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The Effect of Corporate Social Responsibility on Firm Value During COVID-19

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Abstract: This study reviews the relationship between corporate social responsibility (CSR), firm size, and the leverage on firm value. Panel data analysis is performed to test the sample in basic industries and the chemical sector over the years 2017-2020. To investigate any significant differences between CSR and firm value prior to the COVID-19 pandemic (years 2016–2019) and during the pandemic (years 2020), the authors performed paired sample t-testing. The results imply that the beneficial relevance of CSR performance could assist businesses in protecting their value at the start of a financial catastrophe, such as the COVID-19 pandemic. Therefore, during the COVID-19 era, businesses must continue to invest in CSR initiatives to maintain stakeholders' trust. This research advances previous CSR studies by offering further clarification on the conflicting results currently available about the influence of CSR on firm value during the COVID-19 period. Further research is necessary to determine whether the effects of CSR during the second year of the COVID-19 period differ from those during the pre-crisis period and the first year of the COVID-19 period.

Keywords: corporate social responsibility, COVID-19 period, firm value, basic industry and chemicals sector.

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INTRODUCTION

Starting from March 2020, the COVID-19 outbreak spread across the world and seriously impacted global capital markets. Academic literature has concluded that the pandemic created a direct destructive economic impact everywhere in the world (Goodell, 2020). Pandemics and crises have been proven to impact the firm value negatively (Zopiatis et al., 2019) and create concern for businesses and stakeholders. Although it has been established that pandemics and other crises negatively affect firm value (Hadi et al., 2020; Zopiatis et al., 2019), little emphasis has been given to specific business initiatives designed to lessen that impact. According to the instrumental stakeholder theory (Jones, 1995), corporate image benefits from appropriate CSR activities that satisfy various stakeholders (Franco et al., 2020; Rhou & Singal., 2020). Additionally, CSR contributes to favorable evaluations in capital markets, even though CSR initiatives are typically encouraged to improve and sustain long-term corporate financial performance (Feng et al., 2018; Flammer, 2013).

In recent years, the importance of CSR practice in Indonesia has increased along with the growing economic activities of many manufacturing companies. The government of Indonesia has encouraged companies to impose CSR, through the implementation of Law Number 40 (2007) on Limited Liability Companies and the Government Regulation No. 47 (2012), which implies that Indonesian companies dealing with natural resources, mainly manufacturing companies, must be socially responsible in order to pay back what has been taken, so that resources can be sustained for a long period (Devie et al., 2018; Zhang & Liu., 2024). This includes basic industries and the chemical sector, which inherently create higher levels of risk and environmental damage resulting from production waste pollution (Mukhtaruddin et al., 2019). During the pandemic period, the concern of CSR on basic industries and the chemical sector was not only limited to the environmental aspect. Employees and various communities were affected as many new regulations were imposed by the Indonesian government to reduce the spread of the virus. In other words, to properly safeguard their firm value, companies were forced to pay more attention to both their employees' health and safety as well as the well-being of the communities at large.

Having robust CSR programs during a pandemic may bring a positive reaction to firms by focusing on employee health and safety within the workplace, or by assisting lower-income employees and providing financial and technological assistance (Manuel & Herron., 2020; Lu et al., 2024). This reflects that CSR attempts to protect stakeholders during major crises such as pandemics can have a positive impact on society all the while improving organizational optimism (Mao et al., 2020). Another important point about firms with high CSR activities came to light after the global financial crisis of 2007–2008. These firms showed to receive lower financial and transaction costs, as well as greater capital access for long-term investment during the global financial crisis (Borghesi et al., 2019; Ngo & Duong., 2024). Nevertheless, companies need to note that a negative effect can still be generated depending on CSR policies issued and how employees perceive it. Forced, top-down CSR programs or unbeneficial CSR schemes may create a negative perspective and demotivate employees (Aguinis et al., 2020). Thus, to safeguard firm value while in a pandemic period, good CSR policies must be followed with correct implementation by individual employees to generate a satisfactory result.

On top of CSR, firm size and leverage have also been proven to influence firm value. Firm size is a component that shows companies' growth and financial strength, as it shows companies' assets, which are expected to generate a favorable economic outcome more efficiently and boost companies' growth in the future (Yadav et al., 2022). Additionally, creditors tend to give more capital investment opportunities to larger companies with good reputations as they are deemed more credible and trustworthy. Therefore, companies will be more likely to have higher dividends and receive higher investor interest and confidence when the firm size is big. However, firm size may also negatively affect firm value if companies fail to pay dividends to their investors even when they own large assets and inventories, thus failing to provide retained earnings to shareholders (Hirdinis, 2019). Hence, firm size needs to be assessed further to see the connection between it and firm value.

Leverage, on the contrary, can impact on the performance and productivity of firms as it indicates how much borrowed capital or debt is used as financial resources. Leverage can impact firm value positively when high leverage can increase firm value and form strong trust between the company, investors, and creditors (Zuhroh, 2019). Strong trust could increase the possibility of receiving loans or investment for operational funding and serve as a tool to control management's use of cash. Impact could be negative if high debt is followed by high cost and risk, which may burden the firm and weaken investors' confidence if their ability to pay back the debt is affected (Dewi et al., 2021; Okafor et al., 2021; Nguyen et al., 2022).

During 2020, the Indonesian Stock Exchange (IDX) reported high volatility in domestic stock exchange starting in mid-March and left some potential volatility in the stock market. However, IDX has also revealed that

there are three business sectors which are defensive amidst the volatility existing in the IDX composite index. Among these, two sectors include a manufacturing industry of basic industry and chemicals sector (Budi, 2020). This contradicts earlier findings that changes in the basic industries' and/or the chemicals sector's stock price were caused by inflation. According to Yulinartati et al. (2019), when inflation affects companies in these sectors, prices will rise and demand for goods would fall, resulting in a decrease of sales. Consequently, net income and ROE will drop along with the sales, causing stock prices to decline. In addition, research has proven that COVID-19 severely disrupted activities in the manufacturing, trade, and transportation sectors (Nugraha et al., 2024) and is significantly related to the abnormal returns on the Indonesian sectoral stock market, especially in the basic industry sector and the chemicals sector (Prasetyo & Faturohman, 2023). One research study suggested that firm value in the hospitality industry is more vulnerable and affected more by pandemics than other industries (Zopiatis et al., 2019); the whole impact of the pandemic on manufacturing industries especially in the basic industries and the chemical sector in Indonesia have not been fully researched yet. Given the conflicting results on the contribution of corporate social responsibility (CSR) to business value during the COVID-19 period, this research clarifies some of the issues raised by earlier social responsibility studies. To ascertain whether CSR has distinct effects on the second year of the COVID-19 period in contrast to the pre-crisis period and the first year of the COVID-19 period, more study will be required. The findings of CSR, firm size, and leverage impact to firm value by previous research have also been shown to be inconsistent across time and industries. This research objective is therefore to determine the actual impact of CSR, firm size, and leverage on firm value during a crisis period such as the COVID-19 pandemic as well as the COVID-19 period impact on companies' CSR and firm value performance in the basic industries and the chemicals sector of companies listed on the Indonesian Stock Exchange (IDX).

METHODS

The purpose of this study is to find whether CSR, firm size, and leverage give a positive, neutral, or negative impact towards firm value, as well as whether there is any difference for CSR and firm value performance between the period before and during the COVID-19 pandemic. The regression model used in this research will be presented as follows:

$$FV_{it} = \alpha + \beta_1 CSR_{it} + \beta_2 FSIZE_{it} + \beta_3 LEV_{it} + \varepsilon_{it}$$

With α representing constant, β as regression coefficient, *i* denoting firms or cross-section data, *t* denoting time periods or time series data, and ε representing error.

The analysis for H1 – H3 are performed using the panel data analysis, which includes the comparison of the pooled OLS, common effect, fixed effect, and random effect model. To find the results for H4 – H5 hypotheses of this paper, the paired sample t-test is utilized by examining two periods of the samples (Kim et al., 2018). The first period is from the year 2016-2019, which indicates the period before COVID-19; while the second period is 2020 which shows the period during the COVID-19 pandemic.

To conclude, the influence of the independent variables towards the dependent variable, the panel data analysis and paired sample t-test are performed over the secondary data of the sample through the GRETL statistical software. The samples used in this research are companies listed in the basic industries and the chemicals sector of the IDX for the year 2016-2020 which have consistently published the annual reports and consistently provide publicly available financial and CSR information from 2016 to 2020. Following the purposive sampling criteria, the sample used therefore includes 53 companies within the 5 years observation period, with total unit of analysis of 265 firm-year (Table 1).

Table 1 Sampling Summary

Sampling Criteria	No. of Companies
Companies listed in the Indonesian Stock Exchange (IDX) under the basic industry and chemicals sector	86
Companies not fulfilling the criteria	33
Companies used	53
Period of study (in years)	5
Total samples observed (unit analysis)	265 firm-year

The dependent variable used in this research model is firm value. The measurement of firm value that will be is Tobin's Q ratio (q-ratio). This ratio is commonly used in previous studies as it shows the estimate of return value between a company's market value and accounting value. Investment in assets that can stimulate further investment is shown by a Q-ratio above one, as profit needs to be higher than the initial investment expense (Sabrin et al., 2016). On the other hand, a q-ratio below one will be unattractive as the profit generated will not be higher than the expenditure incurred. The following is Tobin's Q ratio formula used for calculating firm value:

$$Tobin's\ Q = \frac{Market\ Value\ of\ Equity + Debt}{Total\ Assets}$$

For the independent variable, there are three variables used in this research model, which are the corporate social responsibility, firm size, and leverage.

CSR in this paper will be measured using the KLD index, focusing on five topics that matter to Indonesia (Devie et al., 2018), which are: community, diversity, employee relations, environment, and products. Further details on the KLD issue areas is presented in the Appendix.

The measurement will be shown in a scoring system of –1 to 1, where a score of 1 will be given for each strength and –1 for each concern carried out by the company according to the issue areas. Contrarily, a score of 0 will be given if the firm fails to meet the parameters stated in the issue areas. The net CSR will then be calculated as the total strengths minus the total concerns, as shown in the following formula:

Net CSR = (Total strengths of Community – Total concerns of Community) + (Total strengths of Diversity – Total concerns of Diversity) + (Total strengths of Employee Relations – Total concerns of Employee Relations) + (Total strengths of Environment – Total concerns of Environment) + (Total strengths of Products – Total concerns of Products)

Following the concept of higher total assets indicate larger firm size, the firm size will be calculated by the log natural of total assets (Qiu et al., 2021), with the following formula:

$$Firm\ Size = \ln(Total\ Assets)$$

The debt to asset ratio (DAR) calculated as total debts divided by total assets, will be used to calculate the leverage in this paper (Qiu et al., 2021). Below is a formula for calculating the leverage:

$$Leverage = \frac{Total\ Debt}{Total\ Assets}$$

The details on the variable definitions and data source are presented in Table 2.

Table 2 Variable Definitions and Data Source

Variable(s)	Definition	Source of Data
Net CSR (CSR)	The total score of all strength factors carried out by the company deducted by the total score of all concern factors done.	Annual report, sustainability report, and other reliable sources
Firm Size (SIZE)	Shows the company size according to the total assets. Computed by calculating the log natural of total assets.	Annual report and Bloomberg
Leverage (LEV)	Present the company's aptitude to fulfill all of its long-term obligations along with the risk in the financial structure taken. Measured by calculating the ratio between total debts to total assets.	Annual report and Bloomberg
Tobin's Q	Shows the proportion between market value and book value of total assets of a company.	Bloomberg

RESULTS AND DISCUSSION

According to Table 3 showing the summary of the descriptive statistics results for each independent and dependent variable for the 53 firms within the 5 years, the CSR has resulted in a mean of 11.947, and a maximum value of 15. From the KLD indicator previously discussed, the score ranged between –17 to 17. It means that companies in the basic industry and chemicals sector in Indonesia have successfully performed their CSR obligation well with an average of 11.947 out of 17. Additionally, with a minimum value of six (6), it indicates that the lowest CSR score a company in this sector gets is six (6) which might be resulted from the compulsory CSR regulation. Aside from that, there is a median of 12, and a standard deviation of 1.718 in the CSR result. Although the net CSR varies among each company, they tend to have similar trends for each company in the year-to-year basis.

Table 3 Descriptive statistics of variables

Variables	Mean	Median	Std. Deviation	Minimum	Maximum
CSR	11.947	12	1.7181	6	15
FSIZE	22.0300	21.8320	1.6143	18.7330	25.5650
LEV	0.2854	0.3130	0.1917	0	1.0817
TBQ	0.7457	0.3910	0.9940	0.0390	7.4530

To evaluate the reliability and validity of the research model, multicollinearity and heteroscedasticity test will be performed. Additionally, as the panel data is a mix of a time series data (single observation unit within a lengthy period) and cross-sectional data (several observation units over a specific time), a classification performed as the start of the regression analysis stage to find whether the panel data regression model is common effect model, fixed effect model, or random effect model. The most appropriate regression models for the panel data analysis are chosen by conducting the FE estimator test, Breusch-Pagan test, and Hausman test. Table 4 shows that all variables have passed the multicollinearity and heteroscedasticity test, and Table 5 shows the result of the panel data regression model tests.

Table 4 Pooled OLS Model (Dependent: TBQ)

	Coefficient	Std. Error	t-ratio	p-value	VIF
const	−2.14473	0.854507	−2.510	0.0127 **	
CSR	0.0768132	0.0362051	2.122	0.0348 **	1.104
FSIZE	0.104616	0.0393840	2.656	0.0084 ***	1.153
LEV	−1.16316	0.326528	−3.562	0.0004 ***	1.117
Mean dependent var		0.745732	S.D. dependent var		0.993994
Sum squared resid		241.5076	S.E. of regression		0.961934
R-squared		0.074111	Adjusted R-squared		0.063468
F(3, 261)		6.963729	P-value(F)		0.000159
Log-likelihood		−363.7189	Akaike criterion		735.4377
Schwarz criterion		749.7567	Hannan-Quinn		741.1909
rho		0.746507	Durbin-Watson		0.349201
Heteroskedasticity (White's test)				p-value = 0.746794	

Table 5 Panel diagnostic test (Dependent: TBQ)

	FE Estimator	Breusch-Pagan Test	Hausman Test
p-value	2.93773e-033	4.87414e-047	0.496252
Results	Fixed	Random	Random

By completing the panel data regression model tests, the random effect model has been chosen as the most suitable model and the hypothesis testing can be done by analyzing the determinant coefficient (R-squared or R^2), F-test, and t-test results of the analysis. A weak significant impact is found if the p-value is less than 10%, moderate significant impact is found if the p-value is less than 5%, and strong significant impact is found if the p-value is less than 1% (Devie et al., 2018).

Table 6 show that the random effect model produces highly significant p-values of less than 1%, which is 0.19%. Therefore, there is sufficient evidence to reject the null hypothesis (H_o) and accept the research hypothesis.

Table 6 Random Effect Model (Dependent: TBQ)

	Coefficient	Std. Error	t-ratio	p-value
const	−1.6275	1.5137	−1.075	0.2823
NETCSR	0.0936	0.0436	2.145	0.0319**
FSIZE	0.0736	0.0691	1.065	0.2870
LEV	−1.2837	0.4048	−3.171	0.0015***
P-value		0.00192888		
R-squared		0.0707649		

For the variables, two (2) out of the three (3) independent variables had a significant correlation towards the dependent variable. Based on the random effect model, the net CSR has a p-value of 3.19%, and leverage with 0.15%. On the other hand, the firm size is deemed as insignificant as the p-value is 28.70%, which is greater than 10%. Meanwhile, the R-squared of 0.0708 indicates that the dependent variable could be explained by the independent variables in this study by 7.08%, while the rest 92.92% can be influenced by other factors aside from the research variables.

Paired sample t-test was used in this study to compare the CSR and firm value from two separate periods of time. The first period was from the year 2016 to 2019 which is before the COVID-19 period (pre-COVID-19), while the second period was from the year 2020 or the COVID-19 period. The t-test aims to determine whether there is any statistical difference between the means of the CSR and firm value.

According to Table 7, the mean of CSR and firm value during the COVID-19 period had slightly climbed up compared to the mean from before the COVID-19 period. The mean value of the corporate social responsibility, which is calculated by the net CSR, had increased from 11.8868 to 12.1887. Concurrently, the firm value computed by Tobin's Q from before the pandemic is 0.74000 and increased to 0.76866 during the COVID-19 period. Although it is shown that there is an increase of both sample means, the test also shows that the p-value result of both the CSR comparison and the firm value comparison respectively are 0.2533 and 0.8515. These p-value results are greater than the significance threshold of 10%, indicating that there are no significant differences between the firm's value from before and during the COVID-19 period.

Tabel 7 Paired sample t test results

	N	Std. Deviation	Std. Error Mean	Mean	t	p-value
CSRbefore	212	1.75958	0.120849	11.8868		
CSRduring	53	1.53243	0.210495	12.1887	1.144840	0.2533
CSRbefore – CSRduring				−0.3019		
FVbefore	212	1.03433	0.071038	0.74000		
FVduring	53	0.821212	0.821212	0.76866	0.187407	0.8515
FVbefore – FVduring				−0.02866		

The first hypothesis proposed in this study states that corporate social responsibility (CSR) has an impact on the firm value of Indonesian listed companies in the basic industry and the chemical sector. According to the analysis, CSR gives a significant positive impact towards the firm value, therefore, the first hypothesis of this paper is accepted. This is in-line with the previous findings of significant positive impact by Devie et al. (2018), as well as the stakeholder theory, legitimacy theory, and signaling theory. The three theories suggest that as businesses accommodate and comply with stakeholders' expectations, the company will give signals that they care for their stakeholders and will be recognized as a legitimate organization and earn the right to obtain resources and good firm reputation, which in turn will improve firm value (Deegan, 2019; Devie et al., 2018; Harrison et al., 2015).

The positive effect on the firm value can be seen from the stable results from the analysis done for the 2020 sample, which is during the COVID-19 period, because companies with good CSR performance are more resilient in volatile market (Engelhardt et al., 2021). This has proven to be in contrast with the previous claim by

Buchanan et al. (2018), where they claim that CSR give positive impact before crisis period that would turn into negative impact upon crisis period. In this paper, it is found that the firm value had slightly increased along with the slight increase of CSR score performance, which does not prove any negative effect during crisis period.

The second hypothesis proposed is that the firm size has an impact on the firm value of companies listed in the basic industry and the chemical sector. The analysis results have shown that the firm size has a positive but insignificant relationship towards the firm value, therefore, the second hypothesis of this research is rejected. Although this contrasts with positive significant finding by Husna & Satria (2019), according to the previous studies with similar findings, there are several reasons which may cause this insignificant relationship. First, because large companies may not take a high risk to make new investments associated with expansion before their obligations have been paid, investors might not be convinced that the management could improve the company's value according to their expectations (Lahjie et al., 2023; Asni & Agustia., 2022). Another reason that could prompt the insignificant relationship according to Setiadharma & Machali (2017) is because Indonesian investors tend to disregard accounting information and are more prone to be irrational in their investment. Normally, before making an investment decision, investors should analyze and assess the company's financial statements as well as business performance. However, these irrational investors who often would sell high-priced stocks carelessly while holding low-priced stocks for far too long, tend to fail in comprehending and interpreting information properly (Priscilla et al., 2023; Lu et al., 2024). This would make the firm size, which shows the total assets of a company, an unreliable decisive factor for investing decision thus, creating a not significant effect on the firm value.

The third hypothesis leverage has an impact on the firm value of listed companies in the IDX's basic industry and chemical sector. Based on the analysis results, the relationship between leverage and firm value was found to be negative and significantly correlated. This is shown by the negative coefficient of –1.2837 as well as a p-value lower than 1% significance level, which is 0.15%. Thus, the third hypothesis of this research is accepted. This finding is in congruence with the previous research by Devie et al. (2018), Hatem (2015), and Fosu et al. (2016). Consequently, this finding aligns with the signaling theory because increase in debt will increase the collateral assets imposed on the firm's borrowing or financial expenses which can send a negative signal to investors. The high debt level tends to be associated with high company's risk thus lowering its value (Harmono et al., 2023; Kouki & Ben Said, 2011).

The negative and significant impact of leverage on the firm value in the basic industry and chemical sector, shows an adverse relationship between the two components in the sector. Meaning that any increase in leverage or debt fundings of a company will generate a decrease in its firm value, while any decrease in the leverage ratio will consequently increase the firm value. This strong leverage to firm value significance can be caused by the high-risk nature of high debt, which can generate borrowing interest or other future liabilities, and in lower the firm value. Companies and managements should be aware of this correlation, especially during the COVID-19 period as there is high volatility in the economic condition.

The fourth hypothesis for this study looked at CSR of Indonesian listed companies in the basic industry and the chemical sector in the period before and during the COVID-19; results indicated a significant difference. The comparison of the two periods was done by computing the sample mean of the CSR from the year 2016 to 2019 for the period before COVID-19; while the year 2020 is used as the period during COVID-19. According to the paired sample t-test, the analysis showed that the sample mean of CSR during the COVID-19 period was higher than the sample mean of CSR before the COVID-19 period. This result can be seen by comparing the sample mean of 11.8868 from before COVID-19 period with the sample mean of 12.1887 from during the

COVID-19 period, which indicates an increase of 0.3019. However, as the two tailed p-value result of 25.33% is greater than the significance level of 10%, this finding is considered as an insignificant difference result, hence the fourth hypothesis is rejected.

Although there was no preceding research comparing CSR performance using paired sample t-test between the period before and during the COVID-19 pandemic, especially for companies in the basic industry and chemicals sector, studies by Giannarakis & Theotokas (2011) states that in a crisis period, CSR performance would increase because companies would like to use this opportunity to sustain their image and build up better trust with their stakeholders. Similar to the findings of this research, companies increased their CSR activities in the year 2020 to respond to the increasing demand of communities. Several activities that companies performed were product donations (e.g., oxygen tubes, medicine), hygiene and medical support (e.g., masks, hand sanitizers), vaccination posts, as well as financial support to employees and communities. In contrast to that, Karaibrahimoglu (2010) suggested CSR performance experienced a significant decrease for both of its activity's extent and number despite of the increasing demand in time of crisis as management have a defensive response to the affected financial and economic condition.

Nevertheless, several factors can explain this finding of insignificant difference of CSR for manufacturing companies in the basic industry and chemicals sector. First, aligning with previous findings by Dias et al. (2016), there is no major impact of the crisis period on voluntary CSR if the industry is company oriented which tends to deal in business-to-business (B2B) environment. This is because these companies have less direct engagement with the community as compared to consumer-oriented companies. Second, as the performance of CSR in this sector has proven to be well throughout the year as illustrated in Figure 1, several additional activities conducted in response to the COVID-19 period might be covered in the issue area indicator which has been performed by the company even before the pandemic period, thus resulting in insignificant differences. However, the additional activities in 2020 have increased the net issue area scores, especially the community and employee relations area which is in line with the increasing differences. Lastly, because of the limited sample year used for the COVID-19 period which is the year 2020, there is no sufficient evidence to fully link the insignificant increase of CSR to the long-term implication of the COVID-19 period.

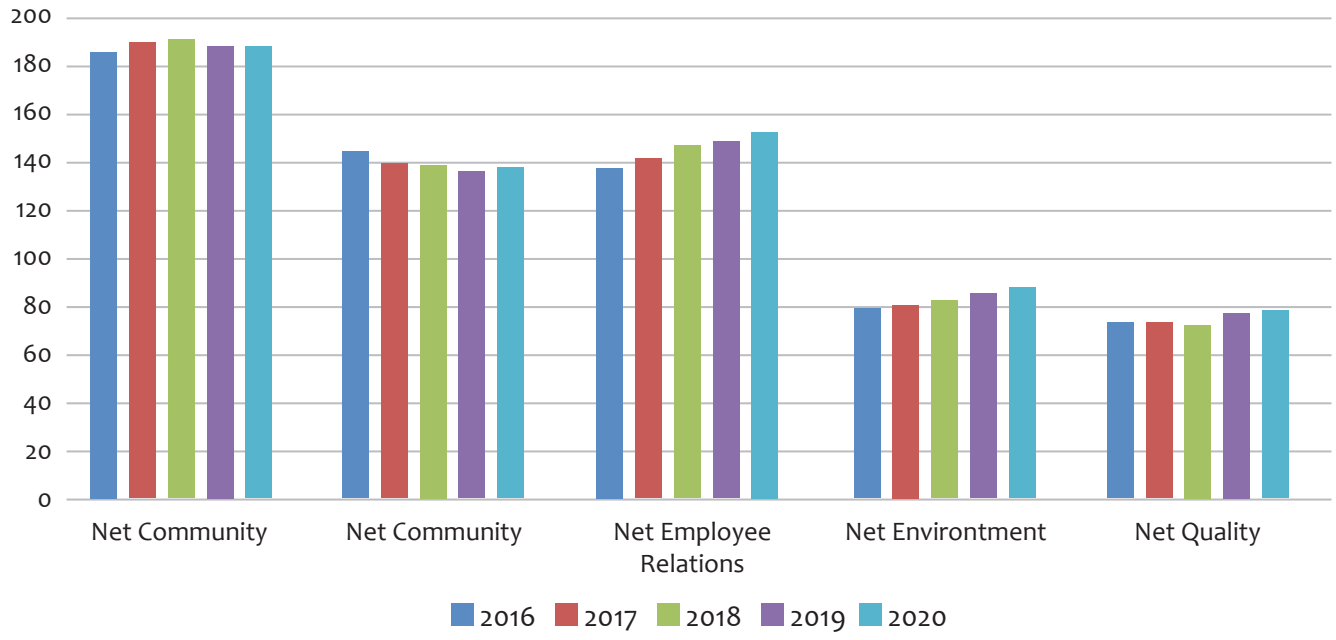

Figure 1 Net CSR Score in Each Issue Areas from 2016 to 2020

Lastly, the fifth hypothesis which was firm value of listed companies in the IDX's basic industry and chemical sector for the period before and during COVID-19 had a significant difference. Similar to the previous hypothesis result, there is a slight increase in firm value's sample mean from before the COVID-19 period to during the COVID-19 period. The increase can be seen when the firm value sample mean of 0.74000 before COVID-19 is being compared to the sample mean of 0.76866 during COVID-19, which resulted in an increase of 0.02866. Likewise, the difference is deemed insignificant as the two-tailed p-value result of 0.8515 is greater than the 10% significance level, hence the fifth hypothesis is rejected.

This result has shown to be in contrast with research done by Binh & Huong (2022), claiming that there is a significant difference of firm value between the period before and during the COVID-19, where in the period during the pandemic, the firm value decreased significantly compared to the period before. This finding resulted from the comparison of the firm value of listed companies in the telecommunication industry sub-sector and the textile industry using the paired sample t test. Binh & Huong (2022) used year 2019 as the period before and the year 2020 as the period during the COVID-19 pandemic, as opposed to this research which used the average of year 2016 to 2019 as the period before.

Contrarily, Ding et al. (2021) found that firms with better CSR and less exposure towards COVID-19 have less variances in their stock returns during the period. This is in line with the insignificant increase of the firm value in the basic industry and chemicals sector, as the company in this sector tends to deal in business-to-business (B2B) environment and receive less exposure towards the effect of COVID-19. Additionally, with the good CSR performance this sector has in the past 5 years as shown in Figure 2, there is less variance in the firm value during the COVID-19 period as it has safeguarded the firm's image to stakeholders.

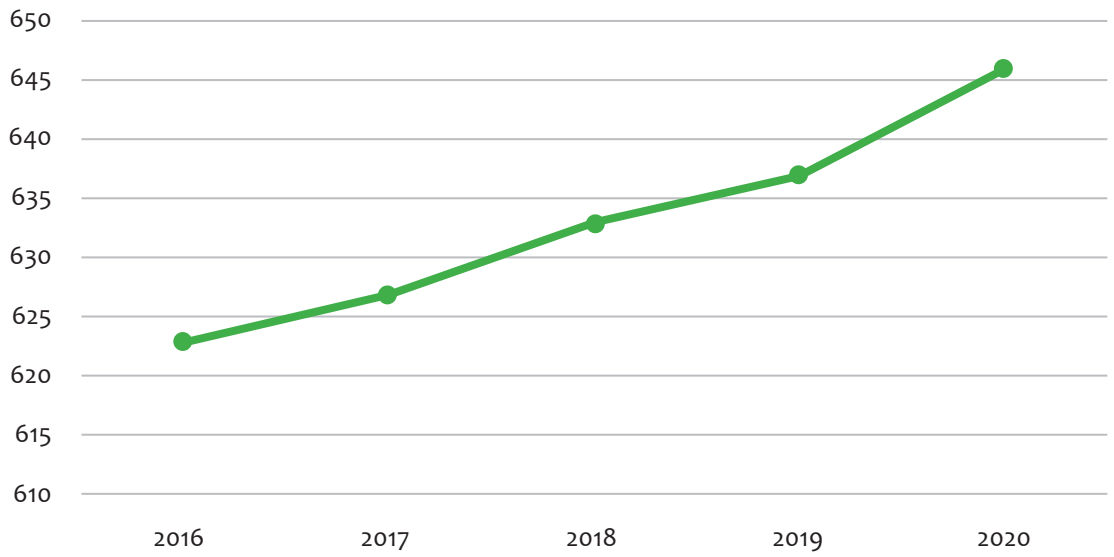

Figure 2 Net CSR Trend from 2016 to 2020

The relationship between corporate social responsibility (CSR) and firm value has been shown to be moderately significant and positive. This aligns with the stakeholder theory, legitimacy theory, and signaling theory which suggest that as businesses accommodate and complies with stakeholders' expectations, the company will give signals that they care for their stakeholders and will be recognized as a legitimate organization, which in turn will improve firm value (Deegan, 2019; Devie et al., 2018; Harrison et al., 2015). CSR has been proven

to be a determinant of firm value, as investors prefer to invest in socially responsible companies when a crisis occurs, even if they do not invest more in it (Ding et al., 2021).

To safeguard the firm's value during COVID-19 period, management performed additional CSR activities in compliance with the stakeholder's demand. This included the welfare, and wellbeing of their stakeholders, especially employees. In response to that, companies performed several new CSR activities during the COVID-19 period such as product donations (e.g., oxygen tubes), hygiene and medical support (e.g., mask, hand sanitizers), vaccination posts, as well as financial supports to employees and communities. Although these activities resulted in an insignificant difference of the net CSR performance between the period before and during the COVID-19, it had resulted in a significant increase in the employee relations area which shows how well these companies had complied with the government's regulations. Consequently, as this increase resulted in a slight increase of the firm values during the first year of COVID-19 period, there is an indication that the firm value of the sector has remained stable even during the period with high volatility in the market, with the help of companies' effort to be sustainable towards their employees.

Firm size has been shown to have a positive but insignificant relationship with firm value. This result implies that firm size holds no significant influence on the firm value. This may be due to the defensive tendency of large firms against high-risk decisions before they paid any existing obligations and in turn, management might not be able to convince investors that they can improve the company's value according to the investors' expectation (Lahjie et al., 2023; Asni & Agustia, 2022). Aside from that, it may also be caused by irrational investors which tend to disregard accounting information such as total assets which is the indicator of the firm size (Setiadharma & Machali, 2017). As a result, the firm size would become an unreliable deciding factor and investors would choose to focus on the rate of return on dividends and capital gains (Putri & Rachmawati, 2018).

On the other hand, leverage and firm value have been shown to have a strong significant negative relationship. This aligns with the signaling theory that an increase in debt will increase the collateral assets imposed on the firm's borrowing or financial expenses which can send a negative signal to investors (Harmono et al., 2023). The strong negative significance can be caused by the high-risk nature of high debt, which can generate borrowing interest or other future liabilities, and in turn lower the firm's value. Companies and management should be aware of this leverage to firm value correlation, especially during the COVID-19 period as there is high volatility in the economic condition.

Overall, the findings of this research suggest that it is critical for management to take into consideration CSR and the leverage of the company, especially in a crisis period such as the COVID-19 pandemic period. CSR may indicate the image and reputation of a firm among its stakeholders such as investors and communities, which can impact the firm's value. On the other hand, leverage may indicate the company's financial condition and the level of debt the company has, which may impact the company's risk, and in turn affect its firm value. As firm value plays an important role in investors' valuation of a company, it is essential for management, particularly those in the basic industry and chemical sector companies, to consider these factors as a strategy to attract more investors

CONCLUSION

Corporate social responsibility has been shown to have a significantly positive impact towards firm value. This implies that engaging in CSR activities would result in a favorable impact on the firm's value, as higher CSR generates higher firm value. Additionally, this finding also shows that CSR is positively correlated with firm value even during a financial crisis, as proven by the first year of the COVID-19 period included during this

analysis. This finding aligns with stakeholder theory, legitimacy theory, and signaling theory which suggests that firm value will improve when companies give positive signals of caring for the stakeholders through CSR. Firm size has been shown to have an insignificant positive impact towards firm value, which indicates that any increase or decrease in firm size gives no substantial direct effect to firm value. This result may be caused by the defensive tendency of large firms against high-risk decisions when there is an existing obligation, which in turn lower investors' confidence on management's ability to improve firm value according to their expectations (Lahjie et al., 2023). Leverage has been shown to have a negative and strong significant impact on firm value. This indicates that the leverage level has an adverse correlation with the firm's value, where the high level of leverage would lower the firm's value. In a financial crisis period, this adverse relationship holds high significance, as high debt during a financial crisis holds higher risk which in turn lowers the firm's value. This finding aligns with the signaling theory which suggests that firm value will be affected negatively when companies have high risk due to the high levels of debt (Harmono et al., 2023). Corporate social responsibility and firm value have been shown to have insignificant differences between the period before and during the COVID-19 pandemic. Although the differences are insignificant, the period during COVID-19 for both CSR and firm value experienced a slight increase as compared to the period before COVID-19. Along with the increase in CSR activities performed in response to the pandemic, the firm value of the sector has remained stable even though volatility exists in the stock market. Several limitations surfaced during the study could potentially serve as a reference for future research. First off, this study's focus is restricted to the examination of CSR, firm size, leverage, and firm value correlation for listed businesses in the chemicals and basic industries sectors of the Indonesian stock exchange (IDX) during the COVID-19 period. The findings of this research may not represent all listed companies on the IDX and different samples may result differently. In addition, the adjusted R-squared values outlined that the proportion of firm value explained by the variables used in this research is limited to 7.08%, whereas the remaining 92.92% are related to other variables beyond the scope of this study. Meaning that different results may be obtained if other variables are considered for the study. Lastly, the period of COVID-19 pandemic used in this research is limited to a one-year time frame from the year 2020, which might affect the accuracy of the findings in reflecting the long-term impact of COVID-19 period on the variables. As a result, different results may be obtained when a longer time frame is available for a more balanced comparison.

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APPENDIX

Appendix KLD Indicator

Issue Area(s)	Strength(s)	Concern(s)
Community	Charitable Giving	Negative Economic Impact
	Innovative Giving	Tax Disputes
	Volunteer Programs	Investment Controversies
	Support for Housing	
	Support for Education	
Diversity	CEO	Non – Representation
	Board of Directors	Controversies
	Work/Life Benefits	
Employee Relations	Strong Union Relations	Poor Union Relations
	Retirement Benefits Strength	Retirement Benefits Concerns
	Health and Safety Strength	Health and Safety Concerns
	Employee Involvement	
Environment	Beneficial Products and Services	Hazardous Waste
	Pollution Prevention	Substantial Emissions
	Recycling	Climate Change
		Regulatory Problems
		Ozone Depleting Chemical
		Agricultural Chemical
Products	Quality	Product Safety
	R&D / Innovation	Marketing / Contracting Concerns
		Antitrust Problem