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Comparative Analysis of the Taffler and Grover Models in Predicting Financial Distress in Local Cosmetic Companies Listed on the Indonesia Stock Exchange for the 2019-2023 Period

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Abstract:
This research aims to analyze whether there is a significant difference between the Taffler Model and the Grover Model in predicting financial distress conditions in local cosmetic companies listed on the IDX for the period 2019–2023. The sampling technique used is purposive sampling. This study uses secondary data sourced from the financial reports of local cosmetic companies during 2019–2023. Hypothesis testing in this research uses the Mann–Whitney test. The results show that there is a significant difference between the Taffler Model and the Grover Model in predicting financial distress conditions in local cosmetic companies listed on the IDX for the period 2019–2023. This is due to variations in the financial ratios used and differences in bankruptcy value criteria in each financial distress prediction model. The Taffler Model is the most accurate financial distress prediction model for local cosmetic companies with an accuracy rate of 80%, while the Grover Model achieves an accuracy rate of 64%.

Keywords:
Taffler, Grover, Prediksi Financial Distress

BACKGROUND

Every company naturally hopes that its business will remain sustainable in the long term and avoid bankruptcy. The increasingly fierce business competition in today's era of globalization is pushing companies to work harder to maintain their operational sustainability. With the increasing population of young people in Indonesia and growing awareness among the public about the importance of maintaining appearance and skin health, the phenomenal growth of the cosmetics industry in Indonesia is becoming increasingly evident. This is reflected in the high sales figures in the skincare and beauty categories, as reported by Kompas.co.id. The younger generation, known as active and tech-savvy consumers, increasingly prioritize products that not only enhance beauty but also offer benefits for skin health.

While the positive trend in demand for beauty products presents significant opportunities for the cosmetics industry, not all local cosmetics companies are able to capitalize on this momentum effectively. Some local cosmetics companies are facing serious challenges in maintaining their financial health, which could potentially lead to financial distress. This is reflected in the profit/loss data for the period from 2019 to 2023, where several companies

recorded sustained losses and significant profit fluctuations, indicating financial pressure that could threaten the sustainability of their businesses amid intensifying competition.

Based on the net income data from five local cosmetic companies in Indonesia from 2019 to 2023, PT Akasha Wira International Tbk has demonstrated very positive and consistent profit growth each year, with significant increases year over year. In contrast, other cosmetic companies such as PT Martina Berto Tbk and PT Mustika Ratu Tbk are facing significant challenges. PT Martina Berto Tbk has consistently reported substantial losses over the past five consecutive years, although the loss trend shows a decline, the company has yet to emerge from severe financial pressure. PT Mustika Ratu Tbk has also experienced significant profit fluctuations. After recording a slim profit in 2019, the company incurred losses in 2020, returned to profitability in 2021, saw a profit increase in 2022, but incurred losses again in 2023. These fluctuations indicate instability that could lead to financial distress if not addressed promptly.

Meanwhile, PT Kino Indonesia Tbk and PT Kimia Farma also faced quite extreme profit volatility. PT Kino Indonesia Tbk, for example, recorded high profits in 2019, but profits fell sharply in the following years, even recording a large loss in 2022, before returning to profit in 2023. PT Kimia Farma also experienced a surge in profits in 2021, but then plummeted with massive losses in 2022 and remained unprofitable in 2023.

Based on financial statement data, PT Martina Berto Tbk shows the highest potential for financial distress with consistent losses over the past five years, while PT Mustika Ratu Tbk also faces similar risks with highly volatile profit performance despite experiencing a significant increase in 2022. Both companies face serious financial challenges, with PT Martina Berto Tbk being more vulnerable to the risk of bankruptcy. Financial distress occurs when a company experiences difficulties in meeting its financial obligations, which can be caused by various factors such as a decline in sales, an increase in production costs, or changes in consumer preferences. In the highly dynamic local cosmetics industry, which demands innovation and adaptation to market trends, financial risk management is crucial for maintaining business continuity and stakeholder confidence. To analyze these risks, the Taffler and Grover models were selected because they complement each other; the Taffler model focuses on liquidity using the Current Assets/Current Liabilities and Earnings Before Taxes/Current Liabilities ratios, while the Grover model assesses asset efficiency through the Earnings Before Interest and Taxes/Total Assets and ROA ratios. These models are highly suitable for application in manufacturing companies, including cosmetics companies that require strict inventory and cash flow management. Various studies support the effectiveness of these two models in predicting financial distress with high accuracy, such as Farha (2022), who found that the Grover model had an accuracy of 82% and the Taffler model 76% for BEI manufacturing companies in the 2011-2015 period, and Prakoso et al. (2022) reported an accuracy of 96% for Taffler and 84% for Grover in BEI retail companies from 2017 to 2019, and Utama and Hamidah (2024) reported an accuracy of 100% for Grover and 83% for Taffler in commercial banks from 2012 to 2021. Other studies such as Ermawati (2023), Gunawan & Warminda (2023), Rusadi (2024), and Mustafa et al. (2022) also show high accuracy results for both models across various industrial sectors. With the combination of the Taffler and Grover models, local cosmetic companies can identify financial distress risks more accurately and take the necessary preventive measures to maintain business continuity and support the growth of the cosmetic industry in Indonesia.

Based on the background explanation above, there are previous research results that have not shown consistency. In this study, the researchers refer to the suggestions of previous researchers, namely (Rachmandika, 2024), to pay attention to sectors that have been under-researched, namely local cosmetic companies. In addition, there has been no research using the Taffler model to predict financial distress in local cosmetic companies listed on the Indonesia Stock Exchange (IDX) in the 2019-2023 period.

THEORETICAL FRAMEWORK

Signal Theory

Signal theory was first introduced by Michael Spence in 1973, stating that individuals or entities with information can send signals to interested parties to reflect the state of the company. These parties include employees, investors, creditors, the government, and customers, as this information can influence the decisions made by stakeholders (Rachmandika, 2024). Information that is considered a signal that can influence these decisions includes dividend distribution, investment decisions, merger or acquisition announcements, and predictions of financial distress for the company.

Financial Distress

Financial distress, also known as financial difficulties, is a condition that reflects that a company is at two extreme points. The two extreme points in the context of financial distress are short-term liquidity and insolvency (Lau, 2021). Financial distress begins with a condition in which a company experiences difficulties in meeting its short-term financial obligations, which is the initial stage and is usually temporary. At this stage, the company faces liquidity problems, where cash flow is insufficient to meet obligations that are due immediately. If this condition is not handled properly, the company can move to the second extreme point, namely insolvency, where total liabilities exceed total assets. In a state of insolvency, the company not only struggles to pay short-term debts but also faces the risk of bankruptcy if corrective measures are not taken promptly (Fachrudin, 2020). Therefore, understanding these two extreme points is crucial for company management to identify and address financial issues responsively.

Taffler Model (T-Score)

In 1983, Richard Taffler introduced an innovative bankruptcy prediction model. This model was created from an in-depth comparative analysis of 80 carefully selected financial ratios.

The Taffler model is formulated as follows (Lim & Ng, 2024):

T-Score = 0,53EBTCL + 0,13CACL + 0,18CLTA + 0,16STA

Keterangan:

a. EBTCL = Earnings Before Taxes/ Current Liabilities
b. CACL = Current Assets / Current Liabilities
c. CLTA = Current Liabilities / Total Assets
d. STA = Sales / Total Assets

The established criteria are as follows: If the T-score is < 0.2, it is classified as at risk of bankruptcy; if 0.2 ≤ T ≤ 0.3, it is classified as in the gray zone; and if the T-score is > 0.3, it is classified as in a healthy financial condition.

Model Grover (G-Score)

This model was discovered by Jeffery S Grover in 1968. The Grover model was created as a form of evaluation of the Altman Z-Score model. The main objective of the Grover model evaluation is to improve the accuracy of bankruptcy predictions compared to the Altman Z-Score model.

The Grover model is formulated as follows (Marli & Widanarni, 2021):

G-Score: 1,650WCTA + 3,404EBITTA - 0,016 ROA + 0,057

Keterangan:

a. WCTA = Working Capital / Total Aset
b. EBITTA = Earning Before Interest and Taxes / Total Assets
c. ROA = Net Income / Total Assets

The criteria are as follows: If the G score is ≤ -0.02, the company can be considered unhealthy; if the score is -0.02 < G < 0.01, the company can be considered in the gray zone; and if the score is G ≥ 0.01, the company can be considered healthy.

METHOD

The population used in this study was five local cosmetics companies listed on the IDX. The sample of this study consists of local cosmetic companies that have complete financial statement data to be used as research data. The sample criteria selected by the researcher are local cosmetic companies listed on the Indonesia Stock Exchange (IDX), which have published audited financial statements for the period 2019–2023, and have complete financial statement data that can be used as research data. The operational definitions of the research variables were each measured using financial ratios from the financial statements of local cosmetic companies for the years 2019–2023. In conducting the analysis in this study, the researcher used Microsoft Excel to process the data and calculate the financial ratios, as well as SPSS 27 to perform descriptive statistical tests and hypothesis testing.

RESULT

The following presents the results and discussion of the research, starting from descriptive statistical analysis to bankruptcy prediction analysis.

Descriptive Statistical Test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Model Taffler	25	-,157	1,571	,48000	,437005
Model Grover	25	,118	2,185	1,25996	,728648
Valid N (listwise)	25				

Source: Data processed by SPSS, 2025

International Journal of Current Economics & Business Ventures, 5 (2) 2025, 23-36
International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

Based on the data in the figure above, the results of the descriptive statistical test show that the minimum value of the Taffler Model is -0.157 at PT Martina Berto Tbk. in 2020, while the maximum value is 1.571 at PT Akasha Wira International Tbk. in 2023. The mean value of the Taffler Model variable is 0.48000, with a standard deviation of 0.437005.

The next variable is the Grover Model with a minimum value of 0.118 at PT Kimia Farma Tbk. in 2020, while the maximum value is 2.185 at PT Akasha Wira International Tbk. in 2021. The mean value of the Grover Model variable is 1.25996 and its standard deviation is 0.728648.

Mann-Whitney Hypothesis Test

Test Statistics[a]

	Score
Mann-Whitney U	129,500
Wilcoxon W	454,500
Z	-3,551
Asymp. Sig. (2-tailed)	<,001

a. Grouping Variable: Model

Source: Data processed by SPSS, 2025

Based on the Mann-Whitney test results shown in the figure above, the Asymp. Sig. (2-tailed) value is < 0.001. This value is much smaller than the set significance level of 0.05. Therefore, based on the analysis conducted, the decision made is to accept H1, which proves that there is a significant difference between the Taffler Model and the Grover Model in predicting financial distress conditions in local cosmetic companies listed on the IDX for the period 2019–2023.

Accuracy Level Test

Taffler Model

DESCRIPTION	CALCULATION	RESULT
Accuracy Level	$\frac{20}{25}$ x 100%	80%
Error Type I	$\frac{0}{25}$ x 100%	0%
Error Type II	$\frac{5}{25}$ x 100%	20%

Source: data processed by researchers (2025)

Based on the results presented above, the accuracy rate of the Taffler Model in predicting financial distress in local cosmetics companies for the period 2019-2023 reached 80%. The 80% figure is derived from 20 correct predictions out of a total of 25 tested samples, with the 20 correct predictions comprising 15 non-distress predictions from the Taffler Model that align with actual conditions and 5 distress predictions that align with actual conditions. The 5 distress predictions that matched the actual conditions include PT KINO in 2022, PT MBTO in 2020, 2021, and 2022, and PT KAEF in 2023. Additionally, this model produced a Type I error of

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International Journal of Current Economics & Business Ventures
https://scholarsnetwork.org/journal/index.php/ijeb

0% and a Type II error of 20%, where the model predicted companies in uncertain conditions or classified as a grey area.

Grover Model

DESCRIPTION	CALCULATION	RESULT
Accuracy Level	$\frac{16}{25}$ x 100%	64%
Error Type I	$\frac{9}{25}$ x 100%	36%
Error Type II	$\frac{0}{25}$ x 100%	0%

Source: data processed by researchers (2025)

Based on the calculation results shown above, the accuracy rate of the Grover Model in predicting financial distress in local cosmetics companies for the 2019-2023 period reached 64%. The value of 64% was obtained from 16 correct predictions out of a total of 25 samples tested. Additionally, this model produced a Type I error rate of 36%, where the Grover Model predicted 9 results indicating non-distress while the actual condition of the companies was experiencing distress, and 9 accurate distress predictions consisting of PT KINO in 2022, PT MBTO in 2019-2023, and PT KAEF in 2022 and 2023. The Type II error rate for this model is recorded at 0%.

DISCUSSION

The results of the hypothesis testing indicate a significant difference between the Taffler Model and the Grover Model in predicting financial distress conditions in local cosmetics companies listed on the IDX for the period 2019-2023 with a significance value of < 0.001, thus accepting H1. The Taffler Model consistently identified two companies in the non-distress category (PT Mustika Ratu Tbk and PT Akasha Wira International Tbk), while the other three experienced fluctuations, entering the grey area and distress. Conversely, the Grover Model classified all companies as non-distressed throughout the period, although some of their financial ratios indicated challenges. The Taffler model is more sensitive in recognizing actual financial risks, consistent with the evidence of losses and operational issues experienced by some companies.

In terms of accuracy, the Taffler model achieves 80% with zero percent Type I error, outperforming the Grover model, which only achieves 64% with a Type I error of 36%. These results align with previous research that positions the Taffler Model as a more accurate and reliable model for predicting financial distress. Therefore, the Taffler Model is more effective for detecting potential bankruptcy in local cosmetic companies, while the Grover Model tends to provide positive signals that are less sensitive to financial issues.

CONCLUSION

This research analyzes the significant differences between the Taffler Model and the Grover Model in predicting financial distress conditions in local cosmetics companies on the IDX for the period 2019-2023, using financial statement data processed with Microsoft Excel

and SPSS 27. The test results show that the two models produce significantly different predictions, both in terms of calculation results and accuracy levels.

The Taffler model identified some companies in non-distress conditions, but also found several companies experiencing a grey area or distress in certain years with an accuracy rate of 80%. Meanwhile, the Grover model classified all companies in non-distress conditions with an accuracy rate of 64%. This shows that the Taffler model is more sensitive and accurate in detecting potential financial distress than the Grover model.

BIBLIOGRAPHY

Agustin, P., & Permatasari, I. (2020). Pengaruh Pendidikan Dan Kompensasi Terhadap Kinerja Divisi New Product Development (Npd) Pada Pt. Mayora Indah Tbk. *Jurnal Ilmiah M-Progress*, *10*(2), 174–184. https://doi.org/10.35968/m-pu.v10i2.442

Aridiyanto, M. J., & Penagsang, P. (2022). Analisis Faktor-Faktor Yang Mempengaruhi Kinerja Koperasi (Studi Kasus : Koperasi Di Surabaya Utara). *JEB17 : Jurnal Ekonomi Dan Bisnis*, *7*(01), 27–40. https://doi.org/10.30996/jeb17.v7i01.6542

Armadani, A., Fisabil, A. I., & Salsabila, D. T. (2021). Analisis Rasio Kebangkrutan Perusahaan pada Masa Pandemi Covid-19. *Jurnal Akuntansi*, *13*, 99–108. https://doi.org/10.28932/jam.v13i1.3197

Berlianti, D. F., Abid, A. Al, & Ruby, A. C. (2024). Metode Penelitian Kuantitatif Pendekatan Ilmiah untuk Analisis Data. *Jurnal Review Pendidikan Dan Pengajaran*, *7*(3), 1861–1864.

Ch, F. N., Rusli, D., & Rohmah, A. (2024). *Accuracy of the Financial Distress Model in Transportation Firms : Altman , Springate and Grover Model*. *2*(1), 13–22.

CNBC Indonesia. (2021, August 23). Kas Seret, Jual Aset, Induk Sariayu Rugi Rp 50 M di Semester I. CNBC Indonesia. https://www.cnbcindonesia.com/market/20210823110857-17-270405/kas-seret-jual-aset-induk-sariayu-rugi-rp-50-m-di-semester-i#:~:text=PT%20Martina%20Berto%20Tbk%20%28MBTO%29%2C%20melaporkan%20kerugian%20bersih,pada%20paruh%20pertama%20tahun%20ini%2C%20per%20Juni%202021.

CNBC Indonesia. (2024, June 3). Kimia Farma & Kaef rugi Rp 1,48 triliun di 2023, ini dia penyebabnya. CNBC Indonesia. https://www.cnbcindonesia.com/market/20240603100555-17-543262/kimia-farma--kaef--rugi-rp-148-triliun-di-2023-ini-dia-penyebabnya

Compas.co.id. (2024, November 14). Top 3 Brand Perawatan & Kecantikan (Foto). https://www.instagram.com/p/DCWdsYmyCGo/?img_index=2&igsh=Z2s2d3Jib3d5eHg=

Dea Raisa Oma Putri, Wahyu Indah Mursalini, & Rasidah Nasrah. (2022). Analisis Prediksi Kebangkrutan Menggunakan Model Springate (S-Score) Pada Perusahaan Sub Sektor

Ritel Di Bursa Efek Indonesia 2016-2020. *Gemilang: Jurnal Manajemen Dan Akuntansi*, *3*(1), 1–20. https://doi.org/10.56910/gemilang.v3i1.297

Ermawati. (2023). Analisis perbandingan metode taffler dan grover dalam mengukur tingkat kesehatan perusahaan pada PT . Aneka Tambang Tbk . tahun 2014-2023. *Online Repository of Universitas NU Kalimantan Selatan Https://Repository.Unukase.Ac.Id/ Online*, 1–11.

Fachrudin, K. A. (2020). The Relationship between *Financial Distress and Financial Health Prediction Model*: *A Study in Public Manufacturing Companies Listed on Indonesia Stock Exchange (*IDX). *Jurnal Akuntansi Dan Keuangan*, *22*(1), 18–27. https://doi.org/10.9744/jak.22.1.18-27

Farha, F. (2022). Perbandingan tingkat keakuratan model prediksi kebangkrutan (model altman, springate, zmijewski, grover, dan taffler). *Jurnal Solid ASM Mataram*, *12*(1), 1–7.

Fatmawati Aulia, Ferdawati, Lisa Amelia Herman, & Sulastri, R. E. (2023). Analisis Model Grover, Altman, Springate dan Zmijewski Dalam Memprediksi *Financial Distress* Pada Perusahaan Sektor Transportasi, Logistik, Real Estate, dan Property. *Jurnal Akuntansi Keuangan Dan Bisnis*, *16*(2), 255–264. https://doi.org/10.35143/jakb.v16i2.6197

Fitriyani, Y. (2023). Analisa Komparasi dan Uji Akurasi Model Altman, Grover, Springate dan Zmijewski dalam Mendiagnosis Kebangkrutan Emiten Saham Jasa Transportasi di Bursa Efek Indonesia Pada Masa Pandemi. *J-MAS (Jurnal Manajemen Dan Sains)*, *8*(1), 590. https://doi.org/10.33087/jmas.v8i1.813

Gunawan, D., & Warninda, T. D. (2022). Prediksi *Financial Distress* Menggunakan Model Taffler Dan Grover Pada Perusahaan Yang Terdampak Pandemi Covid-19. *Jurnal Bisnis, Manajemen, Dan Teknososiopreneur*, *1*(1), 01–15. https://doi.org/10.31326/bimtek.v1i1.1109

Hasibuan, Linda. (2024, Desember 3). 5 Brand Kecantikan Lokal yang Bangkrut, Keok di Negeri Sendiri. CNBC Indonesia. https://www.cnbcindonesia.com/lifestyle/20241203094343-33-592889/5-brand kecantikan-lokal-yang-bangkrut-keok-di-negeri-sendiri

Hertina, D., & Dari, F. W. (2022). *Comparative Analysis of Financial Distress Models in Predicting Bankruptcy during Covid-19 Pandemic*. *Wiga : Jurnal Penelitian Ilmu Ekonomi*, *12*(4), 272–282. https://doi.org/10.30741/wiga.v12i4.900

Husna, L. J. (2021). Memprediksi *financial distress* perusahaan pada. *Jurnal Eksos, Juni 2021, Th XVII, No. 1*.

IDN Financials. (n.d.). Martina Berto suffered another loss of IDR 182 billion. Retrieved from https://www.idnfinancials.com/archive/id/news/44277/Martina-Berto-suffered-another-loss-of-IDR-182-billion.

Kontan.co.id. (2023). Rugi bersih Martina Berto (MBTO) membengkak jadi Rp 203 miliar di

tahun lalu. Kontan.co.id. https://industri.kontan.co.id/news/rugi-bersih-martina-berto-mbto-membengkak-jadi-rp-203-miliar-di-tahun-lalu#:~:text=Produsen%20kosmetik%20dan%20perawatan%20diri%20PT%20Martina%20Berto,neto%20sebesar%20Rp%20297%2C21%20miliar%20pada%20tahun%202020.

Lau, E. A. (2021). *Financial Distress* dan Faktor-Faktor Prediksinya. *Exchall: Economic Challenge*, *3*(2), 1–17. https://doi.org/10.47685/exchall.v3i2.202

Lenaini, I., Islam, U., Raden, N., & Palembang, F. (2021). *Teknik Pengambilan Sampel Purposive Dan*. *6*(1), 33–39.

Lim, W., & Ng, M. (2024). *Analysis Of Bankruptcy Prediction Using Grover, Taffler and Zmijewski Models and Their Effect On Company Value In Non Primary Consumer Goods Sector Companies Listed On The Indonesia Stock Exchange Period 2017-2022. Procuratio: Jurnal Ilmiah Manajemen* , *12*(1), 85–98. http://ejournal.pelitaindonesia.ac.id/ojs32/index.php/Procuratio/index.

Liputan6.com. (2022, November 23). Ini penyebab Kino Indonesia rugi Rp 250,23 miliar hingga kuartal III 2022. Liputan6.com. https://www.liputan6.com/saham/read/5133734/ini-penyebab-kino-indonesia-rugi-rp-25023-miliar-hingga-kuartal-iii-2022?page=5.

Madanika, T. K. (2021). Perbandingan Tingkat Akurasi Model-Model Prediksi *Financial Distress* Pada Perusahaan Yang Termasuk Kantar'S 2020 Top 30 Global Retails (Eur). *Jimea | Jurnal Ilmiah MEA (Manajemen, Ekonomi, Dan Akuntansi)*, *5*(3), 1309–1327.

Maisyarah, S., & Slamet Haryono. (2021). Analisis Prediksi Kebangkrutan Terhadap Perbandingan Model Prediksi. *Jurnal Akuntansi*, *9*(1), 15–26. https://doi.org/10.26460/ja.v9i1.2211

Marli, & Widanarni. (2021). Analisis Model Grover, Springate, dan Zmijewski Sebagai *Predictor Financial Distress* Pada Perusahaan Retail Yang Terdaftar di BEI Tahun 2016-2019. *Dina Mika Ekonomi Jurnal Ekonomi Dan Bisnis*, *14*(1), 83–99.

Mustafa, I., Rahmatika, D. N., & ... (2022). *Analysis of Financial Distress with The Altman, Springate, Zmijewski, Grover, and Taffler Models in The Consumer Cyclicals Sector in The Covid-19 Pandemic. Permana: Jurnal ...*, *14*(2), 326–333. https://permana.upstegal.ac.id/index.php/permana/article/view/316%0Ahttps://permana.upstegal.ac.id/index.php/permana/article/download/316/230

Ningsih, S., & Permatasari, F. F. (2019). Model Zmijewski X-Score Untuk Memprediksi Financial Distress Pada Perusahaan Go Publik Sub Sektor Otomotif Dan Komponen. *Jurnal Akuntansi Dan Pajak*, *19*(2), 134. https://doi.org/10.29040/jap.v19i2.356

Ninuk Riesmiyantiningtias, Rizky Amalia, Abdurrachman, A. B. K. (2023). No Title. *Jurnal Akrab Juara Nomor 2 Edisi Mei 2023 (178-193)*, *8*.

Nuraini Rachmawati, E., Randi Saputra, & Della Gusmi Erdes. (2022). Analisis *Financial*

Distress Pada Perusahaan Otomotif Yang Terdaftar Di Bursa Efek Indonesia. *Jurnal Ekonomi Kiat*, *33*(1), 21–30. https://doi.org/10.25299/kiat.2022.vol33(1).9907

Pratiwi, M. R., Atmadjaja, Y. V. I., & Ferawati, I. W. (2023). P*rediction Analysis of Company Bangkruptcy Using Comparison of the Altman Method (Z-score) and Grover Method (G-scrore) as an Early Warning System in Pharmaceutical Subsector Companies*. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship*, *12*(2), 486. https://doi.org/10.30588/jmp.v12i2.1472

PT Akasha Wira International Tbk. (n.d.). Akasha international. Retrieved April 4, 2025, from https://akashainternational.com/

PT Bursa Efek Indonesia. (n.d.). *Bursa Efek Indonesia*. Diakses 10 Februari 2025, dari https://www.idx.co.id/id

PT Kimia Farma. (n.d.). Kimia Farma. Diakses pada 12 Mei 2025, dari https://www.kimiafarma.co.id/

PT Kino Indonesia. (2025). Homepage. Diakses pada 4 April 2025, dari https://kino.co.id/id/

PT Martina Berto Tbk. (n.d.). Home. Diakses pada 4 April 2025, dari https://www.martinaberto.co.id/

PT Mustika Ratu. (n.d.). Home - Mustika Ratu. Diakses pada 4 April 2025, dari https://mustika-ratu.co.id/

Puspita, A. K., Ichwan Musa, M., Sahabuddin, R., & Ramli, A. (2023). Meanwhile companies that are in a bankrupt position are SMGR in 2021. *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration (IJEBAS)*, *September 2021*, 703–712. www.idx.co.id

Purwohedi, Unggul. (2022). Metode Penelitian Prinsip dan Praktikan. Depok: Raih Asa Sukses.

Puspita, A. K., Yuniarti, R., & Musa, M. I. (2023). F*inancial Distress Analysis Using Taffler Method on Cement Subsector Manufacturing Companies Listed on The Indonesia Stock Exchang*e. *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration (IJEBAS)*, *3*(3), 703–712.

Putri Fhebizarima, N. N. M. P. (2024). Analisis Perbandingan Prediksi Kebangkrutan Model Altman dan Springate Pada Perusahaan Subsektor Konstruksi Bangunan. *PPIMAN: Pusat Publikasi Manajemen*, *2*(3).

Putri, N. K. A. R., & Werastuti, D. N. S. W. (2020). Analisis Model Fulmer dan Grover Dalam Memprediksi Financial Distress Pada Industri Barang Konsumsi. *Jurnal Ilmiah Mahasiswa Akuntansi) Universitas Pendidikan Ganesha*, *11*(3), 2614–1930.

Quraisy, A. (2022). Normalitas Data Menggunakan Uji Kolmogorov-Smirnov dan Saphiro-Wilk. *J-HEST Journal of Health Education Economics Science and Technology*, *3*(1), 7–

11. https://doi.org/10.36339/jhest.v3i1.42

Rachmandhika Bayu, T. J. W. P. (2024). Analisis perbandingan dengan tingkat akurasi metode penilaian financial distress perusahaan. *Volume 13, Nomor 4, Tahun 2024, Halaman 1-13 ISSN (Online): 2337-3806*.

Rusadi. (2024). *Test The Accuracy of The Bankruptcy Prediction Model for Health Sector Companies on The Indonesian Stock Exchange In* 2012-2022. *Management Studies and Entrepreneurship Journal*, *5*(2), 7648–7663. http://journal.yrpipku.com/index.php/msej

Simatupang, E. M. (2020). Penerapan Altman Z-Score Dalam Memprediksi Kebangkrutan Pada PT Bank Mandiri (Persero) Tbk. *Jurnal Akuntansi Barelang*, *4*(2), 40–49. https://doi.org/10.33884/jab.v4i2.1947

Sucipto, R. H., Sumantri, F., & Taruna, H. I. (2024). *Predicting Financial Distress and Bankruptcy of PT Sepatu Bata Tbk with Six Predicting Financial Distress and Bankruptcy of PT Sepatu Bata Tbk with Six Methods*. *February 2025*. https://doi.org/10.57178/jer.v7i2.977

Sudrajat, M. A., & Wijayanti, E. (2019). Analisis Prediksi Kebangkrutan (*Financial Distress*) Dengan Perbandingan Model Altman, Zmijewski Dan Grover. *Inventory: Jurnal Akuntansi*, *3*(2), 116. https://doi.org/10.25273/inventory.v3i2.5240

Sutisna, I. (2020). Statistika Penelitian: Teknik Analisis Data Penelitian Kuantitatif. *Universitas Negeri Gorontalo*, *1*(1), 1–15. https://repository.ung.ac.id/get/karyailmiah/4610/Teknik-Analisis-Data-Penelitian-Kuantitatif.pdf

Tuzahri, E. A., & Munandar, A. (2022). Analisis Penilaian *Financial Distress* Menggunakan Model Altman (Z-Score) Pada Empat Perusahaan Kosmetik Yang Terdaftar Di Bursa Efek Indonesia. *Jurnal Ekonomi & Bisnis*, *10*(2), 131–137. https://doi.org/10.58406/jeb.v10i2.944

Utama, S., & Hamidah, A. (2024). *Comparative analysis of financial distress models for Islamic commercial banks: Ohlson, Taffler, Fulmer, Zmijewski, Springate, and Grover. E3S Web Conf.*, *571*, 1–9. https://doi.org/10.1051/e3sconf/202457103011

Utami, R., Satria, H., Alamsyahbana, M. I., & Saputra, N. C. (2022). *Financial Distress: Model Grover Manufacturing Company in Indonesia. Proceeding 3rd International Seminar on Accounting Society*, *3*(1), 636–647. http://openjournal.unpam.ac.id/index.php/PISA/article/view/20015/10169

Utari, A. D. (2021). Analisis Perbandingan Metode Zmijewski dan Grover dalam Memprediksi Kebangkrutan Bank yang Terdaftar pada BEI Tahun 2015-2019. *Jurnal Ilmu Manajemen*, *9*(2), 489. https://doi.org/10.26740/jim.v9n2.p489-498

Wirawan, H. Y., & Pangestuti, D. (2022). Analisis perbandingan tingkat akurasi model *Financial Distress* pada perusahaan sektor transportasi dan Logistik. *Owner*, *6*(4), 3889–3900. https://doi.org/10.33395/owner.v6i4.1136

Wisnu Haryo Prakoso, I Gusti Ketut Agung Ulupui, & Petrolis Nusa Perdana. (2022). Analisis Perbandingan Model Taffler, Springate, dan Grover Dalam Memprediksi Kebangkrutan Perusahaan. *Jurnal Akuntansi, Perpajakan Dan Auditing*, *3*(1), 1–15. https://doi.org/10.21009/japa.0301.01

Yam, J. H. (2024). *Jurnal Empire Refleksi Penelitian Kuantitatif Mitos Hipotesis Nol (Ho) harus ditolak*. *4*(2), 1–9.

Yonita, V., & Aprilyanti, R. (2022). Analisis Penerapan Prinsip–prinsip *Good Corporate Governance* Pada Usaha Kecil dan Menengah (Studi Pada UKM Restoran/Rumah Makan/Kafe di Daerah Cikupa Tangerang). *ECo-Fin*, *4*(1), 1–9. https://doi.org/10.32877/ef.v4i1.454

Yunita, R. T., & Wibowo, D. (2021). Kemampuan Teori Model Altman, Springate, Grover, Dan Zmijewski Dalam Memprediksi *Financial Distress* Perusahaan Transportasi. *Ilmu Riset Dan Akuntansi*, *11*(11), 83–103.

Zunanto Agil, A. F. (2024). *Analisis Perbandingan Penilaian Financial Distress Menggunakan Model Altman Z Score , Springate S Score , dan Taffler T Score pada Perusahaan Properties dan Real Estate yang Terdaftar di Bursa Efek Indonesia Periode 2016-2021 Pendahuluan*. *30*(2), 125–134.