SURVIVING THE STORM: AN ANALYSIS OF FINANCIAL DISTRESS IN ASIA'S DOMINANT TELECOMMUNICATIONS COMPANIES

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Abstract: This research offers a thorough examination of the consequences of financial distress, operational distress, lending interest rate, firm size, and inflation on the telecommunications industry. The analysis is limited to the ten largest companies in Asia by market capitalization from 2013 to 2022. By doing so, this study provides significant contributions to the understanding of the unique dynamics of financial distress in this crucial sector and time period. Utilizing secondary data from Asian stock exchanges, the research adopts a quantitative methodology. The correlation between the independent and dependent variables is investigated through the utilization of logistic regression. A decline in lending interest rates is associated with a greater likelihood that businesses will experience financial distress, whereas an increase in inflation is linked to the same risk. During 2013–2022, the findings also indicate that financial distress in the largest telecommunications companies in Asia was not substantially impacted by operational risk, financial risk, or firm size.

Keywords: financial distress, financial risk, firm size, macro variable, operational risk

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Introduction

Supporting and contributing to daily life, telecommunications have evolved into an indispensable element. It facilitates individuals' day-to-day activities by providing them with communication instruments. Particularly during the COVID-19 pandemic, when it became indispensable, telecommunications have had an impact on a variety of facets of life. Through 2022, this study examines the Asian telecommunications firms with the most substantial market capitalization.

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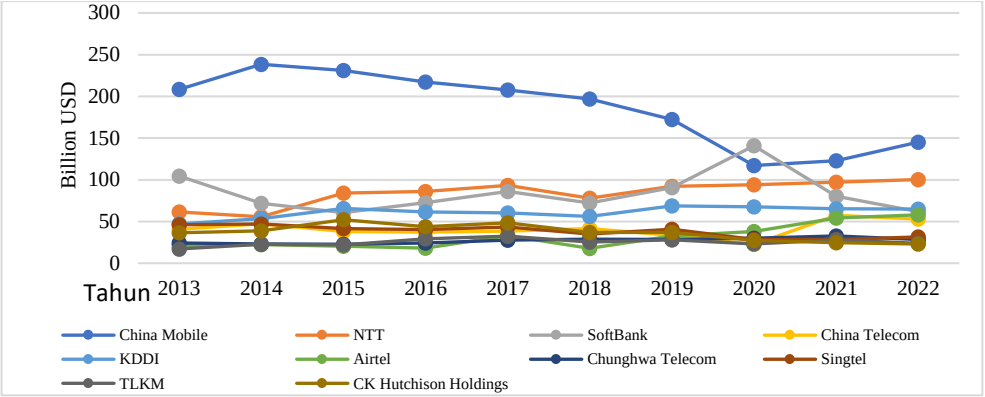


Figure 1: The ten telecommunications companies with the largest market capitalization in Asia

Source: https://companiesmarketcap.com/ (data processed, accessed: April 15, 2023)

CK Hutchison Holdings, China Mobile Ltd., Nippon Telegraph and Telephone Corp. (NTT), Soft Bank, China Telecom, KDDI, Singapore Telecommunication Ltd., Chunghwa Telecom, and Bharti Airtel Ltd. are among the corporations included. In general, these corporations conduct business internationally via joint ventures, acquisitions, or the formation of subsidiaries. They also operate domestically and abroad. The market capitalization of the ten major telecommunications companies in Asia is displayed in Figure 1.

The telecommunications industry is experiencing a paradigm shift due to the advent of novel technologies and evolving consumer preferences. This progress presents substantial prospects as well as potential hazards. A firm's ability to fulfill financial commitments, such as debt repayments, salary disbursements, and other investments, must be considered in relation to the capital expenditure (capex) and operational expenditure (opex) required to facilitate the integration of fiercely competitive new technologies. The necessity of preventive measures to avert financial distress has been underscored by the recent bankruptcies of a number of telecommunications companies across the globe.

A company encounters financial distress when it is unable to meet its financial obligations or debts, thereby increasing the likelihood of insolvency. Financial distress can manifest as a result of various factors, including internal and external influences, as stated by Shahwan (2015).

The thorough investigation seeks to ascertain the fundamental factors that contribute to financial distress in the telecommunications sector. In terms of enhancing risk management strategies and decision-making processes, the results will be of immeasurable value to industry stakeholders, policymakers, and investors. Insufficient scholarly research has been conducted on the subject of financial distress in the telecommunications industry in Asia, despite the sector's critical nature. Multiple variables that may impact financial distress at the leading

telecommunications companies are the subject of this study, which seeks to address this deficiency.

Literature Review

The significance of the information conveyed by company management to external stakeholders, including investors, is underscored by signaling theory. This theory posits that such information elicits feedback from investors concerning the company's future prospects (Watts, 2003; Pirzada et al., 2023). The information furnished by the organization may manifest as either positive or negative. Positive news may consist of profit announcements, favorable company conditions, or dividend distributions. Negative news may involve company losses that impede the ability to distribute dividends, or excessive debt that escalates the risk of bankruptcy.
In the Agency Theory, Jensen and Meckling (1976) defined an agency relationship as the situation when one or more principals employ an agent to provide a service and grant them decision-making power. As a consequence, agents are granted autonomy in executing managerial responsibilities within the organization. Through exercising discretion, self-interested professionals (agents) can maximize their management advantages at the expense of the company owners who bear the costs and obligations.
Within the realm of financial distress, this agency conflict might serve as a determinant that impacts the manifestation of financial difficulty. According to Jensen and Meckling (1976), managers who have more power over the organization are more likely to engage in riskier behavior, which might result in financial difficulties.
According to Smith et al. (2005), there is a positive correlation between elevated levels of financial risk, such as leverage and liquidity ratios, and the probability of experiencing financial hardship. In a similar vein, Khafid et al. (2019) illustrated that enterprises with significant leverage have a substantial debt-to-equity ratio or a considerable debt-to-total-asset ratio. Excessive leverage can result in the financial collapse of companies. These findings indicate that the presence of financial risk has a substantial impact on the likelihood of financial hardship in telecommunications enterprises.
The Degree of Financial Leverage (DFL) quantifies the level of financial risk in this study. The DFL (Degree of Financial Leverage) is a metric that measures the level of financial risk and the extent to which changes in profit are influenced by changes in EBIT (Earnings Before Interest and Taxes). DFL quantifies the degree to which a corporation utilizes debt in order to produce financial gains. As the DFL value increases, the influence of EBIT changes on the company's net profit also increases.
According to Andersen et al. (2011), the financial crisis was in large part the result of an industry-wide failure to manage risk in general and operational risk in particular. Thus, operational risk should be considered when assessing the potential for financial distress in various industries, including telecommunications.

Operational risk is measured using the indicator Degree of Operating Leverage (DOL). Operating leverage indicates how much a company utilizes fixed operating costs compared to its variable costs. As the amount of fixed costs increases in a company's total costs, the level of operating leverage also increases. Companies utilize operating leverage to anticipate that fluctuations in sales will lead to more substantial fluctuations in EBIT.

Elevated interest rates can amplify borrowing expenses, posing difficulties for telecommunications companies in managing their debts and fulfilling financial commitments. A study conducted by Sudaryo et al. (2021) revealed a positive correlation between interest rates and the probability of experiencing financial difficulties in many sectors, including telecommunications. Company leaders must take interest rates into account in order to prevent financial trouble. This conclusion holds significant importance as it enables informed decision-making regarding financial distress in enterprises, by evaluating financial ratios, such as interest rates, in relation to economic stimulus-driven conditions.

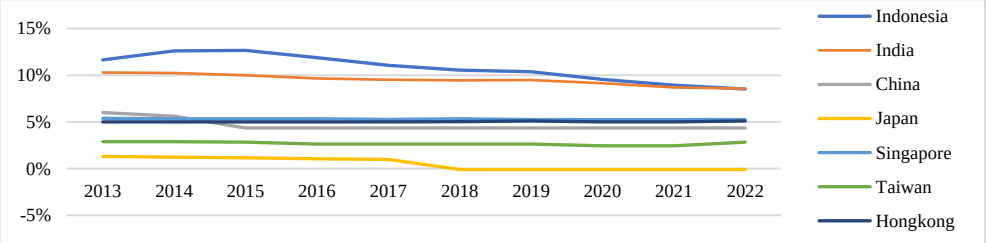


Figure 2: Lending Interest Rate
Source: https://www.theglobaleconomy.com/compare-countries/

The magnitude of a company is sometimes regarded as a pivotal aspect in the examination of financial trouble. Big corporations generally possess greater resources and a wider range of investment options, which can effectively reduce the likelihood of encountering financial difficulties.

Meiryani et al. (2020) argue that business size has a crucial role in determining company profitability due to the presence of economies of scale, a concept rooted in the conventional understanding of a corporation. The total assets represent the value of the assets possessed by the company. The size of a firm can be quantified by assessing its total assets, sales, or corporate capital.

The use of total assets is predicated on the notion that total assets serve as a measure of the company's magnitude and are assumed to impact precision. The aforementioned description implies that the magnitude of a corporation is assessed by its assets. The magnitude of these assets is quantified as the logarithm of the overall assets.

Inflation is an economic variable that can have a substantial impact on the financial state of a corporation. Significant inflation rates can gradually diminish a company's ability to buy goods and services and escalate the expenses associated with manufacturing, perhaps resulting in financial hardship. Sehgal, Mishra, and Jaisawal

(2021) found that there is a positive correlation between high inflation and increased financial distress. Hence, it is necessary to examine the effect of inflation on financial hardship in order to acquire a thorough comprehension of the aspects that influence the financial well-being of telecommunications firms in Asia.

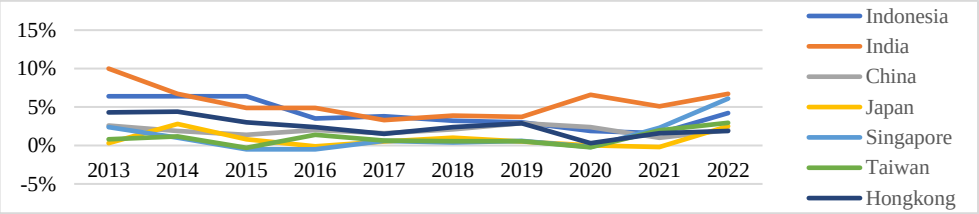


Figure 3: Inflation
Source: https://www.theglobaleconomy.com/compare-countries/

In their study, Elloumi and Guiyie (2001) outlined the process of financial hardship as commencing with a time of incubation influenced by unfavorable economic conditions and management's misguided financial choices. The Altman Z-Score model is widely utilized for forecasting financial difficulty, making it one of the most often employed models in this regard. The formula is a multivariate method used to assess the likelihood of a company going bankrupt. The Altman Z-Score for non-manufacturing enterprises is represented by a linear equation.

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

Where:
Z : Bankruptcy Index
X1 : Working Capital/Total Assets
X2 : Retained Earnings/Total Assets
X3 : Earnings Before Interest and Tax (EBIT)/Total Assets
X4 : Book Value of Equity/Total Liabilities
Here, X1 represents profitability, X2 represents leverage, X3 represents liquidity, and X4 represents solvency.

Table 1. Assessment Criteria for Non-manufacturing Companies

Z-Score	Zone Clarification
Z < 2.60	Financial Distress
Z > 2.60	Non-Financial Distress

Source: Adapted from Journal by Samuel Muchori (2023)

The study is guided by the following research questions:

1. How can financial risk, operational risk, loan interest rate, firm size, and inflation impact the telecoms businesses with the highest market capitalization in Asia between 2013 and 2022?
2. Do financial risk, operational risk, lending interest rate, firm size, and inflation jointly impact the occurrence of financial distress in telecoms businesses with the highest market capitalization in Asia from 2013 to 2022?
3. Does financial risk have a moderate impact on the financial distress of telecom enterprises with the biggest market capitalization in Asia between 2013 and 2022?
4. Does operational risk partially affect financial hardship in telecommunications businesses with the highest market capitalization in Asia from 2013 to 2022?
5. Does the loan interest rate have a partial effect on the financial distress of telecoms businesses with the highest market capitalization in Asia from 2013 to 2022?
6. Does the size of a company have a significant influence on the occurrence of financial difficulties in telecommunications businesses with the highest market value in Asia between 2013 and 2022?
7. Does inflation somewhat affect the financial hardship of telecoms businesses with the highest market capitalization in Asia from 2013 to 2022?

Research Methodology and Data

This study examines the impact of financial risk indicators, operational risk, lending interest rate, company size, and inflation on the occurrence of financial distress in telecommunications businesses operating in the Asian region between 2013 and 2022. The employed research methodology is quantitative.

Quantitative research involves the measurement and analysis of variables to obtain outcomes. Data analysis is the process of utilizing statistical approaches to examine numerical data in order to answer questions about individuals, quantities, characteristics, locations, time, quantities, and methods. The text additionally delineates the techniques of elucidating a matter or occurrence by means of collecting data in numerical format (Apuke and Oberiri, 2017).

This research use observation as a means of gathering data by extracting information pertaining to the subject matter from papers, books, and prior studies. The employed sample approach is purposive sampling. Purposive sampling strategies prioritize saturation, which involves sampling until no new significant information is obtained, in order to achieve a full understanding (Etikan and Ilker, 2016).

The objective of this study is to do hypothesis testing through the utilization of descriptive research. Descriptive research aims to provide a detailed account of a

phenomena and its inherent qualities. This study primarily focuses on the "what" aspect rather than the "how" or "why" aspects of a particular occurrence (Nassaji and Hossein, 2015). Descriptive research enables the identification of the attributes of the study variables.

Due to the duration of the research being conducted at the telecoms company for over a year, the researcher employs cross-section and time series approaches. Time series data is a collection of data points that are gathered at regular intervals over a period of time. Qualitative research is a study method that examines natural actions in unaltered contexts, without manipulating conditions or experiences. The data presented here include detailed verbal descriptions rather than numerical values (Giri and Dr. Dillip, 2010).

Operational Variable

The dependent variable is the variable that is affected or impacted by changes in the independent variable. The study focuses on the variable of financial distress (Y) as the dependent variable. The author employed the Altman Z-Score as a metric to assess bankruptcy risk, where a score of 1 signifies financial difficulty and a score of 0 indicates the absence of financial distress. The study examines financial risk, operational risk, loan interest rate, business size, and inflation as the independent factors.

Population and Sample

The study employs secondary data obtained from the official websites of telecommunications firms, consisting of financial reports spanning from 2013 to 2022. There are a total of 165 telecommunications firms that are publicly listed on a global scale. Upon organizing the sample criteria, a grand total of 10 companies that satisfy the criteria for the research were acquired.

Table 2. Research Sample List

Company	Country	Code
China Mobile	China	CHT
NTT (Nippon Telegraph andTelephone)	Japan	NTT
SoftBank	Japan	9984
China Telecom	China	CHA
KDDI	Japan	9433
Bharti Airtel	India	BHARTIARTL
Chunghwa Telecom	Taiwan	2412
Singtel	Singapore	Z74
Telkom Indonesia	Indonesia	TLKM
CK Hutchison Holdings	Hong Kong	0001

Source: Company's annual financial reports and processed data (2023)

Research Results

In this study, variable Y utilizes the Altman Z-Score with the aim of analyzing the financial performance of companies and determining whether the companies are at risk of financial distress based on the calculated Altman Z-Score

Table 3. Z-Score Results

Company	Year									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
China Mobile	5.473	4.544	4.148	4.487	4.475	5.045	4.908	4.687	4.386	4.196
NTT	2.794	2.773	2.968	2.990	3.140	3.051	2.501	1.529	1.985	2.104
SoftBank	1.020	1.223	0.982	1.032	0.923	0.857	2.095	0.793	0.429	0.582
China Telecom	0.684	0.800	0.422	-0.164	0.352	0.735	0.690	0.817	1.621	1.474
KDDI	4.581	5.182	5.123	5.324	5.287	5.494	3.212	3.095	2.887	2.372
Bharti Airtel	0.560	0.652	0.643	0.404	0.253	-0.283	-0.298	-0.45	-0.273	-0.08
Chunghwa Telecom	6.537	6.510	6.595	6.795	6.657	6.944	6.302	4.992	5.140	5.075
Singtel	4.107	3.946	3.778	3.395	3.657	3.580	2.778	2.749	3.088	3.275
Telkom Indonesia	4.842	4.575	4.587	4.673	4.310	3.988	3.323	2.833	3.275	3.315
CK Hutchison Holdings	11.324	12.006	3.336	3.565	3.761	3.339	3.219	3.154	3.352	3.645
Financial Distress										
Non-Financial Distress										

Source: Annual Report 2013–2022, researchers (2023)

The Z-score cutoff values utilized in Table 3 to ascertain whether a corporation is classified as experiencing financial distress or non-financial distress are as follows: A corporation is categorized as being in financial hardship if its Z-score is below 2.6. A corporation is categorized as experiencing non-financial hardship if its Z-score exceeds 2.6.

Table 4. Number of Samples on the Dependent Variable

Variable	Frequency	Percentage
Financial Distress	35	35%
Non-Financial Distress	65	65%
Total	100	100%

Source: Secondary data processed, researchers (2023)

According to Table 4, 35 out of 100 samples (35%) are considered to be at danger of experiencing financial difficulties, as shown by the derived Altman Z-Score. On the other hand, 65 samples (65%) are not at risk of experiencing financial trouble. The results suggest that certain enterprises in the sample may be at risk of bankruptcy.

Descriptive statistical analysis seeks to offer a comprehensive summary of the investigated data using diagrams or tables, which encompass key metrics such as minimum, maximum, mean, and standard deviation values.

Table 5. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Financial Risk	100	-3.9500	8.2383	1.284819	1.0280740
Operational Risk	100	-73.6193	45.5500	1.171368	10.1648335
Lending Interest Rate	100	-0.0010	0.1266	0.044132	0.0348629
Firm Size	100	3.6717	12.5324	8.007410	2.3189673
Inflation	100	-0.0050	0.1000	0.020670	0.0198553
Valid N (listwise)	100				

Source: SPSS output, processed secondary data, researchers (2023)

The descriptive statistics reveal that the variable Financial Risk has a minimum value of -3.95 and a maximum value of 8.238. The mean value is 1.285, and the standard deviation is 1.028. Given that the mean value surpasses the standard deviation, it can be inferred that the data variation or dispersion is predominantly focused around the mean value. The variable operational risk has a minimum value of -73.619, a maximum value of 45.550, and a mean value of 1.171. The standard deviation of 10.165 is considerably more than the mean value, suggesting that the data exhibits substantial variability, a broader distribution, or the presence of one or more data points that deviate significantly from the mean value. The Lending Interest Rate variable ranges from -0.001 to 0.127, with an average value of 0.044 and a standard deviation of 0.035. Based on these findings, the average value surpasses the standard deviation, suggesting a more consistent or uniform data distribution, with values that are in close proximity to the average. The firm size variable ranges from a minimum of 3.672 to a maximum of 12.532, with a mean value of 8.007. The data distribution has a high level of concentration around the mean value, as evidenced by the significantly smaller standard deviation of 2.319. The inflation variable ranges from -0.005 to 0.1. The average value of 0.021 is marginally higher than the standard deviation of 0.02, suggesting that the data is inclined towards being more consistent or uniform.

Hypothesis Testing

The effectiveness of a logistic regression model can be evaluated by utilizing a classification matrix, which provides insight into the model's ability to accurately anticipate the probability of encountering financial trouble.

Table 6. Classification Results

	Observed		Predicted		
			Financial Distress		Percentage Correct
			Non-Financial Distress	Financial Distress	
Step 1	Financial Distress	Non-Financial Distress	60	5	92.3
		Financial Distress	23	12	34.3
	Overall Percentage				72

Source: SPSS output, processed secondary data, researchers (2023)

According to the information provided in Table 6, the combined count of samples categorized as non-financial distress is 65 (60+5). Among these, 60 samples are accurately categorized as non-financial distress, whereas 5 samples are predicted to be non-financial hardship but have the possibility of financial distress. The cumulative number of samples encountering financial trouble is 35, which is the sum of 23 and 12. Out of these, 12 samples are accurately categorized as financial distress, whereas 23 samples are projected to be financial distress but are really classed as non-financial distress. In the context of interpreting logistic regression with SPSS, the above table yields an aggregate percentage value of (60+12)/100 = 72%. This indicates that the study model's accuracy is 72%.

Regression Model Fit Test (Goodness of Fit)

The Hosmer and Lemeshow Test is a statistical test used to assess the goodness of fit of a developed model, determining its appropriateness. It is deemed acceptable if there is no substantial disparity between the model and the observed data.

Table 7. Table Hosmer and Lemeshow Logistic regression

Step	Chi-square	df	Sig.
1	9.803	8	0.279

Source: SPSS output, processed secondary data, researchers (2023)

The outcomes of the Hosmer and Lemeshow test, presented in Table 7, for evaluating the adequacy of this model based on the hypotheses are as follows:

The p-value (sig) of Hosmer and Lemeshow's Goodness of Fit Test is 0.279, which is greater than the significance level of 0.05. Therefore, we accept the null hypothesis (H0) and conclude that the model is suitable and accurately represents the data.

Archer, Kellie, and Lemeshow (2006) utilized Hosmer-Lemeshow statistics to assess the goodness of fit of the model. A p-value greater than 0.05 was deemed indicative of a satisfactory fit, indicating that the model is capable of accurately predicting the observed values. Put simply, the logistic regression model is deemed acceptable if it accurately corresponds to the observed data.

The Chi-Square table value for Degrees of Freedom (DF), with 5 independent variables, is 4, at a significance level of 0.05, which corresponds to 9.487729. Given that the estimated Chi-Square values of Hosmer and Lemeshow are 9.803, which is more than the Chi-Square table value of 9.487729, we accept the null hypothesis (H0).

Table 8. Contingency Table for Hosmer and Lemeshow Test

		Non-Financial Distress		Financial Distress		Total
		Observed	Expected	Observed	Expected	
Step 1	1	8	8.935	2	1.065	10
	2	9	7.998	1	2.002	10
	3	7	7.608	3	2.392	10
	4	8	7.299	2	2.701	10
	5	6	7.02	4	2.98	10
	6	9	6.658	1	3.342	10
	7	5	6.309	5	3.691	10
	8	5	5.637	5	4.363	10
	9	7	4.653	3	5.347	10
	10	1	2.884	9	7.116	10

Source: SPSS output, processed secondary data, researchers (2023)

The table reveals that there are no significant disparities between the 10 observation phases for samples encountering financial trouble and those without financial distress. These findings demonstrate that the logistic regression model employed in this investigation has the ability to accurately forecast the observed values.

Overall Model Fit Test

The overall model fit test is performed to ascertain the adequacy of the logistic regression model in relation to the research data. In order to evaluate the adequacy of the model, the initial -2LogLikelihood value is compared to the final-2LogLikelihood value.

Table 9. Iteration Block 0 Logistic Regression

Iteration		-2 Log likelihood	Coefficients Constant
Step 0	1	129.498	-0.6
	2	129.489	-0.619
	3	129.489	-0.619

Source: SPSS output, processed secondary data, researchers (2023)

The Iteration History Table at block 0, excluding the independent variables from the model, shows a sample size (N) of 100 and a -2 log-likelihood value of 129.498. The degrees of freedom (DF) are determined by subtracting 1 from the sample size, which in this case is 100, resulting in a value of 99. The Chi-Square value obtained from a table with 99 degrees of freedom and a probability of 0.05 is 123.2252. Given that the -2 Log Likelihood number (129.498) exceeds the Chi-Square value from the table (123.2252), we can conclude that the null hypothesis (H0) is rejected. This suggests that the model, prior to incorporating the independent variables, does not adequately align with the data.

Table 10. Iteration Block 1 Logistic Regression

Iteration		-2 Log likelihood	Coefficients					
			Constant	Financial Risk	Operational Risk	Lending Interest Rate	Firm Size	Inflation
Step 1	1	116.873	-1.519	0.193	-0.013	-16.558	0.081	37.273
	2	116.263	-1.924	0.273	-0.015	-20.193	0.11	44.421
	3	116.255	-1.976	0.294	-0.015	-20.465	0.112	44.9
	4	116.255	-1.977	0.295	-0.015	-20.466	0.112	44.9
	5	116.255	-1.977	0.295	-0.015	-20.466	0.112	44.9

Source: SPSS output, processed secondary data, researchers (2023)

In the iteration history table at Block 1, the degrees of freedom (DF) are determined as the sample size (N) minus the number of independent variables minus 1, which is equal to 100 - 5 - 1 = 94. The Chi-Square value corresponding to a chance of 0.05 and 94 degrees of freedom is 117.6317.

Given that the -2 Log Likelihood number (116.255) is smaller than the Chi-Square value obtained from the table (117.6317), we can conclude that the null hypothesis (H0) is accepted. This suggests that the model, which includes independent variables, is a good fit for the data. In contrast to the initial block, it was determined that the model did not align with the data before incorporating the independent variables.

The log-likelihood value (-2LogL) serves as the foundation for assessing the overall adequacy of the model. The method employed involves comparing the initial -2LogL value (Block Number = 0), which is 129.498, with the -2LogL value at Block Number = 1, which is 116.255. A regression model with strong independent variables leads to an improved model fit, as evidenced by the -2LogL value in Block Number = 0 being greater than the -2LogL value in Block Number = 1, with values of 129.498 and 116.255 respectively. This indicates that the model employed is suitable for the chosen dataset.

The reduction in the -2 log-likelihood in both iteration histories suggests that the logistic regression model is a good fit for the data (Mulyawati et al., 2022).

Determination Coefficient Test

The determination coefficient test is performed to evaluate the explanatory power of independent factors on the dependent variable. The Cox and Snell R Square and Nagelkerke R Square values serve this purpose. It is alternatively known as pseudo-R-Square.

Table 11. Table Pseudo R-Square Logistic regression

Step	-2 Log likelihood	Cox and Snell R Square	Nagelkerke R Square
1	116.255[a]	0.124	0.171

Source: SPSS output, processed secondary data, researchers (2023)

The Nagelkerke R-Square value of 0.171 signifies that the independent variables account for 17.1% of the variation in the dependent variable. The remaining 82.9% of the variation is attributed to factors not included in the model.

Simultaneous Test

Simultaneous testing seeks to determine the combined impact of the independent variable on the response variable using the Likelihood Ratio Test (Fathurahman et al., 2019).

Table 12. Omnibus Test Logistic regression

		Chi-square	df	Sig.
Step 1	Step	13.234	5	0.021
	Block	13.234	5	0.021
	Model	13.234	5	0.021

Source: SPSS output, processed secondary data, researchers (2023)

Table 12 indicates that the p-value of 0.021 is less than the predetermined significance level of 0.05. Therefore, the hypothesis stating that the independent factors have a simultaneous impact on the dependent variable is supported (H1), while the null hypothesis (H0) is disproven. Financial distress is greatly influenced by the simultaneous effects of financial risk, operational risk, loan interest rate, company size, and inflation.

The Chi-square value in the table, 13.234, exceeds the Chi-square table value of 11.0705 for 5 degrees of freedom (number of independent variables = 5). Thus, we refute the null hypothesis, signifying that the inclusion of independent variables has a substantial impact on the model, or, in simpler terms, the model is deemed suitable.

Table 13. Statistical Results

Variable		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1	Financial Risk	0.295	0.331	0.794	1	0.373	1.343	0.702	2.572
	Operational Risk	-0.015	0.023	0.418	1	0.518	0.985	0.943	1.03
	Lending Interest Rate	-20.466	9.98	4.205	1	0.04	0	0	0.404
	Firm Size	0.112	0.104	1.163	1	0.281	1.119	0.912	1.372
	Inflation	44.9	18.254	6.05	1	0.014	3.16E+19	9157.33	1.092E+35
	Constant	-1.977	0.986	4.02	1	0.045	0.139		

Source: SPSS output, processed secondary data, researchers (2023)

Alternatively, one can employ the subsequent assumptions:

H0: There is no significant effect of any independent variable on the dependent variable (p-value > 0.05).

H1: There is a statistically significant effect of at least one independent variable on the dependent variable (p < 0.05).

The lending interest rate and inflation variables have a statistically significant level (Sig) below 0.05. Financial distress is greatly influenced by the simultaneous impact of financial risk, operational risk, loan interest rate, company size, and inflation.

Partial Test

The partial test is performed to ascertain the impact of each independent variable on the dependent variable being studied. If the p-value of an independent variable is less than 0.05, it indicates that each independent variable (X) has a statistically significant partial impact on the dependent variable (Y).

Based on the information provided in Table 13, the impact of the independent variables on the dependent variable can be summarized as follows:Among the 5 independent variables, the loan interest rate and inflation are the only ones that exhibit a notable partial influence, with values below 0.05 that are statistically significant.

The Influence of Independent Variables on Dependent Variable

The logistic regression equation model is generated based on Table 13.

$$\text{Ln } (FD/(1\text{-}FD)) = -1.977 + 0.295(X1) - 0.015(X2) - 20.466(X4) + 44.9(X5) + Ɛ$$

The regression equation indicates that the independent variables of financial risk, business size, and inflation have a positive impact. Simultaneously, operational risk and loan interest rates exert a detrimental impact.

a. The constant value (a) is -1.977, indicating that in the absence of any variables influencing the risk of financial distress (when all independent variables are at 0), the log odds of financial distress would be -1.977.
b. The regression coefficient β_1 for financial risk is positively correlated with the outcome variable, but the relationship is not statistically significant. This suggests that a rise in financial risk leads to a higher likelihood of experiencing financial distress, however the relationship is not statistically significant. The coefficient of 0.295, which is positive, indicates that for every unit rise in financial risk, the log probabilities of financial distress will increase by 0.295 units, while holding other variables equal.
c. The regression coefficient β_2 for operational risk exhibits a negative value and lacks statistical significance. This suggests that a rise in operational risk leads to a decline in the logarithmic odds of experiencing financial distress, while the impact is not statistically significant. The negative coefficient of -0.015 indicates that for every unit rise in operational risk, the log probabilities of financial distress will drop by 0.015 units, provided all other variables remain same.
d. The regression coefficient β_3 for lending interest rate is negative and statistically significant. This suggests that a rise in the lending interest rate leads to a decline in the logarithmic probability of experiencing financial difficulties. Telecommunications firms that have higher lending interest rates are often less likely to experience financial trouble. The negative coefficient of -20.466 indicates that for every unit increase in the loan interest rate, the log probabilities of financial difficulty will reduce by 20.466 units, providing all other factors remain unchanged.

e. The regression coefficient β_4 for company size is positive but lacks statistical significance. This suggests that larger corporations are at a higher risk of experiencing financial difficulties. In this scenario, the expansion of telecommunications firms leads to a rise in the logarithmic probabilities of encountering financial difficulties. The coefficient of 0.112 indicates that for every unit increase in firm size, the log probabilities of financial difficulty will increase by 0.112 units, providing all other variables remain same.
f. Inflation: The regression coefficient β_5 for inflation exhibits a positive and statistically significant relationship. These findings suggest that a rise in inflation is associated with a corresponding increase in the likelihood of experiencing financial difficulties. Telecommunications companies operating during periods of elevated inflation are more prone to experiencing financial trouble. The presence of a positive coefficient of 44.9 indicates that for every unit increase in inflation, the log probabilities of financial difficulty will increase by 44.9 units, provided all other factors remain unchanged.
g. Ɛ represents the random error in the regression model.

The research findings exhibit disparities with the research hypothesis, as evidenced in the subsequent table. Conversely, the adverse factors consist of operational risk and the loan interest rate. As the operational risk and loan interest rate values rise, the likelihood of a company facing financial hardship diminishes.

Table 14. Influence of Independent Variables on the Dependent Variable

Variable	Hypothesis	Research
Financial Risk	Positive	Positive
Operational Risk	Positive	Negative
Lending Interest Rate	Positive	Negative
Firm Size	Negative	Positive
Inflation	Positive	Positive

Source: Hypotheses and processed research findings, researcher (2023)

The Influence of Financial Risk on Financial Distress

According to the findings presented in Table 13, the financial risk variable has a partial significance value of 0.373, which is greater than the threshold of 0.05. Additionally, the positive regression coefficient suggests that there is a positive association between financial risk, as measured by the Degree of Financial Leverage (DFL), and the outcome variable. However, it lacks statistical significance in its impact on financial distress. There is suspicion because the EBIT margin of the 10 companies under investigation remains higher than the average for the telecoms industry (14.4%) according to data from MTC Consulting in 2020. Consequently, corporations have the ability to employ borrowed capital in order to amplify their profit potential or investment yields.

Table 15. EBIT Margin Average 2018 to 2022

Company	EBIT Margin
China Mobile	15.00%
NTT	15.10%
SoftBank	10.10%
China Telecom	7.60%
KDDI	19.20%
Bharti Airtel	15.80%
Chunghwa Telecom	20.50%
Singtel	9.60%
Telkom Indonesia	30.80%
CK Hutchison Holdings	13.30%

Source: Annual Report 2013–2022, data processed by researchers (2023)

The Influence of Operational Risk on Financial Distress

The negative regression coefficient and the partial significance value of the operational risk variable, as evaluated by the Degree of Operational Leverage (DFL), being 0.518, which is greater than 0.05, suggest that operational risk has a negative association but does not have a substantial impact on financial hardship. Greater operational leverage results in higher operating profit. An augmentation in operating profit leads to a reduction in the probability of encountering financial trouble.

This aligns with the results of the study done by Kristanti and Effendi (2017) on 61 enterprises that were classified as facing financial difficulties. The study revealed that operational risk had no substantial impact on the probability of enterprises encountering financial difficulties. The impact of operational risk on the probability of organizations encountering financial issues is negligible.

The impact of operational risk on the top 10 companies in Asia, as measured by market value, does not have a substantial effect on their financial hardship. Consequently, these organizations possess the ability to effectively handle any risks associated with their operations, resulting in a clear correlation between the growth in sales volume and the increase in operating profit. These organizations possess adequate reserves to confront unforeseen catastrophes by upholding an EBIT margin that surpasses the market norm.

The Influence of Lending Interest Rate on Financial Distress

The negative regression coefficient and the partial significance value of $0.04 < 0.05$ for the lending interest rate variable show a significant and negative link between the lending interest rate and financial distress.

Table 16. Value of Current Liabilities and Lending Interest Rate

Company	Variabel	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Tren Graph
China Mobile	Current Liabilities	370.9	452.5	501.0	536.4	530.0	474.4	462.1	517.3	582.1	533.3	
	Lending Interest Rate	6.00%	5.60%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	
NTT	Current Liabilities	3676.8	3721.7	3741.1	4131.4	4622.4	5228.1	6607.6	7426.2	6251.5	6836.9	
	Lending Interest Rate	1.30%	1.22%	1.14%	1.04%	0.99%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	
SoftBank	Current Liabilities	3767.2	4672.5	5165.8	5226.9	6728.8	8681.7	7736.2	12879.7	12381.5	10580.7	
	Lending Interest Rate	1.30%	1.22%	1.14%	1.04%	0.99%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	
China Telecom	Current Liabilities	200.1	206.3	256.1	319.1	275.4	258.9	264.7	271.1	265.1	281.7	
	Lending Interest Rate	6.00%	5.60%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	4.35%	
KDDI	Current Liabilities	1048.9	958.3	958.5	1081.5	1437.8	1377.8	3013.7	3516.4	4016.0	4636.2	
	Lending Interest Rate	1.30%	1.22%	1.14%	1.04%	0.99%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	
Bharti Airtel	Current Liabilities	568.0	634.4	586.6	634.6	782.4	930.1	1314.9	1116.4	1140.3	1219.6	
	Lending Interest Rate	10.29%	10.25%	10.01%	9.67%	9.51%	9.45%	9.47%	9.15%	8.70%	8.57%	
Chunghwa Telecom	Current Liabilities	58.8	62.5	62.9	64.2	63.9	63.2	66.1	71.4	64.3	65.7	
	Lending Interest Rate	2.88%	2.88%	2.83%	2.63%	2.63%	2.63%	2.63%	2.44%	2.44%	2.84%	
Singtel	Current Liabilities	5.7	5.8	6.5	9.3	8.4	8.8	10.6	9.1	9.1	8.3	
	Lending Interest Rate	5.38%	5.35%	5.35%	5.35%	5.28%	5.33%	5.25%	5.25%	5.25%	5.25%	
Telkom Indonesia	Current Liabilities	28437	32318	35413	39762	45376	46261	58369	69093	69131	70388	
	Lending Interest Rate	11.66%	12.60%	12.66%	11.89%	11.07%	10.54%	10.37%	9.54%	8.92%	8.52%	
CK Hutchison Holdings	Current Liabilities	15.5	31.4	130.3	157.3	114.9	221.9	159.3	173.4	181.4	176.5	
	Lending Interest Rate	5.00%	5.00%	5.00%	5.00%	5.00%	5.04%	5.10%	5.00%	5.00%	5.10%	

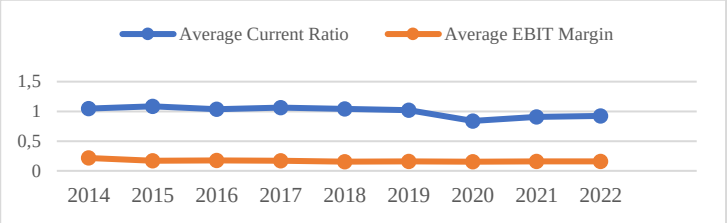
Source: Annual Report 2013–2022, data processed by researchers (2023)

This aligns with the study conducted by Sudaryo, Haat, Saputra, Yusliza, and Muhammad (2021) on companies listed on the Indonesia Stock Exchange in Jakarta. The study shown that the interest rate has a significant influence on financial hardship. Reduced interest rates might adversely affect companies. Insufficiently high interest rates can lead to excessive borrowing by larger organizations, resulting in over-leveraging. This might exacerbate their financial difficulties in the event of negative changes in market or financial conditions. This relationship is evident in the comparative graph depicting the correlation between current liabilities and loan interest rate, as illustrated in the table 16.

The Influence of Firm Size on Financial Distress

The positive regression coefficient, with a significance value of 0.281, suggests that there is a positive association between firm size (measured by total assets) and financial distress. However, this link is not statistically significant. This finding aligns with the study conducted by Sudaryo, Haat, Saputra, Yusliza, and Muhammad (2021), which determined that the size of a company does not have an impact on its financial difficulty. The financial state of a corporation is not always accurately indicated by its size. The financial status of a firm is not necessarily determined by its size; a huge company may not be in good financial standing, while a small company may not be in poor financial standing. Notable examples include Nortel Networks Corporation, which underwent bankruptcy proceedings in 2009, and WorldCom, which faced a similar situation in 2002. Table 17 below provides insight into the financial status of the 10 telecommunications firms under study, as indicated by their current ratio and EBIT margin.

Table 17. Value of Average Current Ratio and Average Current EBIT Margin



Source: Annual Report 2013–2022, data processed by researchers (2023)

From 2016 to 2019, the average current ratio, which measures a company's capacity to fulfill its short-term obligations, shown a tendency to decrease and thereafter stabilize. In 2020, it underwent a decrease as a result of the influence of COVID-19, but thereafter progressed towards a state of stability in 2021 and 2022. This suggests that, despite some variation, the corporation possessed ample current assets to settle its immediate obligations. Concurrently, the EBIT margin, which indicates the company's operational effectiveness and its capacity to earn profits from its core operations, generally exhibited a consistent level.

The Influence of Inflation on Financial Distress

The regression coefficient for inflation is positive and statistically significant (p-value = 0.045 < 0.05), suggesting that inflation has a significant and positive impact on financial distress. These findings align with the study conducted by Ceylan (2021) on companies listed in the Small and Medium Enterprises (SME) Index of Borsa Istanbul from 2010 to 2019. The research revealed that higher inflation rates elevate the likelihood of financial difficulties for companies. Additionally, it aligns with the research conducted by Sehgal, S., Mishra, and Jaisawal (2021) regarding Indian enterprises, indicating that elevated inflation raises the probability of encountering financial difficulties. These findings align with the study conducted by Ceylan (2021) on companies listed on the Small and Medium Enterprises (SME) Index of Borsa Istanbul from 2010 to 2019. The research revealed that inflation rates had a direct impact on the likelihood of financial difficulties for companies. Moreover, Sehgal, Mishra, and Jaisawal (2021) conducted a study on Indian enterprises which indicates that elevated inflation rates are associated with an increased probability of encountering financial difficulties. Inflation can have a substantial impact on financial distress through the reduction of consumer purchasing power, the escalation of production costs, and the elevation of interest rates. Companies may face challenges in fulfilling their financial responsibilities, which might raise the likelihood of financial hardship (Fachrudin, Pirzada, and Iman, 2022). Effective management of inflation risks is crucial for companies to mitigate the potential of financial difficulty. One approach is to provide adequate cash flow management, thereby guaranteeing sufficient funds to pay the company's financial obligations. One can accomplish this by augmenting sales, diminishing expenses, or pursuing cost-effective funding options.

Conclusion

The descriptive analysis reveals that financial risk, lending interest rate, company size, and inflation have a uniform data distribution, with data being more concentrated around the mean value. Conversely, operational risk displays diverse fluctuations in data with a broader dispersion of data points.

The financial distress of telecommunications businesses with the greatest capitalization in Asia for the period of 2013-2022 is influenced by multiple factors including financial risk, operational risk, loan interest rate, firm size, and inflation. Financial risk has a limited and non-significant influence on the occurrence of financial distress in the telecoms businesses with the highest market capitalization in Asia from 2013 to 2022. Operational risk has a limited and non-significant effect on financial distress in the telecoms businesses with the highest market capitalization in Asia from 2013 to 2022. The telecoms businesses with the biggest market capitalization in Asia experienced financial difficulties during 2013-2022, partly due to the negative impact of the loan interest rate. The size of a firm has a slightly positive but statistically negligible effect on the occurrence of financial trouble among telecoms businesses with the highest market capitalization in Asia from 2013 to 2022. From 2013–2022, inflation had a partially substantial positive effect on the financial distress of telecoms businesses with the highest market capitalization in Asia.

This research has significant consequences for decision-makers and industry players in the telecommunications sector. It offers valuable insights into the macroeconomic effects of things like inflation and lending interest rates on the financial stability of enterprises. If a recession occurs, these companies may encounter a decrease in sales and revenues, which could provide difficulties in fulfilling their financial commitments. These implications can inform the development of policies and strategies that target the mitigation of financial distress. Examples include implementing risk management practices, diversifying investment portfolios, planning budgets, managing cash flow, diversifying products and markets, effectively managing debt, and closely monitoring monetary policies and economic indicators.

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PRZETRWAĆ BURZĘ: ANALIZA TRUDNOŚCI FINANSOWYCH W DOMINUJĄCYCH FIRMACH TELEKOMUNIKACYJNYCH W AZJI

Streszczenie: Niniejsze badanie analizuje wpływ ryzyka finansowego, ryzyka operacyjnego, stopy procentowej kredytów, wielkości firmy i inflacji na trudności finansowe w 10 firmach telekomunikacyjnych o największym kapitale w Azji w latach 2013-2022. W badaniu zastosowano podejście ilościowe i wykorzystano dane wtórne notowań na azjatyckich giełdach papierów wartościowych. Wykorzystuje regresję logistyczną do zbadania związku między zmiennymi niezależnymi i zależnymi. Wyniki pokazują, że spadek stóp procentowych kredytów zwiększa ryzyko trudności finansowych dla firm, podczas gdy wzrost inflacji zwiększa ryzyko trudności finansowych. Wyniki pokazują również, że ryzyko finansowe, ryzyko operacyjne i wielkość firmy nie miały istotnego wpływu na trudności finansowe w największych firmach telekomunikacyjnych w Azji w latach 2013-2022.

Słowa kluczowe: trudności finansowe, ryzyko finansowe, wielkość firmy, inflacja, oprocentowanie kredytów, ryzyko operacyjne, firmy telekomunikacyjne