

Conference Paper

Bankruptcy Prediction Analysis of PT Garuda Indonesia Compared to Four Airlines Companies in Asia

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Abstract

Airline industry is one of the promising industry for investors, it considered a big deal as it predicted to grow rapidly during for the next 20 years. Asia Pacific forecasted as the main player for airline in 2034, which will surpass Europe and North America. SKYTRAX Global Airlines Awards 2018 are announced Garuda Indonesia as one of the top ten best airlines in the world and the Best Cabin Crew in the world. The awards are followed by the other airlines in Asia. Nevertheless airline industry also known for its volatility business, due to the big amount of operating cost, such as unstable fuel price and the high cost of labor. Those issues affect Indonesia's best airlines, Garuda Indonesia, experienced loss for the past 5 consecutive years.

The purpose of this research is to predict the bankruptcy possibilities of PT. Garuda Indonesia compared to five listed airlines company in Asia, which included as the best airlines in the world. This research will also analyze the relationship of Altman Z"-Score between PT. Garuda Indonesia to other companies by using Coefficient Correlation method. This research will be conducted by using Revised Altman Z" Score for non-manufacturers company which will predict the bankruptcy event for the next two or three years. The sample of this research are Garuda Indonesia (GIAA), Singapore Airlines (SING), THAI Airways (THAI), All Nippon Airways (ANA), and EVA Air (EVA) during the period of 2014-2018. Altman Z"-Score indicates that GIAA, THAI, and EVA predicted to bankrupt, while SING and ANA are predicted to be in the grey zone for the next 2 – 3 years.

Keywords: Airline Industry, Bankruptcy, Asia, Garuda Indonesia, Altman Z-Score

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1. Introduction

Airlines industry is not just about its commercial airlines business but it also about making impact to the other parts of the world. Contributing a big amount of money every year to economy, aviation industry is a big deal, which predicted to grow intensely for the next 20 years [1]. Maintained by its vigorous passenger and cargo demand, aviation industry is running stronger in 2018, globally. Globally, commercial aircraft sector predicted to growth up to 4.8% revenues in 2018 [2]. This phenomenon agreed by Airbus

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and Boeing, as the main player of aircraft manufactures, they showed a significant growth of production rate in 2018 and 2019, followed by the high demand by airlines company around the world [3, 4].

For the last 10 years, compound annual growth rate has increased 5.1%, while annual passenger boarding rose around 62.5% from 2008 to 2019 [2]. The increasing number of passenger leads by Asia Pacific region [3], followed by its share of middle class population, which expected to grow up to 65% in 2030 [4].

Asia is being the major markets of airlines in the world, especially China and India contribute much on the growth of aviation industry. The rise of aviation industry in Asia-Pacific pushed by the growth of regional economy, trade liberalization, and the new evolution of business models [5]. Some factors derived aviation industry are world economic condition, technology, Avgas price, jet fuels, and standard policy [6].

Other than that, in Airline Sector 2018 Outlook by CAPA stated that there is around 10% growth of Passenger traffic in Southeast Asia and half of the region achieved double digit growth. In 2017, airline industry remained profitable due to decreasing of fuel price, a stable political condition, and also a good economic condition. Southeast Asia also considered as one of the biggest driver in airlines industry until 2035, some of them are Indonesia and Japan, which predicted will be ranked 5th and 7th respectively [7].

The growth of Airline Industry in Asia also can be seen by seeing their achievement year by year. SKYTRAX, one of the impressive Airlines awards since 1989, proudly announce the best airlines in the world for the last 5 years are dominated by Asia. Singapore Airlines awarded as the best airlines in the world 2018, followed by Qatar Airways, ANA, Emirates, EVA Air, Cathay Pacific, Lufthansa, Hainan Airlines, Garuda Indonesia, and Thai Airways, respectively.

The award not just about the best airlines but it also rate for every airlines category, such as Best Cabin Crew, Best Low-Cost Airlines, Best Regional Airlines, and many more. Surprisingly, most of the global category are taken by Asian's Airlines as their top 10, especially the Best Cabin Crew award. This award is totally dominated by Asia in the top 10. Garuda Indonesia, Singapore Airline, ANA, Thai Airways, and EVA Air declared as the top 5 of Best Cabin Crew Airlines, respectively, and at the same time the top 10 Best Airlines in the world [8].

Through the promising growth of airlines industry, this industry still remains the unstable industry compared to others. The operational cost are raising – fuel and labour – which affects its margin in operation. The fluctuating oil and jet fuel prices, high fixed and variable costs, market price are the main reason why this industry considered highly volatile [9]. On 2014, the fall of oil prices was the main cause of unprofitable airlines

industry in the world. Furthermore, those big airlines companies profitability are derived from the market prices. In which depends on the jet fuel.

Despite of the positive profit outlook since 2017, the phenomena of oil price in 2014 still remarkable due to the struggle to bring the positive margins. Even in 2017, Airlines Industry in Southeast Asia is underperformed [10]. No matter how many awards they brought, there is no guarantee that the airlines would be financially stable.

Most of Southeast Asia airlines experienced the decline these past years, one of the biggest issue is come from Indonesia national carriers, Garuda Indonesia, which also the best Airlines in Indonesia. The growth of the aviation industry and economic condition of Indonesia, does not make Garuda Indonesia shows the positive condition, their financial performance reported loss for these past years. Based on the data presented of their Garuda Indonesia annual report in 2017, Garuda Indonesia slipped to a substantial net loss in 2017 [11]. The rumors also supported by the statement of Ministry of Finance, Sri Mulyani. She concerns about the overall performance of the biggest airlines company in Indonesia, which also one of the Indonesian State Owned Company.

Inclusively, Garuda stated loss around \$222 million or equal 3 billion rupiahs along January to September 2017. From the previous year, the loss swelled up to 404,53 percent approximately [12]. Garuda reported that the loss mostly caused by the increased fuel costs, operational costs, fine and the large cost of tax amnesty that should be fulfilled. One of the reasons that all of the cost raised is affected by the sensitivity price of oil and gas in the world [12]. Also, the substantial issue about their internal problem, such as their former CEO issued corruption and their bad employee relationship that affected the stock price which weakened up to 58%, counted from their decision to go public [13].

Furthermore, other airlines industry in Asia also reported loss. On March 2018, Singapore Airlines declared a loss, 138 million SGD [14] on March 2018. At the same time, Thai Airways as the Best Airlines in Economy Class also suffered a loss 3.69 billion THB in their third quarter [15].

Malaysia Airlines is going to have another loss due to USD 195.2 million loss in 2017 [16]. Most of airlines in Asia, both best or not are facing same issues, which is high fuel price, that leads them to the financial loss, they are Emirates, Cathay Pacific Airways, Luthansa, and Hainan Airlines [17–20].

The declining financial performance of global airlines industry also affect its share price, which dropped by around 20% in last December [18]. The share price dropped because of the investor concerned of the underperformed industry throughout the year.

Nevertheless the significant fall of oil price influence the share price to surpass in the fourth quarter of 2018.

Several airlines company in Asia declared a loss these past years, including the best airlines in Indonesia, Garuda Indonesia. The significant loss of Garuda Indonesia for the past 5 years did not make them out from the list of best airlines in the world SKYTRAX version. Followed by the other airlines in Asia, such as Singapore Airlines and Thai Airways that experienced loss on March 2018. As it mentioned before, the fluctuate oil prices, high fixed and variable cost, and market price are factors that influence the performance of airline industry [19].

Thus, this research will predict the bankruptcy of five airlines company in Asia by using Altman Z"-Score. This research will show the current and future condition of financial performance in each companies based on their bankruptcy score and also the coefficient correlation analysis of the bankruptcy score relationship between each companies.

There are 5 (five) top Airlines in Asia to be analysed they are Garuda Indonesia (GIAA), Singapore Airlines (SING), EVA Air (EVA), Thai Airways (THAI), and All Nippon Airways (ANA). They also remain in the same type of companies. They are formed as group companies which considered have other subsidiaries to work on. Due to the same level of airlines companies, they visible to be compared to each other. Moreover, they have been experienced loss during the period of the study. The period of the study (2014-2018). Moreover, this research will focused on the GIAA Performance compared to others due to the bad financial performances reported for the past 5 years.

2. Literature Review

2.1. Bankruptcy Prediction

The failure definition has several meanings, Failure is defined as the inability of a firm to pay its financial obligations as they mature [21] also failures are when the company cannot pay their suppliers, shareholders, or lenders [22]. Business failure is known as a part of a bankruptcy, which defined as the state of being completely lacking in a particular quality or value literally. In this case, a Bankruptcy Prediction stands for a prediction towards the failure of a company in the future. Bankruptcy Prediction are varied from the number of an attribute or what kind of attributes are considered. One of the most popular models is the Altman's 1968 model with its 5-factor multivariate discriminant analysis model [23].

2.1.1. Altman-Z Score

The first model was developed by Altman is the five-factor model to predict the bankruptcy of the manufacturing company, which are chosen based on their best doing in the overall job together while predicting the corporate bankruptcy [23]. Altman Z Score is a financial analysis model for identifying corporate financial performance that related to the potential of bankruptcy [24]. The model has been updated since 1984 to adapt with the economic condition in several countries, such as Japan, Australia, Netherlands, and many other countries, due to that issues, this Altman Model is being a model that accepted globally [29, 30].

This model named "Z-Score", Altman Z-Score has a varied percentage of accuracy for every sample, which are 95% accuracy for one year before bankruptcy, 72% for two years before bankruptcy, 48%, 29%, and 36%, respectively for three, four, and five years before it happens. Those factors are grouped into 5 standards ratio, which are profitability, liquidity, leverage, solvency, and activity ratios. The final form of the Altman's Z-Score is:

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

Equation 2.1: Altman's Z-Score Model

Where,

Z = Overall Index

X1 = Working capital/Total assets

X2 = Retained Earnings/Total assets

X3= Earnings before interest and taxes/Total assets

X4= Market value equity/Book value of total debt

X5=Sales/Total assets

The final form of Altman's Z-Score was made for predicting bankruptcy of manufacturing companies. Then, Altman developed the Z-Score model to predict bankruptcy of non-manufacturing company such as services company. the needs of the industry pushed him to develop this kind of model, the method simply cut out one variable, which is X5 [24], aligned with the changed of the coefficient of every variable. It merely aims to reduce the effects of the capital turnover ratio. As a result, the developed model of Altman's Z-Score for Nonmanufacturers company is:

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

Equation 2.2: Altman's Revised Z-Score Model

The equation of this model will result in several values which considered their condition in terms of bankruptcy. When the score showed more than 2.6, means that the company's possibility of bankruptcy is Very Low and counted in the "safe zone", $1.1 \leq Z \leq 2.6$, the company is going to be Bankrupt in the next two years and counted in the "grey zone", and $Z < 1.1$ considered as Dangerous in the "distress zone" [25]. The development of Altman's Z-Score Model is more applicable for the non-manufacturers company, especially specific industry like airlines, retailers, telecoms, etc. The ratios used in this model consists of [26]:

a. X 1 - Working Capital/Total Assets (WC/TA)

This ratio is a calculation of Net Liquid Assets of the firm relative to the total capitalization with Working Capital as the difference between current assets and current liabilities. Liquidity and size characteristics are clearly considered. This ratio asserted as the least important contributor to discrimination among two groups.

b. X 2 - Retained Earnings/Total Assets (RE/TA)

Retained earnings considered as the total amount of reinvested earnings and/or losses of a company and the cumulative profitability over its entire life. Discreetly, the age of a company is measured. Retained Earnings/Total Assets (RE/TA) essentially measures the leverage of a company. When this ratio is high, implies that a company has financed their assets through retention of profits and have not utilized as much debt. Moreover, RE/TA Ratio focuses on the use of internally generated funds for growth, which considers as low-risk capital or OPM (other people's money), which considers higher-risk capital.

c. X 3 - Earnings before Interest and Taxes/Total Assets (EBIT/TA)

EBIT/TA Ratio calculate the productivity of a firm's assets, detached with any tax or leverage factors. This ratio appears to be applicable for any studies that dealt with credit risk because of a company's essential existence is based on the earning power of its assets.

d. X 4 - Market Value of Equity/Book Value of Total Liabilities (MVE/TL)

Equity is the accumulation of market value of all shares of stock (preferred and common) and both current and long-term obligations are included in Liabilities. The calculation presents how much the firm's assets can decline in value, measured by market value of equity plus debt and before the liabilities overdoes the assets and the company becomes insolvent.

2.2. Coefficient Correlation

A correlation coefficient is a statistical measurement of changes between one variable to another variable. A correlation could be identified as the level of association between two variables, although regression described as a figure of a relationship between particular values of one variable and the propose of corresponding values of the second [27]. Generally, correlation aims to know the interdependency, while regression leads to the study of dependency.

Other than that, Person Correlation is suitable for parametric data and data with interval and ratio, such as financial ratio, as it used in several empirical studies to identify the correlation between financial ratios [35, 36]. In this research, Correlation Coefficient will help to examine the relationship between PT. Garuda Indonesia Bankruptcy Prediction Score with other Bankruptcy Prediction Score of Airlines Companies in Asia.

2.3. Previous Studies

The Altman's Revised Z-Score Model already used and assessed by Kumar and Anand (2013) to predict the Bankruptcy of Kingfisher Airlines in India. The other service company also use Altman's Revised Z-Score Model to predict the Bankruptcy of Shipping Service Company in Indonesia (Manalu, Octavianus and Kalmadara, 2019).

3. Methodology

In this research, the data used are quantitative data. Quantitative data considered as numerical data, which consists of financial report of the company. The data are categorized as secondary data and collected from the Quarterly Report of each company that are listed and attached in their official website. Those Listed Airlines Companies

consist of Garuda Indonesia (GIAA), Singapore Airlines (SING), EVA Airways (EVA), Thai Airways (THAI), and All Nippon Airways (ANA).

3.1. Data Analysis

3.1.1. Calculating Altman Z"-Score

The Z"-Score of the Airlines Companies in Asia are chosen from 2014 to 2018. The data gathered from the quarterly report of the company. The model will be used is the Altman's Revised Z"-Score Model because Airlines Company considered as a non-manufacturing company, which is Service Company. The form of Altman's Z-Score Model is:

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

Equation 3: Altman's Revised Z-Score Model

Where,

Z = Overall Index;

X1 = Working capital/Total assets;

X2 = Retained Earnings/Total assets;

X3= Earnings before interest and taxes/Total assets;

X4= Market value equity/Book value of total debt.

Within this Altman's Revised Z-Score Model, the Z-Score considered as the dependent variable, while the Xn is the independent variables, which its changes will be responded by Z.

3.2. Statistical Analysis

3.2.1. Coefficient Correlation

Coefficient Correlation method used for identifying the interdependency between two variables. This method also can measure the strong relationship between variables. In this research, Coefficient Correlation or Pearson's Correlation is used for identifying the relationship between PT. Garuda Indonesia Bankruptcy Prediction Score with other Bankruptcy Prediction Score of Airlines Companies in Asia with 5% error.

Before calculating the coefficient correlation, the data of airlines companies that predicted bankrupt should be collected. Other than that, the data should be normally

distributed so that the test statistic will be valid. The normality test will be conducted by One-Sample Kolmogorov-Smirnov [28]. Then the data will be calculated by using SPSS Software to identify the relationship correlation. The correlation will be measured by the scale of -1, 0, +1 [29]. More closer to +1, means the data is having a positive correlation. More closer to -1 means that the data is having a negative correlation. If the data shows 0 as the correlation score, it means that the data is not correlated at all. The data also has to have a Significance score less than 0.05 to have a correlation between variables.

4. Discussion

Throughout 5 years of research studies of Altman Z"-Score in 5 airlines companies in Asia, the worst time period is in 2018. During 2018, GIAA, THAI, and EVA showed Z"-Score less than 1.1 and they are predicted to be bankrupt in the next 2 or 3 year in advance. While, SING experienced the first bad performance which having less than 2.6. SING considered in the grey zone in the second quarter of 2018 after having a long history of good performance with Z"- Score more than 2.6. For ANA, after predicted safe from the bankruptcy event in the last quarter of 2017, in 2018 the Z"-Score is decreasing and leads ANA to the grey zone.

Based on the result in Table 4.1, it showed that the GIAA has the lowest Altman Z"-Score compared to others. As Altman Z"-Score also can identify the financial performance of a company, for the past 5 years, GIAA has bad financial performances which leads them to bankrupt for the next 2 or 3 years. GIAA experienced the loss for the past 5 years with several factors. Jet fuel prices may affect the financial performance of GIAA too, as all of the world experienced that, while there may be many other reasons why GIAA has been going down while others still have the chance to experience better. Other than that, as these past 5 years remain crisis for airlines industry, GIAA is one of the companies that affected the most. Followed by its political condition in 2014, the internal problem of the company, and also the low currency phenomena in 2017 to 2018.

Both of the paired samples shows that they are not having any significant relationship between each other. As GIAA - THAI has 0.444 as their significance score and GIAA - EVA has 0.666 which scored more than 0.05. It is related to the Table 4.1 that the increasing or decreasing value of GIAA – THAI and GIAA – EVA did not happen in the same period of time, the bankruptcy event of those 3 airlines company may occur because of its internal factors.

TABLE 1: Altman Z"-Score Result.

		GIAA	THAI	EVA	SG	ANA
2014	Q1	-1.019	0.785	0.830	4.303	1.294
	Q2	0.635	0.378	0.590	4.201	1.217
	Q3	-0.742	0.419	0.663	4.073	1.415
	Q4	-1.336	0.019	0.697	3.711	1.476
2015	Q1	-0.749	0.561	1.202	3.628	1.367
	Q2	-0.048	0.128	0.812	3.606	1.303
	Q3	-0.104	-0.341	0.838	3.502	1.759
	Q4	0.102	-0.325	0.931	3.629	1.759
2016	Q1	-0.030	0.708	0.813	3.642	1.742
	Q2	-0.450	1.402	0.350	3.738	1.322
	Q3	-0.362	1.244	0.619	3.561	1.513
	Q4	-0.423	1.144	0.877	3.442	1.951
2017	Q1	-1.040	0.955	0.688	2.948	2.046
	Q2	-1.686	0.532	0.629	2.811	1.770
	Q3	-1.698	0.238	0.826	2.726	2.407
	Q4	-1.703	0.277	1.056	2.723	2.697
2018	Q1	-1.848	0.423	1.028	2.547	2.327
	Q2	-2.153	-0.050	1.014	2.190	1.721
	Q3	-2.015	0.126	1.095	1.925	2.047
	Q4	-1.437	-0.480	1.290	1.570	2.204

TABLE 2: Coefficient Correlation Result

No. of Paired Samples	Paired Samples	Correlation Value (r)	r - value
1	GIAA & THAI	0.181	0.444
2	GIAA & EVA	-0.420	0.066

Those bankruptcy event in GIAA, THAI, and ANA may occur not because of the external factors that happen surround them. The external factors that stated in Chapter 1, such as fuel price, stock prices, economic condition, and many other things. As stock price that would depend on the company’s performance and it influenced by the internal factors of the company. Economic condition of each company would also be different, as those companies came from different countries. While the fuel price, which remains unstable, also depends on the company’s agreement of fuel hedging and currency of the countries.

5. Conclusion

Hence, there are some conclusions made from the result of this research, which are:

1. The Bankruptcy Prediction of Altman Z"-Score shows that GIAA, THAI, and EVA are predicted to be distress or bankrupt in the next 2 to 3 years in the future because of their score in the last quarter of 2018 shows less than 1.1.

2. The Bankruptcy Prediction of Altman Z"-Score shows that SING and ANA are predicted to be in the Grey Zone for the next 2 to 3 years in the future because of their score in the last quarter of 2018 shows not in the range of 1.1 to 2.6.

3. The Coefficient Correlation analysis results shows that there is no significant relationship between GIAA – THAI and GIAA – EVA.

As a conclusion this bankruptcy prediction results shows that all the current issues and aviation outlook about airlines industry performance are partly true. There is a bad financial performance inside a rapid growth of airlines company. Although several companies are predicted to be bankrupt since 5 years ago, like GIAA, THAI, and EVA, they are not declared bankrupt until now. For GIAA, THAI, and SING, they are the national carrier of their countries, they always be supported by the government. Other than that, bankruptcy of a company also supported by many other things included non-financial factors.

This bankruptcy prediction analysis aim to raise awareness for non-manufacturers company, especially airlines, that there several things to be focused on and well controlled. Based on this analysis, Working Capital and EBIT influences the most of all of the bankruptcy event in all time periods in every company. This means that expenses or costs are the biggest issues in airlines company, fuel cost, labor, and airplane equipment are the biggest cost in airlines [20] and it proved by the occurrence of negative ratio of Working Capital and EBIT in every company that predicted bankrupt.

This bankruptcy prediction analysis can be beneficial for investors, credit evaluation, and also the corporate governance to improve the performance of the company. From this research we also can conclude that World Airlines Rating did not determine the financial performance of the company. In despite of the ability of Altman formulas to predict the bankruptcy event, it should be noted that all of the score are just a prediction not a group of facts that will surely occur.

This research is limited analyse the bankruptcy prediction event of airlines company in Asia, for further research can be done by analysing the effect of bankruptcy event towards other financial factors, such as share price. Besides, other researcher should

carefully look towards the Altman formula to be used based on the type of industries, since Altman provides so many findings to predict bankruptcy.

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