

THE IMPACT OF FINANCIAL DISTRESS ON FINANCIAL PERFORMANCE : EVIDENCE FROM LISTED LICENSED FINANCE COMPANIES IN SRI LANKA

LMNS De Mel¹ and HJR Buddhika²

ABSTRACT

In the ever-changing world of financial markets, the intersection between financial distress and performance is important. Financial distress, an entity's inability to satisfy its financial obligations, can seriously affect a company or individual's market value and stability. Sri Lanka's financial sector has recently faced difficulties, with certain institutions failing due to insolvency or regulatory noncompliance. The research intends to give significant insights to stakeholders, regulators, and investors in the Sri Lankan finance industry by utilizing Altman's Z-score model. This study examines the relationship between financial distress and financial performance in 22 licensed finance institutions in Sri Lanka from 2013 to 2022. The study's independent variable is financial distress, measured by Altman's Z-Score model, and the dependent variable is financial performance, measured by Return on Assets (ROA) & Return on Equity (ROE). Descriptive analysis, Correlation analysis and panel data regression were used to analyze the data in the study. The study supported that financial distress significantly impacts the ROA and ROE which are considered as financial performance measurements. The higher distress firms showed a lower performance during the period. The main indication given where companies should focus on the distress of the company can be analyzed through the Altmans Z score model. Licensed finance companies can have proactive measurements to enhance the liquidity reserves and optimize the capital structure of the firm. The findings are significantly important for the management of Licensed finance companies in Sri Lanka to manage their future strategies. The study's result indicates a significant impact of financial distress on the financial performance of listed licensed finance companies in Sri Lanka.

Keywords: Altman's Z-score Model, Financial Distress, Financial Performance, Licensed Finance Companies, Return on Assets

¹ Junior Finance Executive, SANA Commerce Pvt LTD, Sri Lanka

Email: nipunidemel99@gmail.com



<https://orcid.org/0009-0008-0390-217X>

² Senior Lecturer, Department of Finance, University of Kelaniya.

Email: buddhikar@kln.ac.lk



<https://orcid.org/0000-0001-9857-0113>



[The Journal of Desk Research Review and Analysis](#) © 2024 by [The Library, University of Kelaniya, Sri Lanka](#) is licensed under [CC BY-SA 4.0](#)

Introduction

Background of the Study

Financial distress refers to a condition in which a company or person is unable to meet their financial obligations, such as paying debts and interest. According to Shumway (2001), financial distress arises when a firm is unable to meet its financial obligations. Financial distress can result from a variety of circumstances, including excessive fixed costs, illiquid assets, or economic downturns. Financial distress can have an impact on a company's or an individual's market value or bankruptcy. Altman (1968) developed the Z-score model, which employs many variables to investigate financial distress. Altman's standard model included a combination of five unique ratios to analyze the financial health of the companies. Altman's Z score model is recognized as the most accurate method of identifying financial distress.

The Global Financial Crisis impacted several banks and financial organizations in the late 2000s. Banks and financial institutions that have been affected, are merged, taken over by other financial institutions, partially nationalized by the government, or liquidated. The study can be examined historically by tracing the history of Sri Lanka's finance sector and the issues it faced throughout time.

For example, the Central Bank of Sri Lanka decided in October 2021 to liquidate five failed finance companies after an advisory committee determined that there were no realistic recovery possibilities for them. Central Investments & Finance Ltd., ETI Finance Ltd., TKS Finance Ltd., The Finance Company PLC, and The Standard Credit Finance Ltd. are the failed companies. The CBSL had either cancelled or suspended their licenses owing to various concerns. The liquidation process will be carried out following the laws that apply to each organization.

Tan (2012) discovered that financial distress has a negative association with financial performance. Some studies have found that financial distress can lead to lower financial performance, as distressed companies may face higher costs of capital, lower investment opportunities, and lower customer loyalty. Other studies have found that financial performance can affect financial distress, as profitable companies may have more resources to cope with financial difficulties and avoid default (Shaukat & Affandi, 2015). They investigated the relationship between financial distress and financial performance. According to the study's findings, there is a significant relationship between financial distress and financial performance.

Based on the study following research question was formulated. The main research problem is to find the distressed financial companies and how those will impact the financial performance. The limited studies create an opportunity to carry out the study. Based on the study following research question was formulated.

The majority of studies were based on data from other countries, and their findings may not apply to the local context. The local studies failed to show the extent to which financial distress factors affect the financial performance of finance companies in Sri Lanka. This study,

therefore, sought to bridge this research gap by ascertaining the effect of key financial distress factors on the financial performance of finance companies in Sri Lanka.

RQ 01 - Does financial distress impact the financial performance of Listed Licensed Finance Companies in Sri Lanka?

Objectives of the Study

The main objective of this study is to find the impact of financial distress on the financial performance of listed licensed finance companies in Sri Lanka, using a sample of 22 listed finance companies over ten years from 2013 to 2022. Based on hypotheses and conceptual frameworks two main objectives were developed.

R01 - To examine the impact of financial distress on the Return on Equity (ROE) of listed finance companies in Sri Lanka.

R02 – To-examine the impact of financial distress on the Return on Asset (ROA) of listed finance companies in Sri Lanka.

Significance of the Study

Financial institutions play a vital role in the economy by providing financial services to various sectors of the economy, such as small and medium enterprises, tourism, agriculture, infrastructure, and trade. Hossain et al. (2002) emphasized the importance of the non-banking financial sector as a medium for the country's economic development and the prevailing challenges within the industry. They help consumers and businesses save, invest, and manage risks. They supported economic growth and stability by facilitating trade, innovation, and diversification. Financial institutions are essential for a prosperous and resilient society. According to Sufian (2007) BFIs and NBFIs contribute to general economic growth by facilitating efficient money and capital markets, and NBFIs, in addition to commercial banks, play a vital role in providing financial services and the rise of NBFIs increasing financial stability of the capital market. Finance companies also play a crucial role in supporting the recovery from the COVID-19 pandemic, by providing liquidity and credit to businesses and individuals affected by the crisis.

Literature Review - Financial Distress

Financially distressed firms are companies that have experienced financial difficulties continuing their usual operations and, in the event of insolvency, are facing bankruptcy proceedings (Baharin & Sentosa, 2013). Financial distress occurs when a corporation is unable to meet (or has difficulty paying off) its financial obligations to its creditors. It occurs when operating cash flows are insufficient to meet present obligations, forcing the firm to take remedial action (Ray & Mahavidyalaya, 2011). Throughout history, there have been several company failures all around the world. The yearly flow of company failures has not stopped expanding in recent years, and this trend became more pronounced during the global financial crisis of 2007- 2008 (Sami, 2013). Poor governance, intense competition, negative economic circumstances, and capital structure have all been attributed to corporate financial difficulties (Outecheva, 2007). Andrade and Kaplan (1998) stated that financial distress occurs when a company cannot meet its obligations to third parties. They have identified two types of

financial distress: the first is a failure to make a debt payment, and the second is an attempt to restructure the debt to avoid a default situation. The study by Altman and Hotchkiss (2010) Regardless of the manner of default, both indicate declining company performance and financial distress. Although financial distress does not always imply that a firm will collapse, a severe and sustained fall in a company's financial performance may eventually result in bankruptcy, causing investors and creditors to face significant financial losses.

The process of financial distress begins when a company struggles to pay short-term obligations (Whitaker, 1999). Financial distress is primarily caused by inadequate asset mix, corporate governance, and financial structure (Gilbert et al., 1990). Financial distress is due to factors like large debts, uninformed expansion, intense competition, and high legal costs (Natalia, 2007). Inadequate capital is a major factor in financial distress, as it cannot absorb losses (Adeyemi, 2012). Financial distress is when firms face financial constraints, such as bankruptcy, insolvency, failure, or default, affecting their daily activities.

Previous Studies on Financial Distress in Sri Lanka

Some studies have examined the effectiveness of solvency tests and Z'Score models in predicting corporate bankruptcy in Sri Lanka. The study analyses financial data from various firms and compares the solvency test with established Z'Score models like Altman's and Springate's. The findings provide insights into the relative effectiveness of these models in measuring corporate distress, contributing to financial risk assessment and decision-making for investors in Sri Lanka (Gunathilaka, 2014).

Over seven years, this study examines the impact of capital structure on the financial performance of 11 trading companies in Sri Lanka. The findings indicate a positive association between capital structure factors and financial performance variables, implying that effective capital structure is critical for better financial performance in the trading sector in general. The research emphasizes the significance of capital structure in improving financial performance in the trading sector (Niranjani & Priya, 2013).

Previous studies examined the profitability and sustainability of microfinance institutions in Sri Lanka using a multiple regression model from 2005 to 2010. The study reveals that higher leverage and debt ratios positively correlate with profitability, while cost per borrower and female borrowers have a negative correlation. The study emphasizes the importance of staff productivity and training in reducing operational costs and improving efficiency. The findings suggest that MFIs can achieve profitability while fulfilling their moral obligation to alleviate poverty (Dissanayake & Anuranga, 2012).

Measures of Financial Distress

This part summarizes some of the distress risk measures used in the existing literature. Broad categories of corporate failure prediction models include statistical models, Artificial Intelligence, and theoretical models (Altman, 2006). The Altman Z-score model is a model classified under the Multiple Discriminant Analysis (MDA) model. MDA is the most accurate and applicable financial distress prediction model.

This is vital because the reliability of the assessment methodologies used must be evaluated against the validity of the stated findings in the distress literature. Financial statement-based distress indicators were widely used until the early 2000s. Beaver (1966) was the first systematic study to discover 30 financial ratios in a univariate setting, forming six groups of ratios. The study concluded that each of the six ratio groups had considerable explanatory power relative to a simple model of random prediction. Altman (1968) improved on Beaver's (1966) research by using multiple discriminant analysis (MDA) and a much narrower set of ratios: (i) a liquidity measure; and (ii) a book leverage measure. (iii) a measure of cumulative profitability; (iv) a measurement of market leverage, and (v) a measure of the turnover of assets.

Table 1: Classification of Financial Distress/Bankruptcy Predictive Models

Category	Models
Statistical Models	Univariate Analysis Multiple Discriminant Analysis (MDA) Linear Probability Models (LPM) Probit Models Cumulative Sums (CUSUMS) procedure
Artificial Intelligence and Expert Systems	Recursively Partitioned Decision Trees (Inductive Learning) Model Case-Based Reasoning (CBR) Model Neural Networks (NN) Genetic Algorithm (GA) Rough Set (RS) Models
Theoretical Models	Balance Sheet Decomposition Measure Gambler's Ruin Theory Cash Management Theory Credit Risk Theories

Source: Compiled by Researchers from Altman (2006)

Altman's Z-score model, developed using the Multiple Discriminant Analysis (MDA) approach, is a widely accepted measure of financial distress. Using 33 solvent and distressed companies, Altman developed a bankruptcy prediction model with a cut point of 2.675 to classify healthy and distressed firms. The model demonstrated sound prediction performance one and two years before financial distress Altman (1968).

Z Score Model

The most prominent approach to assessing the financial status of a corporation is the Altman Z-score. The Altman Z'Score approach was established by Altman in 1968. It has been used to quantify financial distress in various research studies (Kim-Soon et al., 2013). This model is a multivariate formula that has been used to estimate the financial health of a firm and whether it will go bankrupt in the next two years.

Revised Z' score Model

Altman's Z score model maximizes predictive power by using five weighted financial ratios, producing a discriminate score called a Z score or zeta. This model measures profitability and risk, demonstrating a company's bankruptcy risk relative to a standard (Altman, 1968). Altman's Z-score model is a linear combination of ratios, applicable to public manufacturing firms, with the Original Z score.

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + .999X5$$

The MDA method assigns firms to failing or non-failing groups based on their discriminant score, using the original Z-score prediction model. The firm is given to the group it most closely resembles, using the original ratios as follows.

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings Before Interest and Taxes / Total Assets

X4 = Market Value of Equity / Total Liabilities

X5 = Sales/ Total Assets

Altman revised the Z-score model to apply to private and non-manufacturing firms, adjusting the market value of equity to book value. He introduced various coefficients for the ratio (Altman, 1983).

$$Z=0.717X1 + 0.847X2 + 3.107X3 +0.420X4 + 0.998X5$$

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings Before Interest and Taxes / Total Assets

X4 = Book Value of Equity / Total Liabilities

X5 = Sales/ Total Assets

In 1995, the revised model was expanded to include emerging markets, allowing non-manufacturing companies and public firms to incorporate different coefficients and cut-off points (Altman et al., 1995).

$$Z=6.56X1+3.26X2+6.72X3+1.05X4$$

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings Before Interest and Taxes / Total Assets

X4 = Book Value of Equity / Total Liabilities

Variables of The Z Score Model

X1 - Working Capital to Total Assets Ratio

This ratio measures a company's liquidity, with less working capital indicating potential financial distress. A positive working capital ratio allows a company to meet short-term liabilities with ease, while a negative ratio indicates financial distress.

X2 - Retained Earnings to Total Assets Ratio

This ratio measures Profitability, indicating the amount of reinvested earnings or losses, indicating a company's financial health. Higher ratios indicate better financial health.

X3 - Earnings Before Interest and Taxes To Total Assets

This measures firms' operating efficiency, which is profit-making ability before interest, tax, and total assets.

X4 - Book Value Of Equity To Total Liabilities

This ratio measures a company's market value's ability to cover liabilities in case of solvency, comparing owners' equity market value to total liabilities book value.

X5 – Sales To Total Assets

The X5 ratio measures a company's ability to generate sales using its assets. A lower ratio indicates less competition, indicating a company's ability to compete effectively.

Accuracy of Z Score Model

Mamo (2011) and Bwisa (2010) carried out research on the applicability of Altman's (1968) model in predicting the financial distress of commercial banks and other firms listed at the Nairobi Stocks Exchange in Kenya, where they found the model to be accurate and applicable locally. Altman Z'Score models accurately classify financial distress in firms, even during crises, on the Oslo stock exchange (Aasen, 2011). Z'Scores's bankruptcy prediction worsened during the financial crisis, but overall distress identification remains intact.

The Z-score model predicts corporate health globally, gaining recognition in developed and developing countries. A study was conducted to find the accuracy of anticipating organization failures using the Altman Z-score model, and they observed that the Altman model can demonstrate well enough in anticipating failure (Gerantonis et al., 2009). A study in Ghana found that Altman's Z-score can predict corporate failure in listed firms based on size and nature. The study tested the model on 15 non-failed and failed companies listed on the Ghana Stock Exchange, testing it across a cross-section of manufacturing firms from 2004 to 2005 (Appiah, 2011). The Altman Z-score model has 90% validity in predicting the financial distress of Kenyan commercial banks (Mamo, 2011).

Few studies investigating using Altman's Z-score for non-manufacturing firms on financial institutions listed on the Zimbabwe Stock Exchange reveal that 83.33% of financial institutions were in the distress zone, while 16.67% were in the grey area. This study highlights the potential of Altman's Z-score to predict corporate failure in both manufacturing and non-manufacturing industries despite its drawbacks (Titshabona, 2014). Altman's models have significant predictive ability, accurately classifying 74% of non-failed firms and 63% of failed

ones in a study of 99 failed and 274 non-failed Brazilian firms (Yim & Mitchel, 2005). Few studies tested Altman's Z-score model's accuracy in predicting Chinese company failure using data from 2000–2008 Chinese publicly listed companies (Wang & Campbell, 2010).

Financial Performance

Financial performance tracks a firm's progress against strategic plans, compares similar firms, and influences satisfaction and value perception (Kang & Kinyua, 2016). They argued that financial performance measures company policies and operations in monetary terms. Financial performance significantly impacts satisfaction and value perception (D'Alessandro et al., 2015). Performance is influenced by factors like business environment, strategy, structure, and control system (Fauzi & Idris, 2009).

According to Chan and Chen (1991), financially distressed businesses have poor performance and inefficient producers. They are also likely to have excessive financial leverage and cash flow difficulties, which cause them to lose market value. Recently, financial distress has become an increasingly significant problem in finance, with the financial health of organizations serving as an important signal for interested people seeking to learn more about a company's performance. Many stakeholders, including creditors, suppliers, investors, consumers, and workers, are resisting doing business with financially challenged businesses (Cornell & Shapiro, 1987).

Financial distress, according to Beaver (1966) and Betker (1997), has a significant impact on a firm's operations and profitability through cost implications such as administrative and legal costs associated with the bankruptcy process or increased costs for debt service and supplies. Financially distressed businesses deal with many challenges, including financial distress and poor financial performance.

Financial distress has risen into a worldwide issue that needs close monitoring and specific methods to keep it from adversely impacting diverse stakeholders such as shareholders and creditors. Liquidity, leverage, profitability, and firm performance are the most important factors in determining the likelihood of a company collapsing (Becchetti & Sierra, 2003). Financial distress negatively impacts profit and operating cash flows, as evidenced by the number of failed banks worldwide. Firms underperform during financial distress, indicating a deterioration in performance. This highlights the negative impact of financial distress on firms' performance (Tan, 2012).

Financial institutions aim for profit but also have social and economic goals. To measure the profitability of banks, they use three major ratios, ROE, ROA and Net Interest Margin (NIM) (Ongore et al., 2013). The first ratio is ROE, which measures a bank's ability to generate cash internally. The positive indicator of its efficiency in using shareholders' funds (Khrawish, 2011). The second ratio is ROA, which indicates a bank's ability to generate income by utilizing its available assets, while ROA indicates the bank's efficiency in using resources. A high NIM shows higher profitability, but it may also indicate riskier lending practices and substantial loan

loss provisions. The three ratios help banks evaluate their financial performance and contribute to their overall success.

Low financial distress leads to better performance, while firms with high financial distress, which means financial distress negatively impacts firm performance (Kairuki, 2013). Financially distressed firms lose market value due to poor performance, leading to high leverage and cash flow issues (Campbell et al., 2011). Most finance companies have experienced financial fluctuations, liquidation, or statutory management, while others are yet to go through a financial distress situation in the future. Therefore, it is important to study the impact of financial distress on finance companies in Sri Lanka.

Methodology

This chapter describes the research design, the population of the study, the basis of sampling, the data collection, and the data analysis techniques to be used to achieve the objectives of the study.

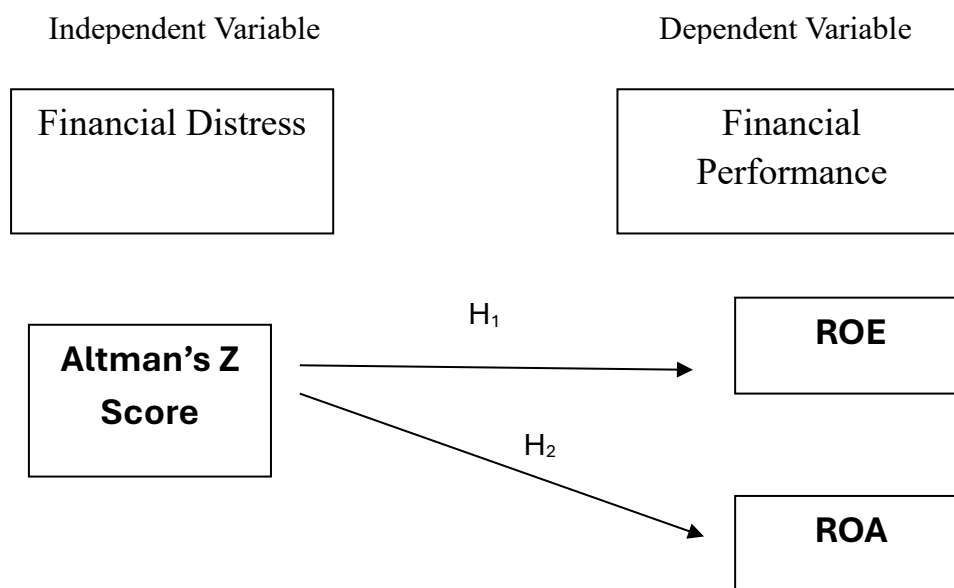
Research Design

The study adopts a deductive approach, which means that it tests a hypothesis derived from existing theories and literature. The research logic of the research study is based on the assumption that financial distress affects the financial performance of listed licensed finance companies in Sri Lanka. The study aims to identify the determinants of financial distress and its impact on financial performance using quantitative methods and secondary data from annual reports of selected companies.

Conceptual Framework

The conceptual framework was developed based on research questions and research objectives. Further two hypotheses were developed based on a foundation named H_1 and H_2 :

Figure 01: Conceptual Framework



Source: Author Compiled (2023)

The arrows indicate the influence of financial distress (Independent Variable) on financial performance (Dependent Variable). The boxes indicate the main concepts and sub-concepts that need to be defined and measured in the research. The framework shows that financial distress impacts financial performance and that there are different causes and measures for both concepts. The operationalization table for both independent and dependent variables is given below.

Table 02: Operationalization of the Study

	Variables	Indicators	Measurement indicator
Dependent variable	Financial Performance	ROA	Net Income/Total Assets
Dependent variable	Financial Performance	ROE	Net Income/Shareholder's Equity
Independent variable	Financial distress	Altman's Z'Score Model	Altman Z Score = $6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$ The greater the Z Score value in financial distress, the better; it indicates that the company is healthier.

Source: Author Compiled (2023)

Population and Sample Selection

The population of the research study consisted of 25 listed licensed financial institutions that operated in the country from 2013 to 2022. The sample is a segment of the population under the study. The target sampling population for the research was all licensed non-bank financial institutions as of the time of sampling. The researcher selected 22 licensed non-bank financial companies excluding 03 companies that do not have sufficient information to proceed with the study.

Data Collection and Analysis

Secondary data, which was extracted from past financial reports of the finance companies under study and the annual supervision reports from CBSL, was used in this study. That is income statements, statements of financial position and statements of changes in equity. The study aimed to examine how financial distress, measured by Altman's Z score, influenced the financial performance of these companies, measured by ROA and ROE. The study used secondary data from the annual reports published in the Colombo Stock Exchange and applied multiple regression analysis to test the hypotheses. The period of analysis covered ten financial years from 2013 to 2022. Financial distress was calculated using the Altman Z score model, as shown below. Mamo (2011) used the model to predict financial distress in commercial banks in Kenya and found the model to be 90% valid.

Altman's Z score Model

The Altman Z-score model is a numerical statistic that predicts a company's likelihood of going bankrupt in the next two years. American finance professor Edward Altman developed the model in 1968 as a predictor of a company's financial health. The initial model is based on five financial measures that may be extracted from a company's annual report, and it has been modified and revised multiple times since then. The Z-score is determined by giving different weights to each ratio and then adding them all up. The Z-score indicates the likelihood of a company going bankrupt in the next two years. The smaller the risk, the higher the score.

Z'Score Model for non-manufacturing firms

$$Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$$

Table 03: Variables of Z'Score Model

Variable	Empirical Proxy	Formula/Method
X1	Liquidity	Working Capital/Total Assets
X2	Profitability	Retained Earnings/Total Assets
X3	Productivity	EBIT/Total Assets
X4	Solvency	Book value of Equity/Total Liabilities
Overall Index	Z'Score (Model)	$Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$

Source: Author Compiled (2023)

Zones of Discrimination

The score interpretation is as follows:

- **A score above 2.6** – this is the “safe zone” for these companies.
- **Score from 2.6 to 1.1** – this is the range for those companies in the “grey area.” This means some work should be done to avoid getting into the danger zone.
- **Score below 1.1** – this is the “distress zone.” These companies might be filing for bankruptcy at any time.

Hypotheses

The following are the main hypotheses developed in the research study. The combined impact of the ratios, which is represented by the overall z-score index, is found in the financial performance of the companies that are represented by ROA and ROE.

- H₁: There is a significant impact of financial distress on ROA.
- H₂: There is a significant impact of financial distress on ROE.

Results and Discussion

The data for the period of 2013 -2022 has been analysed through STATA software and the results are given below. The purity of the data set is checked at the initial level using a normality test that checks the normal distribution of the data.

Normality Test

The core assumption of the classical linear regression model is that the data set should have a normal distribution. The skewness and kurtosis analysis were used to test the normality of the data set in this study. To be the normal distribution, the skewness value should be within ± 2 . And the kurtosis value should not go beyond the 5. Initially, all the outliers are motorised to keep the normality assumption valid in this study. The following hypothesis was formulated to test the normality of the data set.

Null hypothesis (H_0) = The data set is Normally distributed.

Alternative hypothesis (H_1) = The data set is not Normally distributed.

Table 04 represents the skewness and kurtosis test for normality for this study. Based on the below results, the Skewness value is less than two and the Kurtosis value is not more than 5 for all the variables in this study. Thus, the researcher failed to reject the null hypothesis. Therefore, conclude that the normality assumption is valid in this study.

Table 04: Skewness and Kurtosis Test for Normality

Variable	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skw	Kurt
ROA	220	0.0189	0.0177	-0.0156	0.0519	-0.0156	0.0519	-0.29	2.66
ROE	220	0.0958	0.0109	-0.2145	0.2055	-0.2145	0.2055	-1.34	4.43
ZSCORE	220	0.3307	1.0687	-3.6527	2.1069	-2.3635	2.1069	-0.34	3.36

Source: Author compiled based on STATA Output (2023)

Descriptive Statistics

The Descriptive statistics results are in Table 05. Further, explains the mean, standard deviation, minimum, and maximum values for ROA, ROE, and ZSCORE for a sample of non-banking financial institutions in Sri Lanka.

Return on Assets

The sample's average ROA is 0.018858, indicating a poor degree of profitability. The standard deviation is 0.0176611, indicating that there is some variation in ROA levels across the sample firms. The minimum ROA is -0.0156128, indicating that some of the firms in the sample are losing money. The highest recorded ROA is 0.0519319, suggesting that some of the firms in the sample are performing well.

Return on Equity

The sample's average ROE is 0.0957975, indicating an adequate level of profitability. The standard deviation is 0.1088037, indicating some variation in ROE values across the sample

firms. The minimum ROE is -0.2144523, indicating that some of the firms in the sample are losing money. The highest recorded ROE is 0.2054943, suggesting that some of the firms in the sample are performing well.

Altman Z'Score

The sample's mean ZSCORE is 0.330706, below the safe zone of 2.6. This implies that non-banking financial institutions in Sri Lanka are in danger of going bankrupt. The standard deviation is 1.068736, indicating that there is some diversity in ZSCORE values among the sample firms. The minimum ZSCORE is -3.652733, indicating that some of the firms in the sample are very vulnerable to bankruptcy. The highest ZSCORE is 2.106942, indicating that some of the firms in the model are financially sound. Overall, the facts in the table suggest that the financial health of Sri Lanka's non-banking financial institutions is uneven. Some businesses are doing well, while others are in danger of going bankrupt. Before making any investment or lending choices, investors and creditors should thoroughly evaluate the financial viability of any non-banking financial company.

Table 05: Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
ROA	overall	0.0188	0.0176611	-0.0156128	0.0519319	N = 220
	between		0.0140463	-0.0087324	0.045213	n = 22
	within		0.0110781	-0.0251328	0.0507552	T = 10
ROE	overall	0.0957	0.1088037	-0.2144523	0.2054943	N = 220
	between		0.0848733	-0.1250129	0.2054943	n = 22
	within		0.0702197	-0.1474899	0.3233551	T = 10
ZSCORE	overall	0.3307	1.068736	-3.652733	2.106942	N = 220
	between		0.8052474	-0.967503	2.106942	n = 22
	within		0.7214026	-2.819352	2.52917	T = 10

Source: Author Compiled (2023)

Correlation Matrix

The correlation between variables is presented in Table 06. It showed the correlations between, ROA, ROE and Z'Score for listed licensed finance companies in Sri Lanka during the period from 2013 to 2022.

ROA and ROE have a highly positive correlation of 0.8227, indicating a considerable association between these two financial performance indicators. The ROA rises, and the likelihood of ROE (Return on Equity) rising rises as well. This positive association suggests

that firms with greater ROA have higher ROE, which is a frequent relationship since ROA influences ROE. The 0.4561 positive correlation between ROA and Z'Score indicates a positive association between ROA and financial distress (Z'Score). When ROA is greater, the Z'Score tends to be higher as well. This indicates that companies with stronger financial performance may have slightly fewer chances of financial distress. The positive correlation of 0.3114 between ROE and Z'Score suggests that firms with greater ROEs have better Z'Scores.

Table 06: Correlation Matrix

	ROA	ROE	ZSCORE
ROA	1.0000		
ROE	0.8227	1.0000	
ZSCORE	0.4561	0.3114	1.0000

Source: Author Compiled (2023)

Regression Analysis

A statistical method for determining the relationship between one dependent variable and one or more independent variables is regression analysis. To be able to forecast or comprehend how changes in the independent factors affect the dependent variable, modelling this connection is the aim. Two regression models run for two dependent variables of ROA and ROE.

Regression Model 01 – ROA

Table 07: Regression Results Output - Model 01 - ROA

Random-effects GLS regression					
			Number of obs	=	220
Group variable: FirmID			Number of groups	=	22
R-sq:					
within	= 0.0906	Obs per group :		min	= 10
between	= 0.3272			avg	= 10.0
overall	= 0.2080			max	= 10
			Wald chi2(1)	=	16.86
			Prob > chi2	=	0.000
		Robu st Std. Err.	z	P> z	[95% conf. Interval]
ROA	Coef .				
Z SCORE	0.0051	0.001 3	4.11	0.000	0.0027 0.0076
_cons	0.0172	0.002 5	6.81	0.000	0.0122 0.0221

Source: Author compiled based on STATA Output (2023)

$$ROA = \beta_0 + \beta_1(Zscore) + \varepsilon$$

$$ROA = 0.0171595 + 0.005136 (Z \text{ SCORE}) + \varepsilon$$

The overall R-squared is 0.2080, indicating that the model explains about 20.80% of the overall variation in ROA. This means that the explanatory power is modest. The ZSCORE coefficient is 0.005136, and it is statistically significant ($z = 4.11$, $p < 0.001$). This implies that ZSCORE (financial distress) and ROA have a positive relationship. ROA tends to rise by approximately 0.005136 units as ZSCORE increases. The intercept term of 0.0171595 is statistical significance ($z = 6.81$, $p < 0.001$). When ZSCORE is 0, this is the estimated ROA. However, while ZSCORE is a standardised metric, its interpretation may be subjective. The Wald chi-square test with one degree of freedom is significant (Wald $\chi^2(1) = 16.86$, $p < 0.001$), showing that the model as a whole is statistically significant, including the ZSCORE variable. The findings indicate that financial distress, as evaluated by ZSCORE, has a statistically significant positive connection with ROA in Sri Lankan non-bank financial organizations.

Regression Model 02 – ROE

Table 02: Regression Results Output - Model 02 - ROE

Random-effects regression	GLS					
			Number of obs	=		220
			Number of groups	=		22
Group variable:	FirmID					
R-sq:						
		Obs per group :	min	=		10
within	= 0.1013		avg	=		10.0
between	= 0.0940		max	=		10
overall	= 0.0970					
			Wald $\chi^2(1)$	=		4.85
			Prob > χ^2	=		0.0277
		Robu				
		st Std.				
		Err.	z	P> z	[95% Interval]	conf.
ROE	Coef.					
		0.014				
Z SCORE	0.0311	1	2.2	0.028	0.0034	0.0588
		0.019				
_cons	0.0855	4	4.4	0.000	0.0474	0.1236

Source: Author compiled based on STATA Output (2023)

$$ROE = \beta_0 + \beta_1(Zscore) + \varepsilon$$

$$ROE = 0.0855178 + 0.0310842 (Z \text{ SCORE}) + \varepsilon$$

The model's overall R-squared is 0.0970, indicating that the model explains about 9.70% of the total variance in ROE. This suggests a modest degree of explanatory ability. ZSCORE has a

coefficient of 0.0310842, which is statistically significant ($z = 2.20$, $p = 0.028$). This implies that ZSCORE (financial distress) and ROE have a positive relationship. ROE tends to increase by 0.0310842 units as ZSCORE increases. The intercept term is 0.0855178, and it is statistically significant ($z = 4.40$, $p < 0.001$). This represents the estimated ROE when ZSCORE is zero. However, given that ZSCORE is a standardised measure, the intercept may not have a straightforward interpretation.

The Wald chi-square test with 1 degree of freedom is significant (Wald $\chi^2(1) = 4.85$, $p = 0.0277$), indicating that the model as a whole, including the ZSCORE variable, is statistically significant. The results suggest that financial distress, as measured by ZSCORE, has a statistically significant positive relationship with ROE in non-bank financial institutions in Sri Lanka.

Hypotheses Testing

Based on the data analysis spanning the period from 2013 to 2022, the results of the regression analysis reveal a statistically significant relationship between financial distress, as measured by Z'Score, and both ROE and ROA. With the p-values associated with the Z'Score coefficient being below the conventional significance threshold ($p < 0.05$), we have sufficient evidence to reject the null hypothesis. The findings suggest that financial distress does have a discernible impact on the financial performance of non-bank financial institutions in Sri Lanka during the specified period. This supports the alternative hypothesis, implying that variations in financial distress are associated with changes in financial performance metrics, providing valuable insights for stakeholders and policymakers in the financial sector.

Table 03: Summary Table of Hypotheses

Hypothesis statement	Coefficient (β)	Sig: P values	Results
Hypothesis (H₁): There is an impact of financial distress on ROA.	0.0051	(P=0.0000) Significant at 1% level	Supported
Hypothesis (H₂): There is an impact of financial distress on ROE	0.0310	(P=0.028) Significant at 5% level	Supported

Source: Author compiled based on STATA Output (2023)

Z'SCORE Analysis

In the years between 2013 and 2022, the table below shows how many companies were in the safe zone, the grey zone, and the distress zone. From 2013 to 2023, the majority of the firms

were distressed. While the number of firms in the distress zone dropped from 20 in 2013 to 13 in 2022, the number of firms in the grey area increased from 0 in 2013 to 8 in 2022.

Table 4: Classification of companies in each zone

<i>Year</i>	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SAFE	2	2	1	1	3	1	2	1	2	1
(%)	9%	9%	5%	5%	14%	5%	9%	5%	9%	5%
GREY	0	2	3	4	1	5	4	5	6	8
(%)	0%	9%	14%	18%	5%	23%	18%	23%	27%	36%
DISTRESS	20	18	18	17	18	16	16	16	14	13
(%)	91%	82%	82%	77%	82%	73%	73%	73%	64%	59%
Total	22	22	22	22	22	22	22	22	22	22

Source: Author compiled based on STATA Output (2023)

After analyzing the data, we found that just 14% of firms were in the 'safe' zone in 2017, and 5% & 9% in the other sample years.

Only a few firms are in the 'grey' zone between 2013 and 2022. Most companies are in the 'distress' zone, with 91% in 2013, 82% in 2014, 2015, and 2017, 77% in 2016, 73% in 2018-2020, 64% in 2021, and 59% in 2022. Based on the findings, we can conclude that some financial institutions are in the 'Grey' zone, while the majority are in the 'Distress' zone during the ten-year research period. In the year 2013, we had the most companies in the 'Distress' zone. The percentage of companies in the safe zone has decreased over time, from 9% in 2013 to 5% in 2022. The percentage of companies in the grey zone has remained relatively steady throughout time, ranging between 9% and 18%. The proportion of enterprises in distress has decreased over time, from 91% in 2013 to 59% in 2022.

The general trend of diminishing firms in the safe zone and growing firms in the distress zone is concerning. The fluctuations in the number of firms in each zone from year to year illustrate that the pattern of declining financial performance has been relatively constant over the last ten years. There have, however, been periodic variations, such as a rise in the number of firms in the grey zone between 2018 and 2020. The number of firms in the safe zone ranged between 5%-9%, while the number of firms in the distress zone declined from twenty in 2013 to thirteen in 2022. This implies that the financial performance of Sri Lanka's licensed finance firms has improved in recent years. It is crucial to emphasize, however, that the number of enterprises in distress remains large.

Summary of Total Z Score of Financial Institutions

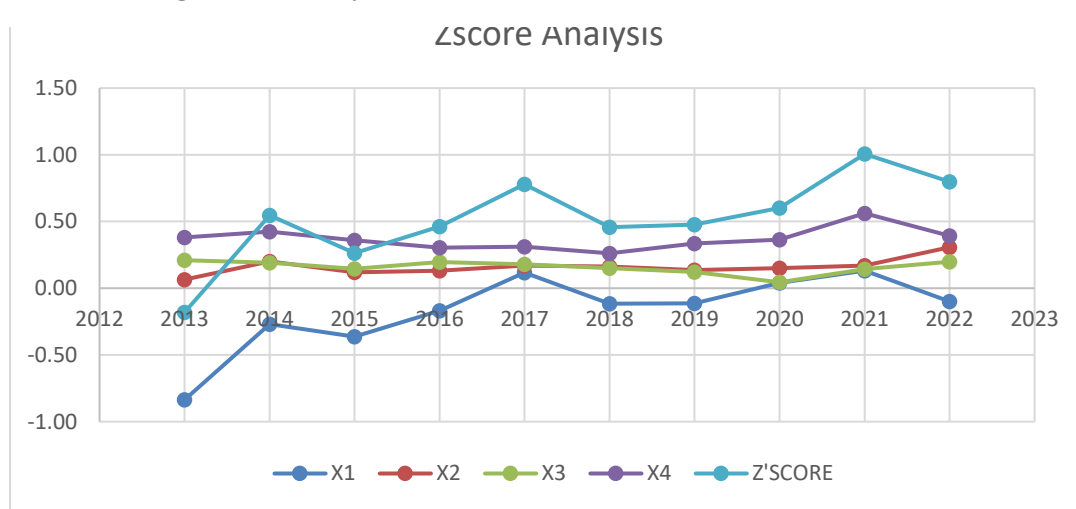
Table 5: Analysis of Total Z'Score of Financial Institutions

<i>Year</i>	<i>X1</i>	<i>X2</i>	<i>X3</i>	<i>X4</i>	<i>Z'SCORE</i>
2013	-0.8361	0.0650	0.2100	0.3807	-0.1804
2014	-0.2696	0.2000	0.1925	0.4242	0.5471
2015	-0.3630	0.1204	0.1465	0.3591	0.2629

2016	-0.1692	0.1321	0.1957	0.3050	0.4636
2017	0.1180	0.1688	0.1792	0.3122	0.7781
2018	-0.1165	0.1630	0.1498	0.2618	0.4581
2019	-0.1130	0.1357	0.1209	0.3343	0.4779
2020	0.0413	0.1508	0.0445	0.3639	0.6004
2021	0.1315	0.1704	0.1426	0.5617	1.0062
2022	-0.0994	0.3072	0.1983	0.3921	0.7981

Source: Author compiled based on STATA Output (2023)

Figure 01 : Analysis of Total Z'Score of Financial Institutions



Source: Author compiled based on STATA Output (2023)

The trend in working capital to total assets (X1):

The X1 variable indicates fluctuations and variations in the working capital-to-total-assets ratio during ten years. The numbers vary from negative to positive, representing shifts in the financial health of Sri Lanka's non-bank financial companies. X1 changes significantly from year to year, demonstrating that the financial stability and liquidity of non-bank financial institutions in Sri Lanka have fluctuated throughout this period. The shift from negative to positive values in the latter years shows an increase in liquidity and a decrease in financial distress.

The trend in retained earnings to total assets (X2)

Over ten years, the X2 variable exhibits an increasing trend, starting at 0.065 in 2013 and then gradually rising to 0.3072 in 2022. This implies that non-bank financial entities in Sri Lanka have accumulated larger retained profits in comparison to total assets. While there is an overall rising tendency, X2 fluctuates year to year. Economic situations, institutional policies, and regulatory changes might all have an impact on these fluctuations. The major increase in 2022, for example, shows a huge accumulation of retained profits that year.

The trend in EBIT to total assets (X3)

The X3 variable depicts changes in the EBIT to total assets ratio over ten years. EBIT is a measure of a company's operational profitability, and this ratio demonstrates the efficiency with which profits are generated concerning total assets. X3 varies from year to year, indicating that the financial performance of non-bank financial institutions in Sri Lanka has been volatile over this time. Several years, such as 2013, 2017, and 2022, have significantly greater profitability, while others, such as 2019 and 2020, have lesser profitability.

The trend in Book Value of Equity to Total Liabilities (X4)

Over ten years, the X4 variable shows changes in the ratio of book value of equity to total liabilities. This ratio denotes the percentage of the company's equity to total liabilities. X4 changes dramatically from year to year, demonstrating that the financial position of Sri Lanka's non-bank financial institutions has fluctuated over time. In 2021, for example, X4 climbed significantly, showing a greater proportion of equity compared to liabilities.

Financial Distress And Bankruptcy Prediction of the Selected Financial Institutions

Table 6: Bankruptcy Prediction of the Selected Financial Institutions

<i>Firm</i>	<i>Zscore - 2022</i>	<i>Zone</i>	<i>Firm</i>	<i>Zscore - 2022</i>	<i>Zone</i>
AFSL	-0.0839	Distress	MERC	-0.1794	Distress
ALLI	0.6784	Distress	MBSL	-0.9807	Distress
AMCL	2.1561	Grey	CSF	-0.4017	Distress
AAF	1.8628	Grey	BFN	-0.6551	Distress
AMF	0.8103	Distress	PLC	0.1717	Distress
CFIN	2.2374	Grey	PMB	-0.1565	Distress
CDB	0.7421	Distress	SFCL	1.4823	Grey
COCR	1.3811	Grey	SFIN	0.9696	Distress
CALF	1.7533	Grey	SEMB	4.8559	Safe
LFIN	1.2090	Grey	CRL	-2.3635	Distress
LOFC	2.1851	Grey	VFIN	-0.1152	Distress

Source: Author compiled based on STATA Output (2023)

Based on the Z-scores, the above table predicts the bankruptcy of non-banking financial institutions (NBFIs) in Sri Lanka. The data shows that 13 NBFIs are in distress, suggesting a significant probability of insolvency. These are the following institutions: AFSL, ALLI, MERC, MBSL, CSF, CDB, BFN, PLC, AMF, PMB, CRL, SFIN, and VFIN. To prevent insolvency, these institutions should take prompt steps to enhance their financial condition. Eight NBFIs are in the grey zone, which indicates a moderate probability of failure. AMCL, AAF, CFIN, COCR, CALF, LOFC, SFCL, and LFIN are among these institutes. These institutions should also take preventive steps to strengthen their financial situation to avoid falling towards the distress zone. SEMB is the only NBFI in the safe zone, signifying a minimal chance of insolvency. To be stable, this institution should continue to follow strong financial practices.

Conclusion & Recommendations

This research examines the impact of financial distress on financial performance using data from 22 Listed licensed financial institutions over ten years from 2013 to 2022. The following findings were made based on the results of descriptive statistics, correlation coefficient analysis, and panel data regression analysis. According to the correlation research, the financial distress measure, Altman Z score, shows a positive relationship with both ROA and ROE. Expressed financial distress (Z score) corresponds positively with financial performance (ROE). Because the overall significance of the model is present, the regression results demonstrate that financial distress has a considerable influence on the Firm's financial performance. Panel data regression analysis, on the other hand, reveals that each financial institution has a significant impact of Financial Distress on the financial performance of the Financial Institutions.

The study's results indicate that financial distress exists in Sri Lankan financial institutions. Almost all of the companies experienced financial distress at some point throughout the ten years. Financial distress is impacted severely by financial institutions, as seen by poor financial performance in the context of severe financial distress. The limited number of companies secured from distress. It is assumed that businesses in the same industry would have comparable or not significantly different financial situations. The greater the level of distress, the lower the level of financial performance, and the lower the level of financial performance, the higher the level of financial distress. From 2013 to 2022, the majority of the companies' ROA, which showed financial performance, improved year after year. This suggests that their financial distress position improved with time. This might be attributed to a rise in assets, which increased retained profits, working capital, and equity book value. As a result, despite financial distress, most institutions' business performance improved year after year. Since financial distress is decreasing, there is optimism that there will be no financial distress in Sri Lankan finance businesses in a few years. It is also an indicator that corporations are taking steps to reduce financial distress. This will result in overall growth in the economy.

Supervisory bodies should turn their attention to the liquidity levels of these financial institutions. This distress situation is frequently caused by insufficient liquidity, which limits their investment opportunities and decreases financial stability. The Central Bank of Sri Lanka plays an important role in policy formulation, with a focus on financial stability. This proactive step can reduce the impact of financial distress on individual banks, hence protecting the financial system as a whole. This study has practical implications for listed licensed Financial Institutions in Sri Lanka, challenging them to gain a greater understanding of the effects of future financial distress on their performance. The research provides a framework for more informed investment decisions for investors and stakeholders. Understanding the impact of financial distress on financial performance can help with risk assessment and portfolio management methods.

these financial institutions should implement effective risk management strategies to mitigate the impact of financial distress. This may involve enhancing liquidity reserves, optimizing capital structure, and closely monitoring economic indicators that influence distress levels.

Financial institutions should strengthen their risk management frameworks to identify and address potential sources of financial distress proactively. This involves comprehensive stress testing, scenario planning, and the development of contingency plans. Improving operational efficiency and cost management can enhance financial stability. Institutions should regularly assess and optimize their business processes to ensure they operate efficiently even in challenging economic conditions. Improving operational efficiency is crucial for financial stability. Institutions should invest in technology, streamline processes, and adopt cost-effective strategies to ensure operational resilience, especially during economic downturns.

Limitations

The study's findings are contingent on the availability and accuracy of the data. Limitations may arise if there are data gaps, inaccuracies, or changes in reporting standards over the study period. Any discrepancies or differences in reporting standards over the study period may impact the robustness of the results. The study's scope is limited to internal financial metrics, and broader contextual factors should be considered. Caution is advised when generalizing the findings to other financial sectors or geographic regions.

Future Research

Future research could delve into sector-specific nuances within the financial industry to understand how the relationship between financial distress and performance varies across banking, insurance, and other sectors. Exploring the impact of macroeconomic factors, such as interest rates, inflation, and GDP growth, on the identified relationships would provide a more comprehensive understanding of the dynamics between financial distress and performance. Extending the study's time frame could uncover long-term trends and patterns that may not be apparent in a ten-year analysis.

References

- Aasen, M. R. (2011). Applying Altman's Z-Score to the Financial Crisis. *An Empirical Study of Financial Distress on Oslo Stock Exchange*. <http://hdl.handle.net/11250/169347>
- Adeyemi B. (2012). Bank Failure in Nigeria: A Consequence of Capital Inadequacy, Lack of Transparency and Non-Performing Loans. *Banks and Bank System*. 06(1), 99–109.
- Altman E., Hartzell J., & Peck M. (1995). *Emerging Markets Corporate Bonds: A Scoring System*. Kluwer Academic Publishers
- Altman, E. I. (1968a). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. In *The Journal of Finance* .23(04). <http://www.jstor.org/about/terms.html>.
- Altman, E. I., & Hotchkiss, E. (2010). *Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt*. John Wiley & Sons.
- Altman E.I. (1983). *Corporate Financial Distress and Bankruptcy*, John Wiley & Sons.
- Altman E.I. (2006). *Corporate financial distress and bankruptcy: predict and avoid bankruptcy, analyze and invest in distressed debt*. John Wiley & Sons.
- Andrade, G., Kaplan, S. N. (1998). How Costly is Financial (Not Economic) Distress? Evidence from Highly Leveraged Transactions that Became Distressed. *The Journal of Finance*, 53(5), 1443-1493.
- Appiah K.O. (2011). Corporate Failure Prediction: Some Empirical Evidence from Listed Firms in Ghana. *China-USA Business Review*, 10(01), 32–41.

- Baharin, I., & Sentosa, I. (2013). Capital Structure and the Post-Performance Factors of Malaysian PN 17 Firms. *International Journal of Business and Management Invention*, 02(03), 50-56.
- Beaver, W. H. (1966). Financial Ratios as Predictors of Failure. *Journal of Accounting Research*, 04, 71-111. <https://doi.org/10.2307/2490171>
- Becchetti, L., & Sierra, J. (2003). Bankruptcy Risk and Productive Efficiency in Manufacturing Firms. *Journal of Banking & Finance*, 27(11), 2099-2120.
- Betker, B. L. (1997). The Administrative Costs of Debt Restructurings: Some Recent Evidence. *Financial Management*, 26(04), 56-68.
- Bwisa, A. S. (2010). *Evaluation of applicability of Altman's revised model in prediction of financial distress in Kenya* (Doctoral dissertation, University of Nairobi, Kenya).
- Campbell, J. Y., Hilscher, J. D., & Szilagyi, J. (2011). Predicting Financial Distress and the Performance of Distressed Stocks. *Journal of Investment Management*, 09(02), 1-21.
- Chak, K.C., & Chen, N.F. (1991). Structural and Return Characteristics of Small and Large Firms. *The Journal of Finance*, 46(4), 1467-1484. <https://doi.org/10.1111/j.1540-6261.1991.tb04626.x>
- Cornell, B., & Shapiro, A. C. (1987). Corporate Stakeholders and Corporate Finance. In *Management*, 16(1), 5-14. <http://www.jstor.org/stable/3665543>
- D'Alessandro, S., Johnson, L., Johnson, L., Gray, D. M., & Carter, L. (2015). The market performance indicator: A macro understanding of service provider switching. *Journal of Services Marketing*, 29(4), 302-313.
- Dissanayake, D. M. N. S. W., & Anuranga, B. K. D. H. (2012). The determinants of return on assets: evidence from microfinance institutions in Sri Lanka. <https://ssrn.com/abstract=1990281> <http://dx.doi.org/10.2139/ssrn.1990281>
- Fauzi, H., & Idris, K. M. (2009). The Relationship of CSR and Financial Performance: New Evidence from Indonesian Companies. *Issues in Social and Environmental Accounting*, 03(01).
- Gerantonis N., Vergos K., & Christopoulos A. G. (2009). Can Altman Z-score Predict Business Failures in Greece? *Research Journal of International Studies*, 12, 21-28.
- Gilbert L. R., Menon K., & Schwartz K. B. (1990). Predicting Bankruptcy for Firms in Financial Distress. *Journal of Business Finance*, 17(01), 161-171.
- Gunathilaka, C. (2014). Financial Distress Prediction: A Comparative Study of Solvency Test and Z-Score Models with Reference to Sri Lanka. *IUP Journal of Financial Risk Management*, 11(3).
- Jayamaha, A. (2012). Efficiency of small financial institutions in Sri Lanka using data envelopment analysis. *Journal of Emerging Trends in Economics and Management Sciences*, 03(05), 565-573.
- Kariuki, H. N. (2013). *The effect of financial distress on the financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi). <http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/58672>
- Kang, J., & Kinyua, A. (2016). Effect of internal control systems on the financial performance of companies quoted in the Nairobi securities exchange. <http://hdl.handle.net/123456789/2135>
- Khrawish H.A. (2011). Determinants of Commercial Banks Performance: Evidence from Jordan. *International Research Journal of Finance and Economics*, 05(05), 19-45.
- Kim-Soon, N., Abusalah, A., Mohammed, E., Khalifa, F., & Agob, M. (2013). A Study of Financial Distress Companies Listed in the Malaysian Stock Exchange using Financial Liquidity Ratios and Altman's Model. *European Journal of Scientific Research*, 114(04), 513-525.

- Mamo, A. Q. (2011). Applicability of Altman (1968) model in predicting financial distress of commercial banks in Kenya. <http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/12760>
- Nanayakkara, K. G. M., & Azeez, A. A. (2014). Predicting Corporate Financial Distress in Sri Lanka With Reference to Z-Score Model. *Kelaniya Journal of Management*, 03(01), 1-22. DOI: [10.4038/kjm.v3i1.7474](https://doi.org/10.4038/kjm.v3i1.7474)
- Nimalathasan, B., & Pratheepkanth, P. (2012). Systematic Risk Management and Profitability: A Case Study of Selected Financial Institutions in Sri Lanka. *Global Journal of Management and Business Research*, 12(17), 40-43.
- Nirajini, A., & Priya, K. B. (2013). Impact of Capital Structure on Financial Performance of the Listed Trading Companies in Sri Lanka. *International Journal of Scientific and Research Publications*, 03(05), 1-9.
- Ongore, V.O., & Kusa, G.B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, 03(01), 237–252.
- Outecheva, N. (2007). Corporate Financial Distress: An Empirical Analysis of Distress Risk. Unpublished Doctorate Dissertation, University of St. Gallen.
- Pathirawasam, C., & Wickremasinghe, G. (2012). Ownership concentration and financial performance: the case of Sri Lankan-listed companies. *Corporate Ownership & Control*, 09(04), 170-177.
- Rajkumar, P. (2015). Using Altman's Model and Current Ratio to Assess the Financial Distress of Listed Companies in the Default Board of the Colombo Stock Exchange. *Scientific Research Journal (SCIRJ)*, III.
- Ray, S., & Mahavidyalaya, S. (2011). Assessing Corporate Financial Distress in Automobile Industry of India: An Application of Altman's Model. *Research Journal of Finance and Accounting*, 02(03), 155-168.
- Samarakoon, L. P., & Hasan, T. (2003). Altman's Z-Score Models of Predicting Corporate Distress: Evidence from the Emerging Sri Lankan Stock Market. *Journal of the Academy of Finance*, 01, 119-125.
- Sami, B.J. (2013). Financial Distress and Bankruptcy Costs. *Global Strategies for Banking and Finance*, 369–379. [10.4018/978-1-4666-4635-3.ch024](https://doi.org/10.4018/978-1-4666-4635-3.ch024)
- Sivathaasan, N., & Rathika, S. (2013). *Capital Structure and EPS: A study on Selected Financial Institutions Listed on the Colombo Stock Exchange (CSE) in Sri Lanka*. *European Journal of Business and Management*, 05(14), 69-73.
- Tan, T. K. (n.d.). *Financial Distress and Firm Performance: Evidence from the Asian Financial Crisis*. *Journal of Finance and Accountancy*, 11(01).
- Titshabona N. (2014). Predicting Corporate Failure: Insights from the financial sector in Zimbabwe. *International Journal of Economics*, 02(11).
- Wang Y., & Campbell M. (2010). Business Failure Prediction for Publicly Listed Companies in China. *Journal of Business and Management*, 16(01), 75–88.
- Whitaker, R.B. (1999). The Early Stages of Financial Distress. *Journal of Economics and Finance*, 23(2), 123–133.
- Yim J., & Mitchel H. (2005). A comparison of corporate distress prediction models in Brazil. *Nova Economia*, 15(01), 73–93.