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Grover Method Analysis on Financial Distress in IDX Insurance Companies with Loss

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Abstract

Insurance hold a crucial role in protecting against unexpected financial risks, but insurance faces profitability challenges that could potentially trigger financial distress. This study aims to analyze financial distress using the Grover method and to determine the influence of the Grover method's financial ratios are Working Capital to Total Assets (WCTTA), Earnings Before Interest and Tax to Total Assets (EBITTA), and Return on Assets (ROA) on financial distress. This study uses a descriptive quantitative method to analyze 9 insurance companies listed on IDX that experienced losses and drastic profit declines during 2018-2023. Secondary data were processed using Excel and SPSS 20 with the data analysis technique is Grover's method, descriptive statistical tests, classical assumption tests, multiple linear regression, and hypothesis test. The results show that average G-Score of ABDA, ASJT, LPGI, AHAP, ASBI, ASMI, BHAT, MREI, VINS falls within the safe zone, but BHAT is indicated potencial bankrupt on 2022-2023.The variables WCTTA and EBITTA have a significant positive effect on financial ditress, while ROA has a significant negative effect on financial distress. Further research is recommended to expand the sample, variables, and study period for more comprehensive results.

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1. Introduction

People around the world are facing many challenges and uncertainties, with global issues continuing to escalate, ranging from economic fluctuations and climate change to health risks. These phenomena have created an urgent need for individuals and entities to protect themselves from potential losses. Insurance is one form of financial protection that can help individuals and entities reduce financial risks resulting from unforeseen events such as illness, natural disasters, accidents, or property loss (Purwaningsih & Catur, 2023).

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Over time, the Indonesian insurance industry has faced numerous challenges in maintaining its profitability. Indonesia's insurance penetration and density remain at 1.4%, which is the lowest figure when compared to other ASEAN countries (OJK, 2023). Low insurance penetration and density make it difficult for companies to increase their premium income, which is their main source of revenue (Agustiranda et al., 2019).

The general insurance industry recorded a loss of Rp.10.13 trillion in 2024, whereas in 2023 the insurance industry still recorded a profit of Rp.7.8 trillion, representing a 197.8% decline in profit based on data from the Indonesian General Insurance Association (Untari, 2025). In 2022, the number of insurance sector complaints recorded by the OJK reached 1,291 cases, by January 2024, the number of complaints in the insurance sector had increased to 3,007 cases, with the main issues including failure to pay claims, dishonest insurance services, insurance products that do not match the offers, premium issues, and others (OJK, 2023).

These issues have led many parties to impose a negative stigma on the insurance industry in Indonesia. Based on research conducted by Permadi & Suardi (2022), the emergence of negative news about Indonesian insurance companies has an impact on financial distress because the more insurance companies receive negative news, the greater the potential for companies to experience financial distress. Financial distress refers to a situation that indicates a deterioration in the financial condition of a business that occurs before bankruptcy or liquidation (Putra et al., 2023).

One study shows that as many as 87.5% or 28 life insurance companies registered with the OJK have the potential to go bankrupt, with only 12.5% or 4 other companies falling into the healthy category based on the Altman Z-Score method (Nurlaila et al., 2021). Even during the COVID-19 pandemic, five insurance companies listed on the Indonesia Stock Exchange faced potential financial distress as analyzed by the Altman Z-Score, with the pandemic representing the economic instability experienced by insurance companies at that time (Wahyuningsih et al., 2022). Most previous studies have primarily used bankruptcy prediction methods such as the Altman Z-Score alongside other equally accurate bankruptcy methods like the Grover method. The Grover method has an accuracy rate of 97.5%, which is higher than the Altman Z-Score method's 95% accuracy rate for predicting financial distress (Ummah, 2021).

The Grover method, proposed by Jeffrey S. Grover in 2001, is an advancement of the Altman Z-Score method that classifies companies into three criteria zones: safe, gray, and potentially bankrupt. The Grover method includes three financial ratios: Working Capital to Total Assets, Earnings Before Interest and Tax to Total Assets, and Return on Assets (Liew et al 2023). These three financial ratios can be used to reveal their influence on financial distress conditions.

Working Capital to Total Assets Ratio This is a liquidity ratio that measures a company's ability to cover its short-term liabilities with sufficient assets owned by the company (Kasmir, 2017). This ratio compares working capital in the form of current assets minus current liabilities with the company's total assets (Christa & Mukti, 2023). The EBIT (Earnings Before Interest and Tax) to Total Assets Ratio reveals how much profit a company generates from its assets (Kasmir, 2017). Earnings before interest and tax (EBIT) to total assets measure a company's efficiency in generating profits before interest and taxes from the assets it uses in its operational activities (Idi & Barolla, 2021). Return on Assets (ROA) is a profitability financial ratio that evaluates a company's effectiveness in generating profits by utilizing its total assets (Kasmir, 2017). Return on assets measures by comparing the level of efficiency of a company in using assets to generate profits (Ardian & Wahyudi, 2023),

Companies experiencing financial difficulties will show symptoms through financial ratios that can serve as warning signals for the company. The Signal Theory introduced by Michael Spence in 1973 explains that companies will convey information about their condition to financial statement users through signals in the form of positive or negative information. The relevance of the signaling theory in the context of financial distress lies in how companies communicate their financial statement information both in positive and adverse conditions to investors (Septazzia, 2020).

This study uses the Grover method to analyze financial distress in insurance companies that experienced losses and a drastic decline in profits on the IDX from 2018 to 2023 by classifying companies into safe, gray, and potentially bankrupt zones. It also examines the influence of Grover ratios such as working capital to total assets, earnings before interest and tax to total assets, and return on assets on financial distress in these insurance companies. The purpose of this study is to analyze financial distress using the Grover method and to determine the effect of Grover's financial ratios on financial distress in insurance companies that have experienced losses and a drastic decline in profits on the Indonesia Stock Exchange (IDX) from 2018 to 2023.

2. Research Method

The method used in this research is descriptive quantitative. The population is all insurance companies listed on the IDX, totaling 18 companies. The sample obtained through purposive sampling consists of 9 insurance companies that experienced losses and a drastic decline in profits on the IDX from 2018 to 2023, namely PT Asuransi Bina Dana Artha Tbk. (ABDA), PT Asuransi Jasa Tania Tbk (ASJT), PT Asuransi Lippo General Insurance Tbk (LPGI), PT Asuransi Harta Aman Pratama Tbk (AHAP), PT Asuransi Bintang Tbk (ASBI), PT Asuransi Maximus

Graha Persada Tbk (ASMI), PT Bhakti Multi Artha Tbk (BHAT), PT Maskapai Reasuransi Indonesia Tbk (MREI), and PT Victoria Insurance Tbk (VINS).

All research data were obtained from secondary data using documentation techniques sourced from the official database of the Indonesia Stock Exchange (IDX) www.idx.co.id and processed quantitatively using Microsoft Excel and SPSS version 20. Independent Variable of this study are Working Capital to Total Assets, Earnings Before Interest and Tax to total asset, and Return on Asset with the Dependen Variable is financial distress. The data analysis techniques employed in this study include financial distress analysis using the Grover method, descriptive statistical tests, classical assumption tests, multiple linear regression tests, and hypothesis test.

3. Results

The values of the Working Capital to Total Assets (X1), EBIT to total asset (X2), and Return on Asset (X3) ratios that have been obtained will be analyzed using the Grover method first to determine insurance companies that are classified as safe, gray, or potentially bankrupt, before being tested for their influence on financial distress using classical assumption tests, multiple linear regression, and hypotheses. The Grover equation used is G = 1.650X1 + 3.404X2 – 0.016X3 + 0.057, with the criteria: G-Score ≥ 0.01 indicates a safe zone, between -0.02 to 0.01 indicates a gray zone, and ≤ -0.02 indicates a potential bankruptcy zone.

Table 1: Financial Distress Calculation Results with the Grover Method

NO	COMPANY CODE	YEAR	1.650* (X1)	3.404* (X2)	0.016* (X3)	G-Score	INFORMATION
1	ABDA	2018	-0.103	0.060	0.0004	0.013	Safe Zone
2	ABDA	2019	0.088	0.103	0.0005	0.247	Safe Zone
3	ABDA	2020	-0.010	0.221	0.0009	0.267	Safe Zone
4	ABDA	2021	-0.042	0.238	0.0010	0.252	Safe Zone
5	ABDA	2022	-0.011	0.146	0.0006	0.191	Safe Zone
6	ABDA	2023	0.172	0.088	0.0005	0.317	Safe Zone
Average						**0.215**	**Safe Zone**
7	ASJT	2018	0.539	0.211	0.0008	0.806	Safe Zone
8	ASJT	2019	0.591	0.020	0.0000	0.667	Safe Zone
9	ASJT	2020	0.828	-0.060	-0.0003	0.826	Safe Zone
10	ASJT	2021	1.026	0.007	0.0000	1.090	Safe Zone
11	ASJT	2022	1.013	0.007	0.0000	1.077	Safe Zone
12	ASJT	2023	0.964	0.033	0.0001	1.054	Safe Zone
Average						**0.920**	**Safe Zone**
13	LPGI	2018	-0.073	1.398	0.0004	1.382	Safe Zone
14	LPGI	2019	-0.078	1.455	0.0006	1.434	Safe Zone
15	LPGI	2020	1.079	0.135	0.0005	1.270	Safe Zone
16	LPGI	2021	0.960	0.171	0.0005	1.188	Safe Zone
17	LPGI	2022	0.854	0.111	0.0004	1.021	Safe Zone
18	LPGI	2023	0.599	0.018	0.0001	0.674	Safe Zone
Average						**1.161**	**Safe Zone**
19	AAP	2018	0.926	-0.145	-0.0007	0.839	Safe Zone
20	AAP	2019	0.753	-0.672	-0.0032	0.141	Safe Zone
21	AAP	2020	0.736	0.058	0.0003	0.850	Safe Zone
22	AAP	2021	0.925	0.094	0.0004	1.075	Safe Zone

NO	COMPANY CODE	YEAR	1.650* (X1)	3.404* (X2)	0.016* (X3)	G-Score	INFORMATION
23	AAP	2022	1.139	-0.026	-0.0001	1.170	Safe Zone
24	AAP	2023	1.160	0.005	0.0001	1.222	Safe Zone
Average						**0.883**	**Safe Zone**
25	ASBI	2018	0.777	0.059	0.0003	0.893	Safe Zone
26	ASBI	2019	0.862	0.032	0.0001	0.950	Safe Zone
27	ASBI	2020	0.746	0.073	0.0004	0.875	Safe Zone
28	ASBI	2021	0.643	0.044	0.0003	0.744	Safe Zone
29	ASBI	2022	0.731	0.021	0.0001	0.809	Safe Zone
30	ASBI	2023	0.664	0.024	0.0001	0.745	Safe Zone
Average						**0.836**	**Safe Zone**
31	ASMI	2018	0.649	0.255	0.0012	0.960	Safe Zone
32	ASMI	2019	0.624	0.038	0.0002	0.719	Safe Zone
33	ASMI	2020	1.140	-0.343	-0.0014	0.855	Safe Zone
34	ASMI	2021	1.209	0.043	0.0003	1.309	Safe Zone
35	ASMI	2022	1.162	-0.278	-0.0013	0.943	Safe Zone
36	ASMI	2023	1.260	0.044	0.0001	1.360	Safe Zone
Average						**1.024**	**Safe Zone**
37	BHAT	2018	0.965	0.014	0.0001	1.036	Safe Zone
38	BHAT	2019	1.577	0.023	0.0001	1.657	Safe Zone
39	BHAT	2020	0.445	0.061	0.0003	0.563	Safe Zone
40	BHAT	2021	-0.090	0.043	0.0002	0.010	Gray
41	BHAT	2022	-0.131	0.011	0.0001	-0.063	Potential Bankruptcy
42	BHAT	2023	-0.150	0.010	0.0000	-0.083	Potential Bankruptcy
Average						**0.520**	**Safe Zone**
43	MREI	2018	0.462	0.088	0.0007	0.606	Safe Zone
44	MREI	2019	0.410	0.108	0.0008	0.574	Safe Zone
45	MREI	2020	0.065	0.091	0.0004	0.213	Safe Zone
46	MREI	2021	0.206	-0.254	-0.0012	0.010	Gray
47	MREI	2022	0.189	0.034	0.0001	0.280	Safe Zone
48	MREI	2023	0.314	0.050	0.0002	0.420	Safe Zone
Average						**0.351**	**Safe Zone**
49	VINS	2018	0.565	0.062	0.0002	0.684	Safe Zone
50	VINS	2019	0.833	0.264	0.0012	1.153	Safe Zone
51	VINS	2020	0.266	0.067	0.0003	0.390	Safe Zone
52	VINS	2021	0.129	0.111	0.0006	0.297	Safe Zone
53	VINS	2022	0.165	0.105	0.0005	0.326	Safe Zone
54	VINS	2023	0.421	0.088	0.0004	0.566	Safe Zone
Average						**0.569**	**Safe Zone**

After conducting a financial distress analysis using the Grover method on nine insurance companies that experienced losses and a drastic decline in profits on the IDX in 2018-2023, namely ABDA, ASJT, LPGI, AHAP, ASBI, ASMI, BHAT, MREI, and VINS, it was found that all companies had an average G-Score that was in the safe zone. Although the companies' profits declined sharply to the point of incurring losses, this situation does not necessarily indicate financial distress, as their liquidity remains stable. However, although PT Maskapai Reasuransi Indonesia Tbk (MREI) and Bhakti Multi Artha (BHAT) showed conditions that were considered safe on average, the companies still need to be vigilant about the potential for financial distress because they were in the gray zone in 2021. Although MREI showed a stable G-score in the following year, BHAT showed deteriorating conditions and indicating the potential for bankruptcy in 2022 and 2023.

Next, to determine the influence of the three Grover financial ratios, namely Working Capital to Total Assets (WCTTA) as X1, Earnings Before Interest and Tax to total asset (EBITTA) as X2, and Return on Asset (ROA) as X3 on financial distress (GROVER) as Y, the following tests were carried out:

Table 2: Descriptive Statistical Test Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
X1_WCTTA	54	-.091	.956	.36946	.258130
X2_EBITTA	54	-.197	.427	.02539	.089343
X3_ROA	54	-.198	.077	.01087	.042793
Y_GROVER	54	-.083	2.311	.75291	.513535
Valid N (listwise)	54				

After the results of presenting variable statistical values such as mean, median, mode, and spread size such as standard deviation are found, further testing can be carried out on the regression model.

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		54
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	.00110849
Most Extreme Differences	Absolute	.080
	Positive	.080
	Negative	-.080
Kolmogorov-Smirnov Z		.588
Asymp. Sig. (2-tailed)		.880

a. Test distribution is Normal.

b. Calculated from data.

Table 3: Normality Test Results of One Sample K-S

The results of the normality test using the Kolmogorov-Smirnov test show a significance value (Asymp. Sig. 2-tailed) of 0.880. Since this value is greater than the significance level of $\alpha = 0.05$, it indicates that the data are normally distributed.

Table 4: Multicollinearity Test Results

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	X1_WCTTA	.854	1.171
	X2_EBITTA	.625	1.599
	X3_ROA	.670	1.493

a. Dependent Variable: Y_GROVER

The results of the multicollinearity test show that the tolerance values for the variables WCTTA, EBITTA, and ROA are 0.854, 0.625, and 0.670, respectively, which are greater than 0.10. These tolerance values are followed by VIF values of 1.171, 1.599, and 1.493, respectively, all of which are below the threshold of 10. Therefore, it can be concluded that the three independent variables are free from multicollinearity.

Table 5: Results of the Heteroscedasticity Test (Glejser Test)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.001	.000		4.905	.000
	X1_WCTTA	.000	.000	.204	1.384	.173
	X2_EBITTA	.001	.001	.089	.516	.608
	X3_ROA	-.003	.002	-.178	-1.069	.290

a. Dependent Variable: ABRESID

The results of the heteroscedasticity test with the glejser test showed that the Sig. value of the WCTTA variable was 0.173, the EBITTA variable was 0.608, and the ROA variable was 0.290. The significance value of the three variables are of >0.05, it can be concluded that the regression model does not have heteroscedasticity.

Table 6: Autocorrelation Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000[a]	1.000	1.000	.001095	2.149

a. Predictors: (Constant), X3_ROA, X1_WCTTA, X2_EBITTA

b. Dependent Variable: Y_GROVER

The results of the autocorrelation test using the Durbin-Watson (DW) method yielded a DW value of 2.149 at α = 0.05. Durbin Watson's table at α = 0.05 shows the value of dU = 1.6800, so that the value of 4-dU = 2.320 is obtained. It states that the calculated DW value is in the area dU = 1,680 < dW = 2,149 < 4-dU = 2,320 and it can be concluded that the regression model of this study does not occur or is free from autocorrelation.

Table 7: Multiple Linear Regression Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.057	.000		204.700	.000
	X1_WCTTA	1.650	.001	1.022	2723.266	.000
	X2_EBITTA	3.406	.002	.701	1599.233	.000
	X3_ROA	-.022	.004	-.002	-5.139	.000

a. Dependent Variable: Y_GROVER

Based on the results of multiple linear regression testing, the equations formed in the variables of this study are as follows:

$$Y = 0.057 + 1.650\,X1 + 3.406\,X2 - 0.022\,X3 + \epsilon$$

The constant (α) has a positive value of 0.057, indicating a direct relationship between the independent variable and the dependent variable. The regression coefficient value for the WCTTA (X1) variable is 1.650, which indicates a positive or direct relationship between the WCTTA variable and financial distress. Thus, a 1% increase in Working Capital to Total Assets (WCTTA) will cause a 1.650 increase in financial distress, assuming all other variables remain constant. The regression coefficient value for the EBITTA (X2) variable is 3.406, indicating a positive or direct

relationship between the EBITTA variable and financial distress. Thus, every 1% increase in EBIT to Total Assets (EBITTA) will cause a 3.406 increase in financial distress, assuming other variables remain constant. The regression coefficient value for the ROA (X3) variable is -0.022, indicating a negative or inverse relationship between the ROA variable and financial distress. Thus, every 1% increase in Return on Assets (ROA) will cause a decrease in financial distress of 0.022, assuming other variables remain constant.

Table 8: Partial Test Results (T Test)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.057	.000		204.700	.000
	X1_WCTTA	1.650	.001	1.022	2723.266	.000
	X2_EBITTA	3.406	.002	.701	1599.233	.000
	X3_ROA	-.022	.004	-.002	-5.139	.000

a. Dependent Variable: Y_GROVER

The results of the T partial test show that working capital to total assets (WCTTA) has a significant effect on financial distress. This is evidenced by the *t-calculated* value of 2723,266 exceeding *the t-table* of 1.67356 (df = 54) with a significance value of 0.000 < 0.05. Therefore, it can be concluded that WCTTA partially has a significant positive influence on *financial distress*. EBIT to Total Assets (EBITTA) resulted in a t-calculated value of 1599,233 exceeding *the t-table* of 1.67356 (df = 54) with a significance value of 0.000 < 0.05. Therefore, it can be concluded that EBITTA partially has a significant positive influence on *financial distress*. Return on Asset (ROA) yields a t-calculated value of -5.139 which is smaller than *the t-table* of 1.67356 (df = 54) with a significance value of 0.000 < 0.05. Therefore, it can be concluded that ROA partially has a significant negative influence on *financial distress.*

Table 9: Simultaneous Test Results (F Test)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.985	3	3.328	2773487.577	.000[b]
	Residual	.000	50	.000		
	Total	9.985	53			

a. Dependent Variable: Y_GROVER

b. Predictors: (Constant), X3_ROA, X1_WCTTA, X2_EBITTA

Based on the results of the simultaneous test F, the variables working capital to total asset (X1), EBIT to total asset (X2) and Return on Assets (X3) obtained a calculated F value of 2773487,577, which is a figure greater than the F value of the table of 2.776 with a significance value of 0.000 < 0.05. Therefore, the three variables are working capital to total asset (X1), EBIT to total asset (X2) and Return on Assets (X3) have simultaneously affect financial distress.

Table 10: Determination Coefficient Test Results (Adjusted R2)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000[a]	1.000	1.000	.001095	2.149

a. Predictors: (Constant), X3_ROA, X1_WCTTA, X2_EBITTA

b. Dependent Variable: Y_GROVER

Based on the results of the coefficient of determination test, an Adjusted R Square value of 1 was obtained, fulfilling the equation $0 \leq 1 \leq 1$, which indicates that 100% of the all variations in the dependent variable of financial distress can be explained by the independent variables WCTTA, EBITTA, and ROA. This value shows that the regression model is able to explain all changes that occur in financial distress, so that this model has a high level of suitability for describing the relationship between variables.

Discussion:

Working Capital to Total Assets has a significant positive effect on financial distress. Based on research conducted by Aditya et al., (2022) it can be concluded that the higher the Working Capital to Total Assets ratio due to high total assets sourced from debt, the higher the risk of default, thereby increasing the likelihood of the company experiencing financial distress. These findings are in line with the research conducted by Tamudia et al., (2022) and Ariska et al., (2021) which states that Working Capital to Total Assets has a significant positive effect on financial distress

Earnings Before Interest and Tax to Total Assets has a significant positive effect on financial distress. Based on research conducted by Aditya et al., (2022) companies that tend to experience operational losses rather than profits indicate that the management of all assets has not been carried out effectively. It can be concluded that the greater the decline in profit compared to total assets, the greater the likelihood of a company experiencing financial distress. These findings are in line with the research conducted by Aditya et al., (2022) and Hidayanita & Zafrizal, (2023) which states that Earnings Before Interest and Tax to Total Assets have a significant positive effect on financial distress.

Return on Assets has a significant negative effect on financial distress. Based on research conducted by Hariansyah & Soekotjo, (2020) the lower the value of Return on Assets or the company's ability to generate profits, the greater the potential for the company to experience financial distress. Theese findings are in line with the research conducted by Mahfullah & Handayani (2022) and Kartika & Hasanudin (2019) which states that Earnings Before Interest and Tax to Total Assets have a significant positive effect on financial distress.

Working Capital to Total Assets, Earnings Before Interest and Tax to Total Assets, and Return on Assets simultaneously have a significant effect on financial

distress. The results of this study are in line with the research conducted by Putri & Werastuti, (2020) which results that the ratio of working capital to total assets, EBIT to total Assets and Return on Assets in the grover method affects financial distress. Also supported by research Aditya et al., (2022) which results in the working capital to total assets and EBIT to total assets have a significant effect on financial distress, as well as research conducted by (Silvia & Yulistina, 2022) which states that Return on Assets has a significant effect on financial distress.

4. Conclusions

Based on Grover's analysis of insurance companies that experienced a drastic decline in profits (2018-2023), the results show that ABDA, ASJT, LPGI, AHAP, ASBI, ASMI, BHAT, MREI, and VINS are on average in the safe zone (G-Score), but BHAT is indicated to have the potential bankrupt in 2022 and 2023. The findings also reveal that Working Capital to Total Assets (WCTTA) and Earnings Before Interest and Tax to Total Assets (EBITTA) have a significant positive effect on financial distress, while Return on Assets (ROA) has a significant negative effect on financial distress. For further research, it is recommended to expand the sample variation to include companies other than insurance companies, add other bankruptcy variables or models, and extend the research period beyond six years to make the results more comprehensive and relevant to current conditions.

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