PREDICTION OF CORPORATE FINANCIAL DISTRESS IN THE TRAVEL AND TOURISM INDUSTRY

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Abstract

Currently, most countries in the world endure financial distress due to the ongoing economic crisis. Thus, financial distress prediction (FDP) has become vital in speculating the business continuity for the corporate world. In the context of Sri Lanka, the travel and tourism industry has been highly exposed to political, economic and climate (weather) shocks, as well as being sensitive to the impacts of COVID-19. Along with those shakes the recent economic crisis and the need for FDP led the researchers to empirically investigate the discrimination zones, i.e., distress zone, grey zone, and safe zone of the travel and tourism industry in developed and developing countries. This study adopted Altman's (1968) original Z-score model for data analysis. This research is based on secondary data from annual reports of 138 listed travel and tourism companies listed on the stock exchanges of developed and developing countries: the USA, Australia, Singapore, South Africa, Malaysia, and Sri Lanka during the five-years period (2016–2020). The purposive sampling method is used to obtain the secondary data for the study. The finding revealed that 96.38% of travel and tourism companies are in the distress zone, 2.90% grey zone, and 0.72% safe zone in developed and developing countries. This study recommends all the travel and tourism companies in developed and developing countries maintain enough retained earnings to avoid corporate failure. This study is significant since it evidences the FDP and signals the global economic depression.

Keywords: Altman Z-Score, Tourism Industry, Developed Countries, Developing Countries, Bankruptcy

1. INTRODUCTION

Financial distress prediction (FDP) analyses the likelihood of a corporate failure. Hence, the FDP has become important in understanding the going concern of the companies. Travel and tourism companies in developed and developing countries are highly exposed to corporate failure. This issue would lead the companies to obtain loans from financial institutions as a bailout to regain financial stability. This is valid with losses that occur due to economic crises worldwide, where evaluating the financial health of an organization becomes increasingly essential. As a result, the economic consequence of corporate failure is significant for stakeholders in the organization. Bankruptcy prediction is one of the considerable problems in FDP (Liang et al., 2015). Industries like travel and tourism have been vulnerable due to a string of events and uncertainty seems to remain. This can be seen due to economic crises, especially with the recent economic recession brought about by the pandemic and later aggravated by the Russia-Ukraine war. Furthermore, financial stability is the process of discovering a company's financial strengths and weaknesses by establishing the link between items impacting the financial position and the profit and loss account. Moreover, FDP provides judgment regarding the company's financial capability (Mahbuba, 2015).

Company failure has been recognized as one of the hot topics over the last few decades (Mantovani et al., 2022; Hogan & Kostyuk, 2021; AlHares & Abumustafa, 2021; Di Donato & Nieddu, 2020). Thus, financial stability can be considered significant for all companies for business survival and to achieve stakeholder expectations. Therefore, managers and employees are the responsible individuals for sound financial management for companies' development. Hence, this paper contributes to the FDP evidence/signal or indication in the travel and tourism industry from developed and developing countries. Accordingly, these gaps in the literature led to the research question of what the discrimination zone of the travel and tourism industry is in developed and developing countries.

Numerous techniques are available for assessing the financial health of companies. This study adopted Altman's (1968) Z-score original model which has been proven to be a more reliable tool for FDP This model consists of five financial ratios that analyse the firm's liabilities and assets. Altman Z-score has been identified under three discrimination zones namely, *safe zone, grey zone,* and *distress zone.* These zones are used to evaluate the extent of the financial stability of a particular company.

The rest of the paper is organized into the following distinct stages. Section 2 explains the literature review on the present topic, Section 3 discusses methodology, Section 4 represents the findings of the study, Section 5 analyses the findings, and Section 6 records the conclusion.

2. LITERATURE REVIEW

Altman's (1968) original model has been employed by several studies to measure the financial well-being of companies. Inam et al. (2019) examined the probability of bankruptcy in Pakistani non-financial sector enterprises with a sample of 371 firms listed on the Pakistan Stock Exchange by using the Altman's (1968) Z-score model. The result suggests maintaining companies' financial health by monitoring the financial indicators, also discussed in this research. In a similar study, Nagendrakumar et al. (2020) found that 91% of hotels are in crisis, 9% are safe, and none are in the grey zone in the Sri Lanka hotel industry totaling a sample of 34 hotels. This empirical study demonstrated that the tendency to be bankrupt soon was high for Sri Lanka's tourism sector. Simatupang (2020) analyzed the bankruptcy risk of Bank SUMUT[1] using the Altman Z-score model. The sample for this study includes Bank SUMUT's financial statements from 2017 to 2019. The Altman's (1968) modification method is used in the data processing technique. Based on the data analysis Bank SUMUT's is in the *grey zone.* In an article by Fifriani and Santosa (2020), who applied a modified Altman Z-score method, the main purpose of the study was to predict corporate bankruptcy in the Indonesian telecommunications industry. A sample consisted of all the telecommunication companies listed in the Indonesia Stock Exchange (IDX) during the period 2011–2015. Finally, the result has come up with revealing that there are two potentially bankrupt companies in Indonesia. Buzgurescu and Elena (2020) present bankruptcy risk analysis models with important performance indicators as factors for analyzing the bankruptcy risk of Romanian industrial businesses to determine how foreseeable and significant it is to avoid going bankrupt. The sample of this study consisted of 11 companies listed on the Bucharest Stock Exchange (BVB) from 2015–2017. The result of this study reveals that the substantial association between economic and financial variables and Z-score functions was emphasized.

The purpose of Arini et al.'s (2018) study is to find the Altman Z-score model to predict the bankruptcy companies of advertising, printing, and media listed in the Indonesian stock market. The researcher consisted of a sample size nine of advertising, printing, and media companies listed on IDX. The obtained results show that the Altman Z-score model can predict the bankruptcy of companies. This study explains whether nine samples of face-selected companies are in the grey zone rather than the bankruptcy zone between 2012 and 2015 (Arini et al., 2018). The major contribution assists the management of the firm in determining the company's financial health and management decision-making in avoiding risks related to the company's insolvency.

An article by Maharani and Sari (2021) examined the bankruptcy analysis used in tourism industry companies due to the impact of COVID-19 in Indonesia. This study used four bankruptcy analyzes namely, Zmijewski analysis (X-score), Springate (S-score), Altman analysis (Z-score), and Grover analysis (G-score). A restaurant, a hotel, and

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[1] Bank SUMUT is one of the banks in Indonesia with the company name PT Bank Pembangunan Daerah Sumatera Utara (Regional Development Bank North Sumatra). PT BPD SUMUT or better known as Bank SUMUT is a regional foreign exchange development bank established on November 4, 1961. Bank SUMUT was formed with the status of a Limited Liability Company (*Perseroan Terbatas*, Indonesian).

a travel agency that was listed on IDX between 2018 and 2020 were the sample used for conducting the research. The purposive sampling method was used for the sampling, and the sample size was 27. Findings showed, that five enterprises were in the grey region (grey) category; 18 companies were in bankruptcy according to Altman analysis (Z-score); and only four enterprises in the sample are not in bankruptcy. The collected results demonstrate that the Altman Z-score model is capable of foretelling corporate insolvency (Maharani & Sari, 2021).

Hotels, restaurants, and travel companies are some of the sectors most affected by the COVID-19 pandemic according to the Rahmah and Novianty (2021) study to analyse whether there are differences in financial distress before and during a COVID–19 pandemic using the Altman Z-score model. The financial data of 27 companies in 2019 and 2020 that fit the criteria were used to conduct the research/study. This study was analysed using SPSS Statistics (version 26.0) software program and the results show that there is a negative impact on the business continuity of hotels, restaurants as a tourism sub-sector in Indonesia.

Cındık and Armutlulu (2021) have evaluated the Altman Z-score model revision and conducted a comparative analysis of the financial distress scenario for Turkish companies using four different models: 1) the original Altman Z-score model, 2) the revised Altman Z-score model, 3) quadratic discriminant analysis, and 4) the random forest machine learning model using the same variables suggested by Altman. The data included an investigation of the monetary ratios for 80 companies between 2013 and 2018. These firms are all categorized as small and micro-sized enterprises since they employ fewer than 50 people and generate annual sales of less than 25 million Turkish lira (TRY). Random forest produced a classification accuracy of 100% for publicly traded companies, however other models performed better for privately held companies than for publicly traded ones.

Niresh and Pratheepan (2015) revealed that 71% of companies were under the distress zone, and 29% were under the grey zone in the trading sector in Sri Lanka. In Mahbuba (2015), a Z-score model was used to assess the fundamental financial health of the leather industry in Bangladesh, identifying both financially sound firms and those that are not in the best position. In this study, the results suggest that by identifying the risk level, shareholders make financial decisions about the portfolio of investments that is better off, thus managing risks and returns. In other words, taking a proactive stance in improving financial management can enhance organizational resilience in crises. Adopting strategies of this type equip companies to cushion against risks and withstand external shocks they face in volatile times. A similar approach sets the ground for sound preparation on the financial front to safeguard stakeholder interests in the leather manufacturing sector (Mahbuba, 2015). In another study, Mohammed (2016) assessed the financial health of Raysut Cement Company SAOG and its Omani subsidiaries. Tung and Phung (2019) study adopted the Altman Z-score model to evaluate the bankruptcy risk of various types of businesses, small and medium enterprises.

Rahmah and Novianty (2021) figure out that during the COVID–19, in Indonesia, the majority of hotels and restaurants and tourism sub-sectors were most likely to go bankrupt compared to before the COVID–19 period. Rahmah and Novianty (2021) identified that most companies are in a distress zone due to the government-imposed travel restrictions which limited tourists' visits. Therefore, many travel and tourism companies shut down, leading to a decline in financial performance. Moreover, Lestari et al. (2021) proved that eight companies were in the financial distress zone, 27 companies were under the grey zone, and 45 companies were in strong financial health in the tourism and hospitality, and restaurant sector in Indonesia. Goh et al. (2021) suggested the size and location of the firm, and its financial ratio are crucial factors in determining whether a tourist and hospitality company will survive or bankrupt by using the Altman model. Shome and Verma (2020) adopted Altman modified method to reveal that three airline companies were in the distress zone and only one company was in the safe zone in the Indian aviation Industry. Maharani and Sari (2021) study results confirmed that all the travel and tourism Indonesian companies are in detrimental condition due to the impact of COVID–19.

3. RESEARCH METHODOLOGY

3.1. General research framework

This study relied on the quantitative approach which measured the company's financial healthy level based on 138 firms listed on the stock exchange of developed and developing countries. This research is based on secondary data extracted from the annual reports of listed travel and tourism companies in selected three developed countries (the USA, Australia, and Singapore) and three developing countries (South Africa, Sri Lanka, and Malaysia). Among 176 listed companies in the tourism industry, the sample of this study consisted of 138 firms in developed and developing countries. This is due to the lack of information published in the annual reports of some firms. Altman's original Z-score approach was recognized and widely employed in previous research to evaluate the financial stability/likelihood of bankruptcy of these companies.

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5 * X_1 \quad (1)$$

where, X_1 = working capital/total assets; X_2 = retained earnings/total assets; X_3 = earnings before interest and taxes/total assets; X_4 = market value of equity/total liabilities; X_5 = sales/total assets.

Zones of discrimination: *Safe zone — Z > 2.99; Grey zone — 1.81 < Z < 2.99; Distress zone: Z < 1.81.*

3.2. Ratios explaination

Working capital to total assets ratios used to assess a company's liquidity and the difference between current assets and current liabilities is known as working capital. A company's short-term financial

health is determined by its working capital (Altman, 1968).

The retained earnings to total assets ratio evaluate the business's cumulative profitability. Retained earnings are the total income or loss that is reinvested throughout the life of a company. The age of the firm is important for this ratio as retained earnings are related to the age of the company (Altman, 1968).

Earnings before interest and tax (EBIT) to total assets represent a company's overall productivity and cumulative productivity. Since the final existence of a company is based on its asset earning power, this ratio is particularly relevant for the study of institutional failure (Altman, 1968).

Market value is also determined as market capitalization. Equality is measured by combining the market value of all shares of preferred and common stock (Altman, 1968).

The capital-turnover ratio is a common financial measure that depicts the assets' potential to generate revenue. It is one indicator of a company's ability to deal with competitive pressures (Altman, 1968).

4. RESEARCH FINDINGS

In this study, as explained previously, the Altman Z-score model results are classified into three discrimination zones such as *safe zone, grey zone,* and *distress zone.* This analysis identified that most companies were in the *distress zone* and emphasized the poor financial position of the travel and tourism industry. Among the sample of 138 travel and tourism companies, 134 companies are under the *distress zone* (97.10%) and are highly likely to go bankrupt soon. Regarding the rest of the companies, three companies are in the *grey zone* (2.17%) and only one company (0.72%) is in the *safe zone.* Thus, only two zones indicated 2.89% and comparatively have a low risk to undergo bankruptcy. The companies under the distress zone are expected to undergo bankruptcy due to the negative retained earnings and negative interest and taxes reported over the past five-year period. Therefore, it conveys that the stakeholders of this industry should be more alarmed about the financial aspects of the travel and tourism companies.

Table 1. Overall results of bankruptcy prediction

Variables	Discrimination zones	No. of travel & tourism companies	Average Z-score	Percentage of travel & tourism companies
All countries	Safe zone	1	3.4633	0.72%
	Grey zone	3	1.7775	2.17%
	Distress Zone	134	0.5302	97.10%

Source: Authors' compilation

Table 2 depicts the bankruptcy prediction of selected developed and developing countries travel and tourism industry. Out of 76 companies listed in the tourism industry, 72 companies fall under the *distress zone,* three companies fall under the *grey zone* and one company is under the *safe zone.* The results further revealed that 94.74% of the total travel and tourism companies are very likely to impending bankruptcy and that 3.95% are also at risk of financial distress. The rest of the 1.32% has a non-risk for bankruptcy. However, there is a high probability of the collapse of the entire travel and tourism industry in the selected developed countries.

In Table 2 result of selected developing countries, out of the 62 travel and tourism companies, 62 companies are under the *distress zone.* It disclosed

that 100% of the total travel and tourism companies are likely to fall into bankruptcy in the future. Hence, no travel and tourism company belongs to the *safe zone* and *grey zone,* and, therefore, the entire travel and tourism industry in selected developing countries is more likely to collapse.

Table 3 shows that in six countries (the USA, Australia, Singapore, South Africa, Sri Lanka, and Malaysia) the travel and tourism industry was in a *distress zone* during the five-year period considered for the study. These findings reveal that the travel and tourism industry was in an adverse position of financial health. If this phenomenon continues, it is likely that investments in the travel and tourism companies will suffer, as current investors will exit the investment, i.e., sell their shares and no new investments will be made.

Table 2. Bankruptcy prediction of developed and developing countries

Variables	Discrimination zones	No. of travel & tourism companies	Average Z-score	Percentage of travel & tourism companies
Developed countries	Safe zone	1	3.4633	1.32%
	Grey zone	3	2.3700	3.95%
	Distress zone	72	0.5796	94.74%
Developing countries	Safe zone	0	-	0.00%
	Grey zone	0	-	0.00%
	Distress zone	62	0.2746	100.00%

Source: Authors' compilation

5. DISCUSSION

This study was conducted to explore the discrimination zones (*distress zone, grey zone,* and *safe zone*) of the travel and tourism industry in developed and developing countries. Considering the five-year average Z-scores of the travel and

tourism industry of the selected countries separately, it can be predicted that all the countries are in financial distress. The travel and tourism industry in the USA performed well between 2016 and 2018, but it has declined since 2019. This is depicted by the average Z-score value of 0.3519 recorded in 2020. Although Australia's travel and

tourism industry performances improved from 2016 to 2017, it steadily declined in the remaining three years after 2017. From 2016 to 2018, the Singapore travel and tourism industry rose slowly and reached the highest Z-score value of 0.8932. After 2018, a sharp decline is evident over the two years (2019–2020). The average values of the Z-score of South Africa's travel and tourism industry were under the *distress zone* during the observed period. The highest Z-score was recorded remarkably in 2019 though shows a significant decline in 2020. In the Malaysian travel and tourism industry,

the average Z-score values are less than 1.81 over the five-year period, indicating weak performance, high risk, and the company is likely to go bankrupt. According to the average Z-score values of Sri Lanka, a continuous decline in the travel and tourism industry is reported since 2016. The lowest Z-score value was recorded in 2020, which was 0.1183. Finally, this study revealed that the travel and tourism industry in developed and developing countries has shown a gradual decline throughout this five-year period, and predicted that this industry will go bankrupt soon.

Table 3. Bankruptcy prediction of the country wise over the five-year period

Country	Year	Average Z-score	Discrimination zones
The USA	2016	0.7711	Distress zone
	2017	0.7988	Distress zone
	2018	0.8199	Distress zone
	2019	0.6445	Distress zone
	2020	0.3519	Distress zone
Australia	2016	0.7322	Distress zone
	2017	0.8203	Distress zone
	2018	0.8001	Distress zone
	2019	0.6442	Distress zone
	2020	0.5876	Distress zone
Singapore	2016	0.7168	Distress zone
	2017	0.8437	Distress zone
	2018	0.8932	Distress zone
	2019	0.5348	Distress zone
	2020	0.3764	Distress zone
South Africa	2016	0.6370	Distress zone
	2017	0.7675	Distress zone
	2018	0.8074	Distress zone
	2019	1.1843	Distress zone
	2020	0.5990	Distress zone
Sri Lanka	2016	0.2724	Distress zone
	2017	0.2675	Distress zone
	2018	0.2562	Distress zone
	2019	0.1812	Distress zone
	2020	0.1183	Distress zone
Malaysia	2016	0.2367	Distress zone
	2017	0.2369	Distress zone
	2018	0.3001	Distress zone
	2019	0.2342	Distress zone
	2020	0.2200	Distress zone

Source: Authors' compilation

6. CONCLUSION

The Altman Z-score model is one of the best techniques for bankruptcy prediction among other techniques. The present study empirically concludes that the propensity to be bankrupt is very high in the travel and tourism industry as evidenced by developed and developing countries. Thus, it is concluded that the world has entered a recession and suffers one of the worst economic crises in history. Accordingly, firms are recommended to take due strategies supported by sound planning, to face the misery at hand and minimize the economic depression.

The results obtained in our study contribute to the knowledge of bankruptcy in the travel and tourism industry. Furthermore, the result indicates that Altman Z-score model is the best fit for predicting bankruptcy in the tourism industry.

Although no previous research has been conducted based on corporate failure in developing countries in the tourism industry, the results of this study contribute to the general research field related to the tourism industry's financial performance. Limitations of this study derive from the issue of a short period of observations.

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