FINANCIAL SOUNDNESS AND GROWTH:
Special reference to listed Manufacturing Companies (Capital Goods) in Sri Lanka

Dushanthi Kanchnamala kalubowila

208584H

M.Sc. in Financial Mathematics

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Thesis/Dissertation submitted in partial fulfillment of the requirement for the degree M.Sc. in Financial Mathematics

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DECLARATION

I declare that this is my own work, and this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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The above candidate has carried out research for the Masters dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor: Dr. Dimithri Devinda Jayagoda

Signature of the Supervisor: Date:05-02-2025

DEDICATION

I would like to dedicate this dissertation to

My loving parents

who have been

my constant source of inspiration

ACKNOWLEDGMENT

I am sincerely grateful for the opportunity to submit this research on Financial Soundness and Growth in the Manufacturing sector: Capital Goods of the CSE. I send my heartfelt appreciation to my supervisor, Senior Lecturer Dr. Dimithri Devinda Jayagoda, who provided essential support throughout the research process. I would also like to express my sincere appreciation to Dr. J.A.D. Muran Dencil, Head of the Department, for his unwavering support.

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ABSTRACT

The financial strength of listed companies is a critical concern for various stakeholders, including investors, management, and regulatory bodies. This study aims to explore the impact of financial soundness on the growth of listed manufacturing companies in the Capital Goods sector in Sri Lanka. Specifically, the research focuses on ten manufacturing companies traded on the CSE over a period of five years (2019-2023). The primary research question addresses the relationship between financial soundness and growth in these manufacturing companies: Capital Goods.

Financial soundness is measured using the Z-Score (Altman's model), a widely recognized indicator of financial health. Growth is assessed through three key metrics: market value growth, profit growth, and current ratio growth. In this study, financial soundness serves as the independent variable, while growth metrics are the dependent variables. The analysis employs descriptive statistics and simple linear regression techniques to examine these relationships. Secondary data is sourced from the financial reports of the selected companies for the specified period.

The findings of this study reveal there is a significant positive relationship between financial soundness and net profit growth, indicating that financially robust companies tend to experience higher net profit growth. The analysis also uncovered a significant relationship between financial soundness and market value growth. This implies that financially sound companies are more likely to increase their market valuation, potentially due to investor confidence and their ability to perform well in the market. The study also shows a substantial association between financial soundness and current ratio increase. The current ratio reflects a company's capacity to satisfy its short-term obligations, so this finding suggests that financially sound companies are also improving their liquidity over time.

The study's significance lies in its contribution to the understanding of financial health and growth dynamics within the context of an emerging market. Policymakers and corporate managers can leverage these insights to develop strategies that enhance financial stability and drive sustainable growth. Additionally, this research addresses a gap in the literature concerning the Sri Lankan manufacturing sector specially to Capital goods, providing a foundation for future studies.

However, several limitations must be acknowledged. The study's reliance on secondary data may introduce biases related to data accuracy and reporting standards. Moreover, the analysis is confined to a five-year period, which may not capture long-term trends and cyclical economic variations. The sample size of ten companies, though reflective of the sector, limits the generalizability of the findings. Future research could expand the sample size, extend the analysis period, and incorporate additional variables to provide a more comprehensive understanding of the financial soundness-growth nexus.

In conclusion, this study underlines the complex relationship between financial health and growth within Sri Lanka's manufacturing sector, providing valuable insights for stakeholders focused on promoting economic development and enhancing corporate resilience.

Keywords**:** *Altman Model, financial soundness, growth*

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LIST OF ABBREVIATIONS

Abbreviation	Description
CSE	- Colombo Stock Exchange
GDP	- Gross Domestic Production
GICS	- Global Industry Classification Standard
MDA	- Multiple Discriminant Analysis
WC	- Working Capital

CHAPTER 01

INTRODUCTION

1.1 Background of the Research

Every stakeholder is keenly interested in the financial health of listed companies. Investors prioritize financial strength as their decisions hinge on it. The management of listed companies strives to maintain a robust financial position and positive future trends to attract investors. Achieving this objective requires effective management control, sufficient working capital, and the establishment of reasonable goals. Manufacturing companies fortify their financial positions to foster overall company growth, which, in turn, influences the country's GDP. This research aims to discern the relationship between financial soundness and growth in the manufacturing sector (Capital Goods) of Sri Lanka.

As of May 31, 2024, the CSE has 284 companies spanning 20 GICS industry groups. The Manufacturing sector: Capital Goods stands out as a major player in the CSE.

The term "capital goods," as used by the CSE, refers to assets used in the production of other goods or services. These include machinery, tools, buildings, and equipment that are essential for manufacturing, construction, and various industrial activities. Companies in the capital goods sector manufacture or distribute these items, playing a vital role in supporting the broader economy by enabling the production of consumer goods and services.

The financial strength and growth of manufacturing companies are pivotal to the wealth and development of the Sri Lankan economy. These companies operate on a global scale, facing infinite opportunities and challenges. Therefore, they require substantial financial strength to sustain their business operations. The financial soundness of manufacturing companies significantly influences their contribution to total employment in Sri Lanka.

Various metrics can be employed to gauge the financial soundness of a company. Typically, profitability, liquidity, and solvency stand out as key indicators. Profitability assesses a organization’s capability to generate profit, while liquidity measures the company’s capacity to utilize available resources for short-term operations. Solvency

evaluates a company's capacity to pay long-term financial obligations. Company growth can be analyzed through three dimensions: profit growth, current ratio growth and Market value growth. This study specifically focuses on identifying the relationship between financial soundness and the growth of listed capital good companies on the CSE.

Achieving company goals and objectives significantly hinges on accurate information about Financial Soundness and Growth. The challenge lies in effectively managing financial soundness to attain these growth targets. Interestingly, some manufacturing companies exhibit commendable financial soundness yet struggle to translate it into improved overall company growth.

A review of existing research reveals varying perspectives on the relationship between financial soundness and company growth. There are few empirical studies exploring the impact of short-term financial strength on organizational growth. Research from Western countries indicates a significant link between long-term financial strength and the growth trajectory of businesses. Many experts have discovered a strong correlation between capital structure and growth. However, specific research by Harris and Raviv (1991) and Myers and Majluf (1984) show a negative association between debt-equity mix and profit growth.

Despite this wealth of research, there is a notable absence of comprehensive studies on the financial soundness of listed companies in Sri Lanka. Furthermore, investigations into the impact of financial soundness on organizational growth are rare within the Sri Lankan context. These discrepancies in research findings create a distinct gap. Given the centrality of financial soundness in the realm of corporate finance, this research addresses the gap with a focus on "Financial Soundness and Growth of the Manufacturing sector: Capital Goods." The primary research problem centers on unraveling the relationship between financial soundness and growth in manufacturing companies.

1.2 Research Question and Objectives

1.2.1 Research question

The following research questions will be addressed in this research study,

- What is the relationship between financial soundness and growth in manufacturing companies: Capital Goods?
- Does financial soundness affect the profit growth in manufacturing companies: capital Goods?
- Does financial soundness affect the market value growth in manufacturing companies: Capital Goods?
- Does financial soundness affect the current ratio growth in manufacturing companies: Capital Goods?

1.2.2 Research Objectives

The researcher intends to attain the following objectives.

- Determine the financial stability of listed manufacturing enterprises in Capital Goods.
- Analyse listed manufacturing companies' financial health using the Altman model for Capital Goods.
- Recognize the link between financial stability and growth in manufacturing enterprises, specifically Capital Goods.

1.3 Research Methodology

This section investigates the connection between financial stability and the growth of capital goods companies.

- Population and Sample Selection

This study focuses on the manufacturing industry in Sri Lanka, comprising approximately 29 registered companies (Under Capital Goods). From this pool, the researcher randomly selects a representative sample of 10 companies using a Simple Random Sampling method.

- Data Analysis Techniques

To assess financial strength, we employ Multiple Discriminant Analysis (MDA) models developed by Altman (1968). Subsequently, the researcher utilizes Z-Score approach, Descriptive Statistics, and Simple Linear Regression analysis techniques to interpret the results.

- Data Collection

Data collection of this study primarily relies on secondary sources, specifically audited financial statements. In this study extract relevant information from the annual reports of manufacturing companies listed on the CSE in Sri Lanka. The selected documents include the statement of comprehensive income and the statement of financial position.

- Variables

In this research, the researcher examines two types of variables: independent and dependent. The independent variables, which may impact on the growth of manufacturing companies, are multiple, rendering this study multivariable.

This methodology is designed to provide an extensive knowledge of the financial dynamics and growth patterns inside the manufacturing sector: Capital Goods, ensuring a robust and insightful analysis.

1.4 Significance of the Study

Understanding the financial health of a business is essential for various stakeholders such as owners, managers, investors, and lenders. Measurement of a company's financial strength typically revolves around key areas like profitability, liquidity, and solvency.

- Importance for Stakeholders

The significance of this study extends to policymakers, academics, and business professionals. Policymakers in Sri Lanka can use the substantive findings to refine

economic policies, especially considering the direct impact of the manufacturing sector: Capital Goods on the overall economy. Insights from the study are valuable for shaping policies that encourage business growth, influence tax policies, and contribute to the well-being of the entire economy.

- Impact on Business Professionals

Business professionals, particularly in the manufacturing sector: Capital Goods, stand to benefit significantly. The study's findings can be directly applied to organizational practices, aiding managers in addressing financial challenges. This research is relevant not only to the manufacturing industry but also to similar organizations, offering insights that help managers and stakeholders analyses the impact of financial soundness on growth. It provides a framework to identify opportunities, threats, strengths, and weaknesses related to financial strength.

- Academic Contribution

Academically, this research helps to the advancement of knowledge by offering significant insights on the connection between financial soundness and growth. It serves as a significant resource for scholars, helping to deepen their understanding of these financial dynamics. Additionally, it lays the groundwork for future study in the field of financial dynamics.

In conclusion, the research is extremely important for a wide range of stakeholders, as it provides practical applications for business professionals, informs policymakers, and contributes to the academic discourse on financial stability and growth.

1.5 Limitations of the Study

While performing this study, multiple obstacles were encountered, which may impact on the comprehension of the findings.

- Industry Focus

  The study primarily concentrates on the manufacturing sector: Capital Goods in Sri Lanka. Other industries such as banking, insurance, distribution, and retailing are not included, this limits the findings' ability to generalize to a broader economic setting.

- Reliance on Secondary Data

  The research relies on secondary data, introducing a potential limitation in terms of accuracy. While efforts were made to ensure data reliability, the inherent nature of secondary data may not guarantee 100% accuracy.
- Incomplete Annual Reports

  Some companies did not disclose certain information in their annual reports, impacting the study's comprehensiveness. This limitation arises from the lack of transparency in reporting, preventing access to all necessary information.
- Time Constraints

  The researcher faced time constraints during the study, limiting the period available for research activities. This constraint may have impacted the depth and breadth of the study, potentially influencing the ability to capture a more extensive view of the subject.
- External Factors

  External factors, such as inflation, Covid 19 may pose a challenge in making future predictions for the manufacturing sector: Capital Goods. The relatively short period for research may limit the study's ability to account for long-term economic impacts.
- Focus on Financial Aspects

  The main attention given on the financial aspects of the growth process of the selected manufacturing companies. Other dimensions, such as operational or strategic factors, are not extensively covered, providing a more focused yet potentially incomplete perspective.

  Acknowledging these limitations is critical to understanding the scope and potential implications of the study, providing context for the interpretation of results, and guiding future research efforts.

1.6 Summary and Chapter Organization

The first chapter introduces and emphasizes the importance of the study, outlining the principal objective of identifying the relationship between financial soundness and growth. This study focuses on ten selected capital good companies listed on the CSE and utilizes the Z–score approach, descriptive statistics, and simple linear regression

analysis for analysis. The study's significance extends to policymakers, academics, and business professionals.

The structure of the study comprises five chapters. In Chapter One, the background, significance, research problems, questions, objectives, and methodology are discussed. Chapter Two involves an extensive literature review, exploring existing research and theories related to financial soundness and growth in the manufacturing sector: Capital Goods. Chapter Three details the research methodology, including information on the population and sample, conceptual framework, data collection methods, and analysis techniques. Chapter Four presents the findings and provides a discussion based on the chosen methodology. Finally, Chapter Five concludes the study by summarizing the key findings, offering concluding remarks, and advocating potential directions for future research.

CHAPTER 02

LITERATURE REVIE

2.1 Introduction

This chapter primarily explores the theoretical foundations related to Financial Soundness and Growth within listed manufacturing companies under Capital Goods in the CSE. To achieve the above objective, this chapter will be organized in the following sequence:

Theoretical Background of Financial Strength

An initial exploration into the theoretical foundations of financial strength. This involves understanding the various frameworks and concepts that contribute to evaluating a firm's financial stability.

Theoretical Background of Growth

After the discussion on financial soundness, the chapter will delve into the theoretical background of growth. This includes examining key theories and models that explain the factors influencing the growth trajectory of manufacturing firms.

Previous Findings by Researchers

Building upon the theoretical foundations, the chapter will review and discuss findings from previous researchers. This step is crucial to contextualize existing knowledge and identify gaps that the current study aims to address.

By structuring the chapter in this manner, the reader will be guided through a logical progression from understanding the theoretical foundations of financial soundness and growth to a synthesis of relevant findings from prior research. This approach contributes to a comprehensive understanding of the theoretical landscape surrounding the chosen research focus.

2.2 Theoretical Framework and Literature

2.2.1 Financial Strengths

Financial soundness indicators are composite measures designed to monitor and assess the robustness and stability of financial institutions, markets, and corporate and household entities. These indicators serve as crucial benchmarks for evaluating the overall health and stability of the financial landscape. Financial soundness encompasses both aggregated data on financial institutions and indicators that reflect the market environment in which these institutions operate (International Monetary Fund, 2006).

Among the various tools used to measure financial soundness, the **Altman Z-Score model** stands out as a widely recognized and effective method for evaluating corporate financial health.

Developed by Edward Altman in 1968, the Z-Score model is specifically constructed to forecast corporate bankruptcy and assess financial distress. By merging essential financial statistics into a single predicted score, the model gives a thorough and trustworthy assessment of the financial health of a business and risk of insolvency. Its simplicity, reliability, and applicability across various industries make it an invaluable tool for analyzing financial soundness at the corporate level, complementing broader indicators that monitor financial markets and institutions.

The model incorporates five critical financial metrics:

1. Working Capital to Total Assets – A indicator of liquidity that indicates a company's short-term financial health and ability to meet its obligations.
2. Retained Earnings to Total Assets – Reflects profitability and the capacity of the company to reinvest earnings for future growth.
3. Earnings Before Interest and Taxes (EBIT) to Total Assets – A indicator of operating efficiency and the firm’s ability to generate profits from its assets.
4. Market Value of Equity to Total Liabilities – A solvency indicator that assesses the company’s financial stability and risk exposure.
5. Sales to Total Assets – Evaluates asset turnover, highlighting the efficiency of asset utilization in generating revenue.

The Z-Score classifies companies into three zones:

$Z > 2.99$: Safe region, with a low risk of insolvency.

$1.81 \leq Z \leq 2.99$: The grey zone indicates a moderate probability of financial trouble.

$Z < 1.81$: Distress zone, indicating high probability of insolvency.

The Altman Z-Score model has been adapted over time to accommodate variations in industry dynamics, such as manufacturing, non-manufacturing, and emerging markets. Its enduring relevance makes it a critical framework for assessing credit risk, guiding investment decisions, and informing strategic planning.

2.2.2 Theoretical Background of Altman Model

Altman (1968) proposed a methodology to forecast the bankruptcy of a business. Corporate insolvency and bankruptcy are terms that describe severe financial distress within a business, but they have distinct technical implications. Insolvency typically indicates that a business is inability to fulfill its current financial commitments, suggesting a liquidity crisis. Under Greek Law, insolvency can sometimes be a temporary condition; however, it frequently leads to proceedings under the Bankruptcy Code. On the other hand, bankruptcy refers to a more severe and ongoing financial failure. This situation arises when a company's total Liabilities surpass the market value of its total assets, resulting in a negative net worth.

The bankruptcy prediction holds significant implications for various stakeholders invested in a business, including shareholders, managers, suppliers, employees, government entities, and the community. A bankruptcy prediction model aims to determine a correlation connecting business bankruptcy and a series of financial ratios derived from a firm’s financial report. The research conducted by Altman focuses on evaluating the analytical quality of ratio analysis. Altman's approach involves the development of multiple discriminant analyses, wherein a set of financial ratios is amalgamated to predict corporate bankruptcy. Altman argues that analyzing ratios within a multivariate framework enhances their statistical significance compared to the traditional sequential ratio comparison method. The study initially sampled sixty-six companies, with Altman organizing key variables into five standard ratio categories: liquidity, profitability, leverage, solvency, and activity. A discriminant function was

then created by assigning weights to these variables. This function includes ratios such as WC to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to book value of total debt, and sales to total assets.

Since Altman's groundbreaking study in 1968, the prediction of financial trouble has not reached a definitive conclusion. Much of the financial distress literature has concentrated on identifying explanatory variables with the ability to distinguish between financially distressed companies and financially stable ones, at least a year before bankruptcy. Altman's discriminant analysis (1968) remains a robust statistical method that effectively differentiates between financially strong and weak companies.

In 1977, Altman, Haldeman and Narayanan introduced an innovative model designed to identify the risk of bankruptcy in corporations. The framework is based on the financial statements from the year before the failure and takes into account alternative models from years two through five preceding failures. The outcomes of this model underscore its potential significant applications in creditworthiness assessment, portfolio management, and both external and internal performance analysis.

Altman, along with Haldeman and Narayanan, introduced the 'ZETA analysis,' a refined model that builds on Altman's earlier work by utilizing financial ratios and multiple discriminant analysis. The ZETA model emphasizes five key financial ratios: 'WC to total assets,' 'earnings before interest and taxes to total assets,' 'market value of equity to book value of total debt,' and 'sales to total assets.' This model enhances the original z-score by incorporating seven variables that more effectively predict corporate bankruptcy: return on assets, earnings stability, debt service capacity, cumulative profitability, liquidity, capitalization, and firm size.

Balasundaram (2009) examined the financial stability of listed manufacturing companies over a five-year period. In his study, (Gunathilaka, 2014) conducted from 2003 to 2007, involved a sample of ten listed companies. By applying Altman's Z-score model, the study revealed that these companies were approaching financial distress. To prevent full bankruptcy, the companies' financial health needed immediate improvement. This could be achieved by ensuring sufficient WC, employing

experienced and qualified management, enhancing accountability, and encouraging better employee performance.

Uchenna and Okelue (2012) utilized ratio analysis and the Multi Discriminant Analysis (MDA) model as effective tools for forecasting and identifying struggling businesses in different sectors of the Nigerian economy, including manufacturing. By using balance sheet-based ratios, they analyzed specific financial data to evaluate firm performance, focusing on key aspects such as profitability, interest coverage, debt management, WC, and liquidity.

Uchenna and Okelue emphasized the importance of their findings by underscoring that ratio analysis not only enables the prediction of business failure but also acts as a critical early warning signal. This predictive insight is particularly valuable as it can alert businesses to potential failures one to two years before it occurs, allowing time for corrective actions.

Their study, spanning five years and including eleven companies from manufacturing, oil markets, and conglomerates sectors in the Nigerian economy, underscored the vital role of multi-discriminate analysis as a tool for evaluating the financial health of business firms in Nigeria. The researchers emphasized the relevance of the multivariate ratio model proposed by Altman in 1968, particularly the 'z' score. According to their findings, failing enterprises might be identified two to three years before they failed, suggesting that the 'z' score is an effective and versatile model that can be used to industries such as manufacturing and petroleum marketing in Nigeria.

Shirata (1998) argued that to a certain extent, profitability and liquidity ratios can serve as predictors of bankruptcy. However, he found that these financial ratios could not effectively reveal the financial distress of Japanese firms. Consequently, he decided to exclude profitability and liquidity ratios from the variables selected for his study.

The multivariate discriminant analysis model anticipated in this study is positioned as a universal model, independent of industry and size considerations. The research sample encompasses 686 bankrupt and 300 non-bankrupt enterprises. Shirata (1998) rigorously tested the selected model's efficacy in predicting bankruptcy. To further validate the model, the researcher added eleven Japanese bankrupt firms not initially included in the original sample. Shirata (1998) tested bankruptcy using three distinct

methods: the quadratic model, the normal kernel method, and the multivariate discriminant analysis model.

Shirata (1998) concluded that the linear model of discriminant analysis was more accurate and superior for forecasting bankruptcy in Japan than the quadratic model and the normal kernel technique.

Ohlson (1980) presented a model for corporate failure prediction. Ohlson (1980) employed the econometric methodology of conditional logistic regression to predict company failure. He has used data sets from 1970 to 1976 for the study. He observed 105 bankrupt firms and 2,058 non-bankrupt firms. Also, he applied nine variables for the prediction. Ohlson (1980) separated his analysis from prior investigations since the data for bankrupt enterprises were not obtained from Moody's Guideline. The data were collected from the 10-K financial statements as they were published at the time. This technique has one enormous advantage: the reports specify when they were made available to the public, allowing one to ascertain whether the enterprise went insolvent before or after the date of distribution. This study previously did not mention the timing issue. The key findings of this study are as follows. The scale of the firm, the measure of the financial framework, the measure of effectiveness, and the measure of current liquidity are all important factors in determining the chance of collapse. Models developed and tested by previous studies were overstated. In this investigation, the error in prediction rate is larger than in the original Altman (1968) study and the other studies.

In their study of financial ratios and bankruptcy prediction, Wang and Campbell (2010) re-examined the well-known Ohlson (1980) model of company failure prediction. The Ohlson model was used to Chinese publicly traded enterprises. For the application of the Ohlson model, they gathered data from Chinese publicly listed companies from 1998 to 2008. Wang and Campbell (2010) expanded their study to non-industrial firms even though Ohlson (1980) considered only industrial firms. They have used econometric methodology for logistic analysis. The results of the study confirmed that delisting is a predictable event.

Several models have been established in the academic literature utilizing approaches such as MDA, logit models, hazard models, and neural networks. Amidst the variety

of available models, both practitioners and researchers frequently prefer well-established models, such as those created by Altman (1968) and Ohlson (1980).

Recent research has aimed to enhance the precision of the Altman model. Gagan Kukreja, Sanjay M. Gupta, Adel Mohammed Sarea, and Sumathi Kumaraswamy (2020) explored the effectiveness of the Altman Z-score for detecting corporate fraud. Their findings suggested that the Altman Z-score was more effective than the Beneish M-score in identifying financial statement fraud, specifically in the case of Comscore, Inc. This study highlighted the Z-score's robustness in forensic accounting and fraud detection. Singh and Singla's 2023 study re-evaluated the Altman model's coefficients with up-to-date data and developed a new logistic regression-based model. Their results specified that the new prototype surpassed the re-estimated Altman model in predictive accuracy, proving to be more effective in forecasting financial distress and preventing future bankruptcies.

Another research was conducted by Kanellos Toudas, Stefanos Archontakis, and Paraskevi Boufounou (Toudas, (2024)) regarding bankruptcy prediction models, including the Altman Z-score, focusing on the construction sector in Greece. They found that while Altman's predictive model showed low overall predictability in the years leading up to bankruptcy, it remained a useful tool when compared with other models like Ohlson and Zmijewski.

2.2.3 Altman Model Critical Financial Ratios

The Altman Z-Score model is a commonly used method for assessing the likelihood of bankruptcy or financial distress, with its effectiveness largely due to its incorporation of several critical financial metrics. These vital measurements offer valuable insights into a company's financial health, operational efficiency, and ability to manage risk. As outlined, the model draws on factors such as profitability, liquidity, leverage, and market value, using specific ratios to quantify these elements.

a. Working Capital to Total Assets

This ratio is an important indicator of a company's operational efficiency and financial health. This ratio provides insights into how well a company manages its short-term assets and liabilities relative to its total assets, indicating the firm's ability to cover

short-term obligations and invest in its operations. According to Gitman (2003), effective WC management ensures a company can maintain a balance between profitability and liquidity. This ratio is particularly useful for assessing the liquidity position of firms in various industries. A higher ratio suggests a robust liquidity position, while a lower ratio may indicate potential liquidity issues (Ross, Westerfield, & Jaffe, 2016).

Several empirical studies have examined the relationship between WC management and firm performance. Shin and Soenen (1998) found that efficient WC management positively impacts a firm's profitability. Their study concluded that companies with shorter cash conversion cycles are generally more profitable.

Lazaridis and Tryfonidis (2006) examined how WC management affects the profitability of companies listed on the Athens Stock Exchange. Their findings revealed a notable connection between profitability, represented by gross operating profit, and the cash conversion cycle. They concluded that effective management of WC could enhance profitability.

The WC to total assets ratio is a vital indicator of a firm's liquidity and operational efficiency. Both theoretical and empirical studies underscore the importance of effective WC management in enhancing firm performance and profitability.

b. Retained Earnings / Total Assets

The ratio of retained earnings (RE) to total assets is a significant indicator of a firm's financial health and sustainability. Retained earnings are the total amount of the net profit that a company has reinvested in its operations rather than paid out to shareholders as dividends. Retained earnings are essential for a company's growth and development. Pandey (1994) emphasized that as a company grows, it logically requires a significant amount of WC, which often comes from retained earnings. The accumulation of retained earnings reflects a firm's profitability over time and its ability to sustain operations without relying excessively on external financing.

A higher ratio of RE to total assets suggests that a company has been successful in generating profits and retaining a substantial portion of these profits for reinvestment. This reinvestment can be used for various purposes, including expanding operations,

paying down debt, or enhancing shareholder value through strategic initiatives (Myers & Majluf, 1984)

Empirical studies support the importance of retained earnings in corporate financial strategy. For instance, Zhao and Wijewardana (2012) found that retained earnings significantly contribute to the financial strength and growth of firms. Their study, conducted on Sri Lankan companies, revealed a positive correlation between retained earnings and various measures of corporate growth, including sales, profits, and asset accumulation.

Furthermore, the relationship between retained earnings and total assets has been studied extensively in different economic contexts. Companies with a high ratio of retained earnings to total assets tend to exhibit lower financial distress and higher resilience during economic downturns (Altman, 1968)

The ratio of retained earnings to total assets is an important indicator for determining a company's financial health, strength, and development potential. Higher retained earnings indicate a firm's ability to generate and reinvest profits, providing a robust foundation for sustainable growth. This ratio not only reflects a firm's historical performance but also its strategic approach to utilizing internal funds for future opportunities and challenges. As evidenced by various studies, maintaining a healthy balance of retained earnings is crucial for long-term success and financial resilience.

c. Earnings before Interest and Taxes / Total Assets

The Earnings Before Interest and Taxes (EBIT) to Total Assets ratio is a key financial metric that evaluates a company's capacity to generate earnings from its assets, excluding the effects of interest and taxes. This ratio is crucial for evaluating operational efficiency and overall financial health.

Several studies have examined the importance of the EBIT to total assets ratio in predicting financial performance and stability:

Profitability and Growth: Research has shown a positive correlation between the EBIT to total assets ratio and company profitability. Firms with higher ratios tend to have better profit margins and higher growth rates, as they are more efficient in utilizing their assets to generate earnings (Myers & Majluf, 1984).

Zhao and Wijewardana (2012), have found that companies with higher EBIT to Total Assets ratios tend to exhibit stronger financial performance, which can be attributed to their efficient asset management and operational effectiveness.

In conclusion, the EBIT to total assets ratio is a pivotal measure in financial analysis. It provides valuable insights into a company's operational efficiency, profitability potential, and financial stability. Both academic literature and empirical studies underscore their significance in evaluating and predicting corporate performance.

d. Market Value of Equity / Book Value of Total Debt

The Market Value of Equity to Book Value of Total Debt ratio is a crucial financial metric that provides insights into a company's capital structure and financial health. This ratio compares the market perception of a company's equity to its actual debt obligations, offering valuable information to investors, creditors, and financial analysts.

This ratio helps in understanding the degree of financial leverage a company is using. A higher ratio indicates that the market values the company's equity significantly higher than its debt, suggesting lower financial risk and greater investor confidence (Pandey, 1994).

For investors, this ratio is an indicator of how the market values equity relative to the company's debt. A higher ratio can make a company more attractive to investors, as it suggests strong market confidence in the company's future prospects (Myers & Majluf, 1984).

This ratio is crucial for assessing financial risk. Companies with lower ratios may face higher financial risk and potential challenges in raising capital or servicing debt, whereas those with higher ratios are seen as financially stable (Zhao & Wijewardana, 2012).

All in all, the Market Value of Equity to Book Value of Total Debt ratio is a vital tool in financial analysis. It provides a clear picture of a company's leverage, financial health, and market perception. Both academic research and practical applications highlight its importance in evaluating and predicting corporate performance.

e. Sales / Total Assets

The Sales to Total Assets ratio, also known as the Asset Turnover Ratio, measures a company's efficiency in using its assets to generate sales. It is an important financial metric that helps in assessing how effectively a firm is utilizing its resources to produce revenue. This ratio is crucial for both internal management and external stakeholders to understand the operational performance of a company.

Managers use the Sales to total assets ratio to monitor and improve operational efficiency. By analyzing this ratio, they can identify underutilized assets and take corrective actions to enhance performance (Hampton, 1993). Investors rely on this ratio to make informed investment decisions. A company with a high asset turnover ratio is generally considered a good investment because it indicates effective asset management and the potential for high returns (Myers & Majluf, 1984).

Numerous studies have explored the significance of the Sales to Assets ratio in financial analysis and its impact on firm performance:

Asset Utilization and Firm Growth: Research indicates a strong correlation between high asset turnover ratios and firm growth. Efficient asset utilization leads to higher sales, which in turn can drive growth and expansion (Pandey, 1994).

Financial Health: Studies have shown that firms with higher Sales to total assets ratios generally exhibit better financial health. This is because these firms can generate more revenue from their assets, leading to higher profitability and sustainability (Altman, 1968).

This ratio is often used in comparative analysis to benchmark a company against its competitors. Firms with higher ratios are typically seen as more efficient and competitive within their industry (Zhao & Wijewardana, 2012).

In conclusion, the Sales to Total Assets ratio is a vital tool in financial analysis, offering insights into a company's operational efficiency, performance, and financial health. It is widely used by managers, investors, and creditors to evaluate and compare the effectiveness of asset utilization in generating sales.

2.2.4 Growth

Corporate growth could be measured using the increase in market value, increase in profits, and increase in current ratio.

a. Market value Growth

Market value growth refers to the increase in the overall valuation of an entity, asset, or industry within a specified period, reflecting its performance and perceived worth in the market. This growth is often driven by factors such as increased revenue, improved profitability, favorable market conditions, innovation, and strategic investments. It serves as a critical indicator of financial health and sustainability, enabling stakeholders to assess the potential for long-term success and competitiveness. Analyzing market value growth provides valuable insights into trends, opportunities, and risks, contributing to informed decision-making and strategic planning.

b. Profit Growth

Profit growth represents the increase in a company's net earnings over time, reflecting its ability to enhance profitability through various strategic and operational improvements. It is a crucial indicator of a company's financial health, efficiency, and potential for long-term sustainability. By tracking profit growth, businesses can gauge their success in increasing revenues, controlling costs, and optimizing resource utilization.

c. Current Ratio Growth

Current ratio growth indicates an improvement in an organization’s ability to meet its short-term obligations with its current assets. This metric is a key measure of liquidity and financial stability, as it reflects how efficiently a company can manage its WC. A growing current ratio suggests enhanced operational efficiency, better asset utilization, or a reduction in liabilities, contributing to improved financial health. Monitoring current ratio growth over time is crucial for stakeholders to assess the organization’s ability to withstand financial challenges and maintain solvency while supporting sustainable growth.

2.2.5 Theoretical Background of Growth

Donaldson (1993) identified three major factors on long-term funds: retained earnings, long-term indebtedness, and the issue of fresh equity capital. These sources, with their unique characteristics, contribute to the capital structure of a business firm, each bearing different weights in the overall composition. The capital structure, comprising the combination of these three factors, is essential for a firm to effectively finance its assets. The determination of the mix between debt and equity is a critical process influenced by the evaluation of internal and external factors impacting the operational environment of the business. Understanding the dynamics of capital structure becomes imperative when analyzing the operating performance of a firm. Financing decisions, encompassing the choice between different funding sources, hold paramount importance. These decisions, integral to financial management, guide financial managers in determining how to acquire funds and precisely when these funds are needed to align with the investment decisions of the business firm. Thus, financing decisions emerge as a pivotal function, surpassing the significance of many other decision-making functions in the realm of financial management.

According to Hampton (1993), and Pandey (1994), a company should maintain appropriate short-term financial strength. This can be achieved by managing a firm's current assets and current liabilities. Then the current assets of the firm should be adequate to cover current liabilities to maintain a reasonable safety margin. Pandey (1994) emphasizes that short-term financial strength has a great effect on a firm's profitability, liquidity, and structural health. A financial manager plays a pivotal role in safeguarding the financial health of a firm by carefully managing its current assets and current liabilities, collectively known as WC. This strategic approach is essential to ensure not only high profitability but also proper liquidity and sound structural health. The optimal management of WC allows a firm to achieve three overarching goals. First and foremost, it ensures adequate liquidity, providing the firm with the necessary resources to meet its short-term obligations and capitalize on immediate opportunities. Secondly, effective WC management minimizes risk, shielding the firm from financial uncertainties and unforeseen challenges that may arise in the short term.

By maintaining a delicate balance between current assets and current liabilities, a financial manager not only safeguards the immediate financial well-being of the firm

but also sets the stage for long-term success. This strategic focus on WC is integral to fostering resilience, adaptability, and sustained profitability in the dynamic landscape of business operations.

As explained by Hampton (1993), two classifications need to concentrate on the financial managers. The first classification scheme acknowledges that finance is concerned with establishing the appropriate framework to maximize profit at a given degree of risk. The second classification scheme recognizes that finance deals with creating adequate liquidity for a firm.

Pandey (1994) asserts that with the growth of a company, a substantial amount of WC is logically expected to be necessary. The precise relationship between a company's business volume growth and the corresponding increase in its WC, however, is challenging to determine. Both Pandey (1994) and Hampton (1993) elaborate on the belief held by financial managers that the growth of a firm involves an expansion in both size and activities over the long term.

Pandey (1994) specifically highlights Earnings per Share (EPS) as a pivotal indicator for investors. The variability of EPS is contingent upon the growth and stability of sales, and the degree of EPS concerning sales is influenced by the magnitude of firm growth. Hampton (1993) distinguishes between internal growth, referring to a firm's ability to expand its size and operations independently over the long run, and external growth, indicating the capacity to acquire the business operations of other firms. The term 'acquisition,' as explained by Hampton (1993), generally refers to the takeover of assets in the process of external growth. According to Hampton (1993), several benefits accrue when a firm pursues external growth, including economies of scale, risk reduction, immediate cash inflows, and rapid expansion. Firms typically seek growth for reasons such as diversification, financial stability, operating economies, and capitalizing on profit from turnaround situations.

In their study titled "Financial Leverage, Firm Growth, and Financial Strength: Evidence in Sri Lanka," Bei Zhao and Wijewardana (2012) aimed to expand knowledge on financial leverage, firm growth, and financial strength among Sri Lankan companies listed on the Colombo Stock Exchange (CSE). The study investigated the relationship between financial leverage, growth, and financial strength

in a sample comprising 30% of thirteen sectors of listed companies. To examine financial strength, they developed multiple discriminant functions, with company growth measured by total assets, profits, and sales. Financial leverage variables were derived from empirical findings. Utilizing a basic multiple regression model, Bei Zhao and Wijewardana (2012) analyzed the relationship between financial leverage and the growth of assets, profits, and sales, as well as financial strength (Z-score). F-statistics were applied to assess the significance of the β parameters at a 5% level of significance. The growth variables were indexed by comparing trends from the base year 1989, with a higher index indicating greater growth. The growth index for total assets, profits, and sales was calculated by subtracting the base year (1989) from the selected year and dividing it by the base year. The study revealed that, in Sri Lanka, financial leverage has a favorable relationship with both growth and financial strength.

Harris and Raviv (1991) in their journal of finance "The Theory of Capital Structure" observed that there is a negative relationship between the debt-equity mix and the profit growth of a firm. This journal examines capital structure theories based on agency costs, asymmetric knowledge, product/input market interactions, and corporate control issues. Those are the categories identified by them as determinants of capital structure. As per the article, equity is based on four important properties of the debt contract. They are bankruptcy, cash flow to levered equity, leverage raises the manager's equity ownership portion, and debt value is essentially unaffected by business performance.

The study by Arief et al. (2023) delves into the relationship between market value and financial soundness, specifically using the Altman Z-Score model. The research emphasizes the model's role in evaluating a company's financial distress risk by integrating key factors such as the market value of equity, profitability, and liquidity. Arief et al. (2023) demonstrate that the Altman Z-Score can effectively highlight the financial health of a company, incorporating market value as a crucial element in predicting financial stability.

Arief, Oktaviar, Putra Saratian, and Soelton (2023) (Arief, 2023) explored the impact of sales growth, profitability, and liquidity on financial distress, using the Altman Z-Score model. Their findings highlight the significant relationship between these financial variables and the likelihood of financial distress in companies (Harefan et al.,

2023). The study utilizes the Altman Z-Score model as an analytical framework to evaluate financial stability and predict potential bankruptcy.

The findings indicate that sales growth significantly influences a company's financial health, as consistent growth in sales supports better cash flow and operational performance. Similarly, profitability, represented through metrics like return on assets (ROA) or net profit margin, is a crucial determinant of financial soundness, emphasizing the importance of efficient revenue generation and cost management.

Liquidity, often measured through the current or quick ratio, is also highlighted as a key factor. It reflects a company's ability to meet short-term obligations, with strong liquidity positions reducing the possibility of financial distress.

By integrating these variables into the Altman Z-Score model, the study provides a holistic approach to assessing financial health and identifying bankruptcy risks. The research underscores the importance of these financial indicators as tools for investors and corporate managers in monitoring and mitigating financial instability.

This work contributes to the literature by demonstrating the practical application of the Altman Z-Score model in understanding the interplay between sales growth, profitability, and liquidity, offering valuable insights into corporate financial stability.

Existing literature underscores the vital connection between the growth of an organization and its short-term and long-term financial strength. Notably, empirical studies delving into the influence of short-term financial strength on organizational growth are rare. Research undertaken in the majority of Western countries reveals a strong link between long-term financial strength and commercial firm growth. Scholars frequently discover a strong link between capital structure and growth, with Harri and Raviv (1991) and Myers and Majluf (1984) finding a negative relationship between debt-equity mix and profit growth in commercial enterprises. However, there is a notable dearth of studies on financial soundness in listed companies in Sri Lanka. Furthermore, investigations into the impact of financial soundness on organizational growth are infrequent in the Sri Lankan context. Hence, aiming to bridge this research gap, this dissertation seeks to probe the relationship between financial soundness and the growth of manufacturing companies: Capital Goods traded on CSE within the Sri Lankan context.

2.3 Summary

Literature review explores the concept of financial soundness, with a focus on the Altman Z-Score model, which is commonly used to assess the likelihood of financial distress in organizations. The review highlights the key metrics within the model, including profitability, liquidity, leverage, and market value, and discusses their importance in evaluating a company's financial health. Special attention is given to the WC to the total Assets ratio, which serves as a crucial indicator of short-term financial stability.

Furthermore, the review addresses the role of financial soundness in promoting organizational growth, noting that while financial stability is essential for sustaining growth, its direct impact remains underexplored. A notable research gap identified is the infrequent investigation into how financial soundness influences organizational growth, particularly in the Sri Lankan context. This gap presents an opportunity for further research to deepen the understanding of how financial soundness contributes to business success in Sri Lanka.

CHAPTER 03

METHODOLOGY

3.1 Introduction

The methodology serves as the roadmap outlining the processes to be followed in achieving the objectives of the research. It provides a comprehensive description of how the research will be conducted, including the plan for selecting the sample population from manufacturing companies listed on the CSE.

This chapter is structured into several subparts. Section 3.1 serves as the introduction to the methodology, followed by section 3.2 which outlines the research design. Section 3.3 provides insights into populations and sampling, detailing how the sample was chosen. In section 3.4, the data collection process is explained, while section 3.5 enumerates the variables under consideration in this study. The conceptual framework is presented in section 3.6, offering a visual representation of the relationships between variables. Section 3.7 presents the hypotheses of this study, providing a clear statement of the expected relationships between financial strength and growth in manufacturing companies. Section 3.8 delves into the description of data analysis methods employed in the study. Finally, section 3.9 summarizes the key points covered in the chapter, providing an overview of the entire methodology.

3.2 Research Design

In this research, the aim is to uncover the relationship between financial strength and the growth of firms within the manufacturing industry. The population under consideration comprises the manufacturing sector: Capital Goods in Sri Lanka, which encompasses about 29 registered companies (under Capital Goods) listed on the CSE. From this pool, a sample of 10 companies has been selectively chosen for analysis.

To assess financial strength, the researcher employs the Multiple Discriminant Analysis (MDA) model developed by Altman (1968). The financial strength is further scrutinized using the Z–score approach, descriptive statistics, and simple linear regression analysis techniques.

Data for the study will be collected from secondary sources, primarily relying on audited financial statements, including the statement of comprehensive income and statement of financial position. These financial statements are sourced from the annual reports of manufacturing companies traded on the CSE in Sri Lanka.

The research involves two variables: independent and dependent. Multiple dependent variables are considered in this study, all of which contribute to the growth dynamics of manufacturing companies. Consequently, this research adopts a multi-variable approach to comprehensively explore the factors influencing growth in the manufacturing sector: Capital Goods.

3.3 Populations and Sampling

Population refers to the entire group of individual entities, events, or objects that share common characteristics and can be observed and measured (Yin, 2003). In the context of this research, the focus is on identifying an empirical link between financial strength and the growth of manufacturing companies.

The population for this study comprises listed manufacturing companies. The manufacturing industry: Capital Goods on the CSE consists of 29 registered companies. From this population, a sample of 10 companies have been selected. The sampling method employed is Simple Random Sampling, and the selection is conducted over the five years spanning 2019,2020,2021, 2022, and 2023.

The data obtained from annual reports will be carefully analyzed to draw meaningful conclusions regarding the relationship between financial strength and firm growth in the context of the manufacturing sector: Capital Goods.

3.4 Data Collection

Data collection methods can broadly be categorized into two major types: primary and secondary data.

In the context of this research, mainly data gathered based on secondary data. The data is gathered from audited financial statements, specifically the statement of comprehensive income and the statement of financial position, extracted from the annual reports of capital goods companies listed under capital goods in the CSE in Sri

Lanka. The information used for this study spans five years, covering the annual reports for the specified period. This reliance on secondary data ensures a comprehensive and detailed examination of the financial information related to the selected manufacturing companies over the designated timeframe.

3.5 Variables

Several researchers have emphasized the substantial impact that financial strength can have on a company's growth. During this research, the aim is to explore the relationship between two variables. The researcher, however, has identified more than one dependent variable that is likely to influence the growth of manufacturing companies. Consequently, this research adopts a multi-variable approach.

By incorporating multiple dependent variables, this research aims to provide a more comprehensive understanding of the various factors that contribute to the growth dynamics of manufacturing companies.

In this study, the independent variable is **financial soundness growth**, measured using the Altman Z-Score model. This model incorporates multiple critical financial metrics, such as profitability, liquidity, leverage, and market value, to assess a firm's financial stability and likelihood of financial distress.

For the dependent variables, the focus is on firm growth. To avoid overlapping with the components of the Altman Z-Score model, careful consideration was given to ensure the selected variables align with the study's objectives while remaining distinct from the financial metrics embedded within the Z-Score.

The dependent variables selected for this study are:

1. **Growth in Market Value**: Unlike the *market value of equity* used in the Altman Z-Score, this study examines broader *growth in market value* over time as a reflection of a firm's ability to increase its valuation.

2. **Net Profit Growth**: This study utilizes *net profit growth* rather than EBIT (Earnings Before Interest and Taxes), which is a profitability measure included in the Altman Z-Score. By focusing on net profit, the study captures a more comprehensive view of profitability.

3. **Current Ratio Growth**: The *current ratio* (current assets / current liabilities) is used as a liquidity metric distinct from the Altman Z-Score's *WC to total assets* ratio. While both are indicators of liquidity, the current ratio provides a different perspective by assessing short-term financial health based on the balance of current assets and liabilities.

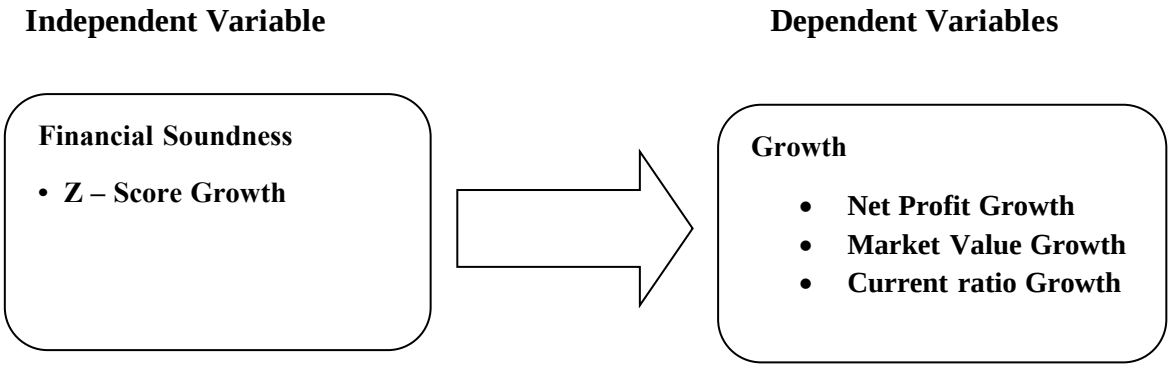
This distinction ensures that the relationships examined between financial soundness and firm growth are clear and free from redundancy, providing a more nuanced understanding of how financial stability impacts organizational performance.

The findings from this research are expected to contribute valuable insights into the intricate relationship between financial strength and the growth of manufacturing companies listed on the CSE.

3.6 Conceptual Framework

Figure 3.1:

Conceptual Framework



3.7 Hypotheses

In this research, Financial Strength is recognized as an independent variable, while Firm Growth is identified as the dependent variable, categorized into three main dimensions: Net Profit Growth, Market Value Growth, and Current ratio Growth.

The hypotheses formulated for the study are as follows:

- Null Hypothesis (H0): There is no relationship between financial strength and growth.

- Alternative Hypothesis (H1): There is a relationship between financial strength and growth.

These hypotheses are structured to examine the potential correlation between financial strength and the various dimensions of growth within the context of the study. The analysis will provide insights into whether financial strength significantly influences the net profit, Market value and current ratio growth of the companies under consideration.

3.8 Data analysis

To obtain an accurate analysis, data should be cleaned, coded, and properly analyzed (Mugenda and Mugenda, 2005). The tools utilized for data analysis in this study include Microsoft Excel and the SPSS package.

Microsoft Excel is employed to calculate the percentage of net profit growth, market value growth, and current ratio growth. This step is crucial for obtaining accurate figures and insights into the growth dynamics of the manufacturing companies under consideration.

To analyze the financial strength of the firms, the Multiple Discriminant Analysis (MDA) model developed by Altman (1968) is utilized. Additionally, the Z – Score approach is employed to assess the financial strength of the firms.

Descriptive statistics and simple linear regression analysis techniques are then applied to identify the relationship between the independent variable (financial strength growth) and each dependent variable (net profit growth, market value growth, and current ratio growth) of the manufacturing companies. These analytical methods are chosen for their ability to provide a complete understanding of the relationships within the data set.

3.9 Summary

The study incorporates a conceptual framework designed to explore the relationship between financial strength and firm growth. The scope of the research encompasses 10 manufacturing companies in the Capital goods sector listed on the CSE during the

period from 2019 to 2023. The analysis is conducted using collected secondary data, and quantitative measures are employed to analyze the dataset.

Key quantitative methods used for the study include:

1. Z-Score Approach: Utilized to assess the financial strength of the selected manufacturing companies.

2. Descriptive statistics: Used to give an overview and characterize the essential elements of a dataset, providing information on the variables' distribution and core tendencies.

3. Regression Analysis: Used to identify and quantify the relationship between financial strength growth (Independent variable) and firm growth (dependent variable). This analysis helps understand the impact of financial strength on various dimensions of growth.

4. ANOVA (Analysis of Variance): Applied to assess the variance in the data and determine the significance of the observed differences.

5. R Square: In regression analysis, this is used to calculate the percentage of the dependent variable's variation that is explained by the independent variable.

These quantitative metrics help to provide a comprehensive examination of the relationship between financial health and business growth in the selected manufacturing companies: Capital Goods.

CHAPTER 04

RESULTS AND FINDINGS

4.1. Introduction

This chapter analyzes results and findings after analyzing data of capital Goods companies in Sri Lanka in the last five years 2019,2020,2021,2022 and 2023. The connection between financial strength and growth of firms in Capital Goods is analyzed using regression analysis techniques. The study interprets the findings by using graphical methods, the Z-Score approach, descriptive statistics, regression prerequisites, and outcomes of simple regression analysis.

This chapter consists of five main sections including an introductory and summary section. Section 4.1 Introduction, 4.2 Z-Score Analysis, section 4.3 Descriptive Statistics, section 4.4 Regression Analysis, and finally summarize the key findings of the study in Section 4.5

4.2. Z-Score Analysis

Z-Score Analysis is used to determine whether a company is headed for bankruptcy, especially in Capital goods sector organizations. It can predict the probability of a company going bankrupt. Profitability, leverage, liquidity, solvency, and activity ratios are taken into consideration by the formula.

This study uses the Z-Score approach to evaluate the financial strength of selected capital goods companies. The financial soundness of the selected Capital Goods was examined using multiple discriminate analysis techniques. After reviewing the literature related to the study, the following equation can be used to calculate the financial soundness of the companies.

$$Z = 0.012\ X1 + 0.014\ X2 + 0.033\ X3 + 0.006\ X4 + 0.999\ X5$$

X1 = WC/Total Assets

X2 = Retained Earnings/ Total Assets

X3= Earnings before interest and Tax/ Total Assets

X4= Market Value of Equity/ Book Value of Total Debt

X5= Sales/ Total Assets

Z= Overall Index

Based on the Z-Score value, the company can be classified into three zones. Safe zone (Z-score> 2.99), Gray zone (1.81<Z-score<2.99), and distress zone (Z-score<1.81). The companies that are in the safe zone are resilient to bankruptcy, the grey zone is considered a moderate bankruptcy risk, and the distress zone is considered a high bankruptcy risk.

4.2.1. Ratio Analysis for Z-Score Calculation

Table 4.1:

Positions of Selected Ratios of Selected Companies

Company	Working capital / Total assets (X1)	Retained earnings / Total assets (X2)	Earnings before interest and taxes / Total Assets (X3)	Market value of equity / Book value of total debt (X4)	Sales / Total assets (X5)
Lankem Ceylon Plc	- 0.24	- 0.07	0.06	0.21	0.48
Royal Ceramics Lanka Plc	- 0.02	0.51	0.12	2.18	0.38
Central Industries Plc	0.38	0.50	0.16	1.02	1.20

Richard Pieris And Company Plc	- 0.27	0.12	0.16	2.80	0.21
Lanka Tiles Plc	0.28	0.50	0.18	1.80	0.78
Kalani Cables Plc	0.45	0.48	0.14	1.07	1.18
ACL Cables Plc	0.29	0.34	0.11	1.37	0.98
Hayleys Plc	- 0.17	0.32	0.09	1.18	0.01
Laxapana Batteries Plc/	0.22	0.09	0.15	2.25	1.00
Brown& Company Plc	- 0.08	0.31	0.02	0.78	0.29

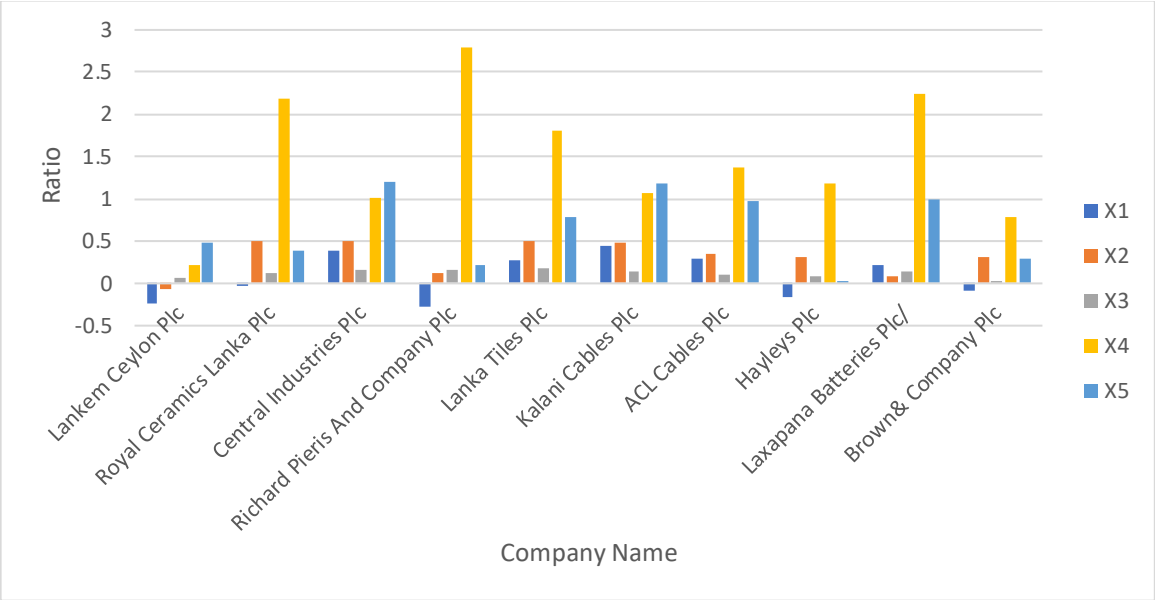
X1is used to measure the liquidity position of the firm and the most of liquidity positions of the selected companies are not in favourable situations while the lowest liquidity level is maintained by Richard Pieris and Company Plc and Kalani Cable Plc maintains a strong liquidity position among the sampled companies during the period of observation.

X2 is used to measure the profitability of the firms. During the 2019 to 2023 period, Royal Ceramics Lanka Plc has earned the highest profits among the selected 10 Capital Goods companies listed in CSE in Sri Lanka. X3 is used to measure the capacity of the business to generate earnings from the company's assets. Lanka Tiles Plc shows the highest earning capacity while Brown & Company Plc has the lowest capacity to earn through its' assets among the selected companies during the observation period.

X4 is used to measure the market position of the company. Richard Pieris and Company Plc has the strongest market position when comparing other selected companies during the last five years. X5 is used to measure the efficiency in generating sales from the company's assets. The highest efficiency in generating sales on the assets of the company has been acquired by Central Industries Plc over the last five years.

Figure 4.1:

Graphical presentation of Positions of Selected Ratios of Selected Companies



According to Altman, significant weightings have been allocated for variables indicated *X1* to *X5*. These variables demonstrate the solvency of the business organization. To determine the overall financial soundness of the selected companies, X1-X5 ratios should be calculated.

This study uses the Z score model to find the impact of the financial soundness of the companies on net profit growth, market value growth, and current ratio growth of the companies. Using the above ratios, then calculate Z – Score value for each company.

4.2.2. Analysis of Z -Score

Table 4.2:

Analysis of Z-Score

Company Name	Z- Score
Lankem Ceylon Plc	0.48
Royal Ceramics Lanka Plc	0.40
Central Industries Plc	1.22
Richard Pieris And Company Plc	0.23
Lanka Tiles Plc	0.80
Kalani Cables Plc	1.20
ACL Cables Plc	1.00
Hayleys Plc	0.02
Laxapana Batteries Plc	1.02
Brown & Company Plc	0.30
Average Z Value	**0.67**

Table 4.2. illustrates the average Z- Score of the sampled companies over the five years. By using the above equation which is developed by Altman Z score values are calculated. Z - score was estimated at 0.48, 0.40, 1.22, 0.23, 0.80, 1.20,1.00, 0.02, 1.02, 0.30 respectively for the selected companies.

All Z Score values of the sampled companies during 2019 to 2023 are below 1.81. It indicates that the financial soundness of the sampled Capital goods companies in Sri Lanka appear bankrupt situation during the observation period.

4.3 Regression Analysis

Regression analysis is a technique used to estimate the relationship between a dependent variable and one or more independent variables. In this study regression analysis is used to estimate the impact of financial soundness on growth of the company.

In regression analysis, regression prerequisites should be tested at the beginning. Therefore, the assumptions that are quantitative data collection, normality, linearity, and test of independence need to be tested**.**

4.3.1 The Quantitative Data Collection

If the researcher used regression analysis technique the data set should be quantitative. The dependent and independent variables should be measured in interval or scale measurements. In this study, the Z Score growth, net profit growth, market value growth, and current ratio growth are measured interval or scale measurements.

4.3.2 Test of Normality

To evaluate the normality of the data, a combination of graphical and statistical methods was employed. These methods included:

1. **Histogram**: The histogram provides a visual representation of data distribution. The shape of the histogram was assessed to check for symmetry and resemblance to a bell curve, indicative of normality.

2. **Q-Q Plot**: The quantile-quantile (Q-Q) plot compares the quantiles of the observed data to the quantile of a standard normal distribution. Data points aligning closely with the diagonal line suggest normality.

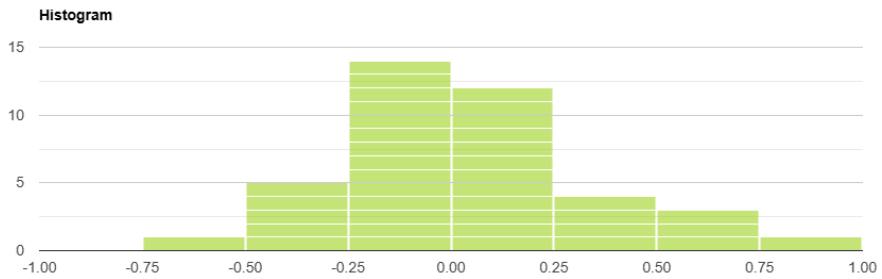
3. **Shapiro-Wilk Test**: The Shapiro-Wilk test was applied as a statistical measure of normality.

To evaluate the normality of each variable separate histograms were created for each dependent and independent variable of the study.

Z-Score Growth

Figure 4.2:

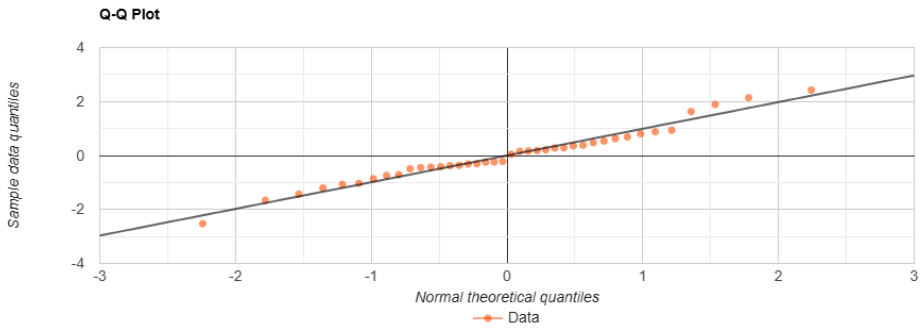
Histogram of Z score



According to the histogram, figure 4.2 can be concluded that the data set of Z-score is approximately normally distributed.

Figure 4.3:

Q-Q Plot of Z Growth



Shapiro-Wilk Test: The results were as follows:

- W Statistic: 0.976
- p-value: 0.5426

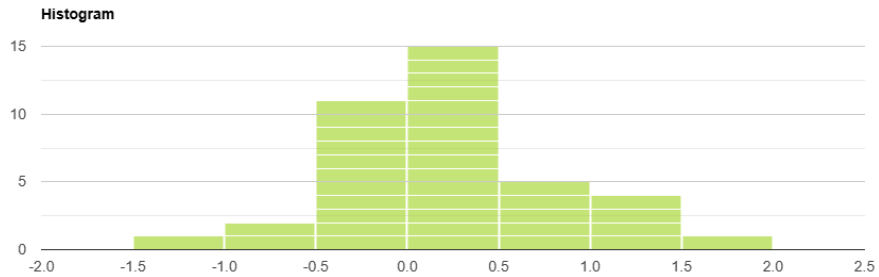
Since the p-value exceeds the significance threshold of 0.05, It is assumed that the data is normally distributed.

Based on the histogram, Q-Q plot, and Shapiro-Wilk test, the data for Z Growth show no evidence to suggest a departure from normality. These findings support the assumption that the data are approximately normally distributed.

Net profit Growth

Figure 4.4:

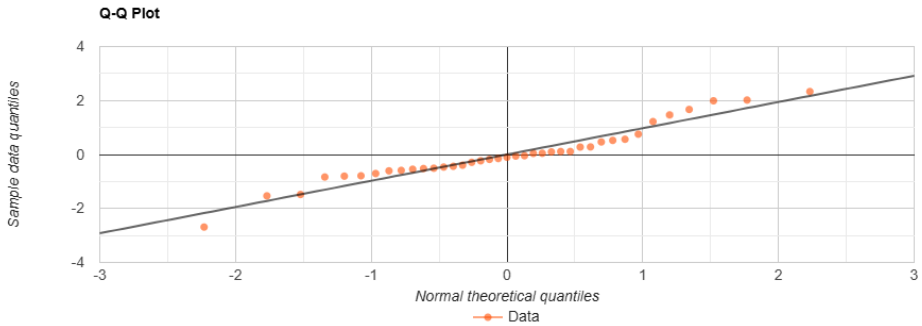
Histogram of Net Profit Growth



According to the histogram, figure 4.4.can be concluded that the data set of net profit growth is approximately normally distributed.

Figure 4.5:

Q-Q Plot of Net Profit Growth



Shapiro-Wilk Test: The results were as follows:

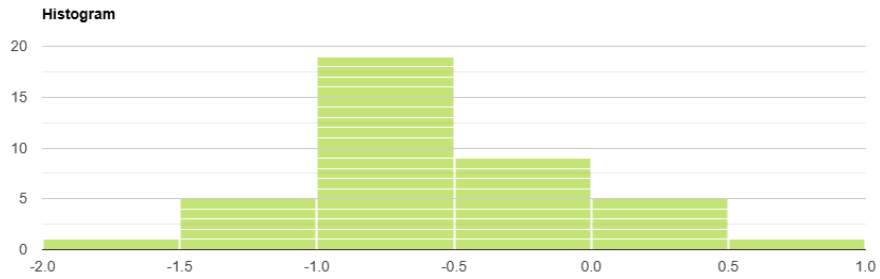
- **W Statistic**: 0.95
- **p-value**: 0.064

Since the p-value is greater than 0.05, fail to reject the null hypothesis, suggesting no significant deviation from normality. Above tests support the assumption that the data are approximately normally distributed.

Market value Growth

Figure 4.6:

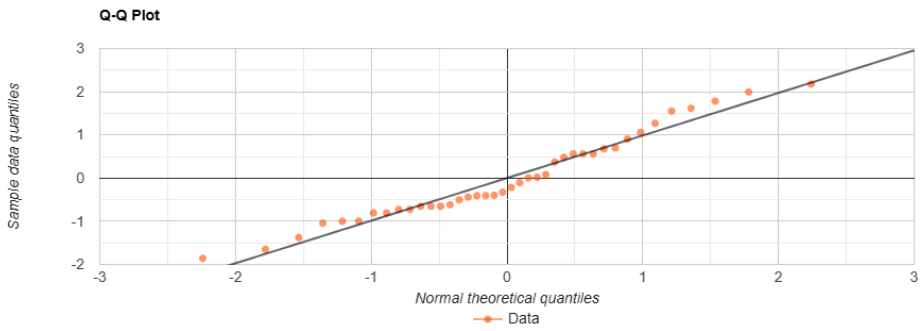
Histogram of Market Value Growth



According to the histogram, figure 4.6. It can be concluded that the data set for profit growth is approximately normally distributed.

Figure 4.7:

Q-Q Plot of Market Value Growth



Shapiro-Wilk Test: The results were as follows:

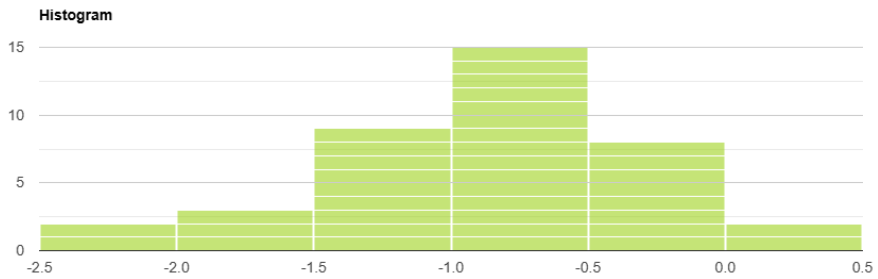
- **W Statistic**: 0.9563
- **p-value**: 0.1252

Since the p-value is greater than 0.05, do not reject the null hypothesis, suggesting no significant deviation from normality.

Current Ratio Growth

Figure 4.8:

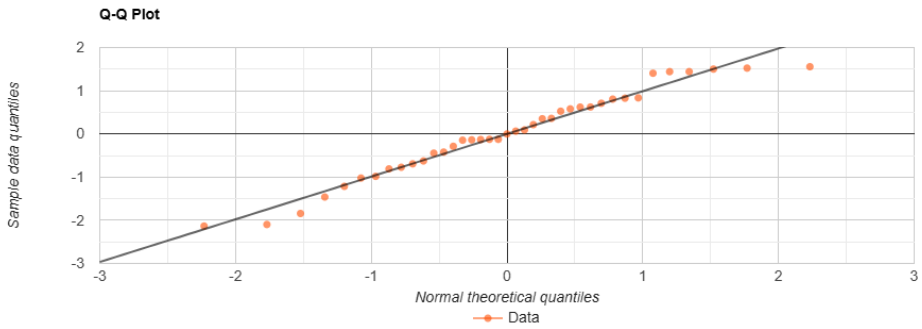
Histogram of Current ratio Growth



According to the histogram, figure 4.8 can be concluded that the data set of current ratio growth is approximately normally distributed.

Figure 4.9:

Q-Q Plot of Current ratio Growth



Shapiro-Wilk Test: The results were as follows:

W = 0.9563, p-value = 0.1396

Overall, all four variables to be approximately normally distributed since none of the Shapiro-Wilk tests were significant at the 0.05 level.

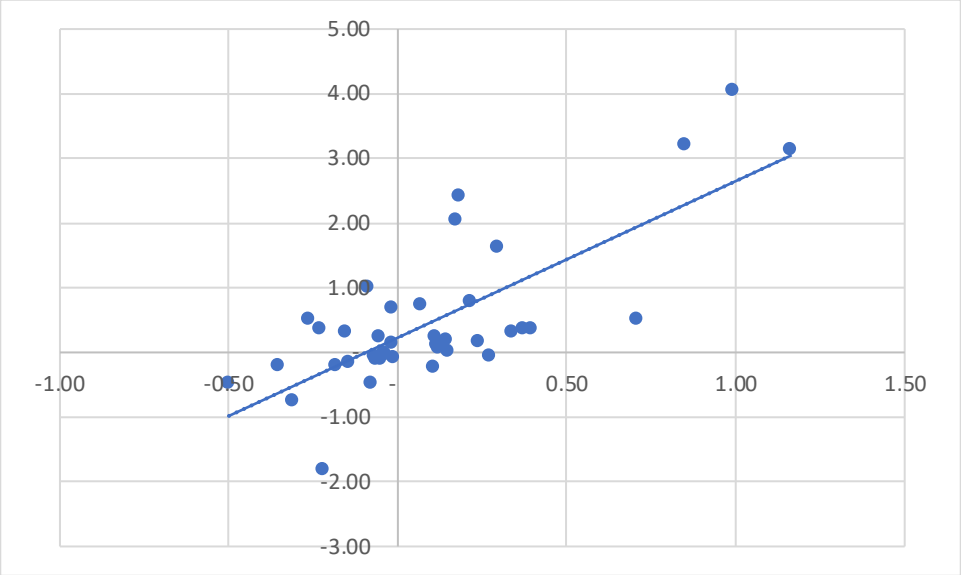
4.4.3 Test of Linearity

In this study, linearity of the data set is measured by using scatter plot diagram. Linearity refers to the assumption that there is a straight-line relationship between the independent variable and the dependent variables.

Z-score growth and net profit growth

Figure 4.10:

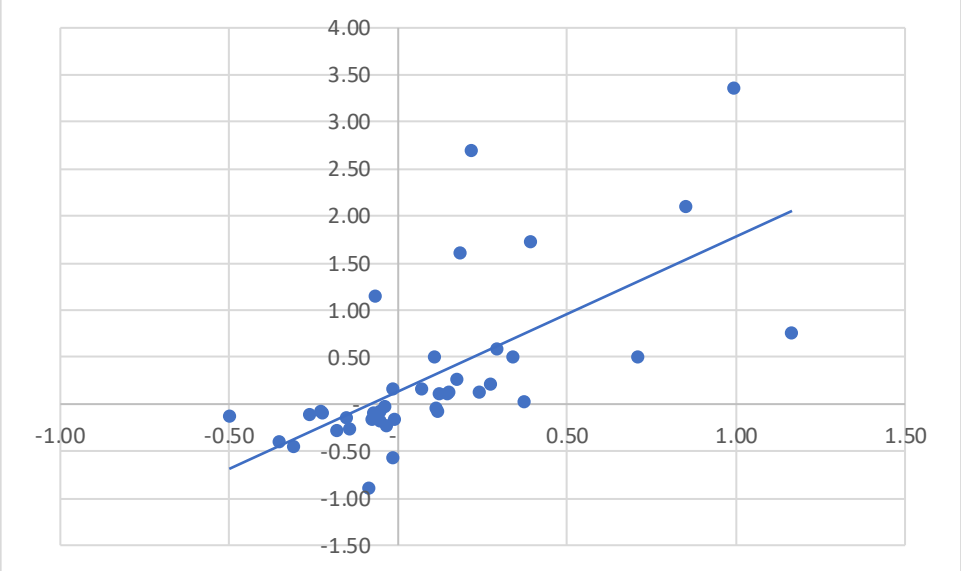
Normal Probability Plot of Net Profit Growth



Z-score growth and market value growth

Figure 4.11:

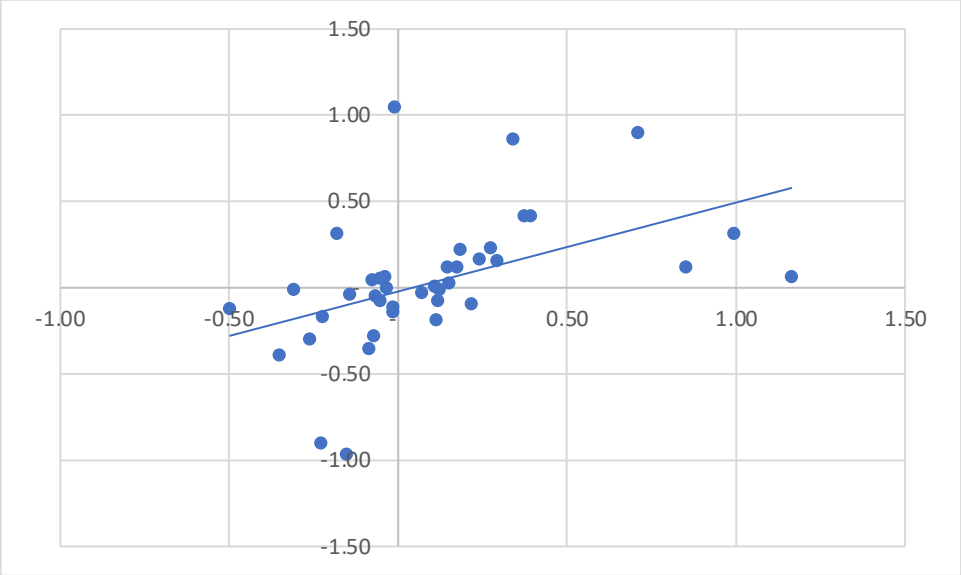
Normal Probability Plot of market value growth



Z-score growth and current ratio growth

Figure 4.12:

Normal Probability Plot of current ratio Growth



4.4.4 Regression Results

Regression analysis is a statistical technique that is used to measure the correlation between one or more independent variables and dependent variables to make predictions or inferences. In this study, simple linear regression analysis was used to measure the impact of financial soundness on net profit growth, market value growth, and current ratio growth of the selected capital good companies. The formula for the simple regression model is shown below.

$$Y=a+bx$$

Y = Growth of the firm (Net profit growth, Market value growth, Current ratio growth)

X = Z – score growth

As per the above explained, the simple linear regression model can be performed as follows.

1. How Z-score growth change impacts on Net profit growth

2. How Z-score growth change impacts on Market value growth
3. How Z-score growth change impacts on Current ratio growth

Z-Score Growth Change Impacts on Net Profit Growth

The hypothesis derived for this analysis was as follows.

H1; Z score growth has a significant impact on the net profit growth of the company.

H0; Z score growth has no significant impact on the net profit growth of the company

As illustrated in table 4.3, the overall model of the study is significant (p= 1.96E-08) at a 95% confidence level. It can be concluded that the impact of net profit growth on z-score changes is statistically significant. R square indicates 57% which means Z score change can explain approximately 57% of the net profit growth of selected capital good companies in this study. It indicates that the z-score changes impact net profit growth effectively.

When the p value is less than 0.05 the overall model is statistically significant. It means that the null hypothesis of the study is rejected. Analysis of the data indicates that changes in the company's financial soundness significantly influence net profit growth.

The correlation coefficient *(r)* is used to measure a linear correlation. It is Multiple R (0.7538) which means there is a strong positive relationship between financial soundness and net profit growth of the company.

VIF values (2.31) are in between 1 and 5 that means there is a moderate multi collinearity and no multi collinearity issues.

Table 4.3:

Regression Coefficient – Net Profit Growth

Regression Statistics	
Multiple R	0.753895
R Square	0.568357
Adjusted R Square	0.556998
Standard Error	0.743898
Observations	40

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	27.68901	27.68901	50.03576	1.95588E-08
Residual	38	21.02861	0.553384		
Total	39	48.71762			

a. Dependent Variable: Net profit Growth (NPG)

Z-Score Growth Impacts on Market Value Growth

VIF values (1.75) are in between 1 and 5 that means there is a moderate multi collinearity and no multi collinearity issues.

The hypothesis derived for this analysis was as follows.

H1; Z score growth has a significant impact on the market value growth of the company

H0; Z score growth has no significant impact on the market value growth of the company

According to table 4.4, the overall model of the study is significant (p = 4.35546E-06) at a 95% confidence level. It can be concluded that the impact of market value growth on z-score changes is statistically significant. R square indicates 43% which means Z score change can explain approximately 43% of the market value growth of selected capital good companies in this study. It indicates that the z-score changes impact market value growth effectively.

When the p value is less than 0.05 the overall model is statistically significant. As illustrated in table 4.4. The sig value is 4.35546E-06. It means that the null hypothesis is rejected, Z score changes have significant impact on market value growth of selected companies. After analyzing the data, it can be concluded that the changes in financial soundness have a significant impact on market value growth.

The correlation coefficient (r) is a measure of the strength and direction of a linear relationship. In this case, the Multiple R value is 0.655, indicating a strong positive correlation between financial soundness and market value growth.

Table 4.4:

Regression Coefficient – Market value Growth

Regression Statistics	
Multiple R	0.655828
R Square	0.43011
Adjusted R Square	0.415113
Standard Error	0.668364
Observations	40

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	12.81145	12.81145	28.6795	4.35546E-06
Residual	38	16.97501	0.446711		
Total	39	29.78646			

a. Dependent Variable: Market Value Growth (MVG)

Z-Score Growth Impacts on Current ratio Growth

VIF values (1.28) are in between 1 and 5 that means there is moderate multi collinearity and no multi collinearity issues.

The hypothesis derived for this analysis was as follows.

H1; Z score growth of the company has a significant impact on current ratio growth.

H0; Z score growth of the company has no significant impact on current ratio growth.

As illustrated in table 4.5, the overall model of the study is significant (p= 0.00219) at a 95% confidence level. It can be concluded that the impact of current ratio growth on z-score changes is statistically significant. Adjusted R square indicates 22% which means Z score change can explain approximately 22% of the current ratio growth of selected capital good companies in this study. It indicates that the z-score changes impact current ratio growth at significant level.

The correlation coefficient *(r)* is (0.47) which means there is a strong positive relationship between financial soundness and current ratio growth.

Table 4.5:

Regression Coefficient – Current ratio Growth

Regression Statistics	
Multiple R	0.470413
R Square	0.221288
Adjusted R Square	0.200796
Standard Error	0.341045
Observations	40

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.255994	1.255994	10.79854	0.002190399
Residual	38	4.419832	0.116311		
Total	39	5.675826			

a. Dependent Variable: Current ratio (CRG)

4.4 Summary

This chapter includes the results and findings after analyzing the data. In this study, the Z score approach and simple linear regression analysis method were used to analyze the data. Using graphical methods, the selected ratios used to calculate the Z Score were discussed. The highest average z score was Central Industries PLC, and the lowest average z score was Hayleys Plc during the observation period. Using histogram, Q-Q plot diagram, scattered plot diagram, and Shapiro-Wilk tests, normality and linearity were tested.

Regression analysis results reveal a positive relationship between financial soundness and net profit growth, financial soundness and market value, as well as financial soundness and current ratio growth among capital goods companies in Sri Lanka.

To ensure the reliability of these findings, a robustness analysis was conducted to test for endogeneity. The residual analysis confirms that the results remain consistent with the original findings. Additionally, as shown in Figures 4.13, 4.14, and 4.15, the scatter plots of residuals do not exhibit any clear pattern, with residuals appearing randomly

scattered around zero without forming a specific shape. This suggests that the model effectively captures the relationship between variables and that key assumptions, such as linearity and homoscedasticity, are satisfied

Figure 4.13:

Residual Plot of Net Profit Growth

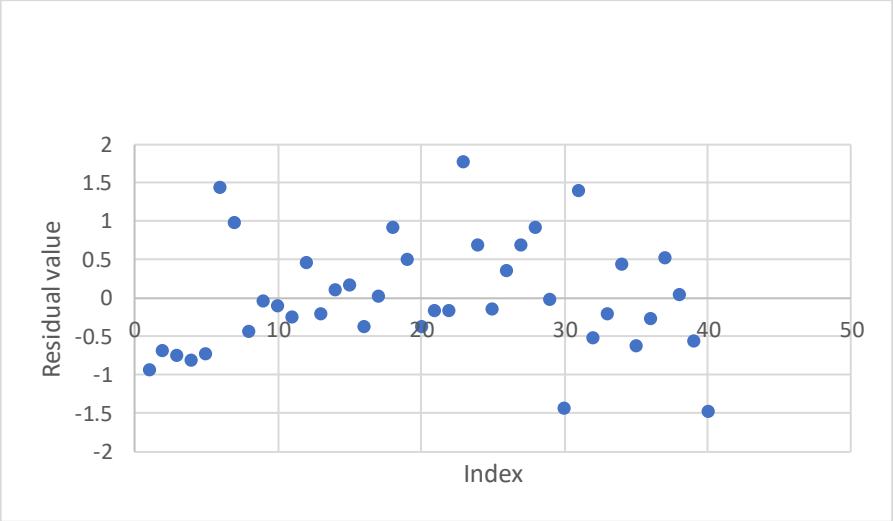


Figure 4.14:

Residual Plot of Market value Growth

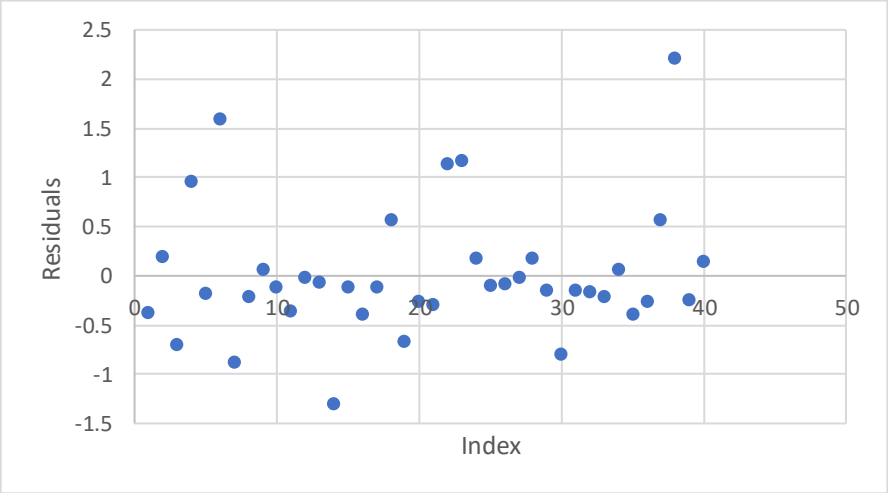
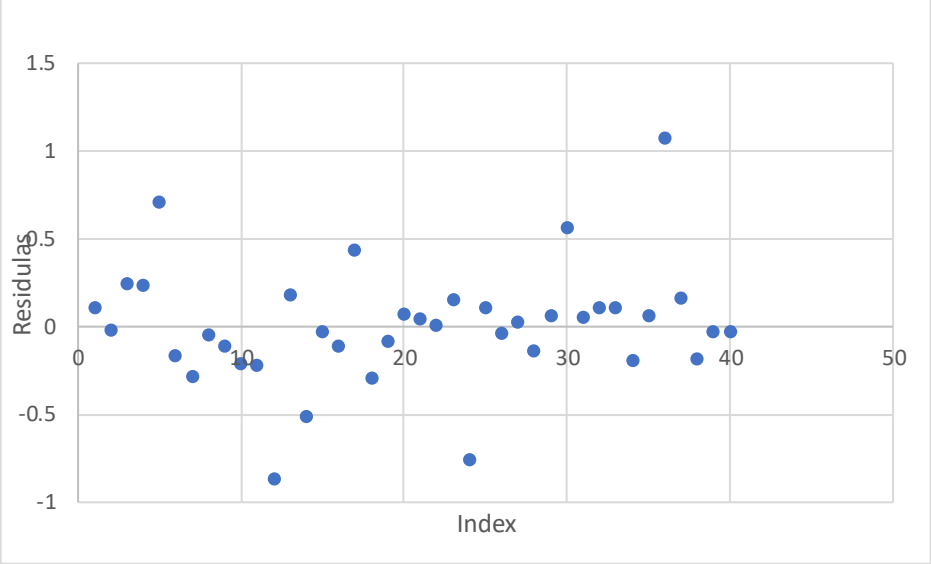


Figure 4.15:

Residual Plot of Current ratio Growth



CHAPTER 05

CONCLUSION

5.1 Overview of the Study

Most of the manufacturing companies worldwide are trying to increase their growth. Many researchers in various countries have identified relationships between financial soundness and firm growth through empirical studies. However, only a limited number of studies have explored this relationship in Sri Lanka. Consequently, policymakers in Sri Lanka have struggled to develop appropriate strategies and procedures to enhance the performance of the Capital Good industry. The purpose of this research is to fill the existing knowledge gap regarding the relationship between financial soundness and growth in the Sri Lankan manufacturing sector: Capital Goods. Three objectives are formulated that are identify the nature of the financial soundness of the listed manufacturing company, analyze the financial soundness of capital good companies under the Altman model, and recognize the relationship between financial soundness and growth of the capital good companies.

The research focuses on two primary variables that are financial soundness and growth. To conduct the study, ten manufacturing companies (Capital Goods) in Sri Lanka were selected. Information was obtained from the published annual financial reports of each company, covering the period from 2019 to 2023. Using descriptive statistics and linear regression methods determined the connection between financial soundness and growth. Regression analysis was employed to identify the relationship between independent and dependent variables. The study particularly considered the R-square value from the model summary table, the significant F value from the ANOVA table, and the regression equation derived from the coefficients table to establish the relationship between the variables.

Furthermore, this study critically examines the related literature on financial soundness and growth in the manufacturing industry. Based on the literature, both views can be concluded regarding the impact of financial soundness and growth of the company. Most of the previous researchers revealed that there is a significant relationship between long-term financial strength and the growth of the company. Also, some

researchers have found that there is a negative relationship between financial soundness and the growth of the business.

However, the study identified a gap by investigating the previous studies also there are a few studies conducted by investigating the financial soundness and the growth of firms in manufacturing companies in Sri Lanka. As well as studies on the effect of financial soundness on organizational growth are rare in the Sri Lankan context. After identifying the research gap, try to bridge it by achieving research objectives.

The study used the Z score to measure the financial soundness of manufacturing companies in Sri Lanka also, net profit growth, market value growth, and current ratio growth were used to measure the growth of the company. This study was conducted with two hypotheses that are There is a relationship between financial soundness and growth of the manufacturing companies (Capital Goods) in Sri Lanka (H1) and There is no relationship between financial soundness and growth of the manufacturing companies (Capital Goods) in Sri Lanka (H0).

5.2 Key Findings and Conclusion

The researcher used the Z-Score technique to examine the overall financial soundness of the CSE-listed companies. The investigation found that the average financial soundness of the chosen listed capital goods companies was unsound during the timeframe. The nature of the net profit growth, market value growth, and current ratio growth was identified using the results of descriptive statistics. Regression analysis is used to determine how the company's financial soundness affects net profit growth, market value growth, and current ratio growth.

According to the results of the regression analysis, findings of this study concluded that there is a upward relationship between financial soundness and net profit growth, Additionally, there is connection between financial soundness and market value growth and there is relationship between financial soundness and current ratio growth in manufacturing (capital goods) companies in Sri Lanka.

Most of previous studies related to the financial soundness and growth of the company revealed that positive and negative relationship in financial soundness and growth. The study concluded that financial soundness has a positive relationship with net profit

growth. Additionally, it established a relationship between financial soundness and market value growth, as well as between financial soundness and current ratio growth, in manufacturing (capital goods) companies in Sri Lanka. Various economic hardships occurred in Sri Lanka due to the impact of the COVID-19 pandemic during the period in which the study was conducted. It was negatively impact on the company's financial soundness in Sri Lankan business.

This study was conducted by analyzing the data of the listed manufacturing (Capital Goods) companies of Sri Lanka from 2019 to 2023. The significant challenges started with the impact of the COVID-19 pandemic on the global economy including Sri Lanka. It led to disruptions in crucial sectors in Sri Lanka. Various economic hardships experienced including high inflation and GDP growth were negative due to the economic contraction in Sri Lanka during this period. Due to recovery efforts of the government (such as monetary policy adjustments, and inflation management), it affected negatively to all businesses in Sri Lanka.

5.3 Implications of the Study

All businesses, not just those in the manufacturing sector: Capital Goods should focus on the financial soundness and growth of the companies. Financial soundness and growth of the company are important factors for several reasons as financial soundness ensures the sustainability and stability of the firm, investment attraction, confidence with creditworthiness and it is a tool for obtaining competitive advantages in the modern business world. When the company is financially sound, it has stronger opportunity to enter into the capital market with higher market competitiveness. The employees of the company will do their maximum with the employee morale due to the long-term financial stability of the company.

The level of engagement with the regulatory compliance requirement and standard of the government depends on the financial stability of the firm. Companies that prioritize financial soundness and growth can increase their resilience, competitiveness, and value creation of the company. Therefore, the observations of this study are critical for the companies to be stronger in financial stability.

5.4 Limitations of the study

There are some limitations in this study, that the study mainly focuses towards the manufacturing industry: Capital Goods in Sri Lanka, and other industries such as banking, insurance, distributing, and retailing industries are excluded from this study also it has limited to only listed capital goods manufacturing companies in Sri Lanka.

Secondary data was used in this study so it cannot prove 100% accuracy. Also, the short period used by the researcher for doing research, where the researcher could not widen the study, as a result of the study, economic pandemic (inflation) may be affected badly to take a future decision on the manufacturing sector: Capital Goods.

This study was conducted using data from 2019 to 2023. This period is the economic contraction period in Sri Lanka because of the COVID-19 outbreak. It directly impacted on the financial soundness of the country.

Also, this study is limited to several parameters to measure the net profit growth, market value growth, and current ratio growth of the companies so another parameter can be used to measure the variables over the different periods.

5.5. Future Research Directions

Future researchers can focus on the other sectors that are listed in the CSE in Sri Lanka and, they can consider not only the growth process of the company but also the other aspects, such as the technology used in the company, the manufacturing mechanism of the company, size of the company, operation cash flow changes etc. Future researchers can identify or define parameters to quantify the parameters examined in this study.

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