CHAPTER TWO

Identifying Financially Sustainable Listed Companies in Sri Lanka

Meedeniya PTS[1] & Dharmarathna DG[2]
Department of Accountancy & Finance, Faculty of Management Studies
Sabaragamuwa University of Sri Lanka
tharumeedeniya@gmail.com

Abstract

This study aims to identify the financially sustainable listed companies on the Colombo Stock Exchange (CSE) in Sri Lanka based on the Altman Z-score model. CSE has 289 companies representing twenty-one (21) World Industrial Classification Standards (GICS) industry groups as of 30th June 2020. The sample size is limited to 191 companies representing 16 GICS industries. The Z-score has been based on the period from 2015-2019. The data for the study were obtained from annual reports. The Altman Z-score was calculated by incorporating ratios, namely, liquidity ratio, profitability ratio, leverage ratio, solvency ratio, and activity ratio. This study identifies separately sustainable companies that are close to sustainable or distressed (grey) companies and distressed companies. The result of the analysis finds sixty-seven (67) sustainable companies, fifty-seven (57) grey companies and sixty-seven (67) distressed companies out of the 191 listed companies representing 16 GICS industries excluding the Bank, Diversified Financials, Insurance, Technology hardware and Equipment and Automobile and Components Industries. This finding is essential for managers, potential investors, creditors, regulatory bodies, employees, government, and society in making the right decisions in the face of financial sustainability.

Keywords: *Altman Z-score, Colombo Stock Exchange, Distressed companies, Financial Sustainability.*

1. Introduction

The world we live in is made up with full of uncertainties and risks. Especially business has been exposed to different types of financial risk and benefits. It means firms face bankruptcy or financial sustainability. Though it is not always possible to identify that movement, financial sustainability or failure is measured in many ways. The high accuracy measurement of the Altman Z-score model is to predict the chance of bankruptcy or financial sustainability in a company (Altman, 1968). Financial sustainability is understood as the ability of public

administrations to continue now and in future policies without causing the debt to rise continuously (Bolívar, 2016). This study aims to identify financial sustainability through the Altman Z-score model in the context of Sri Lankan listed companies. Sustainability means meeting our needs without compromising the power of future generations to satisfy their own needs.

In addition to natural resources, social and economic resources are also required. Sustainability is not just environmentalism. Embedded in most definitions of sustainability, we also find concerns for social equity and economic development. By the tip of the 20th century, many of those ideas had come together to necessitate "sustainable development". The motivations behind sustainability are often complex, personal and diverse. It is unrealistic to list reasons why many individuals, groups, and communities are working towards this goal. Yet, sustainability comes down to the type of future that is been left for the subsequent generation for many people. Sustainability as a price is shared by many individuals and organizations who demonstrate this value in their policies, everyday activities and behaviours. Individuals have played a significant role in developing our current environmental and social circumstances. Together with future generations, the people of today must create solutions and adapt (HLPF 2019 Spotlight Reports, 2019). "Sustainability" is a complex term comprising three main dimensions: environmental, social, and economic categories.

Many measurements have been calculated for economic sustainability and financial sustainability. Financially sustainable business has financial solid as well as broader societal benefits. Another one is recognizing investment opportunities: considerable investment opportunities present in frameworks like the Sustainable Development Goals or the growth of the renewable energy and energy efficiency sectors, and also identifying and integrating nature risk into investment and lending decisions, supporting innovation and research, developing and maintaining strong stakeholder relationships, including beneficiaries, staff and donors, obtaining a range of types of funding, including unrestricted funds, building financial reserves, assessing and managing risks, strategically managing and financing overhead costs (Bolívar, 2016). Many financial sustainability measurements are existing in the world. They are Univariate Analysis (UA), Multiple Discriminate Analysis (MDA), etc. (Al-Manaseer & Al-Oshaibat, 2018; Altman, 2013; Jones & Hensher, 2004). This research used the Altman Z-score model to measure financial sustainability. Empirically researchers have often used the Altman Z-score model to estimate bankruptcy (Gnanaweera, 2011; Kannadhasan, 2007; Lohana, 2014; Mohammed, 2017; Nanayakkara & Azeez, 2015). Simultaneously, some empirical research used Altman Z-score model to measure the financial sustainability. Still, in

the Sri Lanka context, the Altman Z-score model is not used to estimate financial sustainability (Meher & Getaneh, 2019).

The previous literature has shown that many studies identify bankruptcy and financial sustainability predictions in different context and have found different results. Many scholars added the Altman Z-score model, and some scholars used various methods to predict bankruptcy and financial sustainability. In the Sri Lankan context, no financial sustainability analysis has been conducted for listed companies, and unfortunately, a limited number of studies were focused on this concept. However, the researcher proceeds to identify forecast financial sustainability in listed companies in Sri Lanka by utilizing the Altman Z-score model and by fulfilling this essential need and bridging the empirical and knowledge gap in the country. Thus, the study's main objective is to identify the financially sustainable listed companies in CSE by considering 2015 to 2019.

This research is intended to identify financially sustainable listed companies in Sri Lanka through the Altman Z-score model. This study helps stakeholders and enable them to assess their financial strength. Consequently, stakeholders are investors, creditors, managers, regulatory bodies, employees, government, and society. An investor is any individual or other entity (such as a firm or mutual fund) that commits capital with the expectation of receiving financial returns. Investors depend on different financial instruments to earn a rate of return and attain important financial objectives like building retirement savings, funding a school education, or merely accumulating additional wealth over time. Sustainable investing, also referred as socially responsible investing, incorporates environmental, social, and governance factors into investment decisions. Individuals who invest sustainably favour investing in companies, organizations and funds, to generate measurable social and environmental impact alongside a financial return. Investors especially focus on financially sustainable companies because they focus on the benefits of the investments.

A creditor might be a bank, supplier, or individual who has provided money, goods, or services to an organization and expects to be paid later. In other words, the corporate owes money to its creditors. Therefore, the amounts should be reported on the company's record as either a current liability or a non-current liability. Creditors expect many things from financially sustainable companies. For example, a good financial policy and capital allocation statement, sound risk management process, board effectiveness, good audit, accounting and reporting, and remuneration in the company.

Managers shape the culture of their teams and workplaces in countless ways. They need to play both an administrative and leadership role. Thus, they require various sets of skills to

achieve success. Management continues to be a viable career option. The manager is an employee who is accountable for planning, directing and overseeing the operations and financial health of a business unit, division, department, or operating unit within a company. The manager is accountable for managing and leading the work of a bunch of individuals in many instances. When managers can do their job effectively, companies will be financially sustainable.

Governments or other organizations establish regulatory bodies to oversee the functioning and fairness of economic markets and, therefore, firms that engage in financial activity. The goal of regulation is to forestall and investigate fraud, keep markets efficient and transparent, and confirm customers and clients are treated fairly and honestly. Financial sustainability will help to create rules and regulations for regulatory bodies. Regulatory bodies are the Central Bank of Sri Lanka (CBSL), the Securities and Exchange Commission of Sri Lanka (CES) and the Insurance Regulatory Commission of Sri Lanka (IRCSL). Financial sustainability will benefit employees to see a clear picture of the company and its heading in the future. The government could gain comprehensive information on financial sustainability and its variables that influence the financial sustainability of companies, good governance, and the infrastructure development.

Furthermore, financial sustainability helps society because society always gets affected or benefits from activities in the business world, i.e., social responsibility. Therefore, this research can be identified as a turning point in research regarding financial sustainability, which will enhance future researchers' interest in researching this area.

2. Theoretical and Empirical Literature

Gambler's Ruin Theory

It makes predictions concerning the growth and survival of a new business. Further, Gambler's Ruin suggests that growth rates follow a random walk but that survival depends on previous growth. Thus, growth and survival are closely related. This theory is the growth and survival of a new business is theorized by referring to a Gambler playing a game of chance. The gambler needs resources to continue playing the game that can either be derived from "wins" or their sources at startup (Coad et al., 2013). According to Coad et al. (2013), Gambler's Ruin Theory is applied, which presents growth events that occur randomly and that survival depends on the stock of accumulated resources. It makes predictions regarding both growth and survival. Although growth has a positive effect on survival and a longer-term effect, financial variables are observed to impact survival substantially.

Gambler's Ruin Theory evaluated business risk in firms and used it to develop a safety index. Moreover, it claims that in comparing actual and prediction time to failure, it identifies bankruptcies or financial distress before the exact failure date (Jayasekera, 2018). Therefore, this theory helps to evaluate financial sustainability through financial distress, and it helps to make an investment decision.

Life Cycle Theory

Life Cycle Theory is applied in business to explain the birth, growth, mutation and death process of firms. At each stage, they share financial situations (Bayai & Ikhide, 2016). It is linked with the basis for the formulation of financing, marketing, costing, survival, growth and production strategies. It allows firms to transform from small, inefficient, and unsustainable firms into significant, sustainable, and financially sustainable firms (Bayai & Ikhide, 2016). According to the life cycle theory, it helps many investors to make the right decisions in the face of a financial situation.

Lifecycle theory has unique firm life cycle characteristics of birth, growth, maturity, and decline. These characteristics affect a firm's choices, especially in situations like financial distress and, therefore, the threat of bankruptcy. However, due to these lifecycle characteristics, managers may have limited restructuring options when firms are faced with distress or financial sustainability. As a firm matures, its features, business goals, strengths and weaknesses will change, reflecting the progression through the phases of lifecycle theory. The organizations become more extensive and complex in organizational structure, the concentration of ownership becomes more dispersed, and integration increases typically. Strategic decision-making and its effectiveness will also differ in counting on the lifecycle of the firm. Mature and declining firms are less likely to require innovative, risk-taking strategies than firms in birth and growth (Koh, 2015).

Financial Sustainability

Financial sustainability refers to the capacity of financial managers to manage and monitor the expected financial benchmarks and risks over the long run (Imhanzenobe, 2020). However, the concept of financial sustainability is broader than just liquidity or short-term profit. It encompasses long-term returns, growth potential, and the ability to withstand financial distress. The financial sustainability of companies is often found within the answer to the subsequent questions; is the company profitable? Is that the company growing? Is the company operating at an acceptable financial risk level? (Imhanzenobe, 2020). According to Meher & Getaneh (2019), financial sustainability is measured through Return on Assets, Return on Equity, Financial Stability Index, and Bank Soundness. However, this research

finds out identifying financially sustainable listed companies in Sri Lanka through the Altman Z-score model because it helps to measure bankruptcy and financial sustainability.

In the late 1960s, several studies developed models for failure and financial sustainability prediction. Researchers have examined some models to identify their forecasts. There are Univariate Analyses (UA), Multiple Discriminate Analyses (MDA), etc. (Al-Manaseer & Al-Oshaibat, 2018; Altman, 1968; Jones & Hensher, 2004). According to previous research, the most related Altman Z-score model is used to measure financial sustainability under financial distress. This model was initially identified and developed in 1968 by Edward I. Altman, where he utilized data collected from large US companies. He developed a model for predicting company failure or sustainability. This model uses five financial ratios that combine a single number identified as the Altman Z-score. It measures corporate financial health and soundness (Mohammed, 2017).

Empirical Literature

The importance of the listed companies in Sri Lanka for an economy can be measured by financial sustainability through financial distress. Altman's Z-score helps to measure these things (Jayawardena, 1984; Wilkinson, 2013). Therefore, this study investigates the Altman Z-score model, which impacts financial sustainability in the listed companies in Sri Lanka. This section presents the empirical studies that highlight relevant financial distress findings that affect identifying financially sustainable listed companies through the Altman Z-score model.

Several studies have evaluated financial sustainability using several measures, both quantitative and qualitative. Most studies on financial distress also apply indirectly to financial sustainability (Wällstedt et al., 2014). Several studies that have considered the impact of profits, efficiency, liquidity and solvency ratios on financial performance and sustainability have found these variables significant.

Zorn et al. (2018), researched Swiss Dairy farms on the financial ratio impact on financial sustainability. The study related financial sustainability with profitability, liquidity, financial efficiency and solvency and two different models to reflect the differences between European and North American policies. In the North American model, profitability, liquidity efficiency, and solvency were the variables, while profitability, liquidity and solvency were the variables for the European model. They introduced seventeen (17) regularly used financial ratios and they used five (5) profitability ratios, four (4) liquidity ratios and four (4) financial efficiency ratios. In addition, four (4) solvency ratios were used, which include three (3) stability ratios and one (1) repayment capacity ratio. This study can be used to measure the financial

sustainability of Swiss Dairy farms, indicating a high correlation between the general sustainability indicator and the regional sets of indicators. By using the descriptive analysis, correlation matrix and Spearman's rank method, they found that the correlation coefficient among the selected financial ratios was significant and highly positive.

The above study is similar to Hur-Yagba et al. (2015), who assess the financial health and sustainability of wind electricity sectors in the Baltic States and manufacturing companies in Nigeria. It further recommended that companies inculcate liquidity, solvency efficiency, and profitability management policies as part of their corporate management policy framework. In addition, the Altman Z-score model for financial distress should be utilized by manufacturing companies to assist them predicting declining financial sustainability before it occurs.

The study of Tian & Yu (2017) investigated whether an international study on financial ratios as predictors of financial sustainability from the perspective of bankruptcy uses the Altman Z-score model. They determined a set of default predictor variables that represented profitability, liquidity and solvency ratios for Asian and European markets using panel data. In addition, they included that three predictor variables (Retained Earnings/Total Assets, Current Liability/Sales, and Total Debt/Total Assets) are exact predictors of bankruptcy for Asian markets (Japan). In contrast, the Equity/Total Liability ratio was determined as the significant predictor of the Altman Z-score for European markets (UK, Germany, and France).

The research of Liang et al. (2016) investigated the impact of financial ratios and corporate governance indicators on bankruptcy prediction. The study used ninety-five (95) financial ratios and ninety-five (95) corporate governance indicators for 239 bankrupt and 239 non-bankrupt Taiwan companies from 1999 to 2009. Accordingly, these financial ratios and corporate governance indicators were categorized into seven different categories of financial ratios and five categories of corporate governance indicators using discriminant analysis. The financial ratios have been better than corporate governance indicators for prediction. However, both projections give better results. The result showed that the solvency and profitability ratios combined with board structure and ownership structure provided the best combination for bankruptcy or financial sustainability prediction.

The study of Elmabrok & Kim-Soon (2013) examined using Altman's Z-score model to predict the financial hardship of firms listed in the trading services sector of Bursa Malaysia for the period 2003 to 2009. They used random and non-random profitability samples. It could be a difference in determining the financial situation between failed and successful companies; some companies listed within the non-financial failure firms listed within the

Malaysian stock market have financial difficulties. This study demonstrates that using the Altman model is the predictor of an organization's financial failure. Further, it could be an excellent tool for investors to predict the financial failure of companies.

A study by AlAli (2018) examined the application of Altman's Z-score model in determining the financial soundness of healthcare companies listed in the Kuwait stock exchange over the period 2013-2016. It was used to examine financial performance and predict the risk of bankruptcy. Although there are many Altman Z-score models for various varieties of companies, the five-factor model is used for manufacturing companies, and there is a model designed for banks. This literature uses the Altman four-factor model to measure the financial stress of the companies. In addition, this research includes a formula for non-manufacturing and emerging companies (working capital to total assets, retained earnings to total assets, earnings before interest and taxes, and total book equity to total liabilities).

The above studies examined financial sustainability or bankruptcy for foreign countries. Nevertheless, the following studies are related to Sri Lanka. The research of Gnanaweera (2011) analyzed the bankruptcy prediction in the Sri Lankan manufacturing sector using thirty-three (33) de-listed and thirty-three (33) listed companies for the period 2000 to 2010. It used four financial ratios to predict the distress conditions or bankruptcy of the de-listed companies in Sri Lanka. Altman's work has shown that the Z-score and variants have a high degree of accuracy in predicting corporate financial distress within the US, and emerging markets. According to the study results, the Z-score (1963 original model) classifies 90% of the distressed firms and 60% of the non-distressed firm accurately.

A study by Nanayakkara & Azeez (2015) predict corporate financial distress in Sri Lanka from 2002-2011. It includes independent variables such as accrual-based financial ratios, cash flow-based financial ratios and market-based variables. Dependent variables are categorical as financially distressed and financially not distressed. Moreover, multivariate discriminate analysis was used as the analytical technique and a stepwise method to identify the variables. Therefore, it can be used to assist investors, managers, and regulatory bodies in Sri Lanka.

The previous literature has shown that many studies identify bankruptcy and financial sustainability predictions in different contexts and found different results. Many scholars added the Altman Z-score model, and some scholars use various methods to predict bankruptcy and financial sustainability. It used financial ratios, macro-economic factors, return on assets, returns on equity, financial stability index, stock market index, firm size etc. (Al-Manaseer & Al-Oshaibat, 2018; Altman, 2013; Imhanzenobe, 2020; Lohana, 2014; Meher & Getaneh, 2019). In different studies, various contexts showed mixed results.

Subsequently, scholars found the best method of identifying bankrupt or financially sustainable companies by the Altman Z-score model (Wilkinson, 2013). Many research articles investigated identifying bankruptcy or financially sustainable companies through the Altman Z-score model. Further, many empirical works exist in various contexts such as Jordan, Oman, Malaysia, the UK, the USA, Kuwait, Ethiopian countries, Nigeria, India, etc. In the Sri Lankan context, no financial sustainability analysis was conducted for listed companies, and unfortunately, a limited number of studies focused on this concept. However, the researcher proceeds to identify forecast financial sustainability in listed companies in Sri Lanka by utilizing the Altman Z-score model and attempt to fulfill this essential requirement and bridge the empirical and knowledge gap in the country. Therefore, the researcher wants to fill this gap while enriching the existing literature and investigating the identifying financially sustainable listed companies in Sri Lanka through the Altman Z-score model.

3. Methodology

The methodology is based on the recent theoretical and empirical findings related to identifying the financially sustainable listed companies through the Altman Z-score model. The research question is, what types of listed companies come under the financially sustainable category? It describes the approach to test the selected Altman Z-score model according to the related objectives in the introduction part. The researcher allocates the independent variables reference with five ratios according to the previous research studies to measure financial sustainability. Five financial ratios are liquidity ratio, profitability ratio, leverage ratio, solvency ratio and activity ratio. According to the Z-scores, financially sustainable listed companies, greys listed companies, and distressed listed companies in Sri Lanka were identified. The overall framework describes the flow of the research, and accordingly, it will give the conclusion in light of the research objectives.

The relevant population of this study includes all the companies listed in CSE in Sri Lanka and actively traded in the period 2015-2019. The sample size is limited to 191 companies representing 16 GICS industries. This study excludes three industries, namely Banking, Diversified Financial and Insurance since it has distinct characteristics from its nature. Further, these industries are governed by the Central Bank of Sri Lanka and Insurance Regulatory Commission of Sri Lanka etc. The technology hardware and equipment industry had no companies, and the automobile and components industry had one company, but no data is available. Data for this study were gathered mainly from annual reports of firms and the CSE data library.

This research was based on the secondary data obtained from published sources, i.e., annual reports for five years (2015-2019). The absolute figures reported in the financial statements do not serve to measure the companies' financial sustainability. Hence, the financial analyst has to analyze the financial data to ascertain the strengths and weaknesses of the companies. Even though financial analyst have many analytical tools, ratio analysis is the most powerful tool to show the financial sustainability of companies. Alone a single ratio does not serve the purpose. The collected data was analyzed with the help of ratio analysis. The financial ratios used to predict the financial sustainability or failure of the company gives a warning only when it is too late to take corrective action. Therefore, combining the different ratios into a single measure of the probability of financial sustainability or failure is necessary. Altman's Z-score model is a helpful tool in such a situation. The use of the Altman Z-score model helps to consolidate the effect of all ratios. Keeping the above view in mind, the researchers took five years Z-score average for identifying financially sustainable, grey, and distressed listed companies in Sri Lanka. The examples are shown below.

Table 1: Example Z-score calculation and identification of sustainability

Company	Sector	Z-score					Average Z-score	Results
		2015	2016	2017	2018	2019		
Abans Electricals PLC	Consumer Durables & Apparel	2.88	2.80	2.37	2.22	1.76	2.40	Gray Company
Lanka IOC	Energy	7.17	5.78	6.83	4.20	4.79	5.76	Sustainable Company
Hunters and Company PLC	Retailing	2.26	2.60	1.99	0.83	0.72	1.68	Distress Company
ACL plastics PLC	Materials	5.01	5.69	7.98	3.13	4.76	5.31	Sustainable Company

Source: Survey Data (2019).

4. Results and Discussion

Financially Distressed Listed Companies in Sri Lanka

The analysis shows financially distressed listed companies (an average Z-Score below 1.81) from 2015 to 2019. It indicates a high probability of distress within this period. Out of the 191 listed companies, sixty-seven (67) distressed listed companies in Sri Lanka represent twelve (12) sectors, out of the sixteen (16) sectors. Commercial and professional services, household and personal products, pharmaceuticals biotechnology and life sciences, and utility sectors have not included distressed companies.

Table 2: Comparison of Safe, Gray, and Distress Companies

Sector	Safe Com.	Grey Com.	Distress Com.	Total Com.
1. Consumer Durables and Apparel	3	1	6	10
2. Healthcare Equipment and services	2	3	3	8
3. Energy	1	-	1	2
4. Commercial and Professional Services	3	2	-	5
5. Transportation	1	-	1	2
6. Food and Staples Retailing	-	2	1	3
7. Household and Personal Products	1	-	-	1
8. Pharmaceuticals and Biotechnology and Life Sciences	-	1	-	1
9. Telecommunication Services	-	1	1	2
10. Utilities	1	4	-	5
11. Retailing	4	5	2	11
12. Materials	8	7	2	17
13. Real Estate	8	6	3	17
14. Capital Goods	6	13	10	29
15. Consumer Services	14	4	16	34
16. Food, Beverage and Tobacco	15	8	21	44
Total	67	57	67	191

Source: Analysis outputs (2020).

Gray Listed Companies in Sri Lanka

The analysis shows grey-listed companies from 2015 to 2019 period. An average Z-score between 1.81 and 2.99 is in the Gray Zone, suggesting a good chance of the company going distressed or sustainable within the next two years of operations. Out of the 191 listed companies, fifty-seven (57) grey-listed companies in Sri Lanka represent thirteen (13) sectors, out of the sixteen (16) sectors. Energy, transportation, household, and personal products sectors are not included in the grey zone. Accordingly, the market prices of fourteen (14) listed companies increased and the market price decreased by forty-three (43) listed companies from 2015 to 2019.

Financially Sustainable (Safe) Listed Companies in Sri Lanka

The analysis shows the financial sustainability of listed companies from the 2015 to 2019 period alone with the Z-score. An average Z-score above 2.99 is in a safe or sustainable zone. Altman's Z-score model combines five (5) financial ratios to predict the probability of a company becoming sustainable in the next two (2) years. Accordingly, out of the 191 listed companies, sixty-seven (67) sustainable listed companies in Sri Lanka represent thirteen (13) sectors out of the sixteen (16) sectors. However, food and staples retailing, pharmaceuticals, biotechnology, life sciences, and telecommunication services sectors have not included sustainable companies.

Three (3) companies exist under sustainability in the consumer durable & apparel sector, namely, Hayles Fibre PLC, Regnis (LANKA) PLC and Teejay Lanka PLC. The average Z-scores are 3.66, 3.81 and 3.52, respectively. The market prices of Regnis PLC decreased, and other companies' market prices increased from 2015 to 2019. Based on the annual reports, the main strength or reason for sustainability is to produce innovative products in this sector. Similarly, strengths are providing environmentally friendly products, exports to many destinations, operational excellence, product development, and managing relationships. Meanwhile, qualitative characteristics are fundamental, relevance, enhancement, timeliness, and understandability.

The healthcare equipment & services sector has two (2) companies under the sustainable or safe zone. They are Asiri Surgical Hospital PLC and the Lanka Hospitals Corporation PLC. The average Z-scores are 3.89 and 6.01, respectively. According to CSE data, market prices of both companies decreased from 2015 to 2019 since companies consistently improve the quality of human life. In addition, their success in the industry has been an approach to sustainability, responsible governance, and ethical standards. Sustainability is an integral component of the hospital's business model, and they have embraced their responsibility towards people, patients, communities, and the environment.

The energy sector has one (1) company under the sustainable or safe zone. It is Lanka IOC. An average Z-score is 5.76, and the market price decreased from 2015 to 2019. The overall profitability increase can be attributed to the profits derived from all the business segments of IOC Company, except for petrol, where they continued to sell the product on negative margins. Lanka IOC foresees shifting from conventional energy to unconventional energy sources for environmentally friendly auto fuels in the long term.

Three (3) companies are under the sustainable or safe zone in the commercial & professional services sector. They are Paragon Ceylon PLC, Lanka House Painters and Publishers PLC, and Gestetner of Ceylon PLC. Their average Z-scores are 13.06, 4.41 and 4.02, respectively. The market prices of Lanka House Printers and Publishers PLC were increased; however, there was a decrease in Gestetner of Ceylon PLC, and it fluctuated in Paragon Ceylon PLC. These companies are investing their money in diversification. They are setting new industry standards and are driven to make a difference in their quest to create wealth for Sri Lanka.

The transportation sector has one (1) company under the sustainable or safe zone. It is Expolanka Holding PLC. An average Z-score is 4.41. This company's market price decreased from 2015 to 2019. Expolanka Holdings is committed to advancing along a sustainable path following the vision of becoming one of the leading sustainable organizations in the industry. Expolanka believe a conscious effort at sustainable living and sustainable business practices

are vital to enhance their business and protect all life on this planet. A concentrated effort led the growth during five years in expanding their trade lane performance, improving their product portfolio, and growing their core customer base in terms of increased performances from their existing customers and servicing new strategic accounts.

The household & personal products sector has one (1) company under the sustainable or safe zone. It is Swadeshi Industrial Works PLC. The average Z-score is 3.65. This company's market price fluctuated from 2015 to 2019. Swadeshi Industrial Works PLC is the most sought-after Sri Lankan company providing a preferred solution for customers' care and cleaning needs in local and selected international markets.

The utility sector has one (1) company under the sustainable or safe zone. It is Vallibel Power Erathna PLC. The average Z-score is 23.53. This company's market price fluctuated from 2015 to 2019. According to the information published in the annual reports, this company's success began with a quest to deliver sustainable energy to power the nation. Sustainability profitability for their business means they provide a product that is both profitable and environmentally friendly. They have adapted their business model to take advantage of sustainability opportunities. Vallibel Company has much strength. The projects' prime geographical locations, good financial, people, and manufactured capital strength and good governance, risk management, quality management, and CSR practices.

The retailing sector has four (4) companies under the sustainable or safe zone. They are the Autodrome PLC, C.W. Mackie PLC, United Motors Lanka PLC, and Eastern Merchants PLC. The average Z-scores are 3.22, 3.58, 3.05 and 5.57, respectively. The market prices of United Motors Lanka PLC and Eastern Merchants PLC were decreased, and others have fluctuated market prices from 2015 to 2019. The annual reports revealed that these companies produce quality tyres, paints, wires, vehicles etc. All companies' sustainability efforts are under their economic, environmental and social pillars and their every target is set with a clear roadmap as to how it is to be achieved and is ultimately designed to improve their environmental and social performance.

The materials sector has eight (8) companies under the sustainable or safe zone. Chemanex PLC, Union Chemicals Lanka PLC, Bogala Graphite Lanka PLC, ACL Plastics PLC, Industrial Asphalts (Ceylon) PLC, Richard Pieris Exports PLC, Chevron Lubricants Lanka PLC, and Alumex PLC. The average Z-scores are 5.42, 6.29, 6.66, 5.31, 3.27, 4.19, 10.56, and 5.71 respectively. The market prices in three (3) companies decreased, increased in one (1) company and fluctuated in four (4) companies from 2015 to 2019. These companies produce rubber/polymer-related products. Consequently, these companies expand production

capacity, enhance product portfolios, extend distribution networks and infrastructure, have strategic partnerships, international quality standards, and grow their global market presence. Simultaneously, ensure compliance with regulatory requirements and provide clear direction on the decision-making process, promoting a culture of openness, productive dialogue, constructive dissent, employee empowerment, and engagement, thereby creating value for all stakeholders.

This sector has eight (8) companies under the sustainable or safe zone. Serandib Land PLC, Lee Hedges PLC, Equity Two PLC, Property Development PLC, Cargo Boat Development Company PLC, Colombo City Holdings PLC, C T Land Development PLC, and Overseas Realty (Ceylon) PLC. The average Z-scores are 12.4, 4.37, 6.40, 4.81, 16.50, 10.28, 3.33 and 3.71 respectively. The market prices fluctuated in seven (7) companies and decreased in one (1) company from 2015 to 2019. These companies develop housing, land, buildings, properties etc. The real estate industry is highly developing. Sri Lanka is moving in the right direction with the emphasis on infrastructure developments. It will play a significant role in improving the mobility of goods, cost efficiency, and daily commuting capability, thus increasing its intrinsic value to the business community. However, many other areas of the country, such as proper and consistent application of policies, political stability, ease of doing business and investment, and maintaining law and order, still require attention to attract global and local investment communities.

The capital goods sector has six (6) companies under the sustainable or safe zone. Kelani Cables PLC, Lanka Tiles PLC, Office Equipment PLC, Lanka Ashok Layland PLC, Hemas Holdings PLC and Central Industries PLC are among the six companies. The average Z-scores are 3.33, 3.70, 3.40, 3.85, 3.41, and 4.10, respectively. The market prices fluctuated in three (3) companies and decreased in three (3) companies from 2015 to 2019. These companies produce electrical solutions, vehicles, spare parts, and consumer and healthcare solutions. Apparently, they mainly focused on campaigns targeting professionals, influencers and decision-makers. Similarly, these companies are managing working capital, technology capacity expansion, sustainable sourcing, and concentrating on the design and quality of products.

The consumer services sector has fourteen (14) companies under the sustainable or safe zone. They are Tangerine Beach Hotels PLC, Ramboda Falls PLC, Hotel Sigiriya PLC, Pegasus Hotels of Ceylon PLC, Renuka City Hotel PLC, Royal Palms Beach Hotels PLC, The Fortress Resorts PLC, The Nuwara Eliya Hotels Company PLC, Asian Hotels & Properties PLC, Bansei Royal Resorts Hikkaduwa PLC, Hunas Falls Hotels PLC, The Kandy Hotels Company (1938) PLC, The Lighthouse Hotel PLC, and Trans Asia Hotels PLC. The average

Z-scores are 3.18, 4.35, 4.18, 3.53, 14.00, 3.83, 6.32, 7.02, 5.31, 17.52, 4.89, 4.20, 4.15, and 9.11 respectively. The market prices fluctuated in seven (7) companies and decreased in seven (7) companies from 2015 to 2019. They have a clear strategy to drive growth and create long-term value through their property and hospitality operations. They take a disciplined, yield-focused approach to capital deployment on their property. They look to optimize the value of their property and, where appropriate, extract value to fund longer-term sustainable growth. Further, their hospitality operations, consistently deliver a refreshed guest experience across their property and leverage their scale. It will drive growth and maintain high-operating margins.

The food, beverage and tobacco sector has fifteen (15) companies under the sustainable or safe zone. They are Harishchandra Mills PLC, Keells Food Products PLC, Nestle Lanka PLC, Raigam Wayamba Salterns PLC, Bairaha Farms PLC, Three Acre Farms PLC, Renuka Agri Foods PLC, Ceylon Tobacco Company PLC, Distilleries Company of Sri Lanka PLC, Ceylon Grain Elevators PLC, Ceylon Cold Stores PLC, Watawala Plantations PLC, Dilmah Ceylon Tea Company PLC, Convenience Foods (Lanka) PLC and Tea Smallholder Factories PLC. The average Z-scores are 7.77, 5.24, 10.12, 5.15, 3.81, 5.38, 3.04, 14.97, 4.66, 4.09, 6.06, 3.07, 10.27, 5.42, and 3.29 respectively. The market prices fluctuated in thirteen (13) companies and decreased in two (2) companies from 2015 to 2019. They provide excellent quality foods, soups, nutrition, taste and health need to the nation. The companies are providing quality, strong brands, innovation, availability, and convenience continues to be their operational process which propels their efforts to continuously deliver value to their customer. Sector-wise, a high percentage of financially sustainable companies are included Commercial and Professional Services, Household and Personal Products, Materials and Real Estate sectors.

The researcher identified that the present research Z-score classifies 35% of financially sustainable companies, 35% of distressed companies, and 30% of grey companies out of 191 companies. Accordingly, Al-Manaseer & Al-Oshaibat, (2018) concluded that 57.31% of safe companies and 38.09% of grey and distressed companies. It indicated the safety and failure of the financial position of these companies since they develop their activities and make good use of company funds, raising total assets notes, decreased total liabilities, and working capital may be due to lack of experience. The reasons were the same for this study. Further, Mohammed (2017) concluded that the Raysut Cement Company, which showed a poor financial performance in the first three years and another two years, showed a good performance. Therefore, it can be quoted as an investor-friendly company. Samarakoon & Hasan (2003), investigate predicting corporate distress in the Sri Lankan stock market. It

stated that the Z-score classifies 90% of the distressed firms and 60% of the non-distressed firms accurately. The overall success rate of 91% is observed using the Z-score. The out-of-sample evidence provided in this paper means that the Z-score model seems to have excellent potential in evaluating the risk of corporate distress and sustainability in smaller emerging markets. Empirical studies prove high accuracy and suitability for identifying sustainable financial companies through the Altman Z-score model (AlAli, 2018; and Lohana, 2014).

Gambler's Ruin Theory makes predictions concerning the growth and survival of the business; however, this study identifies financial sustainability in the companies through concerning many data (Liquidity, Profitability, etc.). It is affected by the company's growth and failure. This theory is used for predicting financial sustainability and bankruptcy in companies (Coad et al., 2013). Similarly, Life Cycle Theory is applied in business to explain the birth, growth, maturation, and death process of firms. At each stage, they share financial situations. When financial performance is high, the company's life cycle is high growth and survives in maturation. Financial sustainability is an effect on all stages of the life cycle and it helps many stakeholders to make the right decisions in the face of financial situations (Bayai & Ikhide, 2016). These theories are linked to financial sustainability and distress.

The percentage of companies with Z-scores (Sustainable/Safe zone) reached 35%. It indicated the safety of the financial position of these companies because they develop their activities and make good use of company funds. While companies with a low Z-score (Gray and Distress zones) reached 65%, companies are exposed to the risk of financial failure. As a result of a lack of experience in managing the fund, they did not develop their activities and misused company funds and economic and political issues arose. So, it indicates indicators the companies will expose to financial sustainability if they use the same financial or other policies they currently use. These financially sustainable companies are essential to investors, creditors, managers, regulatory bodies, employers, customers, government and society. The listed companies affirmed information for stakeholders through annual reports. They reported about product quality, job security, incentives and rewards, share price and liquidity, compliance with regulations, employment opportunities and support for community needs etc.

5. Conclusion

The study mainly sets out to identify the financially sustainable listed companies in Sri Lanka. The data for the study were obtained from annual reports for the period of 2015-2019. The study analyzes sustainable/safe zone, grey zone and distress zone under the research. The researcher used 191 companies out of the 289 companies and utilized sixteen (16) sectors out of twenty-one (21) sectors. Finally, this study identifies sixty-seven (67) companies as

financially sustainable, fifty-seven (57) companies as grey and sixty-seven (67) companies as distressed out of the 191 listed companies. Subsequently, the following study results investigated the identifying financial sustainable companies. Financial sustainability is understood as public administrations' ability to continue now and in current policies without causing the debt to rise continuously. Therefore, stakeholders need to pay great attention when making decisions. Moreover, Sri Lanka is a developing country because a small number of companies are sustainable. Thus, grey and distressed companies should try to change their strategies in companies to become financially sustainable. All companies overall faced some micro and macro-economic challenges from 2015-2019. The main thing is the Easter attacks and their repercussions affecting the economy in 2019. After these challenges, many companies' Z-scores have been decreased. Accordingly, contributions of the government, policymakers, managers in companies and stakeholders are required and a proper mechanism should be implemented to motivate all listed companies towards sustainability by providing all forms of assistance.

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