THE IMPACT OF GREENWASHING ON FIRM VALUE DURING THE PERIOD BEFORE AND DURING THE COVID-19 CRISIS IN INDONESIA

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Abstract - This study examines the effect of greenwashing on firm valuation in Indonesia using panel data from 2018 to 2022. The research aims to determine whether greenwashing negatively impacts firm value, particularly during times of crisis. The results indicate a significant negative relationship between greenwashing practices and firm value, especially during crisis periods such as the COVID-19 pandemic. These findings underscore the importance of transparency in sustainability reporting and suggest that investors are becoming more critical of greenwashing claims. This study contributes to the growing body of literature on corporate sustainability and greenwashing, offering valuable insights into how misleading environmental claims can affect firm performance. It also has important implications for policymakers, investors, and companies in encouraging genuine sustainability efforts. Firms are urged to adopt authentic and verifiable sustainability practices, as failure to do so may erode investor trust and firm value. Overall, the study emphasizes the risks associated with deceptive sustainability reporting in a more environmentally conscious market.

Keywords: Greenwashing; Firm Value; Crisis; ESG; Statistical Analysis

1. INTRODUCTION

Companies tend to be increasingly concerned about environmental and social issues, prompting them to demonstrate their commitment by being responsible for their activities. According to (Shapsugova, 2023), in an increasingly global world, the role of companies has changed perspective. Profit as the main factor in economic growth was the primary perspective in the past, but now companies must take actions beyond profit, namely engaging in sustainable business practices. Sustainable business is a business concept that focuses on sustainability dimensions, not only on the company's economic profit but also on how the company effects society and the community intending to minimize negative effects on the environment and society to create long-term value for the company, making it an attractive proposition for stakeholders. However, in practice, not all companies are committed to implementing sustainable business practices. This is due to various challenges faced by companies, namely the phenomenon of greenwashing. Greenwashing is the action of a company that presents a positive image to external parties that is not practiced, to enhance the

brand image to gain economic benefits. According to (Delmas & Burbano, 2011), some factors drive the actions of greenwashing. The first factor is the increasing consumer demand for environmental awareness, which drives companies to engage in greenwashing to meet market demands. The second factor is the culture and policies within the organization. Companies that prioritize openness and ethics are less likely to engage in greenwashing, whereas companies that prioritize profit over ethics and lack transparency in environmental matters are more likely to engage in greenwashing. The third factor is the pressure to meet certain performance targets without strict supervision. Fourth, the lack of strict supervision and sanctions encourages companies to continue such actions.

The crisis conditions during the COVID-19 pandemic effected the global economy, including Indonesia. The COVID-19 pandemic has created difficult economic conditions, leading companies to be more inclined to engage in greenwashing to maintain a positive image without actually taking sustainable actions, thereby increasing the firm's value. However, several studies show that the strategies employed by companies yield opposite results. According to research conducted by (Selaković et al., 2024), during periods of crisis, companies involved in greenwashing often face stricter scrutiny from the media and the public, which can lead to regulatory sanctions and significant financial losses. However, on the contrary, companies committed to sustainable actions tend to withstand crises better, thanks to stronger support from stakeholders and a better reputation, thereby improving financial performance and creating long-term value (Ms. S. Shireesha et al., 2024). With differing views on the effect of greenwashing actions, there is a need to understand the effect of greenwashing on firm value in Indonesia. Therefore, this research discusses the effect of greenwashing on firm value before the crisis period (pre-pandemic), specifically in the years 2018-2019, and during the crisis period (pandemic) from 2020-2022. The selection of companies to be analyzed are those that already have sustainability reports. This serves as a reference that the company in question has a long-term commitment to conducting sustainable business practices. Is there an influence of greenwashing on the value of companies in Indonesia before the COVID-19 crisis? Is there an influence of greenwashing on the value of companies in Indonesia during the COVID-19 crisis?

2. RESEARCH METHODOLOGY

The research data used is secondary data from S&P Capital IQ and ESG Intelligence. The data obtained from S&P Capital IQ consists of financial statements to determine the values of Tobin's Q, Sales Growth (SG), Leverage (LEV), Working Capital to Total Assets (WCTA), Return on Asset (ROA), and Total Assets (TA), while ESG Intelligence is needed to determine the greenwashing score from the calculation of ESG score and ESG disclosure for the years 2018-2022. The data population in this study consists of 97 companies. In this study, three variables are used, consisting of dependent variables, independent variables, and control variables. The dependent variable is the variable that is influenced by other variables, so if other variables change, the dependent variable will be effected. Tobin's Q ratio is one of the ratios that measure a firm's value based on the value of tangible and intangible assets relative to the market value.

The independent variable is a variable that does not depend on other variables, so this variable can be altered to see its effect on the dependent variable. The first and second empirical models state that the independent variable is the greenwashing score, which is the difference between the ESG disclosure score and the actual ESG score. A more negative greenwashing score indicates that the real ESG disclosure is higher compared to the ESG disclosure, suggesting a higher likelihood of greenwashing actions. On the other hand, if the

real ESG score is lower compared to the ESG disclosure, it is assumed that the company's greenwashing actions are lower. The calculation of the greenwashing score is as follows.

Greenwashing score = $\frac{\text{ESGdis,i,t-ESGdis}}{\sigma \text{dis}} - \frac{\text{ESGreal,i,t-ESGreal}}{\sigma \text{real}}$

Where:

ESGdis, i,t is the ESG disclosure score of company i in year t ESGreal, i, t is the actual ESG performance score of company i in year t ESGdis is the average ESG disclosure score of all companies ESGreal is the average actual ESG performance score of all companies σ dis is the standard deviation of the ESG disclosure score oreal is the standard deviation of the actual ESG performance score

In simpler terms, the greenwashing score is calculated by taking the difference between a company's ESG disclosure and its actual ESG performance, each normalized by subtracting the average and dividing by the standard deviation. A more negative score indicates a higher likelihood of greenwashing. This is because the real ESG performance is higher than the ESG disclosure, suggesting the company is overstating its sustainability efforts. Conversely, a less negative or positive score suggests lower greenwashing activity. The ESG score itself is derived from the division of disclosure by the index, where disclosure is an item disclosed based on GRI (Global Reporting Initiative) while the index is an item that should be disclosed by the company based on GRI.

Control variables are variables that can limit the influence of unexamined external factors, thereby keeping the relationship between independent and dependent variables constant. The control variables in this study are Sales Growth (SG), Leverage (LEV), Working Capital to Total Assets (WCTA), Total Assets (TA), Return on Assets (ROA), and GWSDummy. An empirical model for analysis in this research using quantitative techniques. The technique with the research variables is measured through numbers. The form of the regression equation is based on the hypothesis:

 $FVi,t = \alpha 0 + \beta 0 GWSi,t + \beta 1 GWS*COVID19i,t + \gamma 1 SGi,t + \gamma 2 LEVi,t + \gamma 3 WCTAi,t + \gamma 1 SGi,t + \gamma$ γ 4TAi,t + γ 5ROAi,t + $\boldsymbol{\varepsilon}$ i,t

3. RESULT AND DISCUSSION

3.1 Descriptive Analysis

Descriptive statistical analysis is conducted to determine the magnitude of the mean, maximum, minimum, and standard deviation of each variable.

Tabel 1. Results of Descriptive Analysis								
Variable	Obs	Mean	Std. Dev.	Min	Max			
TOBINSQ	475	1.712	2.066	0.387	17.678			
GWSCORE	475	-3.046	12.922	-59.55	50.13			
SG	475	8.962	30.778	-88.391	183.581			
WCTA	475	0.005	0.378	-1.079	0.901			
LEV	475	0.636	1.038	-3.996	4.631			
ROA	475	0.040	0.111	-0.661	0.921			
ТА	475	16.926	1.798	11.943	21.413			

Based on Table 1, Tobin's Q value has an average of 1.712 with a standard deviation of 2.066, and a minimum value of 0.387 to a maximum value of 17.678. The average Tobin's Q value of 1.712 indicates that the market values the company higher than the value of its physical assets. This indicates that there is a high value of intangible assets, which presents potential for future growth, leading the market to have positive expectations for the company. The greenwashing score has an average of -3.046 with a standard deviation of 12.922, and a minimum value of -59.55 to a maximum value of 50.13. The greenwashing score can be interpreted such that the smaller the greenwashing score, the better the company is at disclosing its activities that effect the environment, society, and governance. The average sales growth is 8.962 with a standard deviation of 30.778, and a minimum value of -88.391 to a maximum value of 183.581. The positive sales growth indicates that there is a positive growth of 89.62%. Working capital to asset averages 0.005 with a standard deviation of 0.378, with a minimum value of -1.079 and a maximum value of 0.901. The average value of 0.005 indicates that the company's working capital is only about 0.5% of its total assets. The average leverage value is 0.636 with a standard deviation of 1.038, ranging from a minimum of -3.996 to a maximum of 4.631.

This average leverage explains that the company uses 63.6% of its total assets for operational financing. The average ROA value is 0.04 with a standard deviation of 0.111, and a minimum value of -0.661 to a maximum value of 0.921. The average ROA result can be explained by each rupiah of assets owned by each company generating a profit of 4. The average total assets amount to 16,926 with a standard deviation of 1,798, a minimum value of 11,943, and a maximum value of 21,413. The average total asset value serves as an indication of the average measurement of company size. A large range and standard deviation indicate that the company sizes in this study include relatively large and relatively small companies. The variables before and during the crisis in this study are explained using dummy variables. The crisis period is measured using a dummy variable for the years 2020-2022 with a value of 1, while the pre-crisis period is measured using a dummy variable for the years 2018-2019 with a value of 0. The selection of the panel data regression model in this study was conducted to obtain accurate and efficient estimates by considering statistical tests. Model selection testing can be conducted in several ways, namely the Chow Test, Hausman Test, and Lagrange Multiplier Test. The Chow test resulted in the Fixed Effect Model as the best model with an F test value of 0.0000. The Hausman Test results in a significance value of 0.0000, which is lower than the 5% (0.05) threshold, indicating that the Fixed Effect model is the best. The classical assumption test in this study was conducted by performing two tests, namely the heteroscedasticity test and the autocorrelation test. The heteroscedasticity test in this study was conducted using the Breusch-Pagan test.

The result heteroscedasticity test, the probability value generated is less than 0.05, so it can be concluded that this regression model has heteroscedasticity, rejecting the H_0 model. This study conducted an autocorrelation test using the Wooldridge test. the results of the autocorrelation test indicate that there is autocorrelation in the research model because the probability result is less than 0.005. Based on the results of the model test that has been conducted, it show that the fixed effect is the best model in this study. However, the classical assumption tests that have been conducted also indicate the presence of heteroscedasticity and autocorrelation. Therefore, further testing is necessary to address the issues of heteroscedasticity and autocorrelation with panel data regression.

3.2. The Effect of Greenwashing on Firm Value During The Period Before The COVID-19 Crisis in Indonesia

Variable	Coeficient	T-stat	Probability			
GWSCORE	-0.002	-1.000	0.372			
SG	-0.002	-1.530	0.200			
WCTA	-1.008	-1.570	0.191			
LEV	0.017	0.250	0.818			
ROA	2.007	4.140	0.014**			
TA_	-0.048	-0.220	0.836			
cons	2.454	0.690	0.527			
Number of obs	475					
Number of groups	97					
F test	106.11					
Probability	0.0002					
R-Square	0.0265					

Tabel 2. Results of Hypothesis Testing Before the Crisis Period Covid-19

Table 2, the pre-crisis test shows that the R-Square value produced is 0.0265, meaning that 2.65% of the firm value variable can be explained by the greenwashing score variable, sales growth, and all other control variables, while the remaining 97.35% is influenced by other variables outside this study. The results of the panel data regression before the crisis period produced a significant and positively influential ROA variable with a positive coefficient value and a probability value of 0.014, which is less than 0.05. The value of the greenwashing score variable and the control variables (sales growth, working capital to asset, leverage, and total asset) have an insignificant influence because all the probability values of each variable are greater than 0.05. The values of the greenwashing score, sales growth, working capital to an asset, and total asset hurt the firm's value, so as the values of the greenwashing score, sales growth, working capital to an asset. On the other hand, the value of leverage has a positive effect on the firm's value, so as the value of leverage increases, the firm's value also increases. Based on the data analysis results before the crisis, it is concluded that the first hypothesis in this study is accepted, although not significantly.

3.3 The Effect of Greenwashing on Firm Value During The COVID-19 Crisis in Indonesia

Variable	Coeficient	T-stat	Probability			
Crisis	-0.445***	-7.010	0.002			
CrisisGW	-0.006***	-6.970	0.002			
SG	-0.002	-1.640	0.175			
WCTA	-1.175	-1.630	0.177			
LEV	-0.015	-0.260	0.806			
ROA	1.845**	4.020	0.016			
TA_	0.329	1.020	0.365			
cons	-3.651	-0.680	0.535			
Number of obs	475					
Number of groups	97					
F test	16.85					
Probability	0.0080					
R-Square	0.0680					

 Tabel 3. Hypothesis Test Results During the Crisis Period COVID-19

Based on Table 3, it can be explained that the results of the regression test during the crisis period produced an R square value of 0.0680, meaning that 6.80% of the firm value variable can be explained by the greenwashing score variable, the crisis period, and all other control variables, while the remaining 93.20% is influenced by other variables outside this study. The greenwashing variable on firm value during the crisis has a negative and significant effect during the crisis. The probability value generated for CrisisGW is 0.002, which is less than 0.05. The coefficient value of -0.06 indicates that the higher the greenwashing score, the lower the firm's value. This indicates that the more a company provides false information regarding sustainability reports, the more investor distrust in the company increases, thereby effecting the firm's value. This result is supported by the crisis variable, which yields a probability value of 0.02 with a negative coefficient value of -0.445. The ROA variable has a positive and significant effect on the firm's value. The probability result for that variable is 0.016, which is less than 0.05. The coefficient value produced is 1.845. The coefficient value and the probability result generated for the ROA variable can explain that the higher the company's ROA value, the higher the firm's value will be. This indicates that during times of crisis, the company's financial performance tends to withstand the economic crisis that occurs. The sales growth variable has a negative and insignificant effect on the firm's value.

The probability result of the sales growth variable is 0.175, which is greater than 0.05. The resulting coefficient value is -0.0017. A probability value greater than 0.05 indicates that the variable does not have a significant effect on the firm's value. The negative coefficient value indicates that during a crisis, the greater the sales growth, the lower the firm's value. The negative effect of sales growth on firm value during a crisis indicates that there is a decrease in the company's sales targets, necessitating a strategy of lowering sales prices. This causes the profit margin generated by the company to decrease. The working capital to asset variable of 0.177 is greater than 0.05. The resulting coefficient value is -1.1749. The probability result greater than 0.05 means that working capital to assets has an insignificant effect on the firm's value. The negative coefficient value indicates that during a crisis, the higher the working capital to asset ratio, the lower the value of the company. Then, the leverage variable has a negative and insignificant effect on the firm's value. The probability value produced is 0.806, which is greater than 0.05. The leverage coefficient value is -0.014. A probability value greater than 0.05 indicates that the leverage variable is not significant to the firm's value. The negative coefficient value on the leverage variable indicates that during a crisis, the higher the leverage value, the lower the firm value. The value of the company has a positive but insignificant effect on total assets. The probability value produced is 0.365, which is greater than 0.05. The coefficient value for total assets is 0.329. A probability value greater than 0.05 indicates that the total asset variable is not significant to the company. The positive coefficient value indicates that during a crisis, the higher the total asset value, the higher the firm value.

Based on the stages of model testing up to regression with panel data that have been conducted, it shows that in Indonesia, greenwashing does not have a significant effect on firm value before the crisis period. The insignificant effect on the firm's value is caused by several factors. The first factor is that before the pandemic period (2020-2022), sustainability reports were not mandatory for companies to disclose. Sustainability reports are an important instrument in the ESG reporting approach that illustrate the company's involvement in addressing climate, social, and stakeholder risks in the company's activities.

The second factor is the lack of accurate standard measurements in determining the ESG score. The implementation of ESG in Indonesia first appeared in 2016. In the same year, several companies had already reported sustainability reports. However, adjustments in disclosing sustainability reports, indicate that the company has not accurately conveyed the results of the implementations carried out in the company. There are indications that the claims made are not accurate, leading to the company being interpreted as making "green claims" when, in reality, it has not implemented green claims. Based on these factors, the company has not yet developed a perspective on corporate sustainability. The view on the company's business growth before the COVID-19 pandemic is still the main focus. This is supported by the company's limited understanding of the sanctions and benefits in the effort to run a sustainable business. Therefore, the issue regarding the effect of greenwashing on firm value becomes insignificant. The research conducted by (P. Chen & Dagestani, 2023) explains the effect of greenwashing on firm value by exploring the role of board characteristics in China. The background of this research discusses the increasing environmental pressure on companies, which encourages them to actively disclose environmental responsibility reports.

On the other hand, there are concerns that companies may engage in insincere actions in disclosing their environmental responsibilities. This is because it will effect sustainability reports and the firm's value. The results of this study explain that companies engaging in greenwashing actions have a positive effect on company performance, which correlates with the firm's value. The research conducted by (Miao et al., 2023) explains that corporate sustainability actions, emphasizing the balance between social, economic, and environmental factors through green development models and sustainable resource practices, are necessary actions to undertake. However, in the implementation of these actions, there are challenges in balancing efficiency and cost pressures, which leads to the occurrence of corporate greenwashing. This research explains the environmental performance of employees in relation to the company's greenwashing environment, through the mediating variable of organizational values in gas service and chemical production companies in China. The role of this mediating variable is to identify the alignment of employee performance values with the effect of greenwashing, which subsequently effects environmental performance. The result of the research indicates that the greenwashing actions taken by the company harm the environmental performance of the company's employees. This is caused by the misalignment between employee values and organizational values. This influence shows that organizations need to minimize greenwashing behavior to align organizational values with employee values, thereby improving environmental performance. Based on this research, it is implicitly explained that the factor of greenwashing is indirectly influenced by environmental performance, so maintaining a positive environment will effect the firm's value, with employee performance being one of the important aspects to consider.

The subsequent research conducted by (Testa et al., 2018) discusses the pressures faced in balancing market-based logic and environmental logic with a panel of 3,490 companies over the period 2002-2014. The balancing of this logic is caused by the potential difference between actual actions and the commitments expressed. This measurement is conducted using the Green Practice Index (GPI) and the Green Communication Index (GCI) to identify that alignment, thereby enabling the identification of greenwashing and brownwashing behaviors. This identification needs to be carried out to reduce the misalignment that effects negative perceptions and effects on the company's finances. Based on this research, it was found that companies engaging in greenwashing practices do not provide financial benefits to the company. The regression model, producing negative but insignificant coefficients, serves as an indication that the market does not respond positively when companies make false environmental claims. The analysis of brownwashing practices yields the same results as greenwashing, meaning that companies that do not effectively communicate their environmental commitments tend to have low market value and operational performance.

Based on several previous studies that have been conducted, some results support and differ from the author's research. The differences observed are assumed to be caused by the differing characteristics of the countries. The characteristics of China and Indonesia differ despite having similarities, as both are classified as developing countries. However, there is an assumption that differences in institutional and legal factors in a country that lead to environmental regulations could be a factor in determining environmental communication strategies. Additionally, the research conducted with an approach to board characteristic variables in explaining the effect of greenwashing on firm value can be a factor in the difference in the author's research results compared to previous studies. Greenwashing during a crisis has a significant effect on the value of the company. The crisis period during the COVID-19 pandemic from 2020-2022 caused global economic growth to weaken, which in turn effected the value of companies, leading to a decline. The weakening economic conditions have caused investor apprehension towards making investments. The research conducted (Bodhanwala & Bodhanwala, 2023) [8] compared the effect of ESG on firm value in India during the pre-crisis and post-crisis periods, with quarterly data processing each year from 2018 to 2022. The results of this study explain that during the crisis period, the influence of greenwashing on firm value is not significant and does not have a negative effect. The factor of investor indifference towards a company's ESG performance level influences the results of the research.

Therefore, the projections regarding ESG values and investor attitudes indicate that there are actually instances of greenwashing that are not explicitly explained in the research. This is due to the suspicion that the disclosed ESG score is not fully accurate and the assumption that a high ESG score for environmentally compliant companies actually indicates greenwashing. On the contrary, there is also an assumption that a low ESG score could indicate that the company is engaging in sustainability actions. The research (Meier et al., 2024) offers a different perspective. This research provides a fundamental approach through stock market performance. Stock market performance reflects the movement of a company's stock prices in the capital market, making it a direct proxy for investors' views on the firm's value. The sample used in this study is the STOXX Europe 6000 and S&P 50, with an approach examining the relationship between companies' ESG compliance and stock prices during the economic pressure period, specifically during the COVID-19 pandemic. The results of this study indicate that companies adhering to ESG performance enhance stock market resilience during the pandemic. Although the results of this study also explain that the ESG components, namely the environmental and social factors, have a significant contribution to stock market resilience compared to the governance component. Therefore, the improvement in stock market performance will increase market capitalization, and one of the components of market capitalization becomes the basis for calculating the firm's value, thus creating a good correlation. Based on this research, it provides the view that during a crisis, companies that comply with ESG and report ESG correctly will survive and have an effect on the firm's value. The presence of a transparent disclosure attitude will correlate with increasing investor trust in the company, which in turn correlates with an increase in the firm's value. Therefore, the previous research conducted serves as the author's assumption and projection that companies that are not transparent in disclosing sustainability reports or

provide misleading disclosures will decrease investor trust, leading to a decline in the firm's value in the long term. This correlates with the research results conducted by the author.

The finding that greenwashing negatively impacts firm value, particularly during crises, can be explained through several well-established theories. Firstly, from a valuation theory perspective, these results align with the principle that a firm's value is a function of its expected future cash flows, discounted by the appropriate cost of capital. Greenwashing introduces uncertainty regarding the sustainability of a company's practices and its long-term financial performance. Investors, perceiving this increased risk, tend to discount the firm's future cash flows more heavily, leading to a lower valuation.

Secondly, investor behavior theory offers additional insights. Investors are increasingly incorporating ESG factors into their decision-making processes. Greenwashing can be viewed as a breach of investor trust. Studies in behavioral finance suggest that investors react negatively to perceived deception, leading to a sell-off of shares and a decline in firm value. During crises, this effect is amplified as investors become more risk-averse and seek out companies with transparent and sustainable practices. The research results during the crisis period show that the greenwashing variable has a negative and significant effect on firm value. This is supported by the ROA variable, which has a positive and significant effect on firm value during and before the crisis.

Thirdly, signaling theory posits that companies use disclosures to signal their quality to investors. Authentic sustainability reporting can be a positive signal, attracting investors, and enhancing firm value. Conversely, greenwashing acts as a deceptive signal, which, when detected, can severely damage a company's reputation and credibility. The negative impact is particularly pronounced during crises when stakeholders pay closer attention to corporate behavior and transparency. These findings support the idea that deceptive signals related to ESG are penalized by the market, resulting in decreased firm value.

4. CONCLUSION

Based on the research that has been conducted, the conclusion is that in the pre-crisis period, the greenwashing variable had a negative and insignificant effect. The variables of sales growth, working capital to assets, and total assets show negative but insignificant effects on the firm's value. The leverage variable shows a positive but insignificant effect on the firm's value. During the COVID-19 crisis, it was found that the greenwashing variable had a negative and significant impact on the firm's value. Then, the variables of sales growth, working capital to assets, and leverage have a negative but not significant effect on the firm's value. The variable total assets have a positive but insignificant effect on the firm's value. The variable total assets have a positive but insignificant effect on the firm's value. The variable has a positive and significant impact on the firm's value during the crisis and before the crisis.

Managers should prioritize genuine sustainability practices and transparent reporting over superficial greenwashing efforts. Stakeholder trust, built upon authentic ESG performance, is crucial for maintaining firm value, especially during economic downturns. Companies should invest in robust ESG frameworks and ensure accurate, verifiable disclosure of their sustainability initiatives. Furthermore, aligning organizational values with employee values is essential to minimize greenwashing behavior and improve environmental performance. Regulators should establish and enforce stricter standards for sustainability reporting to prevent greenwashing and promote transparency. This includes developing standardized metrics for ESG performance and implementing rigorous auditing mechanisms to ensure the accuracy of corporate disclosures. Furthermore, providing clear guidelines and incentives for companies to adopt sustainable business practices can foster a more responsible and resilient corporate sector. The Government needs to take a role in providing understanding regarding sanctions and benefits in an effort to run a sustainable business.

5. LIMITATION

Research limitations are necessary to avoid deviating from the problem formulation to be discussed, which are first, the researcher analyzes companies that have ESG score and ESG disclosure data during the period of 2018-2022; second, the criteria used in the sample selection are companies that already have sustainability reports in Indonesia; and third, this research uses descriptive statistical analysis and hypothesis testing using regression tests on Stata software.

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