The Analysis of Potential Bankruptcy of Telecommunications Companies Listed in The Indonesia Stock Exchange Using Altman Z-Score (2013 – 2017).

A THESIS

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DECLARATION OF AUTHENTICITY

Hereby I declare the originality of the thesis; I have not presented someone else's work to obtain my university degree, nor have I presented someone else's words, idea or expectations without any acknowledgements. All quotations are cited and listed in references of the thesis.

If in the future this statement is proven to be false, I am willing to accept any sanction complying with the determined regulation or its consequence.

Yogyakarta, March 27th, 2019

Austine Faria Kusuma

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ABSTRACT

This reserach analyzed the health condition of the company to discover the potential bankruptcy that might occur in the future that greatly helps internal and external parties of the company to improve company performance. The author used one of the well-known methods and was widely used as a model named Altman Z-Score to identify indications of bankruptcy of 10 telecommunications companies listed on the Indonesia Stock Exchange from 2013-2017. The author proved that the Altman Z - Score formula was a valid formula to indicate the potential bankruptcy of telecommunications companies listed in the Indonesia Stock Exchange. This could be seen from the results of Z - Score of several companies that was categorized as bankrupt by seeing the profit/loss and cash flow of the company.

Keyword: Altman Z - Score, potential bankruptcy, financial health indicators, telecommunication companies

ABSTRAK

Menganalisa kondisi kesehatan perusahaan untuk mengetahui potensi kebangkrutan yang mungkin terjadi di masa depan sangat membantu pihak internal dan eksternal perusahaan untuk meningkatkan performa perusahaan. Penulis menggunakan salah satu metode terkenal dan kerap digunakan sebagai model untuk mendeteksi indikasi kebangkrutan yaitu metode Altman Z – Score untuk mengenalisa laporan keuangan 10 perusahaan telekomunikasi yang terdaftar di Bursa Efek Indonesia periode 2013 - 2017. Penulis membuktikan bahwa rumus Altman Z – Score adalah rumus valid untuk mengindikasikan potensi kebangkrutan perusahaan telekomunikasi yang terdaftar di Bursa Efek Indonesia, hal ini dilihat dari hasil Z – Score beberapa perusahaan yang terindikasi bankrut lalu dibandingkan dengan laporan laba rugi dan arus kas perusahaan tersebut.

Keyword: Altman Z – Score, potensi kebangkrutan, bankrut, indikator kesehatan keuangan, perusahan telekomunikasi

CHAPTER I

INTRODUCTION

1.1. Background

Human in general will always have the desire to continue to meet their needs from time to time, not only the needs that they want to fulfill but the eagerness of themselves also wants to be fulfilled. Human basically have three categories of needs based on the level of intensity or priority, namely primary, secondary and tertiary needs. One of the factors that underlie the desire for needs and desires to be fulfilled can come from themselves or from external factors, one of the examples is environment factor. Due to the growing environment seen from the increase in population, people must be able to limit themselves and distinguish between what is needed or what is temporary desired. Not only because of the increasing number of people in the environment, but the number of people who utilize technological developments in modern times like this can make humans try to keep up with its development by using offered technology in this era. The rapid development of technology in the present requires us to keep up with the development of this technology. Due to the changing trends, technology has been developed in such a way as to be utilized as much as possible by its users. The use of the right technology can facilitate work, activities, and make it easier for people to receive information from various sources.

One of the fastest growing technologies is the Internet. Almost all corners of Indonesia have used the benefit from internet. Based on a survey conducted by the Indonesian Internet Service Providers Association (APJII) in 2017, the

Secretary General of APJII, Soemartono (2017) explained the results of a survey that is collaborated with Teknopreneur called “"Penetration and Behavior of Indonesian Internet Users 2017", the survey resulted that the penetration of internet users in Indonesia increased to 143.26 million or equivalent to 54.7 percent of the total population of this republic. From these data, it can be concluded that the use of internet in Indonesia is very enthusiastic from Indonesia’s citizen. According to WeAreSocial, in collaboration with Hootsuite, that launched Global Digital Report in 2018, explained that from hundreds of millions of internet users in Indonesia, 60% percent have accessed the internet using smart phones. The use of the internet is dominated by socializing activities in cyberspace. Indonesia in terms of the number of social media users reaches 49% percent of the population of internet users or almost half of internet users in Indonesia have social media. In terms of the growth of social media users themselves, Indonesia is the third largest country with the growth rate of 23% or 24 million users last year in January 2018 report.

Along with the development of highly developed technology and growing internet usage each year, telecommunications companies are starting to compete fiercely to get users who will utilize the telecommunication services provided to meet the needs of the community. Quoted from *news.detik.com* (Tuesday, April 10 2018), in the global telecommunications industry, the growth of this sector tends to slow down, even negatively in several respects. This is partly due to changes in communication trends from voice and SMS (Short Message Service) communications to application-based data communications (*Whatsapp, Wechat,*

Line, etc.) known as OTT (*Over-the-Top*) Communications. The number of players in the telecommunications sector makes it difficult to provide reasonable tariffs while being profitable for all parties. Telecommunication companies must offer tariffs that can attract the public to become permanent users, moreover there is a new regulation issued by the Ministry of Communication (*Kementrian Komunikasi dan Informatika*) and Informatics that decided Population Registration Number (*NIK*) can be used to register more than 3 SIM card numbers and not having limitation, from this regulation the company can reduce mobile users (swinger or rotational churner), and reduce card production costs (efficiency). Due to this new regulation, the operator company must offer facilities that can make the people who have registered their identity and buy *simcards* at the operator company become loyal customers and use it in the long term with the facilities provided by the company operator.

Basically, one of the main objectives of the establishment of the company is to gain profits, maintain the continuity of the company, and open job field. The company also has big responsibilities such as responsibility in maintaining business existence, goods quality, and quality of goods and the welfare of its employees. Companies need to anticipate the bad possibilities that might occur in the future. Pradipta (2017) stated that in anticipating uncertainty in the future, an assessment of company performance is needed. Assessment of the company's performance is a way for management to evaluate the company's performance in using available funding sources. Evaluation of the company is very important to

assess the company's performance. If the company's performance continues to decline, it can bring the bankruptcy of the company.

Analysis of the company's financial statements is basically a calculation of the ratios to assess the financial condition of the company in the past, present, and likely in the future (Syamsuddin, 2009). From the company's existing financial statements, companies can do ratio analysis to detect the risk of bankruptcy. Altman Z-score is one of the predictive models that can be used to predict the probability (risk) of a company's bankruptcy by analyzing the company's financial statements. Besides, this method can predict corporate bankruptcy, Z-score can also be used to measure the level of financial health of a company through information obtained from financial statements. This method has advantages among other bankruptcy prediction methods, namely this method has combined various ratios needed to assess liquidation, profitability, solvency, and activity. In addition, the ratios owned by the Z-Score include the assessment of internal and external companies, in this case the ratio of the stock market value to the total debt entered into the Altman Z-Score method (Brimantyo et al., 2011b).

According to the research done by Brimantyo, Topowijono, & Husaini (2011) regarding the use of Z – Score to predict the bankruptcy of telecommunication companies for 2009 – 2011 period, the result stated that generally by applying the Altman Z-Score method, the entire telecommunication companies shows unhealthy financial conditions from 2009 to 2011 and has the potential to experience bankruptcy. In addition, from the previous researcher that already conduct the bankruptcy prediction of their objects, several of them only

stated the result and the classification which companies belong to heathy zone, grey zone, bankrupt zone. Several of the researchers added the test using SPSS and any other method, however, none of the researcher were comparing their result to Profit/Loss and Cash Flow from Operating Activities for the next following year to check the accuracy of the Altman Z – Score calculation. Thus, the researcher compared the result of this with Profit/Loss and Cash Flow from Operating Activities of first quarter for each telecommunication companies to discover the accuracy of Altman Z – Score method.

In this research, the researcher provided information regarding the financial health of telecommunications companies in the country by taking 10 sample of telecommunication listed on the IDX. The research used the Altman z-score method. It was expected to be able to determine the level of health of the telecommunications company under the research. The data taken is the company's financial data from 2013-2017.

1.2. Research Problem

According to the explanation in the background, the problems discussed in this research were:

1. What is the result of using the Z - Score method in analyzing the potential bankruptcy of telecommunications companies listed on the Indonesia Stock Exchange from 2013 - 2017?
2. Which companies belong to healthy zone, grey zone, and bankrupt zone classification?

1.3. Research Objectives

The purposes of this research are as follows:

1. To analyze the financial report in term to predict the potential bankruptcy of telecommunications companies listed in the Indonesian stock exchange using the Altman Z-Score method.
2. To classify which telecommunication companies belong to healthy zone, grey zone, bankrupt zone.

1.4. Research Contributions

This research is designed to give the benefits and substantially to contribute information for higher education providers. The contribution for researcher is as knowledge in proving the existing theories and their implementation in the field. For the next researcher who took the same theme with this research, this research could provide new information and knowledge as reference. Furthermore, this research might be helpful for the investor as an information material to find out the position of the company. Thus, the investor can decide before investing in the company. For the management of the company, it can help to manage and control the performances of the company by considering the predictions of bankruptcy of the company.

1.5. Systematic of Writing

CHAPTER I: INTRODUCTION

The first chapter of this research gives the general description of the research by explaining the background of study, research question, objective of the research, significance of the research, and systematics of writing.

CHAPTER II: LITERATURE REVIEW

The second chapter of this research contains the review of previous studies that can give the thorough research formation and can relate to specified theories.

CHAPTER III: RESEARCH METHOD

This chapter describes the population and the determination of samples used as an object of research, as well as data sources and data collection techniques used. In addition, it also explained about the variables used in the research, both independent and dependent variables and their definitions. Furthermore, this chapter described the hypothesis and ends with the method used to analyze the data that had been obtained.

CHAPTER IV: DATA ANALYSIS AND DISCUSSION

The fourth chapter of this research explains about the result of findings and discussion regarding the research analysis.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

The fifth chapter of this research is the closing section, which gives conclusions regarding the whole research process and recommendations for further studies.

CHAPTER II

LITERATURE REVIEW

2.1. Theoretical Basis

2.1.1. Bankruptcy

In order to keep the company upright, the management of the company should create strategy and implement it properly. However, there are several factors which may affect the company as the obstacles for the company and may lead to bankruptcy. Bankruptcy is the final result for the company which may means the company cannot meet the financial obligations in the financial distress and resulted the business of the firms must be closed (Pham Vo Ninh, Do Thanh, & Vo Hong, 2018). According to Martin as cited in Supardi (2003), failure that occurs in a company can be interpreted as bankruptcy which is defined in several meanings namely;

1. Economic Distressed

   Economic distressed generally interpreted as failure in economic aspect such as profit or gain. It may mean losing the money or did not get the profit to cover up the money that has been spent for firms or means the profit level is less than the capital cost. According to Nugraheni (2005), failure occurs when the actual cash flow from the company is far below the expected cash flow.

2. Financial Distressed

   The meaning of financial distressed is slightly different with bankruptcy, financial distressed can be said as sign or prediction for

the company regarding about the health of the company. Financial distressed is a warning sign that may lead to bankruptcy and it is likely can be detected before the company fall apart. Pham Vo Ninh et al., (2018) stated that financial distress arises when firms may not be able to meet financial obligations from their creditors due to loss in firm's business operating, illiquid assets, high fixed cost. According to Adnan, Akhyar and Taufiq (2001), financial distressed can be inferred as insolvency that distinguishes between the basis of cash flows and the basis of shares. Insolvency on the basis of cash flow, there are two forms, which are;

a. *Technical Insolvency* occurs when a company cannot fulfill its obligations at maturity even though the total assets have exceeded its total debt.
b. *Insolvency in terms of bankruptcy*, which is defined as negative net worth in the conventional balance sheet on the present value and expected cash flow is less than the liability.

3. General Factors
    a. *Economic factors*, derived from the symptoms of inflation and deflation in the prices of goods and services, financial policies, interest rates and devaluation or revaluation with foreign currencies and balance of payments, surplus or deficit in relation to foreign trade (Tambunan, Dwiatmanto, & Endang, 2015).

b. *Economic factors*, the transformation in people's lifestyles that affect demand for products or services or those related to influential employees (Nugraheni, 2005).

c. *Technology factors*, where the use of technology requires the costs borne by the company, especially for maintenance and implementation the system is not integrated and the user managers are less professional.

d. *Government factor,* where government policies for revoking subsidies on companies and industry, imposing tariffs on exports and imports of goods change, new law policies for banks or labor and others.

4. External Factors

a. *Customer factor*, companies must identify the nature of consumers, to avoid losing consumers, also to create opportunities, find new consumers and avoid declining sales results and prevent consumers from turning to competitors (Nurcahyanti, 2015). In this research, it is better for telecommunication companies to offer great features for their products, especially after the new regulation from the Ministry of Communication which makes the consumers hard to change their *sim-cards* often, the companies must attract the consumer to be a permanent consumer to improve the company's value.

b. *Supplier / creditor factor*, where the strong point lies in lending and determining the period of repayment of debt that depends on creditor's trust in the liquidity of a company.

c. *Competitor factor*, which is something that must be considered because it involves differences in the delivery of services to consumers

5. Internal Factors of the Company.

a. Excessive credit given to customers, causing delinquency in payment until finally unable to pay.

b. Inefficient management, which is caused by lack of ability, experience, skills, adaptive attitudes and initiatives from management.

c. Employees, even top managers are very disadvantageous, performed misuse of authority and cheating especially those related to corporate finance.

According to Korol (2017), bankruptcy is not a sudden incident, the bankruptcy process may even take up to 5-6 years. Therefore, if the early warning signs are detected, managers have more time to prepare and react in the following stages of a crisis.

2.1.2. **Financial Report Analysis**

The company's performance is a reflection of the company's financial condition which is analyzed with financial tools. Through the analysis the firms can discover about the good and bad financial condition of a company

that reflects work performance in a certain period. Success in achieving company goals is a management achievement. Assessment of a company's performance is being measured to be used as a basis for decision making both internal and external parties. Corporate performance is the result of many decisions made continuously by management to achieve certain goals effectively and efficiently. Evaluation of company's performance can be done by ratio analyzing the financial report of the company. The financial statements are the result of a technical activity based on methods and procedures that require explanations. Thus, the purpose of providing useful information for internal and external parties can be achieved. Financial statements can be used as a tool to make projections about various financial aspects of a company in the future (Mas'ud & Srengga, 2015). Financial statement analysis can be done using financial ratios.

Financial ratio analysis is a kind of tool needed to examine and compare the relationships that exist in information units in financial statements. According to Orniati (2009), financial ratio analysis allows financial managers and concerned or influenced parties to evaluate financial conditions quickly because the presentation of financial ratios will display the healthy condition of a company. Ratio analysis is used as an evaluation material from various operational aspects and financial performance of the company, such as efficiency, profitability, solvency and liquidity of the company. According to Machfoedz as cited in Sidik (2003), he stated that some financial ratios can be classified into the following:

a. **The Liquidity Ratio** shows the company's ability to meet short-term financial obligations. This ratio is shown from the size (big or small) of current assets.

    1. Current Ratio is a comparison between current assets and current debt.
    2. Quick Ratio is calculated by deducting inventory from current assets, then dividing the rest with current debt.

b. **Sensitivity Ratio** shows the proportion of the use of debt to finance investment. There are two ways to calculate it; first, pay attention to the data in the balance sheet to assess how much loan funds are used in the company; second, measuring debt risk from the income statement to assess how much the fixed debt expense (interest plus loan principal) can be closed by operating profit. This sensitivity ratio includes:

    1. *Total debt to total assets*, measures the percentage of use of funds from creditors which is calculated by dividing total debt with total assets.
    2. *Debt equity ratio* is a financial ratio that shows the relative proportion between Equity and Debt used to finance company assets. This ratio is also a measure of the company's ability to pay off its obligations.
    3. *Time interest earned*, calculated by dividing profit before interest and tax with interest expense. This ratio measures how

far profit can be reduced without making it difficult for the company to meet the obligation to pay annual interest.

c. **Productivity ratio** is measured how effective a company uses resources as already outlined by company policy. This ratio involves the comparison between sales and supporting assets of sales means that this ratio assumes that a "reasonable" ratio must exist between sales and various assets.

d. **Profitability ratio** is used to measure how effective the management of a company is to generate profits.

    1. *Profit margin on sales* is calculated by dividing profit after tax with sales.
    2. *Return on total assets* is a comparison between profit after tax and total assets to measure the return on total investment
    3. *Return on net worth* is a comparison between after-tax profits and personal capital to measure the level of profit of the owner's own investment.

e. **Market ratio** is applied to companies that have gone public and measure the company's ability to create value, especially for shareholders and potential investors.

    1. *Price earnings ratio*, the ratio between stock market prices and earnings per share. If this ratio is lower than similar industry ratios, it could be an indication that investment in the company's shares is more risky than the industry average.

2. *Market to book value*, the comparison between the stock market value and the book value of shares, it is also an indication that investors valued the company.

2.1.3. Bankruptcy Predictions Method

2.1.3.1. Altman Z - Score

Ratio analysis of financial report is one of the most common activities to do to predict failure or bankruptcy of the company. There are several methods can be applied to predict the bankruptcy of the company by analyzing the financial report. One of the studies of this prediction is *Multiple Discriminant Analysis (MDA)* conducted by Altman, namely the Z-Score analysis. Altman has combined several ratios into predictive models with statistical techniques, namely *multiple discriminant analysis* which is used to predict the bankruptcy of a company with the term Z-Score. This method emphasizes profitability as the most influential ratio to bankruptcy. Z-Score is a score that is determined from a standard count that will indicate the level of possible bankruptcy of the company. The Formula Z-Score for predicting bankruptcy from Altman is a *multivariate formula* used to measure the financial health of a company (Saifi, Mastuti, & Azizah, 2012). The ratios which detect the company's financial conditions related to liquidity, profitability and company activities (Adnan & Taufiq, 2001).

There are five types of ratios finance that can be combined to see the difference between a bankrupt company and a non-bankrupt company. The ratios which Altman has formulated are as follows;

$$\textbf{\textit{Z-Score}} = 1.2\ x_1 + 1.4\ x_2 + 3.3\ x_3 + 0.6\ x_4 + 1.0\ x_5$$

(Altman, 1968:594)

Explanation:

X_1 = Working Capital to Total Assets

$$\frac{Current\ Assets\ -Current\ Liabilities}{Total\ Assets}$$

X_2 = Retained Earnings to Total Assets

$$\frac{Retained\ Earnings}{Total\ Assets}$$

X_3 = Earnings Before Tax to Total Assets

$$\frac{EBIT}{Total\ Asset}$$

X_4 = Market Value Equity to Book Value Of Total Debt

$$\frac{Market\ Value\ Equity}{Book\ Value\ of\ Total\ Debt}$$

X_5 = Sales to Total Asset

$$\frac{Sales}{Total\ Assets}$$

Explanation:

1. In this model, companies that have Z score of > 2.99 are classified as healthy companies.

2. Companies that have a score of Z <1.81 Z-Score <2.99 are in the *gray area* and classified as companies that have financial difficulties, but it has possibility of being rescued and possibly bankrupt is as large as the company's management policy decisions as decision's made.
3. Z-Score <1.81 is categorized as a company that has very large financial difficulties and is at high risk. Thus, the probability of bankruptcy is very large.

These five ratios will be used to analyze the financial statements of a company and then detect the possibility of bankruptcy in the company. According to Yusra (2016), in financial management the ratios used in this Altman method can be categorized into three major groups, namely;

- Liquidity Ratio consists of X1
- Profitability ratios consisting of X2 and X3
- Activity Ratio consisting of X4 and X5

The Z-Score model is very effective in predicting bankruptcy 2 years before the actual bankruptcy and for some cases this model can predict bankruptcy 4 or 5 years earlier (Pradipta, 2017).

2.1.3.2. Springate

Other than Altman Z – Score, Springate is also widely used to predict bankruptcy of the company. According to Springate (1978) Springate uses the same method as Altman (1968), namely Multiple Discriminant Analysis (MDA). Like Beaver (1966) and Altman (1968), Springate (1978) initially

collected popular financial ratios that could be used to predict financial distress. After going through the same test as Altman (1968), Springate chose 4 ratios from 19 considered ratios which were believed to be able to distinguish between companies that were distressed and those that were not distressed. The sample used by Springate is 40 companies located in Canada. This method emphasizes profitability as the most influential ratio to bankruptcy. The ratio which was founded by Gordon L.V and has formulated are as follows;

$$\textbf{Z-Score} = 1.03\,x_1 + 3.07x_2 + 0.66\,x_3 + 0.40x_4$$

Explanation;

X_1 = Working Capital to Total Assets

$$\frac{Current\ Assets\ -Current\ Liabilities}{Total\ Assets}$$

X_2 = Earnings Before Tax to Total Assets

$$\frac{EBIT}{Total\ Asset}$$

X_3 = EBT to Current Liabilities

$$\frac{EBT}{Current\ Liabilities}$$

X_4 = Total Assets Turn Over

$$\frac{Sales}{Total\ Assets}$$

Springate (1978) suggests the cutoff value that applies to this model is 0.862, if the prediction results are <0.862 then the company is in a bankrupt condition.

2.1.3.3. Zmijewski

According to Zmijewski (1984) this model criticizes the sampling method used by its predecessors. According to him, the matched-pair sampling technique tends to generate bias in the results of his predecessor's research. In his research, Zmijewski (1984) requires one crucial thing. The proportion of the sample and population must be determined at the beginning, so that the frequency of bankruptcy is obtained. This frequency is obtained by dividing the number of samples experiencing bankruptcy with the total number of samples. The sample used by Zmijewski (1984) totaling 840 companies, consisting of 40 companies that experienced bankruptcy and 800 who did not experience bankruptcy. Data is obtained from the Compustat Annual Industrial File. Data was collected from 1972-1978. The statistical method used by Zmijewski (1984) is the same as that used by Ohlson, namely logit regression. By using this method, Zmijewski (1984) produces the following model:

$$\textbf{Z-Score} = -4{,}3 - 4{,}5x_1 + 5{,}7x_2 + 0{,}004\ x_3$$

X_1 = ROA

$$\frac{Net\ Asset}{Total\ Assets}$$

X_2 = Leverage

$$\frac{Total\ Liabilities}{Total\ Asset}$$

X_3 = Liquidity

$$\frac{Current\ Asset}{Current\ Liabilities}$$

Those three bankruptcy prediction method are widely used and well known, however, the researcher only select Altman Z – Score as the method applied to predict the bankruptcy because Z – Score method is able to combine various ratios into a meaningful prediction model. This analysis is a multivariate analysis that can see the relationship of certain ratios that can affect the company's financial performance. As can be seen from the similarities, the equation connects the liquidity, solvency and profitability of the company with bankruptcy In addition, the goodness of this model can be used for all companies, both public, private, manufacturing, or service companies in various sizes. Although this model comes from America, this model can be used in developing countries like Indonesia (Agnes, 2011).

2.2. Preceding Research

Altman (1968) tested at least 66 manufacturing companies which were 33 pairs of bankrupt and non-bankrupt companies with the model he compiled appropriately and was able to identify 90 percent of bankruptcy with potential

error of 10-15% cases a year before bankruptcy occurred. In the process of determining Z-Score, Altman used statistical techniques using Multiple Discriminant with a potential error of 10-15%.

Hayes, Hodge, & Hughes (2010) studied about the efficacy of Altman's Z - score to predict bankruptcy of specialty retail firms doing business in contemporary times in eight comparisons, four each in 2007 and 2008, of bankrupt versus non-bankrupt firms in retail specialties. The results shows that the Z-Score accurately predicted bankruptcy filing 94% of the time and precisely expected financial distress over 90% of the time. However, they did not suggest that Altman's Z" is an end-all solution to predicting financial distress.

Nugraheni (2005) did her research about analysis of the accuracy of the prediction of bankruptcy potential through Altman z-score and its correlation with stock prices in listing banking companies in Jakarta stock exchange, the result of the analysis shows that for the five years consecutively the Z-Score value held by all banking companies was still below 1.2. Thus, it was in the third region, which was predicted to be bankrupt. Other research results indicate that the Altman Z-Score bankruptcy potential is related to stock prices with a correlation of 22.6% with a confidence level of 95%. The Altman Z-Score can be applied to predict the potential for bankruptcy in Indonesia.

Pradipta (2017) tested analysis of potential for bankruptcy of go public insurance companies in Indonesia using z-score (2013-2015), the results of insurance companies' research for the period of 2013-2015 indicate that PT. Harta

Aman Pratama Insurance, PT. Bintang Insurance, PT. Dayin Mitra Insurance, and PT. Ramayana Insurance is in an unhealthy position for 3 years.

Samanhyia, Oware, and Anisom-yaansah (2016) studied about predicting financial distress and bankruptcy on selected listed banks in the stock exchange of a developing West African country, Ghana. The results shows that individually, four (4) of the selected banks have their average Z-Score between 1.1 to 2.6 and therefore classified in the grey zone and only one (1) bank has its average Z-score below 1.1 and therefore, it was classified as distressed. The four (4) out of the five (5) banks representing 80% of the selected banks are neither distressed nor classified as safe.

Putri, Makhdalena, Haryana (2014) tested bankruptcy predictions in telecommunication companies listed on the Indonesia Stock Exchange by using the Altman Z-score method to see the score of bankruptcy prediction from 2008-2013. Calculate each bankruptcy prediction in each telecommunication company with the total up to 5 companies. During the observation period, the result showed that the research data of 5 telecommunication companies went public. There were two companies that were in the bankrupt area, the companies were PT. Bakrie Telecom Tbk and PT. Smartfren.

Saifi et al., (2012) performed the calculations using the Altman Z-Score bankruptcy prediction method for plastic and packaging companies listed on the Stock Exchange from 2010 to 2012. The results of the analysis of bankruptcy using the Altman Z-Score method in 5 samples of plastic and packaging companies listed in the Stock Exchange are 1 company stated in bankruptcy

estimation, 2 of which are declared vulnerable, and the remaining 2 companies are declared healthy.

Gunathilaka (2014) examined the relevance of Z-score models in evaluating corporate distress using the financials published by the firms. The study finds that Altman's Z and Z'' models show a higher degree of accuracy in predicting the financial distress. In particular, it has the potential of minimizing the error of classifying a firm as safe when the firm is not safe (i.e., Type I error). If the Type I error is considered to be costly, then the employment of Z-model in Sri Lanka would be more prudent.

Sajjan (2016) investigated the applicability of the Altman's bankruptcy model to examine the financial soundness of the firms belonging to the manufacturing & non-manufacturing firms. The study covers the 6 companies & 5 years of time frame from 2011-2016. According to findings, unfortunately, none of the companies completely belongs to Safe Zone except for few years. Most of the firms are in Distress Zone which clearly indicates that these firms may go Bankrupt in near future.

2.3. Research Question

Theogene, Mulegi, and Hosee (2017) stated that financial ratio analysis is important to the management, owners, customers, suppliers, competitors, regulatory agencies, tax payers and lenders each having their own perspective in applying financial statement analysis as evaluation in order to understand the financial health of organization. By reviewing the financial analysis ratio, the management of the company may decide the next strategy to keep the company

upright or if there is an *early warning* through the financial analysis report, the management should be warned by trying to solve the problems and anticipate future conditions as a starting point for planning actions that may affect future events.

According to Kpodoh (2009), he has done the analysis of financial data using z – score (Altman) in order to get the bankruptcy and financial distress prediction in mobile telecom industry using the case of MTN-Ghana, Millicom-Ghana and Ghana Telecom. The result is positive and confirmed the financial health or status of the case companies. The z-score hence precisely confirmed the failure in one of the case companies and classified another as financially strong. This study proved that the z-score can be used in telecommunication companies outside the country as well as to predict the early warning of bankruptcy.

In this research, no hypothesis testing is needed because this research only needs to implement the Altman formula (Z-Score) to predict the potential bankruptcy of telecommunication companies. However, the researcher has formulated several questions regarding the topic that is being discussed in this research, there are:

1. Which company is belonging to healthy zone, grey zone, bankrupt zone?

2. Is Altman Z – Score formulation accurate in predicting the bankruptcy applied in telecommunication companies listed in Indonesia Stock Exchange period 2013 – 2017?

CHAPTER III

RESEARCH METHOD

3.1. Population and Sample

Population is a generalization region consisting of: object or subject which have certain qualities and characteristics set by the researcher to be studied and then drawn its conclusions (Sugiyono, 2013). This research used 10 Telecommunication companies listed in Indonesia Stock Exchange from 2013 - 2017.

According to Nasution (2003), sample is part of the population that becomes the object of research (sample itself literally means an example). The sampling method used was purposive sampling. Purposive sampling is the determination of samples based on certain criteria or a particular consideration made by the researcher.

The samples in this research were Telecommunication Companies with the following criteria:

1. Publicly listed telecommunication company listed in the Indonesia Stock Exchange.
2. Audited financial statements of the company from 2013-2017.

The samples were:

1. Bakrie Telecom Tbk.
2. Inti Bangunan Sejahtera Tbk.
3. XL Axiata Tbk.

4. Global Teleshop Tbk.
5. Indosat Tbk.
6. Smartfren Telecom Tbk.
7. Solusi Tunas Pratama Tbk.
8. Telekomunikasi Indonesia Tbk.
9. Tower Bersama Infrastructure Tbk.
10. Sarana Menara Nusantara Tbk

(source from http://www.idx.co.id)

3.2. Data Collecting Method

The data used in this research were secondary data taken from the financial statements and audited reports companies included in the group of companies listed in the Indonesia Stock Exchange obtained from the website http://www.idx.co.id from 2013 to 2017. Data sources used in this thesis were from various sources such as books, journals and previous studies that supported the research.

3.3. Data Analysis Method

The formula of Z – Score is:

$$\textit{Z-Score} = 1{,}2\ x_1 + 1{,}4\ x_2 + 3{,}3\ x_3 + 0{,}6\ x_4 + 1{,}0\ x_5$$

1. Working Capital / Total Assets (X_1)

This calculation is used to measure the liquidity of the total and net working capital position. The working capital referred to is the difference

between *current assets* and *current debt*. This ratio is basically a liquidity ratio that measures a company's ability to fulfill the short-term obligations.

2. Retained Earnings / Total Assets (X_2)

This calculation is used to measure cumulative profitability. This ratio measures the accumulated profits as long as the company operates. This ratio shows the company's ability to generate retained earnings from total company assets. Retained earnings are profits that are not shared with shareholders and will be reused for company purposes.

3. Earnings Before Interest and Tax / Total Assets (X_3)

This ratio is useful for measuring the profitability of a business. This ratio is also used to measure the actual productivity from company's assets.

4. Market Value of Equity / Book Value of Debt Ratio (X_4)

This ratio is used to measure the value of assets the company can reduce before the amount of debt which is greater than its assets and the company becomes bankrupt. The intended capital is a combination of market value from ordinary capital and preferred stock, while debt includes current debt and long-term debt.

5. Sales / Total Assets Ratio (X_5)

Sales to total assets (sales to total assets) are used to measure management's ability to face competitive conditions. The ratio measures management's ability to use assets to generate sales.

The criteria used to predict corporate bankruptcy with this model were:

1. If Z> 2.99, it is classified as a healthy company (safe zone)
2. If 1.81 <Z <2.99, it is classified as a company in the gray area or area to go bankrupt.
3. If Z < 1.81, it is classified as a bankrupt company (distress zone)

All of the calculations will be conducted using Microsoft Excel.

CHAPTER IV

FINDINGS AND DISCUSSION

4.1. Descriptive Statistics

Descriptive analysis provides an overview of the phenomena or characteristics of the data. The aim is to make it easier to read the data and understand the intention. Data processed in the form of descriptive statistics show the characteristics of the samples used in this research including mean, minimum and maximum, and standard deviations for financial distress prediction Altman Z – Scores model of telecommunication companies in Indonesia during the 2013-2017 period. Here are the descriptive statistics of each ratios variable;

4.1.1. Working Capital to Total Asset (X_1)

Table 4.1 **Descriptive Statistic Results for X1**

Results	2013	2014	2015	2016	2017
Mean	-0.0422	-0.1314	-0.8179	-0.8292	-1.6252
Standard Deviation	0.2200	0.2995	1.7634	1.7817	3.9550
Minimum	-0.5197	-0.7643	-4.9711	-5.1902	-12.4346
Maximum	0.2801	0.2748	0.0752	0.1050	0.0966

Source: Secondary Data Processed, 2018

The results in table 4.1 of descriptive statistics of Working Capital to Total Asset (X1) ratio is shown above. The average number of X1 in 2013 was -0.0422 and the smallest number was -0.5197 which belong to Bakrie Telecom. The highest number was achieved by Global Teleshop of 0.2801. In 2014, the average number of X1 was -0.1314, and the smallest value of X1 in 2014 was reached by Bakrie Telecom of -0.7643, the biggest value of X1 in 2014 was reached by Global Teleshop of 0.2748. The average number of X1 in 2015 was -0.8179 and

the minimum number was -4.9711 achieved by Global Teleshop, meanwhile the maximum number was 0.0752 which belonged to Telekomunikasi Indonesia. In 2016, the average number was -0.8292 with the minimum number of -5.1902 and the maximum numbers of 0.1050, the minimum number belonged to Bakrie Telecom and the maximum number was achieved by Inti Bangunan Sejahtera. The last year calculated was 2017, the average number of X1 in 2017 was -1.6252, the smallest number was -12.4346 which was achieved by Bakrie Telecom, and the highest number belonged to Solusi Tunas Pratama of 0.0966

4.1.2. Retained Earnings to Total Assets (X_2)

Table 4.2 **Descriptive Statistic Results for X2**

Results	2013	2014	2015	2016	2017
Mean	0.0392	-0.0370	-1.3183	-2.3917	-4.4568
Standard Deviation	0.4221	0.5417	3.0525	5.3184	10.1824
Minimum	-0.7853	-1.3230	-7.7433	-12.7826	-30.0300
Maximum	0.5195	0.4588	0.4075	0.4076	0.3505

Source: Secondary Data Processed, 2018

The results of descriptive statistics for Retained Earnings to Total Assets (X2) ratio was stated accurately in Table 4.2. The smallest number of X2 from 2013 – 2017 was achieved by Bakrie Telecom. Meanwhile, the maximum number in 2013 – 2015 belonged to Inti Bangunan Sejahtera. In 2016, the highest number was achieved by Sarana Mentara Nusantara and in 2017 the maximum number belonged to Telekomunikasi Indonesia.

4.1.3. EBIT to Total Assets (X_3)

Table 4.3 **Descriptive Statistic Results for X3**

Results	2013	2014	2015	2016	2017
Mean	0.0206	0.0001	-1.2113	-0.1967	-0.2076
Standard Deviation	0.1779	0.1323	2.9545	0.5790	0.7223
Minimum	-0.3270	-0.2978	-8.9833	-1.6091	-2.2356
Maximum	0.2937	0.2043	0.1886	0.2126	0.2149

Source: Secondary Data Processed, 2018

The average number of EBIT to Total Asset (X3) in 2013 was 0.0206, with the minimum number of -0.3270 achieved by Bakrie Telecom, and the maximum number was 0.2937 achieved by Inti Bangunan Sejahtera. In 2014 and 2017, the minimum number was achieved another time by Bakrie Telecom, meanwhile in 2015 and 2016 the minimum number was achieved by Global Teleshop. In 2014 – 2017, the highest number was achieved by Telekomunikasi Indonesia.

4.1.4. Market Value Equity to Book Value Total Debt (X_4)

Table 4.4 **Descriptive Statistic Results for X4**

Results	2013	2014	2015	2016	2017
Mean	2.3411	1.9365	1.5052	1.3871	1.9052
Standard Deviation	2.7270	2.0019	1.3977	1.5614	2.0033
Minimum	0.0750	0.1174	0.1025	0.0989	0.1236
Maximum	9.2810	5.2728	4.3025	5.4165	5.3697

Source: Secondary Data Processed, 2018

The results of descriptive statistics of Market Value Equity to Book Value Total Debt (X4) ratio is shown in Table 4.4, the average number of X4 in 2013 was 2.3411 and the smallest number was 0.0750 which belonged to Smarfren Telecom. The highest number was achieved by Inti Bangunan Sejahtera of

9.2810. In 2014, the average number of X4 was 1.9365, the smallest value of X4 year 2014 was reached by Smartfren Telecom of 0.1174, the biggest value of X4 year 2014 was reached by Telekomunikasi Indonesia of 5.2728. From 2015 – 2017, the minimum number was achieved by Bakrie Telecom, meanwhile the maximum number was achieved by Telekomunikasi Indonesia repetitively.

4.1.5. Sales to Total Asset (X_5)

Table 4.5 **Descriptive Statistic Results for X5**

Results	2013	2014	2015	2016	2017
Mean	2.3411	1.9365	1.5052	1.3871	1.9052
Standard Deviation	2.7270	2.0019	1.3977	1.5614	2.0033
Minimum	0.0750	0.1174	0.1025	0.0989	0.1236
Maximum	9.2810	5.2728	4.3025	5.4165	5.3697

Source: Secondary Data Processed, 2018

The results in Table 4.5 show the descriptive statistic of Sales to Total Asset (X5). According to the table, the average number of X5 in 2013 was 0.5288, the minimum number was 0.1331 which was achieved by Solusi Tunas Pratama, meanwhile the maximum number was 2.6115 belonged to Bakrie Telecom. In 2014, the average number was 0.4556 with the minimum number of 0.0831 and the maximum numbers of 2.1805, the minimum number belonged to Solusi Tunas Pratama and the maximum number achieved by Global Teleshop. In 2015, the average number was 1.2779, the smallest number was 0.1212 belonged to Inti Bangunan Sejahtera, and the highest number was 20.4249 achieved by Global Teleshop. The minimum number for 2016 – 2017 was achieved by Bakrie Telecom, meanwhile the maximum number was achieved by Global Teleshop since 2014 – 2017.

4.1.6. Z - Score

After all of the ratios were being calculated, the result of Z – Score can be discovered. The descriptive statistics of Z – Score for all of the telecommunications companies are concluded as follows:

Table 4.6 **Descriptive Statistic Results for Z – Score Calculation**

Results	2013	2014	2015	2016	2017
Mean	2.006	1.408	-3.633	-3.159	-6.454
Standard Deviation	2.922	2.607	11.267	10.434	21.105
Minimum	-2.445	-3.517	-25.982	-26.785	-64.256
Maximum	7.578	4.968	4.375	5.130	4.969

Source: Secondary Data Processed, 2018

In 2013, the average number of Z – Score was 2.006, and the minimum number was -2.445 which was achieved by Bakrie Telecom, and the maximum number was achieved by Inti Bangunan Sejahtera. The companies that achieved the minimum and the maximum number for 2014 were the same in 2013. Meanwhile, from 2015 until 2017, the minimum number was also achieved by Bakrie Telecom, however the maximum number was achieved by Telekomunikasi Indonesia.

To sum up the results of descriptive statistics that had been discussed above, the company that frequently received the minimum number was Bakrie Telecom. This may prove that Bakrie Telecom was currently having a bad financial management or company performances as the result showed that the

company was most likely displayed the minimum number and this might be summed up that the company was predicted to be bankrupt in the future.

4.2. Working Capital to Total Asset (X_1) Ratio

$$X_1 = \frac{Current\ Assets - Current\ Liabilities}{Total\ Assets}$$

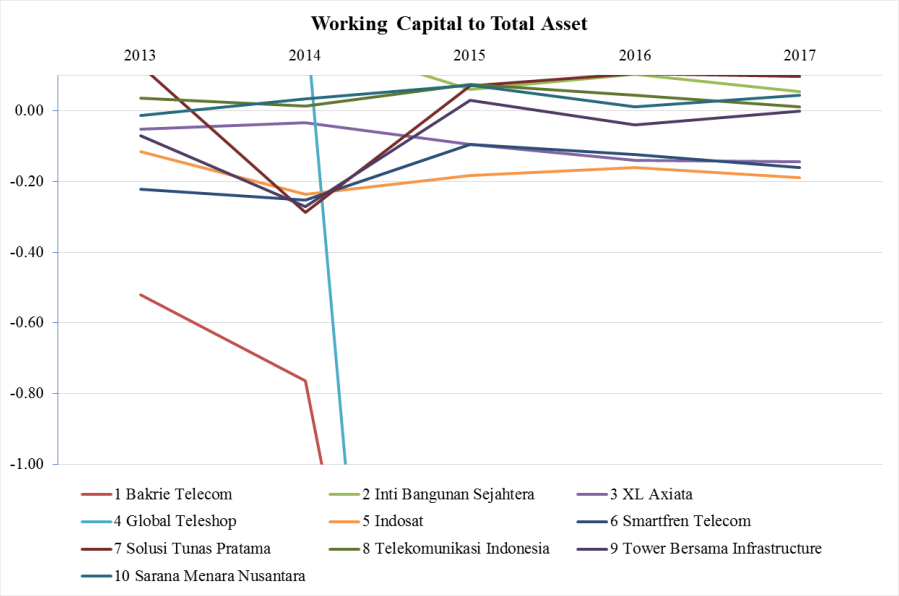
The ratio of X1 is Working Capital / Total Assets. It is a ratio which detects liquidity from total assets and the position of working capital. Working capital is obtained from the difference between current assets and current liabilities. Negative net working capital is likely will face problems in covering short-term liabilities due to the unavailability of sufficient current assets to cover these obligations. Otherwise, companies with positive net working capital rarely face difficulties in fulfilling their obligations (Tambunan et al., 2015).

The following is a calculation of value of X1 variable owned by telecommunication companies for 5 years. Some of the years are presented in Million and Billion as shown in Table 4.7.

Table 4.7 **Results of Working Capital to Total Asset (X_1) Ratio**

No	Companies	2013	2014	2015	2016	2017
1	Bakrie Telecom	-0.52	-0.76	-3.15	-5.19	-12.43
2	Inti Bangunan Sejahtera	0.13	0.21	0.06	0.10	0.06
3	XL Axiata	-0.05	-0.03	-0.10	-0.14	-0.14
4	Global Teleshop	0.28	0.27	-4.97	-2.90	-3.53
5	Indosat	-0.12	-0.24	-0.18	-0.16	-0.19
6	Smartfren Telecom	-0.22	-0.25	-0.09	-0.12	-0.16
7	Solusi Tunas Pratama	0.13	-0.29	0.07	0.11	0.10
8	Telekomunikasi Indonesia	0.04	0.01	0.08	0.04	0.01
9	Tower Bersama Infrastructure	-0.07	-0.27	0.03	-0.04	-0.001
10	Sarana Menara Nusantara	-0.01	0.03	0.07	0.01	0.04

Source: Secondary Data Processed, 2018



Source: Secondary Data Processed, 2018

Figure 4.1 Working Capital to Total Asset

From Table 4.7, Tower Bersama Infrastructure faced massive decline from -0.07 in 2013 to -0.27 percent in 2014. Tower Bersama Infrastructure is not the only one who experienced massive decline in 2013 to 2014, Solusi Tunas Pratama also decline for about -0.16 percent. However, there were five companies that had negative working capital values each year, namely Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata , Global Teleshop, Indosat, Smartfren Telecom, which means that the five companies had liquidation problems because they were unable to meet their short-term needs. In addition, there were also telecommunication companies that experience a decrease in working capital each year, namely Bakrie Telecom and XL Axiata. This happened with the assumption that the financial

management is getting worse every year. The results of the calculation of working capital to total assets by each company above can be said that most of them were experiencing fluctuating developments.

4.3. Retained Earnings to Total Asset (X_2) Ratio

$$X_2 = \frac{Retained\ Earnings}{Total\ Assets}$$

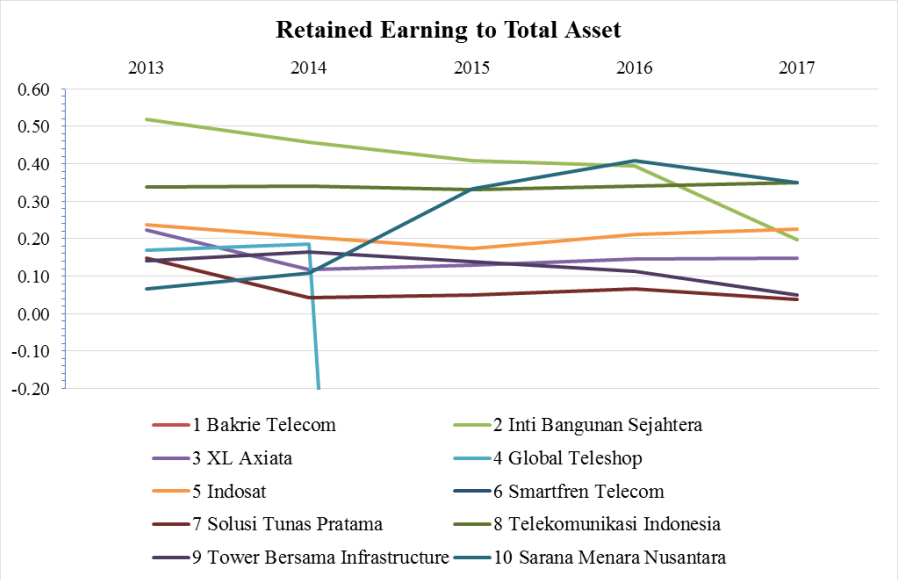
Retained earnings to total assets is a ratio to measure a company's ability to generate retained earnings from a company's total assets. Retained earnings indicate the company's income which is not paid in the form of dividends to shareholders (Nurcahyanti, 2015).

The following is the calculation of the value of X2 variable owned by telecommunication companies for 5 years. Some of the years are presented in Million and Billion which is shown in Table 4.8.

Table 4.8 **Results of Retained Earnings to Total Asset (X_2) Ratio**

No	Companies	2013	2014	2015	2016	2017
1	Bakrie Telecom	-0.79	-1.32	-7.74	-12.78	-30.03
2	Inti Bangunan Sejahtera	0.52	0.46	0.41	0.39	0.20
3	XL Axiata	0.22	0.12	0.13	0.15	0.15
4	Global Teleshop	0.17	0.18	-6.36	-12.14	-15.13
5	Indosat	0.24	0.20	0.17	0.21	0.23
6	Smartfren Telecom	-0.66	-0.67	-0.65	-0.67	-0.76
7	Solusi Tunas Pratama	0.15	0.04	0.05	0.07	0.04
8	Telekomunikasi Indonesia	0.34	0.34	0.33	0.34	0.35
9	Tower Bersama Infrastructure	0.14	0.17	0.14	0.11	0.05
10	Sarana Menara Nusantara	0.07	0.11	0.33	0.41	0.35

Source: Secondary Data Processed, 2018



Source: Secondary Data Processed, 2018

Figure 4.2 Retained Earning to Total Asset

Table 4.8 shows the results of the calculation of retained earnings to total assets owned by each company. There were two telecommunication companies including Bakrie Telecom and Inti Bangunan Sejahtera which experienced a decrease in retained earnings each year. For Bakrie Telecom, the company started with minus result in 2013 and for the next repetitive year the number gets bigger. For the following six companies including Inti Bangunan Sejahtera, XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia experiencing unstable developments each year. However, these companies ended up in 2017 with the lowest number compared to 2013. There were three companies that were also facing fluctuation developments such as Telekomunikasi Indonesia, Tower Bersama Infrastructure, Sarana Menara Nusantara, although they had unstable number each year. In 2017, all of them acquired the higher number than 2013.

4.4. EBIT to Total Asset (X_3) Ratio

$$X_3 = \frac{EBIT}{Total\ Asset}$$

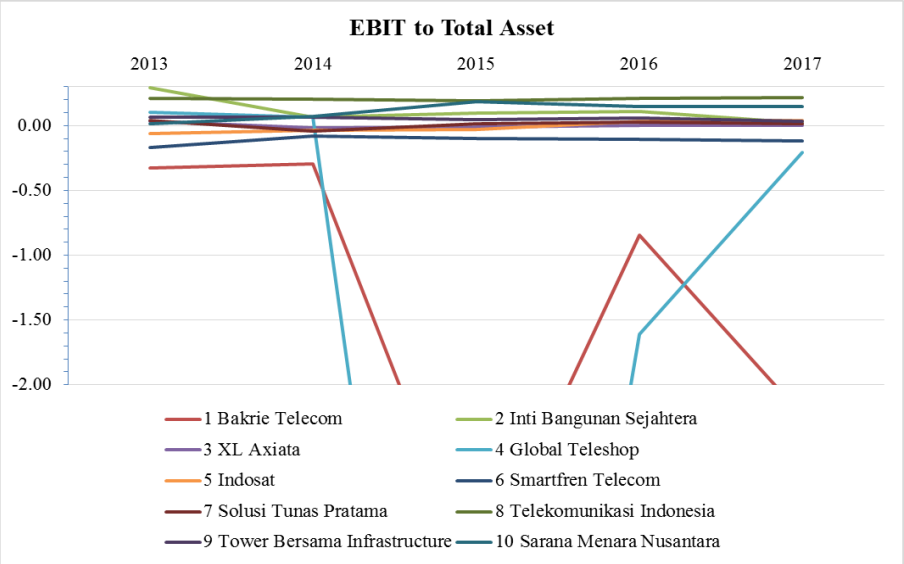
This ratio measures the ability of a company to earn profits from assets used or to measure the ability of capital invested in the overall assets to gain profits for all investors including shareholders and bonds. EBIT (Earnings before Interest and Tax) is the operating income obtained by the company (Nugraheni, 2005).

The following is a calculation of the value of the X3 variable owned by telecommunication companies for 5 years. Some of the years are presented in Million and Billion as shown in Table 4.9.

Table 4.9 **Results of EBIT to Total Asset (X_3) Ratio**

No	Companies	2013	2014	2015	2016	2017
1	Bakrie Telecom	-0.33	-0.30	-3.53	-0.85	-2.24
2	Inti Bangunan Sejahtera	0.29	0.06	0.10	0.11	0.02
3	XL Axiata	0.03	-0.02	-0.01	0.003	0.004
4	Global Teleshop	0.10	0.07	-8.98	-1.61	-0.21
5	Indosat	-0.06	-0.04	-0.03	0.04	0.04
6	Smartfren Telecom	-0.17	-0.08	-0.10	-0.11	-0.12
7	Solusi Tunas Pratama	0.04	-0.04	0.02	0.03	0.02
8	Telekomunikasi Indonesia	0.21	0.20	0.19	0.21	0.21
9	Tower Bersama Infrastructure	0.06	0.06	0.05	0.06	0.04
10	Sarana Menara Nusantara	0.01	0.07	0.18	0.15	0.15

Source: Secondary Data Processed, 2018



Source: Secondary Data Processed, 2018

Figure 4.3 Results of EBIT to Total Asset

Table 4.9 shows the results of the calculation of profit before interest and tax on total assets owned by each company. It can be said that many telecommunication companies experienced fluctuating operating profit developments. There were seven companies facing decrease in operating profit from 2016 to 2017, namely Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesi, Tower Bersama Infrastructure. This shows that these companies had poor financial performance. For Telekomunikasi Indonesia, Tower Bersama Infrastructure, Sarana Menara Nusantara, these companies could be classified to have a stable number. Although in one year they were decreasing, it was increasing in the following year and the number was not drastically dropped. This shows that these 3 companies had good financial management performance each year. The lowest number belonged to Bakrie Telecom in 2017 of -2.24 which

dropped to -0.85 in 2016. The highest number belonged to Inti Bangunan Sejahtera in 2013 of 0.29.

4.5. Market Value Equity to Book Value Total Debt (X_4) Ratio

$$X_4 = \frac{Market\ Value\ Equity}{Book\ Value\ of\ Total\ Debt}$$

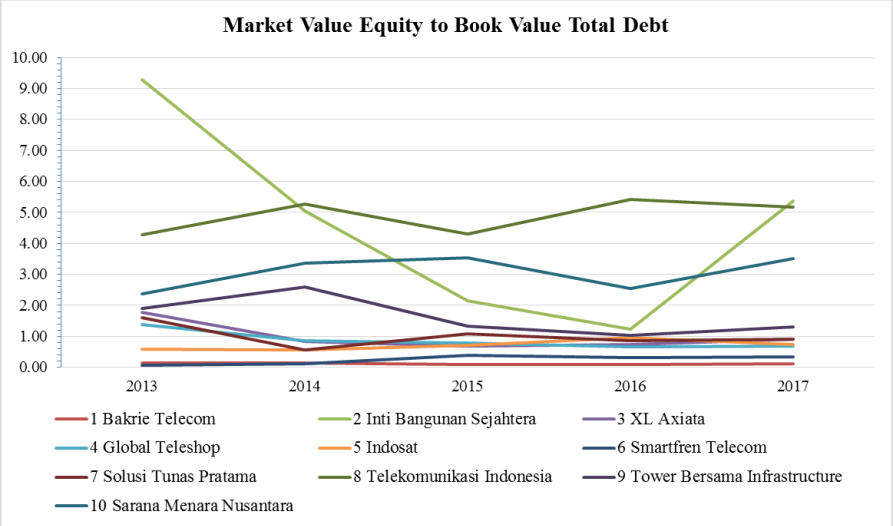
This ratio shows the company's ability to fulfill obligations from the market value of its own capital (ordinary shares). The market value of equity itself is obtained by multiplying the number of ordinary shares outstanding at the market price per share of ordinary shares. Book value of debt is obtained by summing current liabilities with long-term liabilities (Nurcahyanti, 2015).

The following is the calculation of the value of X4 variable owned by a telecommunication companies for 5 years. Some of the years are presented in Million and Billion as shown in Table 4.10.

Table 4.10 **Results of Market Value Equity to Book Value Total Debt (X_4) Ratio**

No	Companies	2013	2014	2015	2016	2017
1	Bakrie Telecom	0.15	0.13	0.10	0.10	0.12
2	Inti Bangunan Sejahtera	9.28	5.06	2.15	1.24	5.37
3	XL Axiata	1.78	0.83	0.70	0.73	0.91
4	Global Teleshop	1.37	0.86	0.79	0.67	0.68
5	Indosat	0.59	0.56	0.71	0.96	0.73
6	Smartfren Telecom	0.07	0.12	0.38	0.32	0.35
7	Solusi Tunas Pratama	1.61	0.55	1.07	0.85	0.91
8	Telekomunikasi Indonesia	4.29	5.27	4.30	5.42	5.18
9	Tower Bersama Infrastructure	1.90	2.60	1.33	1.03	1.30
10	Sarana Menara Nusantara	2.36	3.37	3.53	2.55	3.50

Source: Secondary Data Processed, 2018



Source: Secondary Data Processed, 2018

Figure 4.4 Market Value Equity to Book Value Total Debt

Table 4.10 shows the results of the X4 variable (Market Value of Equity to Total Liabilities) with the number of telecommunication companies that experienced fluctuating developments. There were four companies that had decreasing value each year repetitively from 2013 to 2015, the companies included Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata, Global Teleshop. Although all of the companies experiencing slightly fluctuated number, there were eight companies which were increasing from 2016 to 2017, namely Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata , Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia, Tower Bersama Infrastructure, Sarana Menara Nusantara. The highest number belonged to Inti Bangunan Sejahtera in 2013 of 9.28, and Smartfren Telecom had the lowest number which was 0.07 in 2013. For Smartfren Telecom, the number was significantly increasing in 2013 to 2014 because the current price itself increased from 54 to 91.

4.6. Sales to Total Asset Ratio (X_5) Ratio

$$X_5 = \frac{Sales}{Total\ Assets}$$

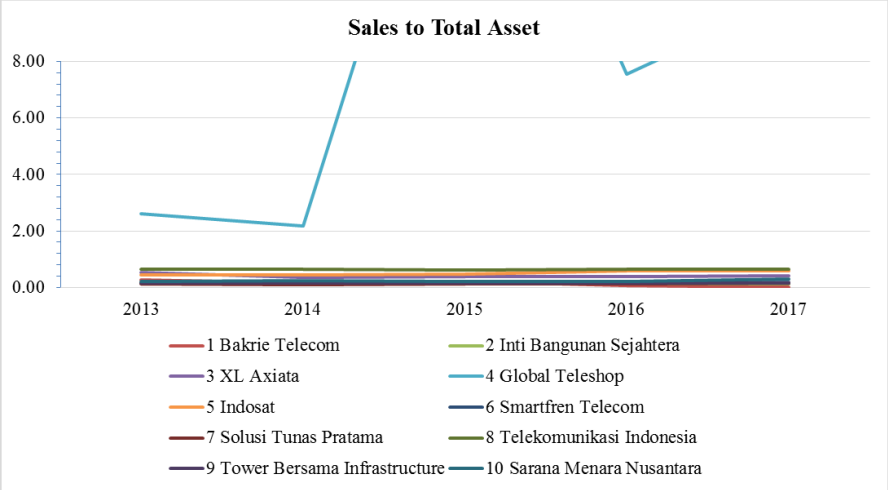
Sales to total asset is a ratio that detects the ability of company funds embedded in all rotating assets in a given period. This ratio can also be said as a ratio that measures the ability of capital invested by a company to produce a report (Adnan & Taufiq, 2001). In other word, this ratio measures the size of management's ability to deal with competitive conditions.

The following is a calculation of the value of X5 variable owned by a telecommunication companies for 5 years. Some of the years are presented in Million and Billion as shown in Table 4.11

Table 4.11 **Results of Sales to Total Asset Ratio (X_5) Ratio**

No	Companies	2013	2014	2015	2016	2017
1	Bakrie Telecom	0.27	0.16	0.21	0.08	0.01
2	Inti Bangunan Sejahtera	0.16	0.13	0.12	0.13	0.12
3	XL Axiata	0.53	0.37	0.39	0.39	0.41
4	Global Teleshop	2.61	2.18	20.42	7.55	10.22
5	Indosat	0.44	0.45	0.48	0.58	0.59
6	Smartfren Telecom	0.15	0.17	0.15	0.16	0.19
7	Solusi Tunas Pratama	0.13	0.08	0.13	0.13	0.15
8	Telekomunikasi Indonesia	0.65	0.64	0.62	0.65	0.65
9	Tower Bersama Infrastructure	0.14	0.15	0.15	0.16	0.16
10	Sarana Menara Nusantara	0.21	0.24	0.21	0.20	0.28

Source: Secondary Data Processed, 2018



Source: Secondary Data Processed, 2018

Figure 4.5 Sales to Total Asset

Table 4.11 shows that there were six companies including Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia that were declining in 2014 from 2013, which means that these companies had poor financial management. Meanwhile, the rest of them were increasing. Most of the companies were having fluctuated developments. In 2017, six companies which were XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia, Tower Bersama Infrastructure, Sarana Menara Nusantara had an increasing number from 2016. This can be summed up as the companies that had good financial management. For Global Teleshop, the company was experiencing significant and fluctuated number. In 2015, the number dramatically went up from 2.18 in 2014 to 20.42, then in 2016 the number sharply dropped to 7.55 and in 2017 the number rose up to 10.22.

4.7. Process and Calculation of Z-Score

After obtaining the financial ratio values of each company from 2013 to 2017, the next step of the research is to calculate the Z-Score from the results of the interpellation of the value of the ratio using the formula $\boldsymbol{Z\text{-}Score = 1.2\ x_1 + 1.4\ x_2 + 3.3\ x_3 + 0.6\ x_4 + 1.0\ x_5}$ with the criteria if the value is Z> 2.99, it is classified as **healthy** company. If the value of 1.81 <Z < 2.99 it is classified as **gray** area where it cannot be said to be healthy or bankrupt. If the value of Z is <1.81, it is classified as **bankrupt** company. Here are the results for ten companies with 5 years calculation each;

Table 4.12 **Results of Z – Score in 2013**

No	Companies	1.2 X1	1.4 X2	3.3 X3	0.6 X4	1.0 X5	Z-Score	Criteria
1	Bakrie Telecom	-0.62	-1.10	-1.08	0.09	0.27	-2.44	Bankrupt
2	Inti Bangunan Sejahtera	0.15	0.73	0.97	5.57	0.16	7.58	Healthy
3	XL Axiata	-0.06	0.31	0.11	1.07	0.53	1.96	Grey
4	Global Teleshop	0.34	0.24	0.34	0.82	2.61	4.35	Healthy
5	Indosat	-0.14	0.33	-0.20	0.36	0.44	0.78	Bankrupt
6	Smartfren Telecom	-0.27	-0.93	-0.56	0.04	0.15	-1.56	Bankrupt
7	Solusi Tunas Pratama	0.15	0.21	0.14	0.97	0.13	1.60	Bankrupt
8	Telekomunikasi Indonesia	0.04	0.47	0.70	2.57	0.65	4.44	Healthy
9	Tower Bersama Infrastructure	-0.09	0.20	0.21	1.14	0.14	1.61	Bankrupt
10	Sarana Menara Nusantara	-0.02	0.09	0.05	1.42	0.21	1.75	Bankrupt

Source: Secondary Data Processed, 2018

Table 4.12 shows the results of the Z – Score calculations. There were three companies which were included in Healthy criteria, and one company belonged to Grey area where this condition cannot be said to be a healthy company or bankrupt. Meanwhile, the rest of six companies belonged to Bankrupt criteria.

Table 4.13 **Results of Z – Score in 2014**

No	Companies	1.2 X1	1.4 X2	3.3 X3	0.6 X4	1.0 X5	Z-Score	Criteria
1	Bakrie Telecom	-0.92	-1.85	-0.98	0.08	0.16	-3.52	Bankrupt
2	Inti Bangunan Sejahtera	0.25	0.64	0.21	3.03	0.13	4.26	Healthy
3	XL Axiata	-0.04	0.17	-0.06	0.50	0.37	0.94	Bankrupt
4	Global Teleshop	0.33	0.26	0.22	0.52	2.18	3.51	Healthy
5	Indosat	-0.28	0.29	-0.12	0.34	0.45	0.67	Bankrupt
6	Smartfren Telecom	-0.30	-0.94	-0.26	0.07	0.17	-1.26	Bankrupt
7	Solusi Tunas Pratama	-0.34	0.06	-0.13	0.33	0.08	0.00	Bankrupt
8	Telekomunikasi Indonesia	0.02	0.48	0.67	3.16	0.64	4.97	Healthy
9	Tower Bersama Infrastructure	-0.33	0.23	0.21	1.56	0.15	1.83	Grey
10	Sarana Menara Nusantara	0.04	0.15	0.23	2.02	0.24	2.68	Grey

Source: Secondary Data Processed, 2018

From Table 4.13, it showed five companies that were included in Bankrupt criteria. They were Bakrie Telecom, XL Axiata, Indosat, Smartfren Telecom, Solusi Tunas Pratama. For the Healthy criteria, three companies were included Inti Bangunan Sejahtera, Global Teleshop and Telekomunikasi Indonesia. The last criteria was Grey area, there were two companies left which were Tower Bersama Infrastructure and Sarana Menara Nusantara.

Table 4.14 **Results of Z – Score in 2015**

No	Companies	1.2 X1	1.4 X2	3.3 X3	0.6 X4	1.0 X5	Z-Score	Criteria
1	Bakrie Telecom	-3,77	-10,84	-11,64	0,06	0,21	-25,98	Bankrupt
2	Inti Bangunan Sejahtera	0,07	0,57	0,32	1,29	0,12	2,38	Grey
3	XL Axiata	-0,11	0,18	-0,04	0,42	0,39	0,84	Bankrupt
4	Global Teleshop	-5,97	-8,90	-29,64	0,47	20,42	-23,61	Bankrupt
5	Indosat	-0,22	0,24	-0,11	0,43	0,48	0,83	Bankrupt
6	Smartfren Telecom	-0,11	-0,91	-0,32	0,23	0,15	-0,97	Bankrupt
7	Solusi Tunas Pratama	0,09	0,07	0,06	0,64	0,13	0,99	Bankrupt
8	Telekomunikasi Indonesia	0,09	0,46	0,62	2,58	0,62	4,38	Healthy
9	Tower Bersama Infrastructure	0,04	0,19	0,16	0,80	0,15	1,33	Bankrupt
10	Sarana Menara Nusantara	0,09	0,47	0,61	2,12	0,21	3,49	Healthy

Source: Secondary Data Processed, 2018

The calculations of Z - Score in 2015 showed that there was only one company belonged to Grey area and two companies belonged to Healthy criteria. Meanwhile, the rest of seven companies were counted in Bankrupt area.

Table 4.15 **Results of Z – Score in 2016**

No	Companies	1.2 X1	1.4 X2	3.3 X3	0.6 X4	1.0 X5	Z-Score	Criteria
1	Bakrie Telecom	-6.23	-17.90	-2.80	0.06	0.08	-26.79	Bankrupt
2	Inti Bangunan Sejahtera	0.12	0.55	0.37	0.74	0.13	1.92	Grey
3	XL Axiata	-0.17	0.20	0.01	0.44	0.39	0.88	Bankrupt
4	Global Teleshop	-3.48	-17.00	-5.31	0.40	7.55	-17.84	Bankrupt
5	Indosat	-0.19	0.30	0.12	0.57	0.58	1.37	Bankrupt
6	Smartfren Telecom	-0.15	-0.94	-0.36	0.19	0.16	-1.09	Bankrupt
7	Solusi Tunas Pratama	0.13	0.09	0.10	0.51	0.13	0.96	Bankrupt
8	Telekomunikasi Indonesia	0.05	0.48	0.70	3.25	0.65	5.13	Healthy
9	Tower Bersama Infrastructure	-0.05	0.16	0.19	0.62	0.16	1.08	Healthy
10	Sarana Menara Nusantara	0.01	0.57	0.49	1.53	0.20	2.81	Grey

Source: Secondary Data Processed, 2018

From Table 4.15, the results display that there were six companies counted in Bankrupt area, and two companies in Healthy area and other two companies in Grey area.

Table 4.16 **Results of Z – Score in 2017**

No	Companies	1.2 X1	1.4 X2	3.3 X3	0.6 X4	1.0 X5	Z-Score	Criteria
1	Bakrie Telecom	-14.92	-42.04	-7.38	0.07	0.01	-64.26	Bankrupt
2	Inti Bangunan Sejahtera	0.07	0.27	0.08	3.22	0.12	3.76	Healthy
3	XL Axiata	-0.17	0.21	0.01	0.55	0.41	1.00	Bankrupt
4	Global Teleshop	-4.24	-21.19	-0.68	0.41	10.22	-15.48	Bankrupt
5	Indosat	-0.23	0.32	0.13	0.44	0.59	1.24	Bankrupt
6	Smartfren Telecom	-0.19	-1.07	-0.38	0.21	0.19	-1.24	Bankrupt
7	Solusi Tunas Pratama	0.12	0.05	0.06	0.54	0.15	0.92	Bankrupt
8	Telekomunikasi Indonesia	0.01	0.49	0.71	3.11	0.65	4.97	Healthy
9	Tower Bersama Infrastructure	0.00	0.07	0.12	0.78	0.16	1.12	Bankrupt
10	Sarana Menara Nusantara	0.05	0.49	0.49	2.10	0.28	3.42	Healthy

Source: Secondary Data Processed, 2018

The results of Z – Score in 2017 shows that there were only three companies included in Healthy area, namely Inti Bangunan Sejahtera, Telekomunikasi Indonesia, and Sarana Menara Nusantara. There were no company belongs to Grey area because the rest of seven companies were listed in Bankrupt criteria.

The following results of Z-Score from 2017 - 2015 are presented in Table 4.17.

Table 4.17 **Results of Z – Score for 2013 - 2017**

No	Companies	2013	2014	2015	2016	2017	Average	Criteria
1	Bakrie Telecom	-2.44	-3.52	-25.98	-26.79	-64.26	-24.60	**Bankrupt**
2	Inti Bangunan Sejahtera	7.58	4.26	2.38	1.92	3.76	3.98	**Healthy**
3	XL Axiata	1.96	0.94	0.84	0.88	1.00	1.12	**Bankrupt**
4	Global Teleshop	4.35	3.51	-23.61	-17.84	-15.48	-9.81	**Bankrupt**
5	Indosat	0.78	0.67	0.83	1.37	1.24	0.98	**Bankrupt**
6	Smartfren Telecom	-1.56	-1.26	-0.97	-1.09	-1.24	-1.22	**Bankrupt**
7	Solusi Tunas Pratama	1.60	0.002	0.99	0.96	0.92	0.89	**Bankrupt**
8	Telekomunikasi Indonesia	4.44	4.97	4.38	5.13	4.97	4.78	**Healthy**
9	Tower Bersama Infrastructure	1.61	1.83	1.33	1.08	1.12	1.39	**Bankrupt**
10	Sarana Menara Nusantara	1.75	2.68	3.49	2.81	3.42	2.83	**Grey**

Source: Secondary Data Processed, 2018

From Table 4.17 above, it is clearly show that the financial management of Bakrie Telecom was not good. From 2013, the company itself was already included in Bankrupt area. However, each year the company kept on increasing the number of bankruptcy predictions and it was getting bigger and worse from -2.44 in 2013 until -64.26 in 2017 which was the highest number from all of telecommunication companies listed above. As already mentioned before, if the z-score is resulting <1.81, it can be summed up as bankrupt. Global Teleshop also faced decreasing number each year, during 2013 and 2014 the company was

categorized as healthy company, afterward in 2015 the number significantly dropped from 3.51 to -23.51, although the bankruptcy prediction number was decreasing in the next 2 years, the last number in 2017 which was -15.48 still below the healthy number. All of the companies were facing fluctuated results each year. However, if the numbers of each year being calculated to find out the average of Z- Score for each company, there were 7 companies that categorized as bankrupt namely Bakrie Telecom, Inti Bangunan Sejahtera, XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia, Tower Bersama Infrastructure. The companies that were listed in Healthy area were Inti Bangunan Sejahtera and Telekomunikasi Indonesia. These two companies from 2013 to 2017 never happened to get the z – score number below 1.81. Sarana Menara Nusantara was the only company listed in Grey area after being calculated averagely. The results of the calculations show that in 2013 actually the company was lead to bankruptcy with 1.75 as a result. However, in the following years the number of z – score is increasing, although there was several numbers slightly decreasing. The number was still above the bankruptcy number which was between 1.81 to 2.99, and the company ended up with 3.42 which was categorized in healthy area.

4.8. Analysis and Discussion

The results showed that the financial condition of telecommunication companies indicates fluctuating results and the results tend to decline rather than incline. The good and bad health of a telecommunication companies, especially in financial term, is strongly influenced by total assets and total debt. Some companies experience bad conditions due to their financial conditions or in terms of assets were unable to cover debts. This matter was believed because many of the Working Capital to Total Assets from 2013-2017 experienced fluctuations which tended to decreases. Thus, the results of the Working Capital to Total Asset calculation were negative. A negative result in this value means that the company had negative net working capital (the value of current debt was greater than current assets). In addition, matter that caused this value to be negative was because the amount of current liabilities was greater than the value of its current assets. The large current liabilities value will cause a large interest expense and if the current liabilities value is greater than the current asset value, this will make the company illiquid and have a tendency to experience a crisis because it cannot fulfill its short-term obligations, thus it can result in bankruptcy.

After analyzing the financial report of all the companies by calculating the ratios and z – score, the researcher made conclusion by using the result of bankruptcy prediction done using Altman Z – Score. However, there were many other ways to make sure that the prediction of bankruptcy was more accurate. One of them was by checking the Profit/Loss financial statement and Cash Flow statement. Although if the results in Profit/Loss are positive it does not mean that

the companies were doing well. The Cash Flow statement especially in the cash flow from operating activities should be checked as well before assuming the company was profitable or not. If the company displayed the positive profit but negative in Cash Flow, the company cannot be said as profitable. However, if the profit is positive and the cash flow also positive, it can be said that the company is really are profitable. The table below shows the Profit/Loss and Cash Flow from operating activities of telecommunication companies for the first quarter;

Table 4.18 **Profit/Loss and Cash Flow from Operating Activites for First Quarter**

No	Companies	Profit/Loss	Cash Flow from Operating Activities	Amount (in)
1	Bakrie Telecom	-174,977	95	Million
2	Inti Bangunan Sejahtera	41,538,559,615	92,343,389,600	Full Amount
3	XL Axiata	15,433	2,344,267	Million
4	Global Teleshop	-11,914,914,251	-338,884,133	Full Amount
5	Indosat	-465,771	2,004,772	Million
6	Smartfren Telecom	-684,992,075,224	-233,269,032,819	Full Amount
7	Solusi Tunas Pratama	109,705	767,969	Million
8	Telekomunikasi Indonesia	7,978	9,566	Billion
9	Tower Bersama Infrastructure	236,323	1,745,002	Million
10	Sarana Menara Nusantara	518,713	327,872	Million

Source: Indonesia Stock Exchange

Before summing up the discussion based on the table above, according to the Z – Score calculations process, the companies that most likely could be bankrupt were Bakrie Telecom, XL Axiata, Global Teleshop, Indosat, Smartfren Telecom, Solusi Tunas Pratama, Telekomunikasi Indonesia, Tower Bersama Infrastructure. After comparing the result of Z – Score for each company to the Profit/Loss and Cash Flow (operating activities), it turned out that there were only two companies that match with the prediction of bankruptcy using Altman Z –

Score. They were Global Teleshop and Smartfren Telecom. Both companies had inclining fluctuates in Sales to Total Asset ratios calculation and in 2017 both companies received the highest number of Sales to Total Asset compared to the previous year.

Other company that had destitute number in all ratios calculation was Bakrie Telecom, although Bakrie Telecom had the negative values in Profit/Loss financial statement and was supported by the result of Z – Score that generally had the lowest number compared to other companies and negative value which was indicated bankruptcy. Surprisingly Bakrie Telecom still had a positive result in the Cash Flow although the number was not large, the cash receipts from customers helped to increase the value of Bakrie Telecom's free cash flow.

According to the research done by Manousaridis (2017), it was stated that the result of Z – Score calculation implemented to "failed" group were 100% confirmed which is indicating that Altman's Z-score model might be an effective indicator of financial distress 2 years prior to a known "failure" event. The "failed" group in this research is "failed" banks from countries that experienced huge economic problems in the period of financial crisis (2006- 2016). However, she also implemented the Z – Score method for large banks from Central Europe which are still active at the time. The result showed that Z – Score method made discernible a significant limitation and also some drawbacks because of the implementation. The researcher questionable the accuracy of Altman Z – Score method applied in specialized for emerging markets as regards predictions for private firms with high leverage.

From this discussion, the researcher also concluded that the Z – Score was not accurately predict the bankruptcy for the company because there were many factors that will make the company stated as bankrupt. However, the Altman Z – Score may help the company to be aware of distress that might happen in the future.

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

Based on the results of research and calculations conducted to determine the prediction of bankruptcy of go – public telecommunications companies in Indonesia listed in the Indonesia Stock Exchange from 2013 - 2017, the research and calculations can be concluded as follows:

1. From the calculation of Z-Score ratios of telecommunications companies in Indonesia, it showed fluctuated results annually. However, if the conclusions are seen from the whole perspective, Bakrie Telecom's company showed the worst results because it always showed negative values for five consecutive years from 2013 - 2017. Not only Bakrie Telecom who had a Z-score that was poor, Smartfren Telecom is the second company that also showed negative values from 2013 – 2017. There were two more companies that included in Bankrupt criteria for each year, those were Indosat, Solusi Tunas Pratama, although these two companies counted in Bankrupt criteria, the values were all positive unlike Bakrie Telekom and Smartfren Telecom that had negative values each year repetitively. There is only one company that had a good Z – Score every year and was always in the healthy category, the company was Telekom Indonesia.
2. The result of the research showed that Working Capital to Total Assets (X1) ratio was one of the ratio that influenced the most than the

other ratios, this ratio significantly influenced the result of bankruptcy prediction of telecommunication companies in Indonesia from 2013 – 2017 period. The X1 ratio was the most influential because some of the companies averagely had negative values.

3. After comparing the result of Z - Score formulation that was implied to calculate the bankruptcy prediction to the Profit/ Loss and Cash Flow from Operating Activities from each company, the researcher concluded that Altman Z – Score did not accurately predict the bankruptcy. Some companies were included in bankrupt area. However, their Profit/ Loss and Cash Flow from Operating Activities displayed that the values of the company was not negative. Thus, although the result of Altman Z – Score implied in this research did not precisely predict the bankruptcy, this prediction might help the companies to be aware of bankruptcy indications that might happen in the future.

5.2. Recommendations

For companies with bankruptcy, grey or healthy indications need to improve competitiveness in the market, the competitiveness are in terms of human resources and the quality of products produced at prices that also compete in the market. Companies obligatory are always ready to be able to overcome existing debts and handle financial difficulties that are occurring as well as those that may occur in the future. In addition, to

overcoming debt problems and focusing on increasing profits, efforts need to be made to improve company performances.

For further researcher, it will be better to put other methods to find the bankruptcy predictions then compare those methods with Altman Z – Score method. In this research, the researcher only used qualitative data and several ratios to predict the bankruptcy. It is hard to predict the bankruptcy completely with only considering the result by one method only. For the next research in the future, to support the prediction of bankruptcy it can be done by considering the qualitative data such as factors other than financial ratios such as economic conditions (economic growth, unemployment rate, inflation etc.) and political parameters. If these factors can be obtained and can be accurately measured, a more accurate prediction of bankruptcy will be obtained.

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APPENDICES

APPENDIX 1 The Calculation of Working Capital to Total Asset (X1) Ratio

Bakrie Telecom	2013	2014	2015	2016	2017
Current Asset	466,135,508,578	149,520,345,786	64,014	43,516	5,266
Current Liabilities	5,209,889,004,020	5,949,291,430,919	7,649,163	8,191,029	8,933,611
Total Asset	9,128,135,053,900	7,588,560,916,085	2,411,596	1,569,775	718,022

Inti Bangunan Sejahtera	2013	2014	2015	2016	2017
Current Asset	438,925,037,443	1,235,888,690,095	454,686,176,910	922,990,241,831	1,199,164,016,997
Current Liabilities	80,947,106,414	442,982,862,242	203,655,329,757	363,155,030,787	846,443,381,930
Total Asset	2,801,815,792,192	3,843,661,562,262	4,177,279,955,791	5,449,356,086,874	6,355,270,875,080

XL Axiata	2013	2014	2015	2016	2017
Current Asset	5,844,114	13,309,762	10,151,586	6,806,863	7,180,742
Current Liabilities	7,931,046	15,398,292	15,748,214	14,477,038	15,226,516
Total Asset	40,277,626	63,706,488	58,844,320	54,896,286	56,321,441

Global Teleshop	2013	2014	2015	2016	2017
Current Asset	1,422,107,607,865	1,782,881,292,967	65,803,392,628	40,903,659,907	32,500,867,639
Current Liabilities	1,005,187,905,968	1,274,133,300,444	681,942,173,566	257,403,914,084	247,283,351,333
Total Asset	1,488,531,947,081	1,851,534,724,223	123,944,904,932	74,599,266,089	60,812,090,345

Indosat	2013	2014	2015	2016	2017
Current Asset	7,169,017	8,591,684	9,918,677	8,073,481	9,479,271
Current Liabilities	13,494,437	21,147,849	20,052,600	16,200,457	19,086,592
Total Asset	54,520,891	53,254,841	55,388,517	50,661,040	50,838,704

Smartfren Telecom	2013	2014	2015	2016	2017
Current Asset	2,014,295,403,669	2,023,170,122,409	2,207,746,392,001	2,318,664,718,735	2,570,255,076,703
Current Liabilities	5,539,550,431,186	6,522,092,930,900	4,159,191,189,004	5,124,263,031,383	6,411,201,682,752
Total Asset	15,866,493,429,557	17,758,684,934,364	20,705,913,320,829	22,807,139,288,268	24,114,499,676,408

Solusi Tunas Pratama	2013	2014	2015	2016	2017
Current Asset	1,369,470,225,328	2,509,692,922,177	1,817,572	2,566,830	2,038,878
Current Liabilities	562,014,322,971	6,207,436,035,816	831,915	1,094,268	821,160
Total Asset	6,310,872,548,093	12,894,699,893,195	13,738,747	14,019,294	12,610,068

Telekomunikasi Indonesia	2013	2014	2015	2016	2017
Current Asset	33,075	33,762	47,912	47,701	47,561
Current Liabilities	28,437	31,786	35,413	39,762	45,376
Total Asset	127,951	140,895	166,173	179,611	198,484

Tower Bersama Infrastructure	2013	2014	2015	2016	2017
Current Asset	2,598,596	3,152,206	2,605,510	1,960,672	1,971,501
Current Liabilities	3,930,922	9,124,102	1,914,539	2,899,952	1,988,122
Total Asset	18,719,211	22,034,082	22,799,671	23,620,268	25,595,785

Sarana Menara Nusantara	2013	2014	2015	2016	2017
Current Asset	2,214,567	2,642,380	3,533,386	3,594,550	3,049,717
Current Liabilities	2,419,900	2,039,363	1,977,557	3,302,952	2,230,487
Total Asset	15,534,076	17,235,419	21,416,709	25,025,207	18,763,478

APPENDIX 2 Retained Earnings to Total Asset (X2) Ratio

Bakrie Telecom	2013	2014	2015	2016	2017
Retained Earnings	(7,168,627,872,614)	(10,039,928,758,791)	(18,673,601)	(20,065,744)	(21,562,226)
Total Asset	9,128,135,053,900	7,588,560,916,085	2,411,596	1,569,775	718,022

Inti Bangunan Sejahtera	2013	2014	2015	2016	2017
Retained Earnings	1,455,682,229,707	1,763,492,341,174	1,702,373,039,147	2,149,760,820,797	1,248,055,931,898
Total Asset	2,801,815,792,192	3,843,661,562,262	4,177,279,955,791	5,449,356,086,874	6,355,270,875,080

XL Axiata	2013	2014	2015	2016	2017
Retained Earnings	8,966,266	7,509,132	7,604,352	8,000,901	8,404,244
Total Asset	40,277,626	63,706,488	58,844,320	54,896,286	56,321,441

Global Teleshop	2013	2014	2015	2016	2017
Retained Earnings	250,603,889,778	342,043,577,810	(787,852,619,208)	(905,719,844,846)	(920,283,237,109)
Total Asset	1,488,531,947,081	1,851,534,724,223	123,944,904,932	74,599,266,089	60,812,090,345

Indosat	2013	2014	2015	2016	2017
Retained Earnings	12,877,143	10,889,973	9,596,118	10,701,160	11,450,155
Total Asset	54,520,891	53,254,841	55,388,517	50,661,040	50,838,704

Smartfren Telecom	2013	2014	2015	2016	2017
Retained Earnings	(10,499,067,701,498)	(11,877,892,548,301)	(13,391,122,559,526)	(15,370,268,693,666)	(18,395,050,021,610)
Total Asset	15,866,493,429,557	17,758,684,934,364	20,705,913,320,829	22,807,139,288,268	24,114,499,676,408

Solusi Tunas Pratama	2013	2014	2015	2016	2017
Retained Earnings	931,702,049,963	551,770,664,989	672,569	925,598	486,628
Total Asset	6,310,872,548,093	12,894,699,893,195	13,738,747	14,019,294	12,610,068

Telekomunikasi Indonesia	2013	2014	2015	2016	2017
Retained Earnings	43,291	47,986	55,120	61,278	69,559
Total Asset	127,951	140,895	166,173	179,611	198,484

Tower Bersama Infrastructu	2013	2014	2015	2016	2017
Retained Earnings	2,632,009	3,635,718	3,151,098	2,693,699	1,256,573
Total Asset	18,719,211	22,034,082	22,799,671	23,620,268	25,595,785

Sarana Menara Nusantara	2013	2014	2015	2016	2017
Retained Earnings	1,017,416	1,857,978	7,160,632	10,200,237	6,545,818
Total Asset	15,534,076	17,235,419	21,416,709	25,025,207	18,763,478

APPENDIX 3 EBIT to Total Asset (X3) Ratio

Bakrie Telecom	2013	2014	2015	2016	2017
EBIT	(2,984,620,405,032)	(2,260,153,573,279)	(8,506,407)	(1,330,333)	(1,605,235)
Total Asset	9,128,135,053,900	7,588,560,916,085	2,411,596	1,569,775	718,022

Inti Bangunan Sejahtera	2013	2014	2015	2016	2017
EBIT	822,811,707,548	243,984,487,296	410,868,435,469	609,814,485,397	148,155,664,761
Total Asset	2,801,815,792,192	3,843,661,562,262	4,177,279,955,791	5,449,356,086,874	6,355,270,875,080

XL Axiata	2013	2014	2015	2016	2017
EBIT	1,389,667	(1,069,786)	(630,526)	185,581	221,238
Total Asset	40,277,626	63,706,488	58,844,320	54,896,286	56,321,441

Global Teleshop	2013	2014	2015	2016	2017
EBIT	155,027,546,037	124,879,322,377	(1,113,428,703,624)	(120,038,363,955)	(12,605,133,764)
Total Asset	1,488,531,947,081	1,851,534,724,223	123,944,904,932	74,599,266,089	60,812,090,345

Indosat	2013	2014	2015	2016	2017
EBIT	(3,333,837)	(1,935,901)	(1,785,835)	1,795,263	1,940,426
Total Asset	54,520,891	53,254,841	55,388,517	50,661,040	50,838,704

Smartfren Telecom	2013	2014	2015	2016	2017
EBIT	(2,708,059,002,617)	(1,405,210,758,310)	(2,008,005,999,053)	(2,474,473,548,306)	(2,777,643,151,259)
Total Asset	15,866,493,429,557	17,758,684,934,364	20,705,913,320,829	22,807,139,288,268	24,114,499,676,408

Solusi Tunas Pratama	2013	2014	2015	2016	2017
EBIT	268,128,307,197	(507,733,724,065)	242,015	409,350	211,135
Total Asset	6,310,872,548,093	12,894,699,893,195	13,738,747	14,019,294	12,610,068

Telekomunikasi Indonesia	2013	2014	2015	2016	2017
EBIT	27,149	28,784	31,342	38,189	42,659
Total Asset	127,951	140,895	166,173	179,611	198,484

Tower Bersama Infrastructure	2013	2014	2015	2016	2017
EBIT	1,177,376	1,430,563	1,089,197	1,363,951	907,639
Total Asset	18,719,211	22,034,082	22,799,671	23,620,268	25,595,785

Sarana Menara Nusantara	2013	2014	2015	2016	2017
EBIT	227,989	1,210,555	3,957,815	3,709,302	2,802,960
Total Asset	15,534,076	17,235,419	21,416,709	25,025,207	18,763,478

APPENDIX 4 Market Value Equity to Book Value Total Debt (X4) Ratio

Bakrie Telecom	2013	2014	2015	2016	2017
Shares Outstanding	30,584,590,655	30,584,590,655	30,584,590,655	30,584,590,655	36,773,904,635
Current price	50	50	50	50	50
Total Liabilities	10,135,605,627,318	11,467,346,262,180	14,924,751	15,467,323	14,873,446

Inti Bangunan Sejahtera	2013	2014	2015	2016	2017
Shares Outstanding	1,143,073,400	1,350,904,927	1,350,904,927	1,350,904,927	1,350,904,927
Current price	5,700	3,000	1,900	1,850	8,100
Total Liabilities	702,030,964,968	801,659,645,032	1,196,285,726,808	2,015,920,172,808	2,037,803,725,474

XL Axiata	2013	2014	2015	2016	2017
Shares Outstanding	8,534,490,667	8,534,490,667	8,541,381,670	10,687,960,423	10,687,960,423
Current price	5,200	4,865	3,650	2,310	2,960
Total Liabilities	24,977,479	49,745,863	44,752,685	33,687,141	34,690,591

Global Teleshop	2013	2014	2015	2016	2017
Shares Outstanding	1,111,112,000	1,111,112,000	1,111,112,000	1,111,112,000	1,111,112,000
Current price	1,250	1,000	488	456	456
Total Liabilities	1,014,328,662,968	1,284,887,778,444	686,221,910,566	754,629,547,345	744,844,128,875

Indosat	2013	2014	2015	2016	2017
Shares Outstanding	5,433,933,500	5,433,933,500	5,433,933,500	5,433,933,500	5,433,933,500
Current price	4,150	4,050	5,500	6,450	4,800
Total Liabilities	38,003,293	39,058,877	42,124,676	36,661,585	35,845,506

Smartfren Telecom	2013	2014	2015	2016	2017
Shares Outstanding	17,795,870,091	17,795,870,091	102,795,870,101	103,705,870,101	103,705,870,101
Current price	54	91	51	53	50
Total Liabilities	12,816,548,480,145	13,796,743,041,760	13,857,375,727,684	16,937,857,089,434	14,869,630,119,030

Solusi Tunas Pratama	2013	2014	2015	2016	2017
Shares Outstanding	794,289,548	794,363,481	1,137,579,698	1,137,579,698	1,137,579,698
Current price	8,150	7,700	8,400	7,000	6,800
Total Liabilities	4,018,499,851,828	11,033,383,101,274	8,924,211	9,330,910	8,516,658

Telekomunikasi Indonesia	2013	2014	2015	2016	2017
Shares Outstanding	100,799,996,400	100,799,996,400	100,799,996,400	100,799,996,400	100,799,996,400
Current price	2,150	2,865	3,105	3,980	4,440
Total Liabilities	50,527	54,770	72,745	74,067	86,354

Tower Bersama Infrastructure	2013	2014	2015	2016	2017
Shares Outstanding	4,796,526,199	4,796,526,199	4,796,526,199	4,531,399,889	4,531,399,889
Current price	5,800	9,700	5,875	4,980	6,425
Total Liabilities	14,605,172	17,903,053	21,208,875	21,996,126	22,410,705

Sarana Menara Nusantara	2013	2014	2015	2016	2017
Shares Outstanding	10,202,925,000	10,202,925,000	10,202,925,000	10,202,925,000	10,202,925,000
Current price	2,750	4,150	4,750	3,580	4,000
Total Liabilities	11,890,688	12,566,090	13,738,170	14,316,861	11,661,666

APPENDIX 5 Sales to Total Asset Ratio (X5) Ratio

Bakrie Telecom	2013	2014	2015	2016	2017
Sales	2,434,692,893,671	1,179,181,751,298	509,596	119,365	7,871
Total Asset	9,128,135,053,900	7,588,560,916,085	2,411,596	1,569,775	718,022
Inti Bangunan Sejahtera	2013	2014	2015	2016	2017
Sales	448,295,643,503	481,904,523,691	506,428,729,921	703,132,723,832	761,760,612,195
Total Asset	2,801,815,792,192	3,843,661,562,262	4,177,279,955,791	5,449,356,086,874	6,355,270,875,080
XL Axiata	2013	2014	2015	2016	2017
Sales	21,265,060	23,460,015	22,876,182	21,341,425	22,875,662
Total Asset	40,277,626	63,706,488	58,844,320	54,896,286	56,321,441
Global Teleshop	2013	2014	2015	2016	2017
Sales	3,887,252,590,039	4,037,217,247,921	2,531,562,923,703	562,959,661,885	621,534,450,144
Total Asset	1,488,531,947,081	1,851,534,724,223	123,944,904,932	74,599,266,089	60,812,090,345
Indosat	2013	2014	2015	2016	2017
Sales	23,855,272	24,085,101	26,768,525	29,184,624	29,926,098
Total Asset	54,520,891	53,254,841	55,388,517	50,661,040	50,838,704
Smartfren Telecom	2013	2014	2015	2016	2017
Sales	2,428,857,501,221	2,954,410,048,419	3,025,755,038,085	3,673,385,751,473	4,668,495,942,494
Total Asset	15,866,493,429,557	17,758,684,934,364	20,705,913,320,829	22,807,139,288,268	24,114,499,676,408
Solusi Tunas Pratama	2013	2014	2015	2016	2017
Sales	840,096,512,954	1,071,929,125,635	1,785,853	1,821,446	1,908,487
Total Asset	6,310,872,548,093	12,894,699,893,195	13,738,747	14,019,294	12,610,068
Telekomunikasi Indonesia	2013	2014	2015	2016	2017
Sales	82,967	89,696	102,470	116,333	128,256
Total Asset	127,951	140,895	166,173	179,611	198,484
Tower Bersama Infrastructure	2013	2014	2015	2016	2017
Sales	2,690,500	3,306,812	3,421,177	3,711,174	4,023,085
Total Asset	18,719,211	22,034,082	22,799,671	23,620,268	25,595,785
Sarana Menara Nusantara	2013	2014	2015	2016	2017
Sales	3,197,139	4,106,175	4,469,784	5,053,112	5,337,939
Total Asset	15,534,076	17,235,419	21,416,709	25,025,207	18,763,478