

# The Level of Efficiency Comparison of Indirect Hypothesis Testing and The Total Effect of Bootstrap and Jackknife Resampling Based on Path Analysis (Studies on SRD and Firm Value Determination Models)

S. Farisyi<sup>1,\*</sup>, M. Al Musadieq<sup>1</sup>, H. N. Utami<sup>1</sup>, C. R. Damayanti<sup>1</sup>, and Solimun<sup>2</sup>

<sup>1</sup>Faculty of Administrative Sciences, Brawijaya University, Malang, Indonesia

<sup>2</sup>Faculty of Mathematics and Natural Sciences, Brawijaya University, Malang, Indonesia

Received: 11 Jan. 2023, Revised: 7 Mar. 2023, Accepted: 3 Apr. 2023.

Published online: 1 May 2023

**Abstract:** The main of objective study is to find out and analyze the direct impact of Corporate Governance Structure, Corporate Posture, Board Qualification & Experience, Sustainability Reporting Regulations on Sustainability Reporting Disclosure, and Firm Value. Secondary data was taken from the Company's Annual Report and Sustainability Reporting from 2013-2020. Path Analysis based on Jackknife and Bootstrap resampling was carried out to find the best coefficient. The results prove that Corporate Governance Structure, Board Qualification & Experience, and Sustainability Reporting Regulations have a significant effect on Sustainability Reporting Disclosure, but Corporate Posture does not have a significant effect on Sustainability Reporting Disclosure. Corporate Governance Structure and Sustainability Reporting Disclosures have a significant effect on Firm Value. In addition, the indirect effect results prove that Corporate Governance Structure followed by Sustainability Reporting Disclosure will increase the Firm Value, Corporate Posture followed by Sustainability Reporting Disclosure will decrease the Firm Value, Board Qualification & Experience followed by Sustainability Reporting Disclosure is not significant in increasing the Firm Value, Sustainability Reporting Regulations followed by Sustainability Reporting Disclosure will increase the Firm Value. This study develops the concepts of Corporate Governance Structure, Corporate Posture, Board Qualification & Experience, Sustainability Reporting Regulations regarding Sustainability Reporting Disclosure, and Firm Value.

**Keywords:** Corporate Governance Structure, Corporate Posture, Board Qualification & Experience, Sustainability Reporting Regulations, Sustainability Reporting Disclosure, Firm Value

## 1 Introduction

Developed initially by Wright in 1934 [1], path analysis is used to test models of relationships between variables in the form of causation [2]. Path analysis is used to determine the direct effect of exogenous variables on endogenous variables and explain whether there are indirect influences that exogenous variables exert on endogenous variables through endogenous mediation or not. Path analysis is an extension of multiple regression analysis that can facilitate hypothesis testing of relationships between complex variables. In path analysis, the correlation between variables is connected with the parameters of the model formed by the path diagram or path chart.

In general, the application of path analysis only comes down to the calculation of direct effect and total effect, that is, using direct effect testing based on partial and simultaneous tests using ANOVA. Meanwhile, in reality, statistical modeling using path analysis requires indirect effect testing, as in the case of sustainability reporting disclosure and firm value. To increase the firm value and maintain the sustainability of reporting disclosures, it is desirable to know what factors have a significant effect on these two aspects.

### 1.1 Research problem

Based on previous research that has been described above, it is proven that in certain cases, the Sobel test cannot be used because it produces an indirect relationship with the insignificant result. Therefore, it is necessary to develop a more sensitive test in capturing the relationship between indirect effects. This study developed the calculation of direct and indirect effects using bootstrap and jackknife resampling.

### 1.2 Objective of the paper

\*Corresponding author e-mail: [sofwanfarisyi@student.ub.ac.id](mailto:sofwanfarisyi@student.ub.ac.id)

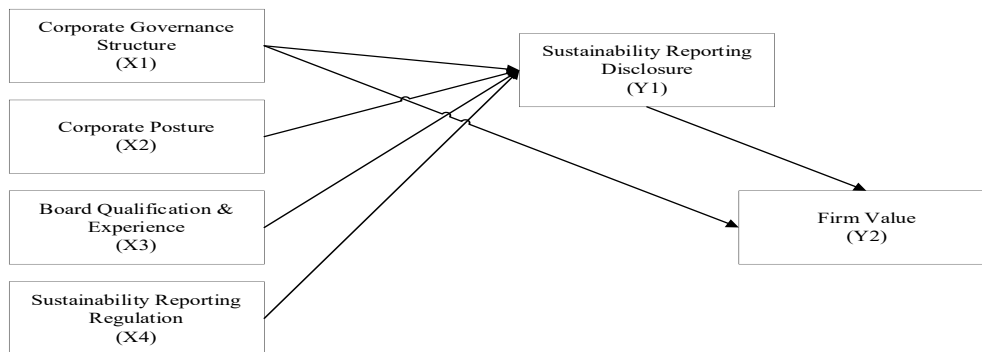
Related research concerning Sustainability Reporting has been conducted previously by [3]. This research focuses are Firm Size, Profitability, Financial Leverage, Corporate Management Governance Structure, Ownership Structure, Firm Age, Industry Sector, Corporate Posture, and Board Qualifications & Experience. The objective of this study is to examine what variables have a significant direct and indirect effect on the firm value and the sustainability reporting disclosures. Indirect effect testing in this study used the Sobel test. However, there were contradictions in the survey results. Some results show that impacts have a significant impact on company sustainability, but other results are not significant.

### 1.3 Research Methodology

This study proposes indirect effect testing was applied using bootstrap and jackknife resampling. The test is to be applied to the relationship of Sustainability Reporting Disclosure by involving the variables of Corporate Governance Structure, Corporate Posture, Board Qualifications & Experience, Sustainability Reporting Regulations on Sustainability Reporting Disclosure, and Firm Value. The concept of this research is based on several theories, to reconstruct the concept (theory) of Sustainability Reporting Disclosure by involving the variables of Corporate Governance Structure, Corporate Posture, Board Qualifications & Experience, Sustainability Reporting Regulations on Sustainability Reporting Disclosure, and Firm Value. The contributions of this study are (1) In developing countries such as Indonesia, in the early stages of encouraging companies to carry out Sustainability Reporting Disclosure forcibly in the form of regulations, namely Sustainability Reporting Regulations. (2) The results of the study can be implemented in other developing countries with conditions similar to Indonesia. (3) Information about company sustainability, as stated in the Sustainability Reporting Disclosure can affect and have an impact on company performance (in the form of firm value). This is expected to bring fresh air to the implementation of the government's Sustainability Reporting Disclosure obligation, to boost the performance of companies in Indonesia.

This study is a quantitative research. The quantitative approach is research that works with numbers, the data is formed from numbers and is analyzed by answering questions through testing certain research hypotheses and making predictions about one variable influences other variables [43]. The type of research used is explanatory research, namely research conducted to explain the relationship between variables through hypothesis testing. The data in this study is secondary data taken from the company's annual report from 2013-2020. The company's annual report has various information such as the variables used in this study. The annual report is used as a source of data collection which is valid due to the conditions of the company. The data taken is data within 8 years. This was done because there was a government regulation namely POJK 51 which was implemented in 2017. So data was taken for 2013-2016 (before the regulation was enacted), and 2017-2020 (after the regulation was enacted).

This study uses path analysis. Path analysis is an analytical method used to determine how much direct, indirect, or total influence the number of predictor variables has on the response variable in a model. The path analysis method is a development that requires the input of the correlation coefficient between variables that have been analyzed previously [44]. In path analysis, the correlation between variables is associated with the parameters of the model which are expressed by path diagrams or path diagrams. The path analysis technique is the development of the correlation technique developed by Sewall Right. Research path diagram in Figure 1.



**Fig. 1.** Path Diagram Model

The following are the hypotheses in this study:

$H_1$ : Corporate Governance Structure has a significant direct effect on Sustainability Reporting Disclosure

$H_2$ : Corporate Governance Structure has a significant direct effect on Firm Value

$H_3$ : Corporate Governance Structure has a significant indirect effect on Firm Value

$H_4$  : Corporate Posture has a significant direct effect on Sustainability Reporting Disclosure

$H_5$  : Corporate Posture has a significant indirect effect on Firm Value

$H_6$  : Board Qualifications & Experience have a significant direct effect on Sustainability Reporting Disclosure

$H_7$  : Board Qualifications & Experience have a significant indirect effect on Firm Value

$H_8$  : Sustainability Reporting Regulations have a significant direct effect on Sustainability Reporting Disclosure

$H_9$  : Sustainability Reporting Regulations have a significant indirect effect on Firm Value

$H_{10}$  : Sustainability Reporting Disclosure has a significant direct effect on Firm Value

## 2. Materials and Methods

### 2.1 Materials

#### Corporate Governance Structure

Cardbury Committee defines corporate governance as a set of rules that regulate the relationship between shareholders, corporate management, creditors, government, employees, and other internal and external stakeholders relating to their rights and obligations, or in other words, a system that regulates and controls the corporate [15]. Corporate governance refers to the set of relationships and structures that exist within a corporate to guide decision-making and ensure accountability to shareholders and other stakeholders. It aims to improve the overall efficiency of the corporate by defining clear goals, monitoring performance, and providing mechanisms for effective management and oversight by the board of directors. Related to this, Watts and Zimmerman state that one of the methods used to monitor contractual issues and limit opportunistic management behavior is corporate governance [16]. One of the previous studies that support this variable relationship is the research entitled "Corporate Governance and Sustainability Reporting in The Australian Resources Industry: An Empirical Analysis". This study aims to evaluate the impact of corporate governance on Sustainability Reporting Disclosure by investigating companies operating in the Australian resource industry. The annual reports of 133 companies and their sustainability reports ending on 30 June 2012 were analyzed using a newly developed scoring index [17]. The results of the study found that there was a significant positive correlation between Sustainability Reporting Disclosure and the attributes of corporate board composition that support a better corporate governance mechanism.

Furthermore, research that examines corporate governance and firm values: a comparative analysis of state and non-state owned companies in the context of Pakistan. The current study empirically investigates the relationship of corporate governance instruments with firm performance. According to the research, the correlation between board independence and firm value is only meaningful and positive for state-owned companies, while market capitalization and return on assets have a substantial and good impact on firm value for both state-owned and non-state-owned firms. The study also found that other variables examined had no significant impact on firm value for either type of corporate, but these results were in line with prior research. [18].

#### Corporate Posture

According to Kent & Chan's research, An active posture is when companies consistently observe their interactions with important stakeholders and make an effort to effectively manage these interconnected relationships. [19]. Chan and Kent in their 2004 study measured the strategic corporate posture using two proxies, on the one hand through the existence of a social and/or environmental reporting system in the corporate and on the other hand through the existence of social responsibility towards social and/or environmental factors contained in the model and mission statement [20].

Posture has a wide presence in strategic contexts in the literature. Miles et al. [21] stated that corporate posture decision about which market to enter and its competitive orientation in the market. Porter research uses a cost leadership and differentiation strategy framework to base orientation as a posture [22]. Posture affects how a corporate selects and interprets its environment and how it deploys its resources. From the perspective of social issues, posture has been used to capture organizational responses to stakeholders [23,24]

This is in line with research showing that the quality of sustainability reports is higher among financial institutions in developed countries [25]. [26] conducted research to see the effect of media visibility, Ownership Structure, Corporate Posture, and the characteristics of the Board Director and their influence on the Sustainability Reporting Disclosure level. The research was conducted on 19 energy companies listed on the Bangladesh Dhaka Stock Exchange. The data is taken from the 2011-2017 annual report. The corporate posture variable is examined using the mention of the corporate social and environmental responsibility indicators in mission or vision statements and their influence on the Sustainability Reporting Disclosure level. The results of the study show that there is no influence from Corporate Posture on the Sustainability

### Board Qualification & Experience

Age is a fairly dominant determinant of the formation of a person's work. In addition, a mature and mature attitude can make a person wiser in making a decision. Decision making by the board of directors is very important in achieving Good Corporate Governance. The director's educational background has a significant influence on sustainability reporting disclosure [27]. [28] conducted research on the effect of Board Qualification & Experience on Sustainability Reporting. The research was conducted in the 2001 annual reports of companies listed on the Kuala Lumpur Stock Exchange (in January 2001). The results of the study show that there is no significant effect of top management qualification and experience on Sustainability Reporting.

### Sustainability Reporting Regulations

The rule is that the social value of the information disclosed exceeds its value for the corporate, in this case, the disclosure is too little from the perspective of the community due to positive externalities [29]. Regulations have been respected since the announcement of these regulations. With the new regulations companies must make adjustments to them [30].

Amidjaya & Widagdo [31] conducted research with the title "Sustainability Reporting in Indonesian Listed Bank: Do Corporate Governance, Ownership Structure, and Digital Banking Matter?". The results of this study provide empirical evidence that sustainability reporting at registered banks in Indonesia is still low. Corporate governance, foreign ownership, and family ownership have a positive effect on continuous reporting. Furthermore, the authors find that foreign ownership has no significant effect on the role of moderator, while family ownership weakens the influence of CG [31]. Fitriasari & Kawahara conducted research with the title "Japan Investment and Indonesia Sustainability Reporting: An Isomorphism Perspective". The results of this study are applicable laws and regulations have a significant effect on sustainability reporting. In Japan laws and regulations focus on environmental aspects while in Indonesia regulatory laws impact all aspects of sustainability reporting [32]. Nwobu & Iyoha [33] conducted research with the title "Managerial Perceptions of Corporate Sustainability Reporting Determinants in Nigeria". The results of the factor analysis show that respondents think that sustainability reporting is influenced by a combination of mandatory, normative, and mimetic factors. Pearson's correlation between sustainability reporting levels and mandatory, normative, and mimetic pressures shows a significant relationship between sustainability reporting levels and mandatory, normative, and regulatory pressures [34]. Khan et al. [35] conducted research entitled "Green Washing or Authentic Effort? An Empirical Investigation of The Quality of Sustainability Reporting by Banks". The results of this study indicate that the reporting quality indicators are gradually improving. Regulatory influences, social performance, and standards frameworks have a significant impact on the quality of sustainability reporting

### Sustainability Reporting Disclosure

The Global Reporting Initiative (GRI) defines sustainability reporting as a reporting system that enables all companies and organizations to responsibly measure, understand, and communicate information on economic, environmental, and social issues to internal and external stakeholders related to organizational performance toward achieving the Sustainable Development Goals [36].

Research by Loh et al. [37] also shows that sustainability reporting is positively related to Firm Value. Kuzey & Uyar [38] also conducted research with the title "Determinants of Sustainability Reporting and Its Impact on Firm Value: Evidence from The Emerging Market of Turkey". The results indicate increasing awareness among the surveyed companies about sustainability reporting under the Global Reporting Initiative and a trend toward better reporting, but sustainability reports guaranteed by independent verifiers are not very common among them. Based on the ten hypotheses formulated, the empirical evidence provides important insights into the determinants of sustainability reporting. Moreover, the results confirm the relevance of sustainability reporting.

### Firm Value

A corporate is established to increase Firm Value by maximizing shareholder profits and wealth. Firm Value is the price investors are willing to pay if the corporate is sold. The reason is that investors need to get a high return on investment, so they will choose a corporate with a high value. Kusumajaya [39], said that Firm Value is very important because it reflects how the corporate performance is currently and the corporate prospects in the future.

The main goal of the corporate according to the theory of the firm is to maximize the wealth or value of the corporate [40]. Maximizing the value of the corporate is very important for a corporate because maximizing the value of the corporate means maximizing the prosperity of shareholders which is the main goal of the corporate. Increasing firm value as the corporate main goal was also stated [41], where the goal of financial management is synonymous with maximizing shareholder

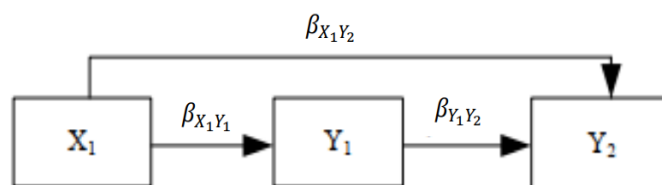
prosperity through increasing the current value per share of existing shares. [42], the goal of maximizing the value of the corporate is related to financial decisions, so that every decision is properly aimed at actions that can increase the corporate stock price.

## 2.2 Methods

### Path Analysis

Path analysis is a technique for analyzing causal relationships that exist in multiple linear regression analysis where the causal relationships that occur between variables are not only direct, but also indirect [4]. Path analysis was first introduced by a geneticist, Sewall Wright. This analysis is the development of a correlation technique which is then broken down into interpretations of the effects. Webley [5] defines path analysis as the development of multiple linear regression analysis which aims to provide estimates of the magnitude and significance of hypothesized causal relationships that occur from several variables. Path analysis consists of a stepwise regression analysis. Regression analysis is a statistical analysis that can be used to observe patterns of relationships between variables from unknown models [6]. Path analysis can measure and test the magnitude of the contribution or contribution made by the path coefficient on each path from the causal relationship between variables. In addition to establishing the direct influence of exogenous factors on endogenous variables, path analysis is used to determine whether exogenous variables have an indirect effect on endogenous variables through the mediation of endogenous variables or not [7].

In path analysis, there are two endogenous variables consisting of pure endogenous variables and mediating endogenous variables. A pure endogenous variable is a variable that is influenced or the result of exogenous variables. Meanwhile, the mediating endogenous variable is the variable that connects the pure endogenous variables and also the exogenous variables being analyzed. This model is presented in Figure 2.



**Fig. 2.** Path Analysis Decomposition Model

Source: Solimun [8]

The general equation for simple path analysis can be written as follows

$$\begin{aligned}
 Y_{1i} &= f(X_i) + \varepsilon_{1i} \\
 Y_{2i} &= f(X_i, Y_{1i}) + \varepsilon_{2i} \\
 Y_{1i} &= \beta_{01} + \beta_{X_1Y_1}X_i + \varepsilon_{1i} \\
 Y_{2i} &= \beta_{02} + \beta_{X_1Y_2}X_i + \beta_{Y_1Y_2}Y_{1i} + \varepsilon_{2i}
 \end{aligned}$$

The amount of direct effect obtained by an endogenous variable from exogenous variables can be seen from the magnitude of the resulting path coefficient. The resulting path coefficient describes how much direct effect is exerted by the residual variable (implicit exogenous variable) on X. The magnitude of the effect that can be exerted by an exogenous variable on endogenous variables can be measured using the numerical value of the path coefficient obtained from exogenous to endogenous pathways. The direct effect describes the relationship between two constructs or exogen variables and endogen variables, for example, the effect between variable X and variable Y. This relationship can be described with a single arrow. The indirect effect is a set of two or more direct effects which is visually represented by multiple arrows. The indirect effect of a construct or exogenous latent variable on endogenous latent variables is achieved through an endogenous intervening variable, for example, the effect between variable X and variable Y through variable Z, in this case, Z is called the intervening variable. The total effect is the sum of direct and indirect effects [9]

The amount of direct, indirect, and total influence of exogenous variables on endogenous partially can be calculated using the following formula [8]



- The total effect of exogenous variables  $X_1$  on endogenous variables  $Y_2$

$$\text{Direct Effect} = \beta_{x_1y_2}$$

$\beta_{x_1y_2}$  : path coefficient of the relationship  $X_1$  to  $Y_2$

- The indirect effect of exogenous variable  $X_1$  on endogenous variable  $Y_2$  through variable  $Y_1$

$$\text{Indirect Effect} = \beta_{x_1y_1} \times \beta_{x_1y_2}$$

$\beta_{x_1y_1}$  : path coefficient of the relationship  $X_1$  to  $Y_1$

$\beta_{x_1y_2}$  : path coefficient of the relationship  $X_1$  to  $Y_2$

- The total effect of exogenous variable  $X_1$  on endogenous variable  $Y_2$

$$\text{Total Effect} = \text{Direct Effect} + \text{Indirect Effect}$$

$$\text{Total Effect} = \beta_{x_1y_2} + (\beta_{x_1y_1} \times \beta_{x_1y_2})$$

### Resampling

The resampling technique is an analytical procedure that reuses sampled data for statistical assumptions without relying on parametric assumptions. Resampling techniques can approximate the variance and/or bias of the estimator, construct confidence intervals, and test statistical hypotheses about the parameters being estimated. Another opinion was also conveyed by Simon [10] who stated that resampling is a method that generates multiple resample from the initial sample and uses these resamples to generate statistics. Rodger [11] stated that there are two domains of resampling, the first one is resampling without replacement (Jackknife) and the second one is resampling with replacement (Bootstrap).

Jackknife techniques are introduced by Quenouille in 1949 for estimating bias. Tukey [12] named it Jackknife and demonstrated that it could reduce an estimate's variance as well as bias. Miller [13] said that by omitting one observation from the original sample, the jackknife generates  $n$  resamples, each with sample size  $n-1$ . The jackknife estimate is computed  $n$  times, each time on the  $n-1$  observations by one observation out, again until  $n$  observations are depleted. The jackknife technique is typically used to obtain more precise estimates. Because the jackknife's resampling technique is clearer and the applications are general, this method advanced cross-validation. This resampling technique is better to use in a large sample.

The bootstrap technique is a resampling technique introduced by Efron in 1979. The main idea behind bootstrapping is that one available sample yields even more by random sampling (hence the concept of shooting your own bootstrap), substituting a small sample, and deriving estimates from the new sample. The bootstrap relies on sampling distributions to estimate parameters. A sampling distribution is a probability distribution that cannot be obtained from a single sample. It explains how the test statistic changes if the process of calculating the test statistic with a random sample of size  $n$  is repeated many times with different random samples [10]. Bootstrap is not only a wonder of the resampling method but also a revolution in statistical methods [14]. The bootstrap technique can be applied to small samples.

### Relative Efficiency

Relative efficiency is used to compare the resampling technique used in this study, so a measure is required to measure it. It is not uncommon to find more than one unbiased parameter when estimating parameters. According to Mendenhall et al. [14], if there are two unbiased parameters  $\beta_1$  and  $\beta_2$  to estimate parameter  $\beta$ , the parameter with the smallest variance can be chosen. Relative efficiency calculations can use the ratio formula between the variances of the two-parameter estimators. If the relative efficiency of  $\beta_1$  is greater than 1, it means that  $\beta_1$  is a better and unbiased estimator than  $\beta_2$ .

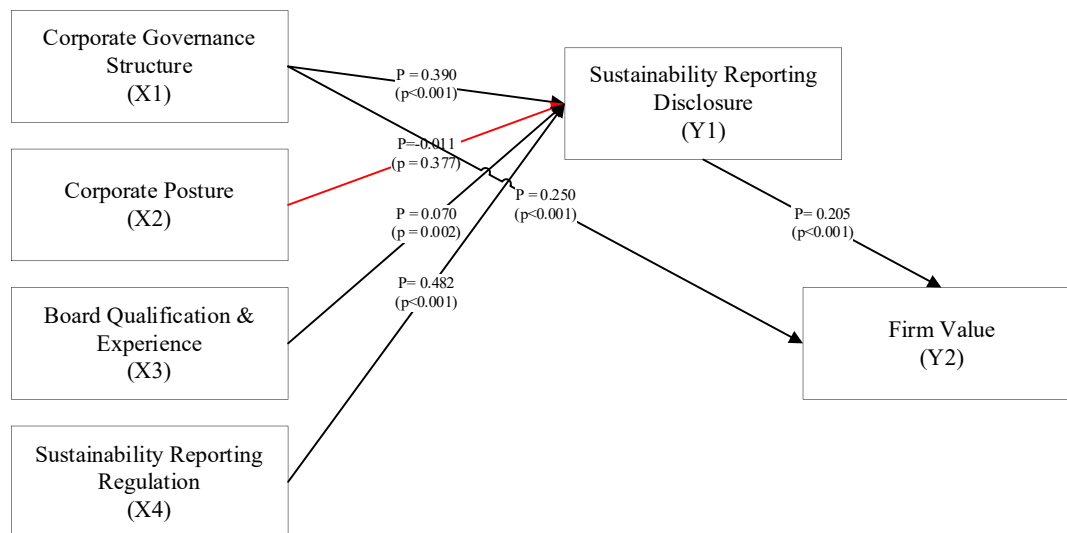
## 3. Results and Conclusion

### Results

Path diagrams explain causality between study variables, either directly or indirectly. The magnitude of the causal relationship between variables is shown by the value of the path coefficient. The higher the path coefficient, the closer the causal relationship. While the direction of the relationship in a causal relationship is shown by the sign of the path coefficient, which can be positive or negative, The strength of the causal relationship is indicated by the p-value. A variable is said to have a significant effect on other variables if the p-value is less than the error rate of 0.05. In Table 1, the following research hypotheses are described.

**Table 1.** Results of Hypothesis Testing the Influence of Between Variables

Variable Relations	Path Coefficient	p-value	Conclusion
<b>Direct Influence</b>			
Corporate Governance Structure → Sustainability Reporting Disclosure	0.390	<0.001	<i>Urgent</i>
Corporate Governance Structure → Firm Value	0.250	<0.001	<i>Urgent</i>
Corporate Posture → Sustainability Reporting Disclosure	-0.011	0.377	Not Significant
Board Qualifications & Experience → Sustainability Reporting Disclosure	0.070	0.002	<i>Urgent</i>
Sustainability Reporting Regulation → Sustainability Reporting Disclosure	0.482	<0.001	<i>Urgent</i>
<b>Mediation Effect</b>			
Firm Value → Sustainability Reporting Disclosure	0.205	<0.001	<i>Urgent</i>



Description:

- = Significant
- = Not significant

**Fig. 3.** Conceptual Framework Testing the Influence of Between Variables

Table 1 shows that there are 6 (six) results of direct influence and mediating influence between variables. Of the 6 (six) influences, 1 (one) of them has no significant effect, and 5 (five) have a significant effect. Thus, this study accepts 5 (five) hypotheses and rejects 1 (one) hypothesis. The accepted hypothesis is:

$H_1$ : Corporate Governance Structure has a significant direct effect on Sustainability Reporting Disclosure

$H_2$ : Corporate Governance Structure has a significant direct effect on Firm Value

$H_6$  : Board Qualifications & Experience have a significant direct effect on Sustainability Reporting Disclosure

$H_8$  : Sustainability Reporting Regulations have a significant direct effect on Sustainability Reporting Disclosure

$H_{10}$  : Sustainability Reporting Disclosure has a significant direct effect on Firm Value

Another effect that can be observed from this model is the indirect effect. Table 2 below is the indirect effect of each variable in the research model.

**Table 2.** Hypothesis Test Results for Indirect Influence Between Variables

Indirect Influence	Path Coefficient	p-value	Conclusion
X1 → Y1 → Y2	0.080	0.004	<i>Urgent</i>
X2 → Y1 → Y2	-0.002	0.041	<i>Urgent</i>
X3 → Y1 → Y2	0.014	0.743	<i>Not significant</i>
X4 → Y1 → Y2	0.099	0.001	<i>Urgent</i>

While the total effect on this research can be seen in table 3 below.

**Table 3.** Total Effects

Total Impact	Path Coefficient	P-Value	Conclusion
X1 → Y2 (by Y1 and without Y1)	0.285	0.000	<i>Urgent</i>
X2 → Y2 (by Y1)	-0.002	0.041	<i>Urgent</i>
X3 → Y2 (by Y1)	0.014	0.743	<i>Not significant</i>
X4 → Y2 (by Y1)	0.099	0.001	<i>Urgent</i>

Based on the total effect, direct effect, and indirect effect between the variables formed in the model, bootstrap and jackknife resampling was performed to measure the relative efficiency of the path coefficients. Below is Table 4. Which compares bootstrap and jackknife resampling and then chooses the best resampling that can be used.

**Table 4.** Comparison of Total Effect with Jackknife and Bootstrap

Influence	Various bootstrap path coefficients	Various Jackknife Path Coefficients	Relative Efficiency	Conclusion
X1 → Y1 → Y2	0.00075	0.00097	0.77973	Bootstrap
X2 → Y1 → Y2	0.00307	0.00354	0.86552	Bootstrap
X3 → Y1 → Y2	0.00191	0.00256	0.74513	Bootstrap
X4 → Y1 → Y2	0.00096	0.00130	0.73364	Bootstrap
X1 → Y2 (by Y1 and without Y1)	0.00194	0.00230	0.84287	Bootstrap
X2 → Y2 (by Y1)	0.00307	0.00415	0.73898	Bootstrap
X3 → Y2 (by Y1)	0.00191	0.00253	0.75609	Bootstrap
X4 → Y2 (by Y1)	0.00096	0.00107	0.89306	Bootstrap

The result is less than 1 for all coefficients on the indirect effect and the total effect. This shows that the bootstrap resampling technique is more efficient in estimating the path parameters for this study. Jackknife resampling is less precise because the

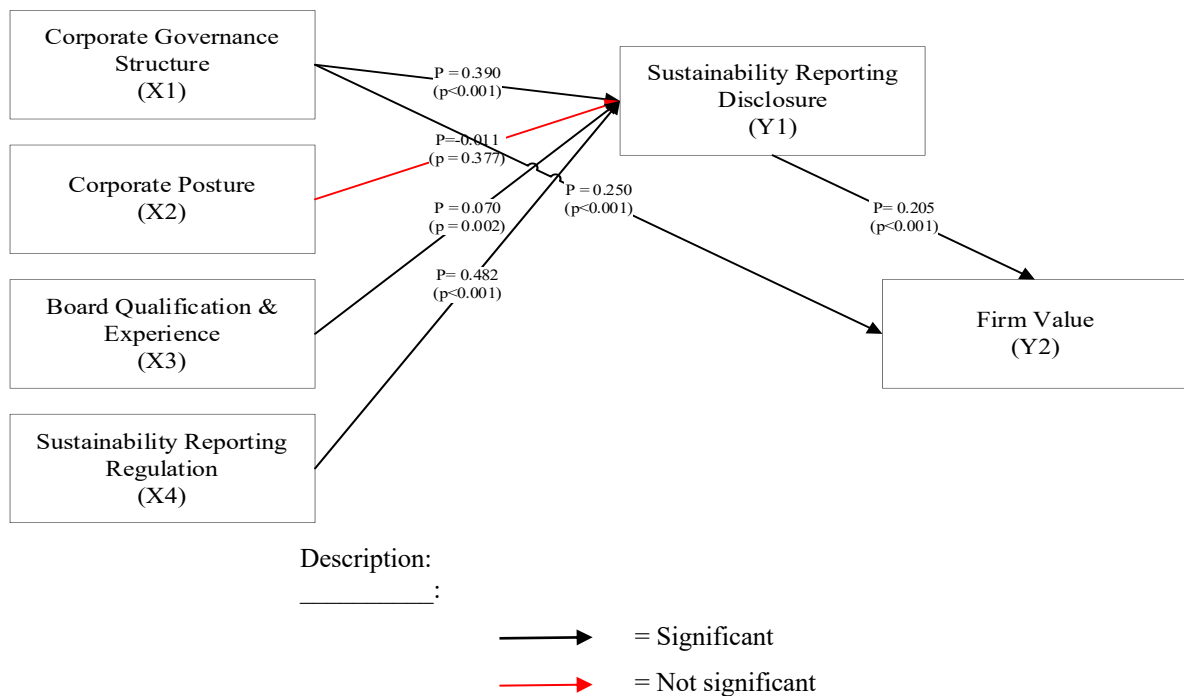


concept of jackknife resampling which eliminates one observation in each re-sampling process is considered to be able to eliminate information in the data so that jackknife can become less efficient. Table 5 below contains information about the Results of the Hypothesis Testing the Effect Between Variables and the formed bootstrap.

**Table 5.** The results of hypothesis testing influence between variables with bootstrap

Variable Relations	Path Coefficient	p-value	Conclusion
<b>Direct Influence</b>			
Corporate Governance Structure → Sustainability Reporting Disclosure	0.311	0.001	<i>Urgent</i>
Corporate Governance Structure → Firm Values	0.382	0.024	<i>Urgent</i>
Corporate Posture → Sustainability Reporting Disclosure	-0.022	0.877	<i>Not Significant</i>
Board Qualifications & Experience → Sustainability Reporting Disclosure	0.049	<0.001	<i>Urgent</i>
Sustainability Reporting Regulation → Sustainability Reporting Disclosure	0.523	0.007	<i>Urgent</i>
<b>Mediation Effect</b>			
Firm Value → Sustainability Reporting Disclosure	0.023	<0.001	<i>Urgent</i>

Based on table 5, it is known that all relationships between variables have a significant effect except for the relationship between Corporate Posture and Sustainability Reporting Disclosure which has no significant effect. Table 5 can be displayed in graphical form as shown in Figure 4 below.



**Fig. 4.** Conceptual Framework from Testing Influence Between Variables with Bootstrap

### Corporate Governance Structure has a significant effect on Sustainability Reporting Disclosure

The results from Table 1 show that the effect of corporate governance structure (X1) on sustainability reporting disclosure (Y1), obtains a structural coefficient of 0.311 and a p-value of 0.001. Because the p-value <0.05, and the coefficient is positive indicates that there is a significant and positive influence between the Corporate Governance Structure (X1) on Sustainability Reporting Disclosure (Y1). This means that the higher the Corporate Governance Structure (X1), the higher the value of

Sustainability Reporting Disclosure (Y1). Thus, hypothesis 1 of this study is accepted.

The results of this study are in line with research conducted by Ong & Djajadikerta [32] who found that there is a significant positive correlation between Sustainability Reporting Disclosure and attributes of corporate board composition that support better corporate governance mechanisms. Furthermore, a study conducted by Ganesan et al. found that corporate governance characteristics were found to have a significant positive relationship with the level of sustainability disclosure, except for CEO duality, while the internal audit function was found to moderate the relationship between corporate governance characteristics and the level of sustainability disclosure [19].

### **Corporate Governance Structure has a significant effect on Firm Value**

The results from Table 1 show that the effect of corporate governance structure (X1) on firm value (Y2), obtains a structural coefficient of 0.382 and a p-value of <0.001. Because the p-value <0.05, and the coefficient is positive, it indicates that there is a significant and positive influence between Corporate Governance Structure (X1) on Firm Value (Y2), meaning that the higher the Corporate Governance Structure (X1), the higher the Firm Value (Y2). Thus, hypothesis 2 of this study is accepted.

In addition, experiencing an indirect effect between Corporate Governance Structure and Firm Values through Sustainability Reporting Disclosure, the Path Coefficient value is 0.080, and the result is significant with a p-value <0.05. This indicates that the Corporate Governance Structure followed by a Sustainability Reporting Disclosure will increase the Firm Value.

The results of this study are in line with Bhat's research which found that return on assets and market capitalization have a significant and positive relationship with firm value for both BUMN and non-BUMN, all other variables are found to be insignificant for state-owned and non-state-owned companies, but the results were consistent with that reported in previous studies [45]. Furthermore, in a study conducted by Soewarno et al. [46] found that leverage does not mediate but dividend policy mediates corporate governance on firm value. On the other hand, corporate governance has a direct effect on firm value.

### **Corporate Posture attitude has no significant effect on Sustainability Reporting Disclosure**

The results from Table 1 show that the influence of Corporate Posture (X2) on Sustainability Reporting Disclosure (Y1), obtains a structural coefficient of -0.022 and a p-value of 0.877. Because the p-value is > 0.05, and the coefficient is negative indicating that there is an insignificant and negative effect on the effect of Corporate Posture (X2) on Sustainability Reporting Disclosure (Y1). That is, the lower the Corporate Posture (X2), the higher of Sustainability Reporting Disclosure (Y1). Thus, hypothesis 3 of this study is not accepted.

In addition, experiencing an indirect effect between Corporate Posture on Firm Value through Sustainability Reporting Disclosure, the Path Coefficient value of -0.002 is significant with a p-value <0.05. This indicates that the Corporate Posture followed by Sustainability Reporting Disclosure will decrease the Firm Value. This shows that if a corporate has a corporate posture followed by the creation of a Sustainability Report it will have an impact on Firm Value. A negative impact on Firm Value occurs because investors think that making Sustainability Reporting will add to the corporate cost structure, reduce the profit of the corporate, and have an impact on decreasing the Firm Value.

The results of this study are in line with research conducted by Raquiba & Ishak [47] who found that research on the influence of media visibility, ownership structure, corporate posture, and characteristics of directors and their effect on the level of sustainability reporting disclosure shows that there is no effect of corporate posture on sustainability. Reporting Disclosure Level. This result is inversely proportional to a study conducted by Chang et al. [48] who found that financial institutions located in developed countries tend to have better quality sustainability reports. This is particularly evident in institutions that prioritize corporate social responsibility values in their vision and mission. Furthermore, privately-owned institutions tend to have higher quality sustainability reporting than those owned by the government.

### **Board Qualifications & Experience have a significant effect on Sustainability Reporting Disclosure**

The results of Table 1 shows that the influence of Board Qualification & Experience (X3) on Sustainability Reporting Disclosure (Y1), obtains a structural coefficient of 0.049 and a p-value <0.001. Because the p-value <0.05, and the coefficient is positive indicates that there is a significant and positive influence between Board Qualification & Experience (X3) on Sustainability Reporting Disclosure (Y1). That is, the higher the Board Qualification & Experience (X3), the higher the value of Sustainability Reporting Disclosure (Y1). Thus, hypothesis 4 of this study is accepted.

In addition, experiencing an indirect effect between Board Qualification & Experience on Firm Value through Sustainability Reporting Disclosure, the Path Coefficient value is 0.014, and the result is not significant with a p-value > 0.05. This indicates that the Corporate Governance Structure followed by Sustainability Reporting Disclosure is not significant in strengthening the Firm Value.

The results of this study are in line with research conducted by Amran & Haniffa who proved the effect of board qualifications

& experience on sustainability reporting [49]. This study was conducted on 201 annual reports of companies listed on the Kuala Lumpur Stock Exchange (as of January 2001). The results of the study show that there is no significant effect of top board qualifications & experience on sustainability reporting. Furthermore, research conducted by Umukoro et al. [50] conducted a study entitled "Board expertise and sustainability reporting in listed banks in Nigeria". This study investigates the influence of environmentally sensitive, certified, or educated board members on sustainability report disclosure. Based on panel data regression estimators for 10 Nigerian Money Deposit Banks during the period 2014-2016.

### **Sustainability Reporting Regulations have a significant effect on Sustainability Reporting Disclosure**

The results from Table 1 show that the influence of Sustainability Reporting Regulation (X4) on Sustainability Reporting Disclosure (Y1), obtained a structural coefficient of 0.523 and a p-value of 0.007. Because the p-value  $<0.05$ , and the coefficient is positive, it indicates that there is a significant and positive influence between Sustainability Reporting Regulation (X4) on Sustainability Reporting Disclosure (Y1). That is, the higher the Sustainability Reporting Regulation (X4), the higher the value of Sustainability Reporting Disclosure (Y1). And this is the highest structural coefficient value compared to other variables. Thus, hypothesis 5 of this study is accepted.

In addition, experiencing an indirect effect between the Sustainability Reporting Regulations on Firm Value through Sustainability Reporting Disclosure, the Path Coefficient value is 0.099, and the result is significant with a p-value  $<0.05$ . This indicates that the Corporate Governance Structure followed by a Sustainability Reporting Disclosure strengthens the Firm Values. This is possible because investors consider that companies are subject to and comply with government regulations and have a commitment to environmental and social factors.

The results of this study are in line with Amidjaya & Widagdo (2019) who found that corporate governance, foreign ownership, and family ownership have a positive effect on sustainability reporting. In addition, the authors find that family ownership weakens the influence of CG while foreign ownership does not significantly affect the moderator role. In addition, the research conducted by Fitriasari & Kawahara [51] resulted in the applicable laws and regulations having a significant effect on sustainability reporting. In Japan, laws and regulations focus on environmental aspects, whereas in Indonesia, laws and regulations affect all aspects of sustainability reporting. Furthermore, research conducted by Nwobu et al. [52] resulted in sustainability reporting being influenced by a combination of coercive, regulatory, and mimetic factors. Pearson's correlation between the level of sustainability reporting and coercive, normative, and mimetic pressures indicates a significant relationship between sustainability reporting and coercive, normative, and regulatory pressures. Research conducted by Khan et al. [53] produced indicators of reporting quality that increased gradually. Regulatory influences, social performance, and standards frameworks have a significant impact on the quality of sustainability reporting.

### **Sustainability Reporting Disclosure have a significant effect on Firm Value**

The results from Table 1 show that the influence of Sustainability Reporting Disclosure (Y1) on Firm Value (Y2), obtained a structural coefficient of 0.023 and a p-value of  $<0.001$ . Because the p-value  $<0.05$ , and the coefficient is positive, it indicates that there is a significant and positive influence between Sustainability Reporting Disclosure (Y1) and Firm Value (Y2). This means that the higher the Sustainability Reporting Disclosure (Y1), the higher the Firm Value (Y2). Thus, hypothesis 6 of this study is accepted.

The results of this study are in line with the study conducted by Kuzey & Uyar [54] and Loh et al. [55] who showed that corporate Sustainability reporting is positively related to firm value. However, research by Siahaan et al. [56] showed that TBL disclosure failed to mediate the relationship between firm characteristics and firm value. Suggestions for further research are to add other factors as independent variables and the object of research includes all sectors listed on the Indonesia Stock Exchange.

## **Conclusion**

Corporate Governance Structure has a significant effect on Sustainability Reporting Disclosure, Corporate Governance Structure has a significant effect on Firm Value, Corporate Posture has no significant effect on Sustainability Reporting Disclosure, Board Qualification & Experience has a significant effect on Sustainability Reporting Disclosure, Sustainability Reporting Regulations have a significant effect on Sustainability Reporting Disclosure, and Sustainability Reporting Disclosure have a significant effect on Firm Value.

It can be concluded that of all the variables tested by the Sustainability Reporting Regulation (as an external variable) it is the factor that has the highest influence compared to the other variables on Sustainability Reporting Disclosure. It can be concluded that in Developing Countries to implement Sustainability Reporting Disclosure, an element of coercion from the government is required first. While the internal variable that has the highest influence is the Corporate Governance Structure variable. This means that if the company has a higher Corporate Governance Structure, the Sustainability Reporting

Disclosure will also be higher.

This research is useful in science development, especially related to empirical evidence that explains the influence between variables in a comprehensive manner. In addition, the indirect effect results in a Corporate Governance Structure followed by Sustainability Reporting Disclosure will increase Firm Value, Corporate Posture followed by Sustainability Reporting Disclosure will weaken Firm Value, Board Qualification & Experience followed by Sustainability Reporting Disclosure is not significant in increasing the Firm Value, Sustainability Reporting Regulations followed by Sustainability Reporting will increase Firm Value.

The result is less than 1 for all coefficients on the indirect effect and the total effect. This shows that the bootstrap resampling technique is more efficient in estimating the path parameters for this study. Jackknife resampling is not quite right because the concept of jackknife resampling which eliminates one observation in each resampling process is considered to remove information in the data so that jackknife becomes less efficient.

The contributions in this research are (1) In developing countries like Indonesia, in the early stages of encouraging companies to make forced Sustainability Reporting Disclosure in the form of regulations, namely Sustainability Reporting Regulations. (2) Research results can be implemented in other developing countries with conditions similar to Indonesia. (3) Information about the company's sustainability contained in the Sustainability Reporting Disclosure can affect and impact the company's performance (in the form of firm values). It is hoped that the study will provide fresh air for the implementation of the Sustainability Reporting Disclosure required by the government, so it can boost the performance of companies in Indonesia.

This research can provide input and suggestions to the government to improve regulations and increase the number of companies that make regular sustainability reports as part of the company's contribution to the Sustainable Development Goals/SDGs. In addition, this research is expected to provide an overall contribution to increasing the production of sustainability reports for public and non-public companies in Indonesia.

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