



Comparative Analysis of Financial Distress by Using the Bankruptcy Prediction Model (Case Study of Registered Tourism Sub-Sector Companies on the Indonesian Stock Exchange Period 2017 - 2019)

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Abstract. This study aims to determine, describe, and analyze whether the Modified Alt-man Z-Score Model, Grover G-Score Model, Springate S-Score Model, and Zmijewski X-Score Model have a high level of accuracy in predicting financial distress in companies or not. The tourism sub-sector is listed on the Indonesia Stock Exchange for the 2017–2019 period. This study used secondary data in the form of the company's annual financial reports. The population of this study consisted of 24 companies and 10 companies as samples using a purposive sampling technique. The research method used was the comparative quantitative method. The data were processed using Microsoft Excel software, and the results showed that the four bankruptcy prediction models used had a high degree of accuracy, where the Grover G-Score and Zmijewski X-Score models had the highest level, namely 100%, Modified Altman Z- Model Score 83 % and Model Springate S-Score 33%. These results have been compared from one model to another. The results give a signal or sign that the company is in financial distress and must immediately implement the right strategy to solve this problem.

Keywords: Bankruptcy Prediction Model, Comparative, Financial Distress, Tourism.

1 INTRODUCTION

The tourism sub-sector companies, including hotels and restaurants listed on the IDX (Indonesian Stock Exchange), are one of the most critical sectors and are closely related to the community. In the tourism sector, people usually spend a lot of time visiting places such as beaches, museums, etc. This sub-sector makes a significant contribution to the Indonesian economy and to the regions because it can increase income for the area and Indonesia, as foreign exchange income for national development, employment of local workers, and regional marketing of MSME products. This sector is an important sector to pay attention to and to be maintained so that every visitor who comes feels safe and comfortable.

Then, every company must have experienced a condition of financial difficulties. A condition in which it is difficult for a company to distribute its finances for other purposes because the income achieved is less than usual or even nonexistent. Financial difficulties can also be called financial distress. If the company continues to face financial problems, the company can go bankrupt and cannot operate.

The phenomenon can become a problem for this sector, as occurred in 2017 when there was an election for Presidential election in Indonesia. This made foreign and local tourists consider traveling to tourist attractions because the situation before and after the election was still unstable. Then throughout 2018, natural disasters hit Indonesia, which caused an increasing trend of natural disasters such as earthquakes, landslides, tsunamis, floods, volcanic eruptions, liquefaction or land subsidence, and others. These had a significant impact on tourism in Indonesia, namely the damage to tourist attractions, a decrease in tourist arrivals due to perceptions of risk and avoidance of unsafe areas, and feeling uncomfortable or ethical issues about going on tours after natural disasters.

Furthermore, in 2019 there was a change in the technology field, namely towards digital technology era 4.0. This has an effect, especially on the use of technology in the tourism sector for promotion, in the form of advertisements and short videos about tourism profiles to attract tourists. If this sector does not follow and participate in the changes in technology 4.0. In that case, it will inevitably be left behind because competition is getting tougher, and convenience in order is preferred today. In addition, in 2019, the COVID-19 pandemic began to appear for the first time, which finally made companies, especially tourism, temporarily close to compiling steps that must be prepared and carried out.

All those phenomena can be disclosed using a theory of planned behavior, which explains personal behavior. It appears from the intentional conduct of individuals caused by several internal and external factors. Attitude behavior of individuals covers belief behavior; assessment results in behavior, norm subjective, belief normative, and motivation to comply with them [1].

If the company immediately makes a strategy or way so that the company can continue to survive, the company can avoid bankruptcy. Bankruptcy is a situation when the company is in an unhealthy state but still stands and walks because of the inability to stay competitive, which results in poor profitability [2]. It shows the position of the finance company, even though it will experience difficulty in future finances. Bankruptcy itself can be caused because of internal factors as well as external ones [3].

To predict bankruptcy, there are several bankruptcy prediction models, namely the Modified Altman Z-Score model, Grover G-Score, Springate S-Score, and Zmijewski X-Score. This prediction does not give results of the company's bankruptcy but conveys early warning signs of financial difficulties. Research results from [4] showed significant differences between the Grover, Altman Z-Score, Springate, and Zmijewski models with different levels of accuracy. From the research side, [5] the Altman Z-Score method can be strengthened by a profitability ratio that shows the inability to profit. Then, the four bankruptcy prediction methods can be used to update existing research with a period from 2017 – 2019. From this bankruptcy prediction model, the use of this model in

tourism sub-sector companies can be compared and analyzed whether the company is experiencing financial difficulties so that it is categorized as bankrupt or still healthy.

Financial distress is the inability of a company to pay the obligation in a short period due to unscrupulous management in the formulation of policy, which raises difficulty in economic/financial distress [6]. The analysis must be done early because the external party, including investors, is the most affected by risk, such as if the company faces complex finance [7]. Financial distress can be looked up by reviewing the financial report. A financial report is an illustrative report of the condition of finances for a certain period [8]. It is used as a tool for communication for the holder's interests [9].

According to [10], accountancy is the ability to systematically record, classify, summarize, and report transactions based on recognized criteria of the public. A similar definition is also mentioned in a study that accountancy is the process of collecting, classifying, and summarizing to provide information to the economy needs user [11].

Analysis comparison or comparison is a statistical method to test the difference between two or more data sets (variables) [12]. The comparison used in this study produced decisions for the future, like in the company, that will determine if the company still can endure or experience some constraints [13].

This research aims to develop, prove, and obtain new and existing knowledge with Modified Altman Z-Score Models, Grover G-Score, Springate S-Score, and Zmijewski X-Score, which have the highest accuracy level. In addition, it is also to prove which model is the most accurate for bankruptcy prediction.

2 METHODS

2.1 Research Method

This research is scientific research that begins with eliciting a problem, searching for an answer by studying literature, creating a hypothesis, and finally making a conclusion [14]. This research used a comparative quantitative method which compares one variable with another variable or one variable by default [13].

Population.

The population is the generalization area [14]. It comprises the defined object and the subject of researchers to study and draw on in conclusion. The population data used for this research are Tourism Sub Sector Companies on the Indonesia Stock Exchange for the 2017-2019 period.

Sample.

The sample is part of the population. It is stated that part element from the people is a sample [15]. Several models used in this research are shown in Table 1.

Table 1. Criteria Sample.

No.	Details	Sample
1.	Tourism Sub Sector Companies registered on the IDX until 2019 2022	40
2.	Tourism Sub Sector Companies the financial reports from 2017 – 2019 are not yet complete	-2
3.	Tourism Sub Sector Companies whose financial reports for 2020 – 2021 is not yet complete	-14
4.	Tourism Sub Sector Companies that have total assets of min. 1 trillion (2017 – 2019)	-14
Total Sample		10
Years of Research		3
Total Data		30

3 RESULTS AND DISCUSSION

3.1 Modified Altman Z-Score Model Analysis

In 2017, only one company experienced gray areas or prone conditions, while nine companies experienced other conditions such as non-financial distress/not bankrupt/healthy. In 2018, two companies experienced a gray area, and eight were in non-financial distress/not bankrupt/healthy. Furthermore, in 2019, two companies were in a gray area or vulnerable state, and eight were in non-financial distress/not bankrupt/healthy. The results for 2019 were still the same as in 2018 where only the company experienced a gray area which is different from 2018.

During 2017-2019, no company experienced financial distress/bankruptcy/unhealthy conditions. If the company is in a gray area, then the company must be careful because financial conditions in the company could experience financial and non-financial distress. However, if the company is in non-financial distress, it means that the finance company needs to be maintained and managed well so it can keep going, survive, and operate.

From the tourism company using the Modified Altman Z-Score model prediction, it was revealed that no company experienced financial distress, and only experience condition gray area and non-financial distress. From the data of the tourism companies' subsector listed in the Indonesia Stock Exchange in 2020, the results in Modified Altman Z-Score model predictions are according to reality because the whole company samples currently are still ongoing. Although it is predicted to be in a condition gray area, the companies still make a slow movement that helps them to keep going and endure in every condition.

3.2 Analysis of the Grover G-Score Model

From 2017 to 2019, the tourism company was categorized as experiencing non-financial distress/not bankrupt/healthy or at 100% because according to the G-Score category, if ≤ -0.02 it is said to be in financial distress, and if ≥ 0.01 it is said to be in non-financial distress.

3.3 Springgate S-Score Model Analysis

In 2017, there were seven tourism companies (70%) categorized as experiencing financial distress/bankruptcy/difficulties in finance, and three tourism companies (30%) experienced non-financial distress/not bankrupt/healthy. Then, in 2018, four companies (40%) experienced financial distress and 6 companies (60%) were in a condition of non-financial despair. Finally, in 2019, three companies (30%) experienced financial distress and seven companies (70%) experienced non-financial distress. From the results of the S-Score category, if > 0.862 , it is said to be in non-financial distress, and if > 0.862 , it is said to be in financial distress.

3.4 Analysis of the Zmijewski X-Score Model

From 2017 to 2019, the tourism company was categorized as experiencing non-financial distress/not bankrupt/healthy or at 100% because according to the X-Score category, if < 0 it is said to be in non-financial distress, and if > 0 it is said to be in financial distress. Then, when the company is in a state of non-financial distress, this explains that the company has successfully maintained and managed the finances of the company, mainly increasing ROA, leverage, and liquidity of the company. From the data of sub-sector tourism companies listed in the Indonesia Stock Exchange in 2020, the results of the predictive Zmijewski X-Score model are by reality because the whole company sample is still ongoing.

3.5 Proof of Bankruptcy Predictive Models

Modified Altman Z-Score.

During 2020, there were five companies predicted to be in financial distress (50%), two companies indicating a gray area (20%), and 3 companies predicting non-financial distress (30%). Then, in 2021 there were four companies predicting financial distress (40%), three companies indicating a gray area (30%), and three companies predicting non-financial distress (30%). Those experiencing financial distress during 2020–2021 were estimated to decline. However, from the data in the 2017 – 2019 period, there was an unprecedented improvement for companies that experienced financial distress.

These results show that the accuracy level of the Altman model is only about 83% which means inappropriate. It was predicted that the financial distress of the company would decline, while company's financial reports showed that they are in financial distress/a gray area.

Grover G-Score.

It was predicted that the companies experiencing financial distress during 2020–2021 would decline in 2021, and if seen from 2017 – 2019, these results are comparable because there were not any companies experiencing financial distress. Then, it was predicted that companies experiencing non-financial distress in 2020 – 2021 would increase in 2021, and if seen in 2017 – 2019, these results experienced a decline because all companies in 2017 – 2019 are in a non-financial distress condition. Based on the G-Score information and results, these predictions for 2020 and 2021 can be seen in the report finance in 2020 and 2021 that are not in a really good condition.

Springate S-Score.

During 2020 and 2021, ten companies are predicted to be in financial distress (100%). The predicted results showed that companies experiencing financial distress during 2020 – 2021 would highly increase because, if seen from 2017, there were only seven companies; in 2018, there were four companies, and in 2019, three companies were experiencing financial distress. Then, the predicted results show that companies experiencing non-financial distress in 2020–2021 declined. Because if seen in 2017, there were three companies; in 2018, there were six companies; and in 2019, there were seven companies in a non-financial distress condition.

Zmijewski X-Score.

The predicted results of companies experiencing financial distress during 2020 – 2021 remain stable, the same as in 2017 – 2019. After obtaining results, these predictions for 2020 and 2021 show that the financial reports in 2020 and 2021 are in good condition. This explains that the accuracy level of the Zmijewski model is 100% and can be considered appropriate. The prediction results for 2020 – 2021 show that companies experiencing financial distress did not exist. The results are correct for 2020 – 2021 because the company's financial reports declared them to be in non-financial distress.

Whatever results are obtained during 2017 – 2019, the company must still stick with various ways and solutions. Then, the prediction results obtained for the next 2 years are expected to make companies better prepared to face conditions because the results of this prediction become a sign of conditions to be experienced by the company for the next 2 years.

4 CONCLUSIONS

Grover G-Score and Zmijewski X-Score models had the highest accuracy level among other models, other than 100%—modified Altman Z-Score Model accuracy level was 83%. Then, the Springate S-Score model accuracy level was 33%. Based on the prediction model of bankruptcy that results in an accuracy level for 2017 – 2019, it is proven that Grover G-Score and Zmijewski X-Score models are appropriate because they can follow the conditions for the next 2 years in 2021.

4.1 Suggestion

Based on the research findings, it is suggested that the sub-sector companies in tourism listed on the Indonesia Stock Exchange make the right decision or strategy so that the company can be wariier if there is a sign leading to financial distress. In addition, more company sectors or other sectors can be involved by using different bankruptcy prediction models and adding research periods that may be carried out by future researchers. Thus, information regarding financial distress in a company, especially in sectors related to tourism which is close to the community, becomes increasingly known to all parties who need and like the community. This can be helpful by providing solutions for tourism companies by carrying out promotions so that they attract the attention of tourists and others.

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