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Altman Z-Score Analysis for Predicting Bankruptcy in Listed CompaniesIn LQ 45 Year 2016-2020

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Abstract: The purpose of this study is to determine the level of corporate bankruptcy. The analysis in this study uses the Altman Z Score models from 29 companies listed in the LQ45 index between 2016 and 2020. The results of this study indicate that there are 12 companies that are categorized as prone to bankruptcy (41.38%), 9 companies are categorized as bankrupt (31.03%), and 8 companies are categorized as healthy (27.59%). Altman Z-Score analysis to predict the bankruptcy of companies listed on LQ 45 in 2016-2020 with an average value of 2,032 are in a position of Prone to Bankruptcy or it can be said that companies have the potential to go bankrupt. This can be seen in the Zi value which is between 1.20% - 2.90% based on the Altman Z-Score calculation.

Keywords: Altman Z-Score, Bankruptcy Analysis, LQ 45, Financial Ratios.

INTRODUCTION

In the current era involving global issues, namely the Covid-19 pandemic that has hit Indonesia and the world, it has had a tremendous impact on health, humanity, economy, and global financial system stability. Some of the consequences of limited mobility and economic activity. Indonesia's economic growth in 2020 was 2.07% lower than in 2019, while financial markets experienced uncertainty, with global economic growth declining by 3.5%. (Source: Manufacturing Production Index Development 2020, Center for Institutional Statistics).

The Composite Stock Price Index (IHSG) has been in a downward trend since the announcement of confirmed cases of Covid-19. The LQ 45 company is also one of the industries listieid on the Inidoinesia Stock Exichangie (IDX) whiich was ailso hit by fluctuations iin tihe capital market which also affects people's investment behavior.

Bankruptcy of a company is a phenomenon that often occurs in the business world because of the influence of internal and external parties of the company. For example, the cost of raw materials, wages, energy costs or other costs.

These other costs match the company's capabilities, the presence of better competitors' products that affect sales, and the inability of managers to run the company increases. Seeing the phenomena mentioned above, it is considered important to keep a company from going bankrupt so that it can compete in the global industry continuously in the long term in order to become a healthy company in order to realize good economic stability for Indonesia.

Comipanies listieid on the LQi 45i Indeix arie industrial sectors thiat haive hiigh liqiuidity anid include market capitaliization considerations. The main measure of transaction liquidity refers to the value of transactions in the regular market. The 45 comipanies listeid on thie LiQ 4i5 Indeix are exipected tio be aible to assess thie conditions that occur iin the ciompany in order to get a clearer picture of the company's current condition, so that they can find out the right actions to maintain and improve the company's shortcomings in order to survive and compete.

To anticipate bankruptcy, business people must prepare early to prevent unexpected events that may occur. Companies must be able to assess the current state of their business to get a clearer picture of the current state of the business, so that appropriate actions can be detected to maintain and improve the company's shortcomings to survive and compete. One of the tools used by companies to assess company performance is financial reports that are prepared from time to time. In order for the company to know more about the company's performance, the company can compare the current financial statements with the previous period's financial statements. One bankruptcy model that offers many advantages is the ZScore model. This model was developed by Edward I Altman, a financial economist.

In Edward I. Altmarn's research, after selecting 22 financial ratios, Altman identified 5 finaniicial ratiiois that cain bie useidi to detect tihie bankruptcy oif ia coimpiany shortly before tihe company goes public. The fivei ratiios aire: workiing capitial over asisets, reitained earniinigs/totiial assiets, earniinigs biefore inteirest aind itaxies/assieits, markiiet valiuie of eiqiuity to book value of debt and property sailes.

This analysis, known as ZScore analysis, can accurately predict a company's performance, as well as its possible financial health in the future whether the business is bankrupt, prone to bankruptcy or in good health. This is useful for investors who invest their capital, be it selling, buying or even saving their investment in the company in question. For company leaders, they care about being able to shape, reflect, improve, and identify the right decisions so that they can be held accountable to shareholders or investors.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Bankruptcy

The Company's operations do not always go as planned. Under certain circumstances, the company may experience minor financial difficulties, such as liquidity difficulties (inability to pay employee salaries, interest on debt). If these minor difficulties are not handled properly, they can escalate into major difficulties and lead to bankruptcy.

According to Hanafi (2008), the concept of bankruptcy can be seen in both streaming and stock approaches. Using a stock-based approach, a company declares bankruptcy when total liabilities exceed total assets. With the flow approach, if you cannot generate sufficient cash flow, your company will go bankrupt. In the case of shares, a company is declared bankrupt even though it can still generate sufficient cash flow or has good prospects in the future.

A new problem that can lead to bankruptcy: short-term financial difficulties leading to unsolvable difficulties. The insoluble difficulty lies in the fact that the company is struggling to pay its debts due to limited assets. If not settled, the company can be liquidated or liquidated. Liquidation is selected if the value of the liquidation exceeds the value of the company.

If the company continues to show prospects and thus the value of the company continues, restructuring is chosen if the value of the company exceeds the value of the company in the event of liquidation.

Z-SCORE RATIO

The Z-Score ratio is divided into several sections that provide an overview of each company, which are as follows:

1) WORKING CAPITAL TO TOTAL ASSET (X1)

Working Capital to Total Assets is the ratio of working capital to total assets. used to measure liquidity. Net liquid assets or net working capital is the difference between total current assets minus total current liabilities. Generally, when a company i experiencing financial difficulties, working capital will fall faster than total assets causing this ratio to fall. Negative net working capital is also likely to face problems in covering its short-term obligations due to the unavailability of sufficient current assets to cover these obligations.

2) RETAINED EARNINGS TO TOTAL ASSETS (X2)

Retained Earning to Total Assets is a profitability ratio that assesses the company's ability to generate profits during the company's operating life. The age of the company affects this ratio because the longer the company operates, it is possible to facilitate the accumulation of retained earnings. This causes companies that are still relatively young in general will show low ratio results, except for those whose profits are very large in the early days of their establishment. The greater this ratio, the greater the role of retained earnings in forming company funds. The smaller this ratio indicates the company's financial condition is not healthy. The ratio of retained earnings to total assets shows that every 1.00 of the company's assets are guaranteed retained earnings.

3) EARNING BEFORE INTEREST AND TAXES TO TOTAL ASSETS (X3)

Earning Before Interest and Taxes to Total Assets is the ratio of EBIT to Total Assets that measures profitability, namely the rate of return on assets, which is calculated by dividing the company's annual profit before interest and tax (EBIT) by the total assets on the year-end balance sheet. This ratio can also be used as a measure of how much productivity the use of borrowed funds is. The ratio of EBIT to total assets shows the net income before interest and taxes that can be generated from every Rp. 1.00 of company assets

4) MARKET VALUE OF EQUITY TO BOOK VALUE OF LIABILITIES (X4)

Market Value Of Equity to Book Value Of Liabilities is the ratio of Capital Market Value to Total Debt which shows the company's ability to meet long-term obligations from the value of its own capital (common shares). The market value of the capital itself is obtained by multiplying the number of ordinary shares outstanding by the market price per common share. The book value of debt is obtained by adding up current liabilities with long-term liabilities. The smaller this ratio, the company's financial condition is not healthy. The ratio of the market value of its own capital to the book value of total liabilities shows that every Rp 1.00 of total liabilities is used to finance share capital.

5) SALES TOTAL ASSETS (X5)

Sales to Total Assets is the ratio of sales to total assets which is an activity ratio to measure the company's ability to increase sales volume. This ratio reflects the efficiency of management in using the company's overall assets to generate sales and earn profits. The lower this ratio indicates the lower the company's income level, thus indicating an unhealthy company's financial condition. The ratio of sales to total assets shows the effective use of all company assets in order to generate net sales that can be generated by every Rp. 1.00 invested in company assets.

METHODS

The type oif diata used in thiis study is qiuantitative diata, namiely "daita in tihe form oif numibers or numibers" (Suliyanto, 2009: 135). Based on the source, this research data is secondairy diata, namely "data thiat hias bieen collected biy data collection institutions and published to the public using data" (Kuncoro, 2013: 148). Thie diata usied iin thiis stuidy were obtainied friom thie financial staitements of comipanies liisted oin LiQ 4i5 foir tihe 201i6-2i020 periiod throiugh the website www.iidx.co.id. Analysis of the data uised iin this reisearch iis quaintitative data analysiis, whiich isi an analytical techniqiue usinig the cialculation oif numbers from finiancial statiements, siuch ais ibalance sheets, profiit and losis and salies, which are thien usied as a baisis for idecision makiing. Classifying each research sample based on the bankruptcy criteria according to Altman, as follows:

Table 1. Bankruptcy Criteria according to Altman

No	Ratio	Predicate
1	Zi > 2.99	Healthy
2	Zi is between 1.81 – 2.99	Prone to Bankruptcy
3	Zi < 1.81	Bankrupt

RESULT AND DISCUSSION

The results of the Altman Z-Score of Companies Listed in LQ 45 in 2016-2020 show that the average bankruptcy is as follows:

Table 2. Altman Z-Score

Issuer Code	*Altman Z-Score Analysis*					Zi	Predicate
	2012	2013	2014	2015	2016		
ADRO	59.2%	52.1%	9.3%	64.9%	45.1%	1,876	Prone to Bankruptcy
AKRA	58.1%	48.6%	6.8%	22.1%	116.2%	2.291	Prone to Bankruptcy
ANTM	59.7%	59.7%	3.2%	19.7%	68.6%	1,799	Prone to Bankruptcy
ASII	53.5%	42.5%	8.9%	10.5%	65.5%	1,719	Prone to Bankruptcy
BBCA	17.8%	15.6%	3.7%	5.7%	6.9%	0.468	Bankrupt
BBNI	14.0%	8.6%	2.0%	11.0%	6.8%	0.350	Bankrupt
BBRI	14.6%	12.7%	3.0%	10.4%	8.9%	0.437	Bankrupt
BBTN	7.6%	4.0%	1.0%	5.1%	7.6%	0.217	Bankrupt
BMRI	14.9%	9.9%	2.3%	17.2%	6.8%	0.402	Bankrupt
BSDE	60.7%	35.8%	5.4%	15.2%	15.1%	1.119	Bankrupt
GGRM	66.2%	64.8%	15.2%	262.2%	134.3%	3,935	Healthy
HMSP	76.3%	26.9%	35.5%	14.2%	224.1%	4.174	Healthy
ICBP	57.0%	38.4%	16.3%	42.2%	99.5%	2.409	Prone to Bankruptcy
INCO	85.2%	66.6%	2.3%	151.8%	31.7%	2,200	Prone to Bankruptcy
INDF	49.1%	23.8%	7.8%	14.4%	73.3%	1,589	Prone to Bankruptcy
INTP	83.9%	68.6%	8.6%	732.1%	53.0%	5.052	Healthy
JSMR	24.2%	11.6%	11.6%	31.4%	32.0%	1.081	Bankrupt
KLBF	80.0%	76.0%	18.2%	23.5%	115.8%	3.036	Healthy
MNCN	48.1%	38.0%	5.7%	23.6%	46.7%	1,408	Prone to Bankruptcy
PGAS	44.1%	36.4%	3.8%	18.1%	45.9%	1.275	Prone to Bankruptcy
PTBA	65.6%	65.4%	21.0%	218.6%	81.5%	3.407	Healthy
PTPP	31.0%	9.0%	2.9%	5.2%	44.7%	0.856	Bankrupt
SCMA	76.4%	57.7%	30.4%	126.2%	83.8%	3.347	Healthy
SMGR	56.7%	277.8%	6.7%	28.7%	54.4%	3,633	Healthy

SRIL	36.8%	21.8%	6.5%	5.9%	71.3%	1.385	Prone to Bankruptcy
TLKM	54.8%	41.8%	18.6%	21.2%	61.9%	2.033	Prone to Bankruptcy
UNTR	58.3%	42.1%	11.5%	67.6%	71.7%	2.133	Prone to Bankruptcy
UNVR	28.3%	27.4%	50.7%	24.2%	216.0%	4.266	Healthy
WIKA	34.5%	11.4%	3.5%	11.5%	52.0%	1.019	Bankrupt
Bankruptcy Rate of Companies Listed in LQ45						2.032	Prone to Bankruptcy

After calculating each variable (X1, X2, X3, X4, and X5) in five consecutive years, it can be seen that the average Z-Score for Companies Listed in LQ 45 is 2,032. This shows that the overall condition of the Companies Listed in LQ45 does not have the potential for bankruptcy, but has the potential to be Prone to Bankruptcy.

Of the 29 companies listed on LQ 45 for the 2016-2020 period, there are 12 companies that are in the category of prone to bankruptcy (41.38%), 9 companies are in the bankrupt category (31.03%), and 8 companies are in the healthy category (27 ,59%). These 29 companies for 5 consecutive years have not shown a positive trend. This shows that the company should focus more on efforts to improve the company's performance to increase the five ratios, for example, by increasing the sales volume of existing inventory, so that there is an income in the company's cash from the sale proceeds.

In addition to improving in terms of finances, companies can also improve and add intangible assets (Intangible Assets) owned by the company. These intangible assets include company management systems, loans (loans) from both banks and other companies, assistance from the government (subsidiaries), cooperation contract agreements with well-known companies. Seeing the conditions above, the manager must be more careful and must make repairs as soon as possible.

CONCLUSIONS

Based on the Altman Z-Score to predict bankruptcy in companies listed on LQ 45 in 2016-2020 the conclusions are as follows:

1. A total of 12 companies (41.38%) are categorized as prone to bankruptcy because they only have a Z-Score between 1.81-2.99, namely PT Adaro Energy Tbk (ADRO), PT AKR Corporindo Tbk (AKRA), PT Aneka Mining Persero (ANTM), PT Astra International Tbk (ASII), PT Indofood CBP Sukses Makmur Tbk (ICBP), PT Vale Indonesia Tbk (INCO), PT Indofood Sukses Makmur Tbk (INDF), PT Media Nusantara Citra Tbk (MNCN), PT Perusahaan Gas Negara Persero (PGAS), PT Sri Rejeki Isman Tbk (SRIL), PT Telkom Indonesia Persero (TLKM), and PT United Tractors Tbk (UNTR).
2. A total of 9 companies (31.03%) were included in the bankrupt category because they had a Z-Score value below 1.81, namely PT Bank Central Asia Tbk (BBCA), PT Bank Negara Indonesia Persero (BBNI), PT Bank Rakyat Indonesia Persero. (BBRI), PT Bank Mandiri Persero (BMRI), PT Bumi Serpong Damai Tbk (BSDE), PT Jasa Marga Persero (JSMR), PT Pembangunan Perumahan Persero (PTPP), and PT Wijaya Karya Tbk (WIKA).
3. A total of 8 companies (27.59%) are included in the healthy category because they have a Z-Score value above 2.99, namely PT Gudang Garam Tbk (GGRM), PT HM Sampoerna Tbk (HMSP), PT Indocement Tunggal Prakarsa Tbk (INTP), PT Bukit Asam Persero (PTBA), PT Surya Citra Media Tbk (SCMA), PT Semen Gresik Persero (SMGR), and PT Unilever Indonesia Tbk (UNVR).
4. Altman Z-Score analysis to predict the bankruptcy of companies thatregistered in LQ 45 in 2016-2020 with an average value of 2,032 are in a position of Prone to Bankruptcy or it can be said that companies have the potential to go bankrupt. This can be seen in the Zi value which is between 1.20%-2.90%. based on Altman Z-Score in Hanafi and Halim (2005:274).

Suggestions that researchers can give regarding the research carried out are companies that are more prone to bankruptcy categories can improve their performance with five indicators, for example by increasing sales of existing inventory, meaning that they must focus more on efforts to increase, gain profits on the company's cash register from sales proceeds. Vulnerable companies are advised that managers be more careful and repair as soon as possible to prevent bankruptcy in the near future.

A limitation of this study is that this analysis is nothing more than a "estimate" or forecast of the company's finances. Therefore, this Zi value is a business failure for management. The bankruptcy discrimination model developed by Altman contains variables in the annual financial statements, so that if the annual financial statements are incorrectly prepared, the results of the Zi value will be wrong.

REFERENCES

A Kadim, K., & Nardi, S. (2018). Pengaruh analisa kesahatan dan kebangkrutan dengan pendekatan altman z-score terhadap harga saham Industri Konstruksi di indonesia yang listing di BEI periode 2013-2017. *Jurnal SEKURITAS (Saham, Ekonomi, Keuangan dan Investasi)*, *1*(4), 52-62.

Abdul Kadim, K., & Nardi Sunardi, S. (2018). Determinant Of Company's Likuidity And It's Implications On Financial's Performance Of Ritail Trade Company's In Indonesia At The Period Of 2008–2017. *Global and Stockhastic Analysis*, *5*(7), 235-247.

Abdul Kadim, K., & Nardi, S. (2018). Eviews Analysis: Determinant Of Leverage And Company's Performance. *Global and Stochastic Analysis (GSA)*, *5*(7), 249-260.

Abdul Kadim, K., Nardi Sunardi, S., Hendro Waryanto, W., Dessy Adelin, A., & Endang Kusmana, K. (2018). The Effects Of Bank Soundness With The RGEC Approach (Risk Profile, Good Corporate Governance, Earnings, Capital) Of Leverage And Its Implications On Company's Value Of State Bank In Indonesia For The Period Of 2012-2016. *IJER (International Journal of Economic Research)*, *15*(11), 41-52.

Adnan, H., & Arisudhana, D. (2017). Analysis of bankruptcy with Altman Z-Score and Springate models in property industry companies. Journal of Accounting and Finance, 1(1).

Altman, EI 1968. Financial Ratios, Discriminant Analysis and the Prediction of Corporate

Hakim, L., Sunardi, N. (2017). Determinant of leverage and it's implication on company value of real estate and property sector listing in IDX period of 2011-2015. *Man in India*, *97*(24), pp. 131-148.

Hanafi, MM and A. Halim. 2005. Financial Statement Analysis. AMP-YKPN. Yogyakarta.

Harras, H., Sugiarti, E., & Wahyudi, W. (2020). Kajian Manajemen Sumber Daya Manusia Untuk Mahasiswa.

Husain, T., & Sunardi, N. (2020). Firm's Value Prediction Based on Profitability Ratios and Dividend Policy. *Finance & Economics Review*, *2*(2), 13-26.

Kadim, A and Sunardi, N. (2018). Altman Z-Score analysis to predict bankruptcy at State-owned Banks (BUMN) in Indonesia in 2012-2016. SEKURITAS Journal (Stocks, Economics, Finance and Investment), 1(3).

Kadim, A., & Sunardi, N. (2018). Analisis altman z-score untuk memprediksi kebangkrutan pada Bank Pemerintah (BUMN) di Indonesia Tahun 2012-2016. *Jurnal SEKURITAS (Saham, Ekonomi, Keuangan dan Investasi)*, *1*(3).

Kadim, A., Sunardi, N & Husain, T. (2020). The modeling firm's value based on financial ratios, intellectual capital and dividend policy.*Accounting*, 6(5), 859-870.

Nardi Sunardi Et Al (2020). Determinants of Debt Policy and Company's Performance, International Journal of Economics and Business Administration Volume VIII Issue 4, 204-213

Sarwani, S., & Sunardi, N. (2019). Analisis Penggunaan Altman Z-Score untuk Mengetahui Potensi Kebangkrutan Industri KonstruksI (BUMN) di Indonesia Tahun 2013-2017. *PROCEEDINGS UNIVERSITAS PAMULANG*, *1*(1).

Sawiya, R., & Munandar, A. (2013). Altman Z-Score analysis to predict bankruptcy of pharmaceutical companies in Indonesia. Journal of Scientific Work, 16(3), 82-90.

Susanto, S., Ambarwati, R., & Tumanggor, S. (2021). Analisis Altman Z-Score Untuk Memprediksi Kebangkrutan Pada Asuransi Umum di Indonesia Sebelum dan Saat Pandemi Covid-19. *HUMANIS (Humanities, Management and Science Proceedings)*, *1*(2).

Wahyu, W., & Salam, R. (2020). KOMITMEN ORGANISASI (Kajian: Manajemen Sumber Daya Manusia).

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