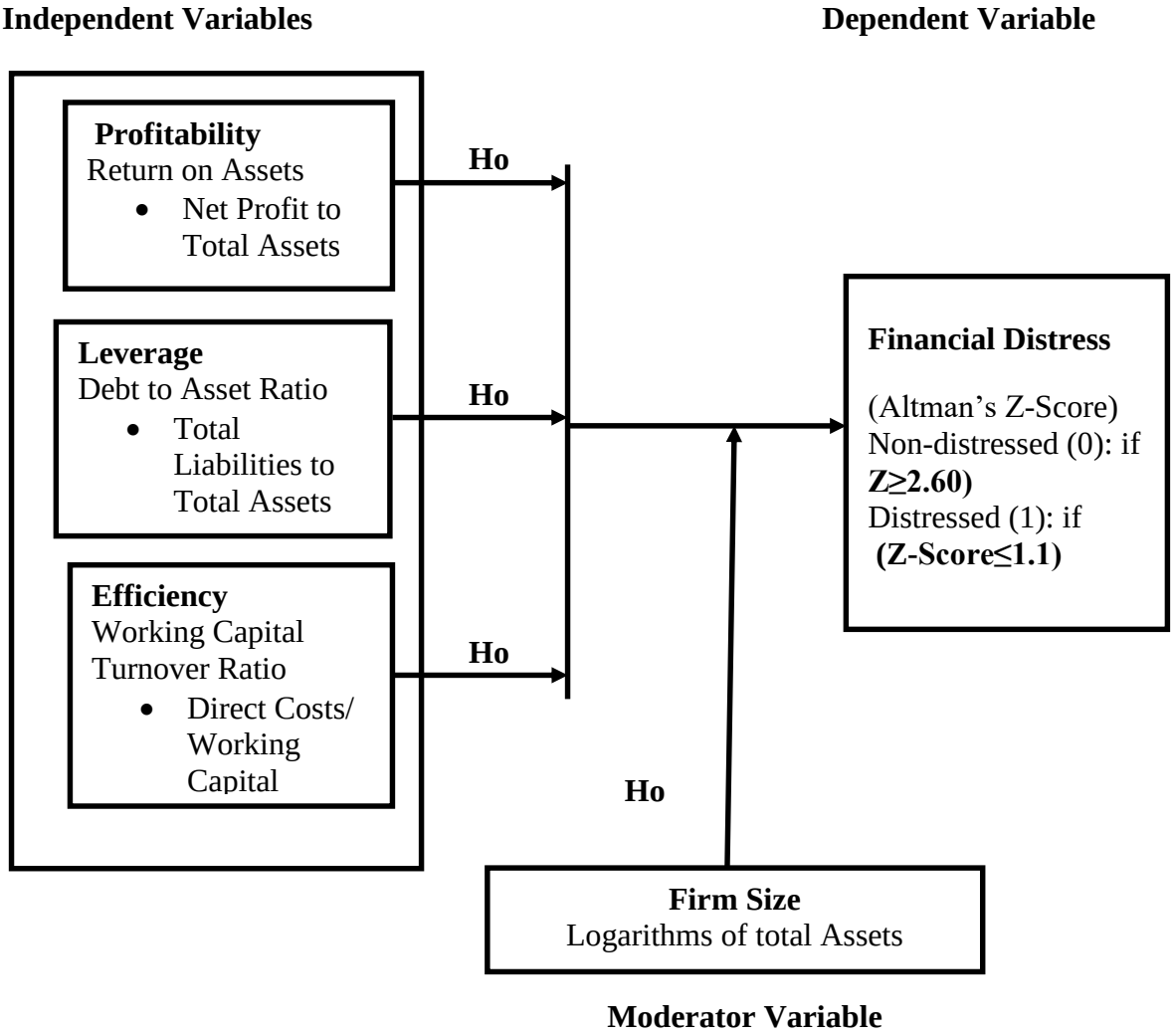

Figure 1: Conceptual Framework

Source:Researcher, (2023)

METHODOLOGY

Research design outlines what researcher will undertake while addressing study questions (Myers et al., 2013). This study used an explanatory research approach to evaluate effect of profitability, leverage and efficiency on financial distress in Commercial and Manufacturing State Corporations in Kenya. Explanatory study variously called causal research determines the breadth and type of cause and effect linkages as well as establish the impacts of specific changes on prevailing norms and procedures.

Explanatory (Causal) research designs are often deductive in character, with research aims attained through conducting tests on hypotheses (Blatter & Haverland, 2012). Causal research design is quantitative and organized in order to analyse the cause and effect links among study variables (Cooper & Schindler, 2009). Causal research designs determine if predictors cause

changes in the dependent variable (Omagwa, 2014). This design was chosen since researcher does not interfere with independent variables thereby minimising biasness of the outcome.

This research adopted the positivism philosophy hinged on the notion that science is the only way of learning about the truth. In positivist's research, there are no personal interests or results manipulations by the person conducting the study Dudovskiy (2018). Positivism relies on several approaches of science: First, Science is deterministic and hinged on the notion 'x' affects 'y' in certain scenarios. Researcher's role becomes following scientific approaches in discovering specific nature of cause and effect relationship (Burton et al., 2015). Positivism also assumes that science is mechanistic and research hypotheses are to be approved or disapproved using specific research methods. According to positivism, science uses methods in operationalizing theories and hypotheses. Methodology entails selecting samples, measurement and analysis aimed at arriving at conclusions regarding hypotheses. According to (Gill & Johnson, 2010), positivism entails looking for cause and effect links in the data to create generalization. In his or her research, a positivist tries to remain neutral from the study and data to avoid influencing the results (Saunders et al., 2016). Researcher used this paradigm because of its underlying assumption that the research environment and events of interest are objective, external and independent of the researcher.

The researcher adopted a census approach due to the small number of commercial and manufacturing state corporations in Kenya. Census approach (Saunders, Lewis and Thornhill, 2016) enhance data validity. The total number of commercial and manufacturing state corporations in the study were 25.

Data was gathered from the 25 State Corporations' published accounts in accordance with the procedures outlined in the operationalization and measurement of variables. Researcher collected annual data for the years spanning from 2015 to 2021. Researcher used excel to gather data from statements of financial performance and statements of financial position. This data helped compute the proxy ratios for independent variables in the study. Study used binary logistic model was used to analyse study hypotheses on effect of profitability, leverage and efficiency on financial distress in Kenya's Commercial and Manufacturing State Corporations. Financially distressed Commercial and Manufacturing State Corporations were categorized as one (1), whereas financially sound state corporations were categorized as zero (0). A binary logit analysis requires a dichotomous result variable, no outliers, and interdependent predictor variables (Hair et al., 2014).

Altman's Z-Score Financial Distress Model

In the study, dependent variable financial distress was binary requiring researcher to classify firms as either distressed or not distressed. This study employed the revised Altman's (1983) Z-score multiple discriminant analysis model to compute financial distress. This model was developed for manufacturing, non-manufacturing firms as well as private firms and public companies (Altman et al., 2017) and Altman (1983).

The model is as follows: -

$$\mathbf{Z=6.56X_1+6.26X_2+6.72X_3+1.05X_4}$$

Where: -

Z" =Overall Index

X_1=Working capital/Total Assets

X_2=Retained Earnings/ Total Assets

X_3= Earnings before Interest and Taxes/Total Assets

X_4=Book Value of Equity/Total Liabilities

Logit Regression Model

This study used logit model to examine effect of profitability, leverage and efficiency on financial distress in State Corporations. Researcher adopted the following model as suggested by Mungai (2009).

$$\mathbf{Pr\ (Yi) = (1/Xi) = f\ (\beta 0+\beta i X_i+\varepsilon i)} \quad \textbf{.....3.1}$$

The logistic model measures probability of dependent variable as 1 (Y=1) implying a likelihood of occurrence of an event. Researchers prefer logit and probit models to linear regression models since they help solve anomalies associated with linear models such as heteroscedasticity (Mungai, 2009) and (Muathe, 2010). Specific objectives of this study include; determine effect of Profitability (X_1), determine effect of leverage (X_2); establish effect of efficiency (X_3) and establishing moderating effect of size (X_4) on financial distress in Commercial and Manufacturing State Corporations. This study applied logistic model as applied by Gemma (2014).

$$\mathbf{Pr\ (Y) = \beta_0+\beta_1 X_{1it}+ \beta_2 X_{2\ it}+ \beta_3 X_{3it}+\varepsilon_i} \quad \textbf{.....3.2}$$

Where:-

Pr= Probability that a character of interest occurs

Y=Financial distress of a State Corporation

$\mathbf{X_{1it}}$= Profitability of State Corporation$_i$ at time$_t$

$\mathbf{X_{2it}}$= Leverage of State Corporation$_i$ at time$_t$

$\mathbf{X_{3it}}$= Efficiency of State Corporation$_i$ at time$_t$

$\boldsymbol{\beta_0}$= Constant Term *i*=Observations

t=2015-2021 (period/time)

$\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$ = co-efficient of independent variables

$\boldsymbol{\epsilon}$ = Error-term

Decision criteria on the dependent variable was based on Altman's model. A score below or equal to 1.1 meant that a State Corporation was financially distressed and headed for bankruptcy while a score above or equal to 2.6 implied that the State Corporation was financially healthy. The discriminating line in this study was in line with Binary Logit Regression model results where a score of one (1) implied that the Commercial and Manufacturing State Corporations are financially distressed while a score of Zero (0) implied that the State Corporation is non-distressed.

Logit Model With Moderating Effect

The study adopted product interaction approach to moderate effect of firm size with Profitability, firm size with Leverage and Firm size with Efficiency as presented in the equation below: -

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$$\mathbf{Pr\ (Y) = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X_{4it} + \beta_5\{X_{4it} * X1_{it}\} + \beta_6\{X_{4it} * X_{2it}) + \beta_7\{X_{4it} * X_{3it}\} + \epsilon_{it}} \quad \text{.....3.3}$$

Where:

Pr= Probability of occurrence of character of interest

Y=Financial distress of a State Corporation

$\mathbf{X_{1it}}$= Profitability of State Corporation$_i$ at time$_t$

$\mathbf{X_{2it}}$= Leverage of State Corporation$_i$ at time$_t$

$\mathbf{X_{3it}}$= Efficiency of State Corporation$_i$ at time$_t$

$\mathbf{X_{4it}}$= Size of State Corporation$_i$ at time$_t$

$\boldsymbol{\beta_0}$= Constant Term *i*=Observations *t*=2015-2021 (period/time)

$\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$.....$\boldsymbol{\beta_7}$= co-efficient of independent variables

ϵ = Error-term

RESULTS AND DISCUSSIONS

Hypotheses Testing

To ascertain effect and significance of predictor variables on financial distress in Commercial and Manufacturing State Corporations, researcher performed a panel logit regression. Logistic regression results are presented in Table 1 below.

Table 1: Logistic Regression Results

Log likelihood = -16.386835

Financial Distress	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Profitability	-31.68816	10.9159	-2.90	0.004	-53.08294	-10.29338	**
Leverage	15.59337	4.423953	3.52	0.000	6.922579	24.26415	**
Efficiency	-3.944415	1.116355	-3.53	0.000	-6.13248	-1.756396	**
Constant	-9.038975	2.770976	-3.26	0.001	-14.46999	-3.607932	**
Mean dependent var		0.383	SD dependent var			0.487	
Pseudo r-squared		0.859	Number of obs			175.000	
Chi-square		200.132	Prob > chi2			0.000	
Akaike crit. (AIC)		40.774	Bayesian crit. (BIC)			53.433	

** *p<0.05*

Source: Research Data (2023)

The panel logistic regression result in Table 1 above indicate that profitability and financial distress have an inverse relationship (β=-31.68816 and p=0.004) implying that when profitability increases by one unit, distress is reduced. Negative coefficient implied that a unit increase in profitability reduced financial distress by 31.6882.

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Results also indicated that leverage and financial distress have a direct relationship and significantly explained financial distress with coefficient β=15.59337 and probability (P=0.000) implying that a unit increase in use of debt increased financial distress by approximately 156% in State Corporations. Operating efficiency and financial distress in State Corporations had an inverse relationship (p=0.000 and β=-3.944415) implying that a unit increase in operating efficiency in State Corporations decreased the risk of financial distress by 39.4%.

Results above also indicate a log-likelihood of -16.387. According to Mungai (2009), logistic models with negative log likelihood ratios with values closer to zero are considered to be better fitting models. The log likelihood value of (-16.387) therefore implied that the model was good. Findings also produced a (Pseudo R^2 =0.8590 and P=0.000) inferring that profitability, leverage and efficiency jointly explained 85.90% of variations in financial distress and therefore the model was fit. Based on the above results, the logistic regression equation is as follows:

$$\mathbf{Pr(y) = \beta_0+\beta_1X_{1it}+\beta_2X_{2it}+\beta_3X_{3it}+\epsilon_{it}}$$

$$\mathbf{Pr(y) = -9.038975-31.68816X_{1it} +15.59337X_{2it} -3.944415X_{3it} + \epsilon_{it}}$$

Where Pr (y) =Probability of financial distress

X_1=Profitability

X_2=Leverage

X_3=Efficiency

ϵ_{it} =Error Terms

β_0=Constant

Moderating effect of Firm Size on Relationship between Profitability, Leverage, Efficiency and Financial Distress

The study adopted product interaction approach to determine the existence of any moderation effect of firm size on relationship between profitability, leverage, efficiency and financial distress in Commercial and Manufacturing State Corporations in Kenya. Researcher added the moderation term (Firm Size) to the original logit model. Results of the moderation effect using financial distress as the dependent variable are presented in the table below:

Table 2: Regression with Moderation Effect of Firm Size on Distress

Financial Distress	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
Size	12.208	11.835	1.03	0.302	-10.989	35.405
Profitability	177.548	96.482	1.84	0.066	-11.554	366.650
Leverage	174.113	114.707	1.52	0.129	-50.709	398.935
Efficiency	-26.435	17.593	-1.50	0.133	-60.918	8.047
Size and Profitability	-98.999	53.290	-1.86	0.063	-203.446	5.448
Size and Leverage	-21.283	18.162	-1.17	0.241	-56.881	14.314
Size and Efficiency	1.139	2.029	0.56	0.575	-2.839	5.116
Constant	-100.341	71.081	-1.41	0.158	-239.657	38.974
Mean dependent var		0.383	SD dependent var			0.487
Pseudo r-squared		0.959	Number of obs			175.000
Chi-square		223.444	Prob > chi2			0.000
Akaike crit. (AIC)		25.462	Bayesian crit. (BIC)			50.780

Source: Research Data (2023)

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Results in Table 2 above indicates that the interaction between firm size and profitability had coefficient (-98.999) and probability (p=0.063) leading to acceptance of null hypothesis at 5% significance level. This implied no moderating effect existed of size on the relationship between profitability and financial distress in State Corporations investigated.

Table 2 also indicates that interaction between firm size and leverage has coefficient (β=-21.283) and a probability (p= 0.241) which was insignificant at 5% leading to acceptance of the null hypothesis indicating lack moderating effect of size on relationship between profitability, leverage, efficiency and financial distress of State Corporations being investigated.

Finally, the outcomes in table 2 indicate that the interaction between firm size and efficiency has coefficient (β=1.139) with a probability (p=0.575) insignificant at 5% level signifying that firm size did not have moderating influence on the relationship between operating efficiency, profitability, leverage and distress in Commercial and Manufacturing State Corporations in Kenya.

In summary, the size of State corporations proxied by the logarithms of total assets did not influence financial distress in Commercial and Manufacturing State Corporations in Kenya. In conclusion, financial distress equally affected both small and big Commercial and Manufacturing State Corporations contradicting the theory of small firms.

Table 3: Summary of Hypotheses Tests

Hypotheses No.	**Causal Relationship**	**p>z**	**-Reject H_0 -fail to reject**
i.	H_0: There is no statistically significant relationship between profitability and financial distress of commercial and manufacturing state corporations in	0.004	Reject H_0
ii.	H_0: There is no statistically significant relationship between leverage and financial distress of commercial and manufacturing state corporations in Kenya.	0.000	Reject H_0
iii.	H_0: There is no statistically significant relationship between efficiency and distress of commercial and manufacturing state corporations in Kenya.	0.000	Reject H_0
Hypothesis No.	**Moderating effect**	**p>z**	**-Reject H_0 -Fail to reject**
iv.	▪ H_0: Size of state corporation has no statistically significant moderating effect on relationship between profitability, leverage, efficiency and financial distress.		
	• Firm size and profitability	0.063	Fail to reject H_0
	• Firm size and leverage	0.241	Fail to reject H_0
	• Firm size and efficiency	0.575	Fail to reject H_0

Source: Research Data (2023)

SUMMARY AND CONCLUSION

The fourth and last objective of study was establishing moderation effect of size on relationship between profitability, leverage and efficiency on distress in commercial and manufacturing state corporations in Kenya. Study further established that firm size did not moderate the relationship between profitability, leverage, efficiency and financial distress in Commercial and manufacturing State Corporations in Kenya.

Recommendations and Policy Implications of Study

This study's findings address important policy concerns at the industry, business, and national level. Those charged with governance in the distressed State corporations should efficiently manage firm's resources to increase their asset turnover and maximise the value of the firm. The study recommends a review of borrowing policies to reduce reliance on government guaranteed debts. Top management of State Corporations should monitor key financial ratios including profitability, leverage and efficiency ratios. These ratios will assist those charged with governance in developing strategic plans and turnaround strategies to bring back to life the distressed state corporations so that they can contribute positively towards growth of the economy.

Suggestions for Further Studies

Most studies on financial distress in Kenya have been inclined to firms listed at the Nairobi Securities Exchange and very few studies done on financial distress of state corporations. Kenyan state corporations are categorised as tertiary education, commercial and manufacturing, training and research, regulatory, service, financial, public universities and regional development. The researcher suggests further studies on financial distress in the categories above which have not been researched. The researcher also recommends other international researchers to study the impact of financial distress of state owned corporations in their countries to add to the limited existing literature. The researcher recommends replication of a similar study on effects of profitability, leverage, efficiency and firm size in other sectors of the economy such as the telecommunication industry, small and medium sized enterprises, microfinance firms, savings and credit co-operative societies among others. Finally, since most studies reviewed on financial distress covered a study period of not more than five years due to data unavailability, time and resource constraints researcher suggests future researchers on financial distress to increase study period to more than five years for credible and conclusive results.

REFERENCES

Abdioğlu, N. (2019). The impact of firm specific characteristics on the relation between financial distress and capital structure decisions. *İşletme Araştırmaları Dergisi*, *11*(2), 1057-1067.

Altman EI (1968) Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. J Finance 23: 589.

Altman EI (1983) Corporate Financial Distress, A Complete Guide to Predicting, Avoiding, and Dealing with Bankruptcy, John Wiley and Sons.

Altman EI, Iwanicz-Drozdowska M, Laitinen EK, et al. (2017) Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's Z-Score Model. J Int Finance Manage Account 28: 131–171

Amoa-Gyarteng, K. (2019). Financial characteristics of distressed firms: an application of the Altman algorithm model. *Journal of Corporate Accounting and Finance*, *30*(1), 63-76.

Ang, A., and Longstaff, F. A. (2013). Systemic sovereign credit risk: Lessons from the US and Europe. *Journal of Monetary Economics*, *60*(5), 493-510.

Atosh, A. M., and Iraya, C. (2018). Effect of corporate governance practices on financial distress among listed firms at Nairobi securities exchange. *Journal of International Business, Innovation and Strategic Management*, *2*(2), 70-90.

Azeez, A. A. (2015). Corporate governance and firm performance: evidence from Sri Lanka. *Journal of Finance and Bank Management*, *3*(1), 180-189.

Baimwera, B. and Muriuki, A. M. (2014). Analysis of corporate financial distress determinants: A survey of non-financial firms listed in the NSE. International Journal of Current Business and Social Sciences, 1 (2), 58-80.

Barus, J. J., Muturi, W., Kibati, P., & Koima, J. (2017). Effect of management efficiency on financial performance of savings and credit societies in Kenya. *Journal of Strategic Management*, *2*(1), 92-104.

Blatter, J., Haverland, M., Blatter, J., & Haverland, M. (2012). *Relevance and Refinements of Case Studies* (pp. 1-32). Palgrave Macmillan UK.

Burton-Jones, A., McLean, E. R., and Monod, E. (2015). Theoretical perspectives in IS research: from variance and process to conceptual latitude and conceptual fit. *European journal of information systems*, *24*(6), 664-679.

Cooper, D. and Schindler, P. (2009). Business Research methods (9thed.) McGraw Hill Companies.

Dirman, A. (2020). Financial distress: the impacts of profitability, liquidity, leverage, firm size, and free cash flow. *International Journal of Business, Economics and Law*, *22*(1), 17-25.

Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of management*, *16*(1), 49-64.

Dudovskiy, J. (2018). Exploratory research. *J. Dudovsiky, Writing a Dissertion. Sage Publications. Retrieved from Business Research Methodology*.

Dudovskiy, J. (2018). Exploratory research. *J. Dudovsiky, Writing a Dissertion. Sage Publications. Retrieved from Business Research Methodology*.

Dwiantari, R. A., and Artini, L. G. S. (2021). The effect of liquidity, leverage, and profitability on financial distress (case study of property and real estate companies on the idx 2017-2019). *American Journal of Humanities and Social Sciences Research (AJHSSR)*, *5*(1), 367-373.

El-Ansary and Bassam (2019), Forecasting financial distress for listed MENA firms. Department of Business Administration, faculty of commerce, Cairo University, Giza, Egypt.

Fiebelkorn, A., Owuor, C., and Nzioki, D. (2021). Kenya State Corporations Review: Corporate Governance and Fiscal Risks of State Corporations.

Finishtya, F. C. (2019). The role of cash flow of operational, profitability, and financial leverage in predicting financial distress on manufacturing company in Indonesia. *Jurnal Aplikasi Manajemen*, *17*(1), 110-117.

Fisseha, F. L. (2015). *meta analysis on the determinants of commercial bank's profitability:(a conceptual frame work and modelling). european scientific journal, 11(19).*

Gemma,A. (2014). *Creating Youth Empowerment through Entrepreneur Financing*. Is the Uganda Youth Venture Capital Fund on course? Published article 2014

Gemma,A. (2014). *Creating Youth Empowerment through Entrepreneur Financing*. Is the Uganda Youth Venture Capital Fund on course? Published article 2014

Gichaiya, M. W., Muchina, S., and Macharia, S. (2019). *Corporate risk, firm size and financial distress: evidence from non-financial firms listed in Kenya.*

Gill, J. and Johnson, P. (2010) Research Methods for Managers (fourth edition). London: Sage.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., and Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European business review*.

Harris, J., Imbert, B., Medas, P., Ralyea, J., and Singh, A. (2020). Government support to state-owned enterprises: Options for Sub-Saharan Africa. *IMF Fiscal Affairs, Special Series on COVID-19, International Monetary Fund, Washington, DC*

Ibhagui, O. W., and Olokoyo, F. O. (2018). Leverage and firm performance: New evidence on the role of firm size. *The North American Journal of Economics and Finance*, *45*, 57-82.

Ikpesu F. (2019), specific determinants of financial distress, Empirical evidence from Nigeria, Journal of Accounting and Taxation, Vol 11(2) PP49-56, and March 2019

Isaac, R. M. (2022). Contribution of corporate governance on performance of listed companies in Kenya. *European Journal of Business and Management Research*, *7*(1), 104-112.

Isayas, Y. N. (2021). Financial distress and its determinants: Evidence from insurance companies in Ethiopia. *Cogent Business and Management*, *8*(1), 1951110.

Jensen, C. M., and Meckling, H. W. (1976). Theory of firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305– 360.

Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In *Corporate governance* (pp. 77-132). Gower.

jerop, L. N. (2021). validity of the multiple discriminate analysis failure prediction model on corporate financial distress: an analysis of the kenyan market.

Kanyugi, M. G. (2016). *The effects of financial distress on the value of firms listed at the Nairobi securities exchange* (Doctoral dissertation, University of Nairobi).

Karina, R., and Soenarno, Y. N. (2022). The impact of financial distress, sustainability report disclosures, and firm size on earnings management in the banking sector of Indonesia, Malaysia, and Thailand. *Accounting and Management Information Systems*, *21*(2), 289-309.

Kihooto, E., Omagwa, J., Wachira, M., and Emojong, R. (2016). Financial distress in commercial and services companies listed at Nairobi Securities Exchange, Kenya.

Kosikoh, J. C. (2014). Determinants of Financial Distress in Insurance Companies in Kenya. *Jomo Kenyatta University of Agriculture and Technology*.

Liahmad, K. R., Utami, Y. P., and Sitompul, S. (2021). Financial Factors and Non-Financial to Financial Distress Insurance Companies That Listed in Indonesia Stock Exchange. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(1), 1305-1312.

Maina, F. G., and Sakwa, M. M. (2017). Understanding financial distress among listed firms in Nairobi stock exchange: A quantitative approach using the Z-score multi-discriminant financial analysis model.

Mihyo, P. B., and Mukuna, T. E. (2018). Interface between Formal and Informal Systems of Horizontal Accountability in Kenya's State-Owned Enterprises. *Eastern Africa Social Science Research Review*, *34*(2), 101-131.

Monks, R., & Sykes, A. (2017). Companies run in shareholders' long-term interests also serve society's long-term interests. In *Responsible investment* (pp. 226-240). Routledge.

Muathe, M, S. (2010) *The Determinants of Adoption of Information and Communication Technology by Small and Medium Enterprises within the Health sector in Nairobi*,

Muigai and Muriithi, (2017), the Moderating Effect of Firm Size on the Relationship between Capital Structure and Financial Distress of Non-Financial Companies Listed in Kenya, *Journal of Finance and Accounting*. Vol. 5, No. 4, 2017, pp. 151-158.

Muigai, R. G. (2016). *Effect of capital structure on financial distress of non-financial companies listed in Nairobi Securities Exchange* (Doctoral dissertation, COHRED, Finance, JKUAT).

Muigai, R. G., and Muriithi, J. G. (2017). The moderating effect of firm size on the relationship between capital structure and financial distress of non-financial companies listed in Kenya. *Journal of finance and accounting*, *5*(4), 151-158.

Muigai, R. G., and Nasieku, T. (2021). Working capital management and financial distress of non-financial companies listed at the Nairobi securities exchange. *European Journal of Economic and Financial Research*, *5*(1).

Mungai, J. N. (2009). *Loan Repayment and Sustainability of Government Revolving Funds in Murang'a County, Kenya* (Doctoral dissertation, PhD Thesis, Nairobi: Kenyatta University).

Myers, J. L., Well, A. D., and Lorch Jr, R. F. (2013). *Research design and statistical analysis*. Routledge.

Ngwa, L. N. (2016). *Impact of Financial Distress on UK Bank Performance and Customer Loyalty: An Empirical Study*. University of Wales Trinity Saint David (United Kingdom).

Ntoiti, Gakure and Waititu (2016), contribution of government regulations to financial distress facing local authorities in Kenya, American Journal of Finance, Vol 1 No. 3 (2016)

Oktasari, D. P. (2020). The effect of liquidity, leverage and firm size on financial distress. *East African Scholars Multidisciplinary Bulletin*, *3*(9), 293-297.

Omagwa, J. O. (2014). *Demographics, housing search, asymmetric information and housing decisions amongst apartment households in Nairobi County, Kenya* (Doctoral dissertation, University of Nairobi).

Onchangwa, G. A. (2019). *Effects of working capital management on financial distress of non-financial firms listed at the Nairobi securities exchange market* (Doctoral dissertation.

Opler and Titman (1994), Financial Distress and Corporate Performance, Journal of American Finance Association.

Pardeshi, B. (2022). Logistic Regression Analysis for Prediction of Financial Failure: Evidence from Central Public Sector Enterprises in India. *Vision*, 09722629221135241.

Saputri, L., and Asrori, A. (2019). The effect of leverage, liquidity and profitability on financial distress with the effectiveness of the audit committee as a moderating variable. *Accounting Analysis Journal*, *8*(1), 38-44.

Saunders, M., Lewis, P., and Thornhill, A. (2016). Research methods for business students (Seventh). *Nueva York: Pearson Education*.

Sautner and Vladimirov (2018), Indirect Costs of Financial Distress and Bankruptcy Law: Evidence from Trade Credit and Sales

Sayidah, N., and Assagaf, A. (2020). Assessing variables affecting the financial distress of state-owned enterprises in Indonesia (empirical study in non-financial sector). *Business: Theory and Practice*, *21*(2), 545-554.

Tinoco, M. H., and Wilson, N. (2013). Financial distress and bankruptcy prediction among listed companies using accounting, market and macroeconomic variables. *International Review of Financial Analysis*, *30*, 394-419.

Wangige, G. J. (2016). Effect of firm characteristics on financial distress of non-financial firms listed at Nairobi securities exchange, Kenya. *Unpublished MBA Project*.

Wangsih, I. C., Yanti, D. R., Yohana, Y., Kalbuana, N., and Cahyadi, C. I. (2021). Influence of Leverage, Firm Size, And Sales Growth On Financial Distress. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, *5*(4).