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The Effect of Liquidity, Leverage, and Profitability on Financial Distress with Company Size as a Moderation Variable

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Abstract

Industri otomotif merupakan salah satu sektor manufaktur terbesar yang menjadi penggerak pertumbuhan ekonomi di Indonesia. Potensi pasar yang besar dan tingginya permintaan kendaraan bermotor, didukung oleh kemampuan produksi dalam negeri, mendorong pemerintah untuk menargetkan peningkatan produksi mobil guna mendongkrak ekspor ke berbagai negara. Kondisi ini berdampak pada seluruh pelaku rantai pasok otomotif Indonesia, termasuk PT XYZ yang mengelola logistik ekspor dan impor mobil. Menyikapi perkembangan tersebut, PT XYZ berencana membangun gedung parkir bertingkat baru untuk menambah kapasitas terminalnya, yang akan dinilai kelayakannya melalui studi ini. Studi kelayakan merupakan studi pengukuran kelayakan dan profitabilitas suatu proyek bisnis. Studi kelayakan yang dirinci sebagai studi kelayakan finansial ini menggunakan Capital Budgeting Analysis sebagai metodenya. Metode ini menggunakan beberapa indikator, seperti Net Present Value, Internal Rate of Return, dan Payback Period, yang dapat diperkaya dengan metrik finansial lainnya. Analisis ini dapat memperkirakan kondisi keuangan perusahaan di masa mendatang dan risiko yang mungkin dihadapi melalui perhitungan sensitivitas. Proyek investasi pembangunan gedung baru oleh PT XYZ dinilai layak karena memperoleh Net Present Value (NPV) positif sebesar Rp136.654.040.230. Proyek ini juga memiliki internal rate of return sebesar 14%, sedikit lebih tinggi dari discount rate atau biaya modal sebesar 12,3%. Payback period yang didiskontokan juga lebih pendek dari umur ekonomis aset, yaitu 17,5 tahun. Struktur modal proyek ini dibebani biaya di awal dan dibebani pendapatan di akhir. Analisis sensitivitas menunjukkan bahwa laju alir mobil di terminal dan discount factor merupakan determinan utama perubahan NPV proyek. Sementara itu, faktor biaya yang paling mempengaruhi perubahan NPV adalah material, upah, dan tarif sewa lahan.

Kata Kunci: Studi Kelayakan; Analisis Penganggaran Modal; Terminal Penyimpanan Kendaraan.Keywords: *Feasibility Study; Capital Budgeting Analysis; Vehicle Storing Terminal.*

Abstract

The automotive industry is one of the largest manufacturing sectors driving economic growth in Indonesia. The large market potential and high demand for vehicles, supported by domestic production capabilities, motivate the government to target increased car production to boost exports to various countries. This condition impacts all Indonesian automotive supply chain actors, including PT XYZ, which manages export and import car logistics. In response to this development, PT XYZ plans to build a new multi-level parking storage building to increase its terminal capacity, which will be assessed for feasibility through this study. A feasibility study is a measurement study of the viability and profitability of a business project. The feasibility study, detailed as a financial feasibility study, uses Capital Budgeting Analysis as its method. This method employs several indicators, such as Net Present Value, Internal Rate of Return, and Payback Period, which can be enriched with other financial metrics. This analysis can estimate the company's future financial condition and the risks that may be faced through sensitivity calculations. The investment project for the construction of the new building by PT XYZ is considered feasible as it achieves a positive Net Present Value (NPV) of Rp136.654.040.230. The project also has an internal rate of return of 14%, a little higher than the discount rate or cost of capital of 12.3%. The discounted payback period is also shorter than the asset's economic life, at 17,5 years. The project's capital structure is front-loaded in costs and back-loaded in revenues. The sensitivity analysis indicates that the car flow rate at the terminal and the discount factor are the main determinants of the project's NPV changes. Meanwhile, cost factors affecting NPV change the most including materials, wages, and land rent tariff.

Keywords: *Feasibility Study; Capital Budgeting Analysis; Vehicle Storing Terminal.*

INTRODUCTION

The sectors of trade, utilities, and capital investments play a pivotal role in propelling the economic advancement of Indonesia. In a recent declaration by the National Statistics Office, it was noted that the growth rate in Indonesia escalated to 5.31% in 2022, marking the highest rate since the beginning of the COVID-19 pandemic. The importance of these sectors is emphasized by their durability and serves as a crucial indicator of the nation's comprehensive industrial progress.

The commercial, hospitality, and investment industries encompass various sub-sectors, including extensive trading and manufacturing, retail commerce, and investment firms each sub-sector witnesses rivalry among enterprises, influencing market evolution. To remain competitive, enterprises must devise strategies to enhance their operational efficiency. Such competition necessitates innovation and performance enhancement by businesses and careful financial health monitoring to stay competitive and evade financial distress. Persistent losses for any enterprise could lead to significant financial challenges (Amanda & Tasman, 2019).

Financial problems are fundamental problems for every company. This is because financial conditions are the foundation of the company's survival and improvement of

company performance (Nugroho & Utami, 2022). The continuity of a business that possesses substantial value is not assured merely by its valuation, especially when the business faces challenges in settling its impending debts. Companies must use the financial distress method to evaluate their performance and ascertain profitability.

A continual decline in the financial outcomes of a company indicates financial distress. This condition demonstrates the company's incapacity to meet its responsibilities and achieve its goals related to profitability. Financial distress arises when a crisis impacts a company's financial stability, rendering it unable to settle its debts as they come due, ultimately leading to insolvency (Julius, 2017). Furthermore, Elloumi and Gueyie (2001), as cited by Fitriyah and Hariyanti (2013), characterize financial distress as a condition where a company reports negative earnings per share (EPS). Such declines in EPS are critical as they influence investment decisions; a negative EPS suggests that the company's earnings and growth prospects are diminishing, thus diminishing investor interest.

Organizations leverage their financial reports to anticipate financial distress conditions since these documents reveal a firm's fiscal health. Financial distress prediction in sizable corporations is commonly facilitated through evaluating financial ratios. These ratios, derived by dividing one financial statement figure by another, offer an overview of the organization's fiscal state (Dewi, 2017). The specific financial ratios employed in this research include liquidity, leverage, and profitability measures.

Table 1. Average C.R., DER, ROE, and EPS in the Trade, Services, and Investment Sectors in 2013-2022

	Current Ratio	DER	EPS	ROE
2013	4.9129	2.0219	77.3744	0.0024
2014	6.8066	1.7780	138.7561	0.1747
2015	3.7305	1.4522	14.5836	0.0131
2016	4.1527	1.3458	45.8692	0.0722
2017	5.6195	1.2646	53.4583	-0.0391
2018	7.6318	1.3974	50.5392	-0.0285
2019	1.9791	0.9041	66.8706	0.0999
2020	1.7699	1.9402	-1.2565	-0.1490
2021	3.3399	3.7596	52.0443	-0.6813
2022	2.6378	2.0751	122.2904	-0.0622

Source: IDX Financial Statements (data processed by researchers, 2024)

Table 1 illustrates the variability in Earnings Per Share (EPS) for firms within the trade, services, and investment industries from 2013 to 2022. In 2014, the EPS peaked at IDR 139, whereas it plunged to its lowest level of IDR 1 in 2020. Subsequent years showed a generally positive trajectory in EPS. Such fluctuations in EPS are critical as they influence investor

decisions due to perceptions of the company's unfavorable conditions, potentially leading to financial distress. This risk affects liquidity, leverage, profitability, and company size considerations in investment strategies.

Liquidity delineates a company's efficiency in satisfying immediate financial obligations when they arise. Elevated liquidity levels indicate robust business performance, thereby elevating a firm's appeal to prospective investors. It is widely recognized that companies endowed with significant liquidity are adept at addressing creditor requirements swiftly. The investigations of Ngadi and Ekadjaja (2019) along with Hadi (2022) disclosed a negative relationship between liquidity and financial distress, implying that elevated levels of liquidity could mitigate the risk of financial distress. Conversely, research by Oktavianti et al. (2020) and Septiani et al. (2021) demonstrated a direct correlation, suggesting that higher levels of liquidity may, under certain conditions, lead to increased financial distress. Nonetheless, analyses conducted by Erayanti (2019) and Hariansyah (2020) revealed an absence of a significant statistical connection between liquidity and financial distress, thereby questioning the presuppositions of earlier studies.

Chairunesia (2020) highlights that the leverage ratio is an essential indicator for evaluating a company's ability to meet its long-term financial obligations by leveraging its assets. Companies utilizing debt financing are subject to continuous financial duties. Failure to meet interest payments on debt may result in insolvency and severe financial difficulties. Research by Salim and Dillak (2021) along with Irwandi and Rahayu (2019) reveals a negative correlation between leverage and financial distress. Conversely, Achyani and Kusumawati (2023), together with Azalia (2019), suggest a positive link exists between leverage and financial distress. Nevertheless, inquiries by Cinantya and Merkusiwati (2015) and Stepani and Nugroho (2023) have established that leverage does not influence financial distress.

According to Damayanti et al. (2017), profitability signifies a company's ability to generate revenue by efficiently utilizing its resources and strengths. This metric is critical for evaluating a company's risk of encountering financial distress. Enhanced profitability typically leads to an increase in the company's assets, facilitating the resolution of its debts. Research by Caronge et al. (2022) and Stepani and Nugroho (2023) demonstrates a negative correlation between profitability and financial distress. In contrast, findings by Oktavianti et al. (2020) and Septiani et al. (2021) imply that an increase in profitability has a positive influence on financial distress. Furthermore, studies conducted by Erayanti (2019) and Susanti and Takarini (2022) concluded that profitability does not significantly impact financial distress.

Adindha (2017) notes that company size is defined by the aggregate asset base under the company's ownership. A more extensive asset portfolio suggests greater diversity and a substantial scale of operations. Firms possessing significant assets typically have more

comprehensive resources, enabling them to mitigate issues related to financial distress more effectively than their smaller counterparts. Furthermore, an expansive total asset base indicates a company's mature phase, characterized by stable, positive cash flows and promising long-term profitability, liquidity, and leverage perspectives. Research conducted by Putri and Mulyani (2019), together with Azalia's work from the same year, demonstrates an inverse relationship between company size and financial distress. On the other hand, the research by Salim and Dillak (2021), followed by Nilasari and Ismunawan's study, proposes the existence of a direct relationship between these two variables. Nonetheless, investigations by Amanda and Tasman (2019), paired with those of Christella and Osesoga (2019), reveal that company size does not influence financial distress.

The preceding overview highlights the business landscape, variable phenomena, and disparate findings in existing studies, rendering this investigation particularly pertinent for further exploration. This investigation aims to reexamine the influence of liquidity, leverage, and profitability on financial distress, considering company size as a moderating variable across the trade, services, and investment sectors. The researcher has developed a keen interest in this subject, which has led to the comprehensive analysis presented in the study, "The Effect of Liquidity, Leverage, and Profitability on Financial Distress with Company Size as a Moderating Variable in the Trade, Services, and Investment Sectors."

METHODS

Variable Operations

Table 2 below shows the measurements of the variables studied. All variables are expressed on a ratio scale, but financial distress is measured on a nominal scale.

Table 2. Operational Variables.

No.	Variable	Definition	Indicators	Scale
1	Independent Variable (X1): Liquidity (*Current Ratio)*	This metric assesses a company's capacity to fulfill its short-term liabilities using its accessible assets (M. et al., 2016)	$\frac{Current\ Asset}{Current\ Liabilities}$	Ratio
	(X2): *Leverage* (*Debt to Equity Ratio)*	As described by Hantono (2018), this indicator demonstrates the extent to which a company's equity sustains its overall debt commitments.	$\frac{Total\ Debt}{Equity}$	Ratio
	(X3):	This metric illustrates the	$\frac{EAT}{Equity}$	Ratio

No.	Variable	Definition	Indicators	Scale
	Profitability (Return *on Equity)*	efficiency with which a proprietor gains returns on the investment made in the enterprise (Hantono, 2018)		
2	Dependent Variable (Y): *Financial Distress*	The firm experienced a deterioration in its financial state prior to bankruptcy. This decline, characterized by reduced profitability and the inability to fulfill financial commitments, manifested before the organization became insolvent (Handayani et al., 2019)	Dummy Variables 1= if the company has negative EPS 0 = if the company has a positive EPS	nominal
3	Moderation Variable (Z): Company Size	This variable represents the total assets possessed by a company (Putri & Merkusiwati, 2014).	*LogNatural Total Assets*	Ratio

(Source: Processed by Researchers, 2023)

Population and Sample

This study encompasses every firm within the commerce, services, and investment industries registered on the IDX from 2013 to 2022. The sample selection consisted of all entities from this group that satisfied the purposive sampling conditions specified by the investigator.

Table 3. Selection of Research Samples

No.	Information	Sum
1	Companies in the trading, services, and investment sectors registered with the Indonesia Stock Exchange (IDX) between 2013 and 2022.	177
2	Trading services and investment companies needed more comprehensive financial disclosures from 2013 to 2022.	87
3	Companies engaged in trading, services, and investments that failed to submit financial statements in rupiah.	8
4	Companies need more complete records concerning study variables such as liquidity, leverage, profitability, company size, and financial distress.	6
Number of Company Samples		76

Number of Years of Observation	10
Total Observation Data	760

(*source: Data processed by the Researcher, 2023*)

RESULT

Descriptive Statistics

The analysis, conducted descriptively, includes data on the minimum, maximum, mean, and standard deviation values across the entire study cohort.

Table 4. Descriptive Statistics Results of Research Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Liquidity (C.R.)	640	.13	421.99	4.7738	22.85537
Leverage (DER)	640	-3.137	24.559	1.4272	2.44695
Profitability (ROE)	640	-8.07	.67	.0033	.42222
Financial Distress	640	.00	1.00	.2703	.44447
Company Size	640	22.757	32.576	28.2555	1.81256
Valid N (listwise)	640				

Logistic Regression Analysis

Overall Model Fit

In this study, we employed a comparative analysis of the initial and final -2log likelihood values (respectively documented as results of block number 0 and block number 1) to evaluate the overall regression model. The decline in the -2 log-likelihood value between the initial and subsequent block demonstrates the efficacy of the logistic model employed (Ghozali, 2018).

Table 5. Test *Log-Likelihood Value* (*Block Number 0*)

Iteration History[a,b,c]			
Iteration		-2 Log likelihood	Coefficients
			Constant
Step 0	1	747.673	-.919
	2	746.969	-.992
	3	746.969	-.993
	4	746.969	-.993

Table 5 illustrates that the initial analysis for block number zero recorded a -2 Log Likelihood Value of 746.969. The evaluation of the -2 Log Likelihood Value for the next sequential block, numbered as block one, is documented in Table 6.

Table 6. Test Log-Likelihood Value (Block Number 1)

Iteration History[a,b,c,d]								
Iteration		-2 Log likelihood	Coefficients					
			Constant	X1	X2	X3	Z	X1 by X3
Step 1	1	580.495	4.861	-.003	-.111	-2.113	-.198	-.004
	2	417.185	5.736	-.007	-.342	-6.981	-.222	-.001
	3	281.282	5.318	-.010	-.382	-14.573	-.203	.009
	4	199.987	5.270	-.014	-.406	-24.983	-.198	-.006
	5	161.814	5.274	-.027	-.535	-37.205	-.191	-.099
	6	145.837	5.030	-.050	-.532	-49.530	-.181	-.312
	7	139.743	5.153	-.122	-.523	-57.622	-.182	-1.112
	8	131.557	7.553	-.458	-.662	-53.261	-.242	-5.518
	9	118.814	9.033	-1.023	-.613	10.300	-.269	-45.916
	10	74.213	6.677	-1.105	.087	10.563	-.210	-66.903
	11	49.660	9.440	-1.733	-.203	17.885	-.269	-100.907
	12	36.803	13.635	-2.461	-.464	26.826	-.378	-146.696
	13	30.249	19.428	-3.342	-.868	36.773	-.533	-200.496
	14	26.953	25.770	-4.365	-1.567	46.375	-.691	-258.118
	15	25.781	31.692	-5.368	-2.245	55.803	-.835	-315.864
	16	25.611	34.812	-5.913	-2.575	61.554	-.911	-349.687
	17	25.606	35.406	-6.019	-2.643	62.785	-.925	-356.835
	18	25.606	35.426	-6.022	-2.645	62.829	-.926	-357.089
	19	25.606	35.426	-6.022	-2.645	62.829	-.926	-357.090

Table 6 presents a computed figure of -2 log-likelihood at 25.606, signifying a diminished efficacy in the second segment of the logistic regression model, known as block number 1, after variables were incorporated. This encompasses data that is both suitably fitted and appropriately modeled.

Coefficient of Determination (Nagelkerke R *Square*)

Table 7. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	25.606a	.676	.982

The Nagelkerke R Square metric, registering at 0.982, illustrates that the independent

variable explains 98.2% of the variance observed in the dependent variable. This indicates that factors outside of the research model account for merely 1.8% of the remaining variance.

Regression Model Feasibility Test (*Hosmer and Lemeshow*)

The suitability of the regression analysis is assessed by measuring its alignment with actual data through the utilization of the chi-square value within the framework of the Hosmer and Lemeshow test. This assessment hinges on the established significance threshold; specifically, a value of 0.05 or below mandates the dismissal of the null hypothesis (H0). This action suggests a significant deviation between expected and actual figures, thus highlighting the model's limitations in accurately predicting outcomes. Alternatively, if the significance level exceeds 0.05, the null hypothesis (H0) is maintained, indicating that the model sufficiently reflects the observed data.

Table 8. Hosmer and Lemeshow Test

tep	Chi-square	Df	Sig.
	.102	8	1.000

In Table 8, the outcomes of the chi-square analysis are displayed, indicating a chi-square value of 0.102 and a significance level (p-value) of 1.00, surpassing the established criterion of 0.05. As a result, the null hypothesis (H0) is upheld, implying that the model accurately reflects the observed empirical data.

Classification Matrix

The matrix for classification determines the values of accurate and inaccurate estimations for the dependent variables. It demonstrates the capacity of the regression model to forecast potential financial distress for companies operating within the trading, service, and investment sectors.

Table 9. Classification Table[s]

Observed			Predicted		
			Financial DIstress		Percentage Correct
			Positive EPS	Negative EPS	
Step 1	*Financial DIstress*	Positive EPS	464	3	99.4
		Negative EPS	3	170	98.3
Overall Percentage					99.1

a. The cut value is,500

Table 9 presents the forecasting accuracy of the regression model in predicting whether a company will experience financial distress, achieving a prediction success rate of 98.3%. The model indicates that, out of 173 occurrences of financial distress, it successfully identified 3 instances. Furthermore, the model's capacity to identify companies unlikely to

face financial distress was demonstrated at a 99.4% accuracy rate; it correctly predicted 464 out of 467 cases. The regression model's overall predictive accuracy within this analysis is 99.1%, indicating a high level of precision in this research's findings.

Partial Test

Table 10. Variables in The Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1a	Liquidity (C.R.)	-6.022	2.101	8.217	1	.004	.002
	Leverage (DER)	-2.645	1.184	4.990	1	.026	.071
	Profitability (ROE)	62.829	19.777	10.092	1	.001	193.000
	Size (Ln.TA)	-.926	.445	4.335	1	.037	.396
	C.R. by Ln.TA	-357.090	107.720	10.989	1	.001	.000
	Constant	35.426	14.556	5.923	1	.015	242.500

The logistic regression equation presented in Table 10 can be expressed in the following manner:

$$Ln\ \frac{FD}{1-FD} = 35{,}426 - 6{,}022CR - 2{,}645DER + 62{,}829ROE - 0{,}926SIZE$$

Simultaneous Tests

Table 11. Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	721.363	5	.000
	Block	721.363	5	.000
	Type	721.363	5	.000

Table 11 displays a chi-square statistic of 721.363, accompanied by five degrees of freedom. The corresponding p-value falls below 0.000, which is beneath the threshold of the critical 5% significance level (0.05). Therefore, it is conclusively established that the independent variables have a significant collective influence on the dependent variables.

Moderate Regression Analysis (MRA)

Table 12. Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1a	C.R.	.583	.299	3.796	1	.051	1.792
	Size	-.243	.061	15.929	1	.000	.785
	M1	-.023	.012	3.753	1	.053	.978
	Constant	5.904	1.680	12.349	1	.000	366.605

a. Variable(s) entered on step 1: X1, Z, M1.

In the data presented in Table 12, a significance level of 0.000 is recorded for company size, which is considerably lower than the threshold of 0.050. This demonstrates a substantial impact of company size on financial distress. Furthermore, the correlation between company size and liquidity, as modified by variable M1, shows a significance level of 0.053. This level fails to reach the traditionally accepted 10% significance threshold and is paired with a negative coefficient (B), suggesting that company size exerts an independent and direct influence on results. In addition, company size serves as an influential intermediary, adjusting the dynamics between liquidity and financial distress through its association with the liquidity variable (C.R.), thereby functioning effectively as a quasi-moderator.

Table 13. Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1a	DER	-1.355	.795	2.906	1	.088	.258
	Size	-.384	.066	33.741	1	.000	.681
	M2	.058	.030	3.697	1	.055	1.059
	Constant	9.414	1.816	26.879	1	.000	123.813

a. Variable(s) entered on step 1: X2, Z, M2.

In Table 13, a noteworthy correlation is observed between company size and financial distress, as demonstrated by a p-value smaller than 0.05, precisely at 0.000. Moreover, when analyzing the role of company size as a moderating variable (M2), its association with the leverage measure (DER) yields a p-value of 0.055. This value, falling under the 10% significance level of 0.10, is associated with a positive coefficient (B). This finding elucidates that company size serves directly as an independent variable impacting financial distress and functions effectively as a moderator. It enhances understanding of how leverage influences financial distress by acting as a quasi-moderator.

Table 14. *Variables in the Equation*

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1a	ROE	325.768	80.595	16.338	1	.000	302,000
	Size	-.115	.124	.867	1	.352	.891
	M3	-14.722	3.238	20.667	1	.000	.000
	Constant	2.518	3.350	.565	1	.452	12.409

a. Variable(s) entered on step 1: X3, Z, M3.

Table 14 reveals data demonstrating that the significance value associated with company size is 0.352, surpassing the established threshold of 0.05. This suggests that company size does not impact financial distress. Subsequently, when the profitability (ROE) is adjusted by the moderator of company size (M3), a significance value of 0.000 is recorded, which is below the 5% significance level (0.05), accompanied by a negative coefficient (B). The interpretation suggests that company size does not function as an autonomous variable

due to its absence of a direct influence. Moreover, company size might act as a moderating variable; it modifies how profitability (ROE) as an independent variable influences the relationship between liquidity and financial distress, thereby serving in the role of a Pure Moderator.

CONCLUSION

The study definitively established that liquidity, quantified by the current ratio, significantly exacerbates financial distress. In a parallel finding, leverage, defined by the debt-to-equity ratio, markedly reduces financial distress. Conversely, profitability, denoted by the return on equity, beneficially impacts a company's financial stability. It was accepted that the scale of a company, known as company size, acts as a moderating factor. This moderation is noticeable in how company size adjusts the effect of the current ratio on financial distress. Furthermore, the extent of a company modifies how leverage and profitability influence financial distress.

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