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Environmental Responsibility, Green Innovation, Firm Value: Asean-5

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ABSTRACT

The purpose of this study was to examine the effect of Environmental Responsibility (ER) and Green Innovation on firm value. Based on stakeholder theory and Resource-Based View (RBV) this study views that Environmental Responsibility (ER) and Green Innovation (GI) are expected to positively affect firm value because they help companies achieve competitive advantage and contribute to sustainable development activities. This study uses a PooledLeast Square (PLS) regression test based on panel data collected from 399 annual reports, sustainability reports from Public Energy and Mining companies listed in ASEAN-5 between 2017 and 2019. The results of the study found that energy and mining companies were proven to increase firm value through the practice of environmental responsibility and green innovation. This research has implications for the community as consumers, it can be taken into consideration to be able to choose which company is responsible for the environment Managers, and other decision makers may need to have a better understanding of the company's behavior in adopting Environmental Responsibility activities and environmentally friendly practices to make the right decisions. Then the government as a regulator can carry out further supervision of companies, especially companies Energy and Mining are in utilizing resources efficiently.

Keywords: Environmental Responsibility, Firm Value, Green Innovation

JEL Classification: M40, M41, M49

INTRODUCTION

One of the important agendas in achieving the *Sustainable Development Goals* (SDGs) 2030 is environmental protection. Environmental issues have become a very important topic in academic literature and the business world because they can affect the economic development and sustainability of companies (Holtbrügge & Dögl, 2012; Tseng, Chiu, et al., 2013). The economy has attracted attention because of several cases of pollution and environmental damage that occur continuously such as mining activities that are not reclaimed, land clearing, burning land, exploitation of coal mines which are a source of ecological disaster problems such as floods, landslides, crop failures, and clean water crisis (Xu et al., 2016). From the various environmental problems that have been reported, the company is required to care for and be responsible for the environment and nature conservation. To answer these problems, companies are required to contribute to the environmental SDGs through the practice of *Environmental Responsibility* (UNDP, 2018a).

Holtbrügge & Dögl, (2012) explain that *Environmental Responsibility* (ER) is one component of CSR as a form of corporate commitment and practice to adopt responsible actions to protect and improve the natural environment into daily operations and management. ER is an important agenda for a country for two reasons. First, the increase in a country's economic growth which is driven by investment in various sectors causes a serious adverse impact on the environment. Second, in recent years there have been demands from the government as a result of environmental pollution problems (Li et al., 2020). Useful ER practices can help internalize externalities to national governments achieve the SDGs goals so that they contribute to the implementation of work environment plans and be a source of competitive advantage in (Lloret, 2016). From the *stakeholder* point of view, it is stated that ER is a driving factor for companies to produce good performance so that found a positive effect on firm value (Dixon-Fowler et al., 2017).

Tseng et al. (2020) found that environmental responsibility can produce a good reputation that encourages corporate governance to improve the company's position and competitive advantage in market and firm value so that it has the potential for future development, and sustainable development. Wu et al (2020) also stated that ER have a positive effect on performance both in the form of innovation and visibility that can increase firm value. Therefore, the ER program was not only created as a guide to meet sustainable development but also to attract and influence investor perceptions, which economically benefits the company and can increase firm value.

If seen, the results of existing research related to ER on firm value are mostly carried out in developed countries. Where the research results found are still diverse. Research in Australia, Italy found that ER has a positive on firm value indicating better performance (Lozano et al., 2016; Testa et al., 2016). Meanwhile, Chinese context, it was found that ER activities have negative on firm value (Li et al, 2020). Not limited to the context of developed countries, research on ER on firm value has started to emerge in developing countries such as Indonesia (Susanti & Prasetyo, 2019) and Vietnam (Tseng et al., 2020) with results showing that ER can improve sustainable performance. Regarding the difference in these results, research on ER on firm value is very interesting for further research. This is because ER can provide a conceptual model for policymakers through effective environmental management in promoting the implementation of the SDGs.

In achieving the right ER activities, a strategy is needed that can be carried out the most proactive way by implementing green innovation practices to assist the implementation of firm value creation. Based on the *RBV* theory, Green Innovation is a form of green

environmental innovation that focuses on reducing waste, preventing pollution and implementing environmental management systems to help reduce the impact of operational processes on the environment (Hart & Dowell, 2011). Currently, there are very few studies that promote green innovation, this is because many studies prefer to examine innovation in general, because innovation is considered a fundamental strategy as a whole in the sustainability process (Carvalho et al., 2018).

The practice of green innovation is a concept in the production process to reduce the impact of environmental damage, reflecting the commitment made by the company in caring for the environment (Duque-Grisales et al., 2020). The importance of *green innovation* in companies needs to be considered and investigated further because it plays a role in achieving sustainable performance (Rezende et al., 2019). In the context of the Chinese state, it was found that the involvement of companies from *green innovation* can increase effective sustainable development activities (Hong et al., 2020). This is by the suggestion made (Yao et al., 2019) which states that role *of* green innovation involved in the company can be a powerful tool in increasing firm value which is internalized into initiative behavior in daily operations.

From several explanations that have been mentioned, this research contributes to fill the gap of existing research. The gap that exists regarding ER on firm value is that this research is still conducted in developed countries, namely in Australia, America and China, there are still few who conduct research in developing countries, especially in ASEAN-5. Although there are those who do related to this topic, the research is only carried out in the manufacturing industry sector, but in this research, it will be carried out in the energy and mining sectors. Furthermore, regarding the role of green innovation, previous research mostly focused on innovation in general as a fundamental strategy. So far, no research has been found that looks at the relationship between Green Innovation and Environmental Responsibility variables which are expected to have an effect on firm value. Whereas Green Innovation can be used as a strategy by companies to improve the quality of environmental activities so that they will have a better impact on firm value. Therefore, this study tries to fill this gap by highlighting another important part of the company's internalization, namely green innovation. Therefore, this study aims to examine:

1. The effect of Environmental responsibility on firm value;
2. The effect of Green Innovation on firm value.

In this study, the sample selection is energy and mining companies in countries located in ASEAN-5. ASEAN-5 was chosen because based on data global megatrends 2017 explained that ASEAN countries agreed to cooperate in the environmental field, especially in controlling a clean and green environment in the sustainable development agenda (Tay, et al., 2017). In addition, the Environmental Performance Index (EPI) shows that environmental indicators owned by ASEAN countries on average show an increase every year. Then, energy and mining companies were chosen as research objects because these companies have a large impact on the environment which creates negative sentiments activities carried out, another thing is that energy and mining companies are also major contributors to environmental problems such as climate change, waste, nature and air pollution (Trireksani & Djajadikerta, 2016).

LITERATURE REVIEW

Previous research reviews have discussed or researched environmental responsibility and firm value, but very few have done so. In addition, existing research has shown mixed results. Environmental responsibility can produce a good reputation that encourages corporate governance to improve the company's position and competitive

advantage in the market as well as the value of the company so that it has the potential for future development, and sustainable development (Tseng et al., 2020). this study uses environmental measurements of ESG attributes which are included in environmental responsibility. The results show that companies that carry out ER activities can encourage the governance structure within the company to improve performance so that they can provide sustainable quality information. Research (Velte, 2017) also uses the ESG Index in evaluating its impact on financial performance. The results showed that ESG performance has positive thought ROA but had no impact on Tobin's Q. I this study (Wu et al., 2020) used content analysis to measure ER by analyzing environmental information disclosed in CSR reports and sustainability reports from a perspective. on the environment in the KLD index. The results show that ER activities have positive thought performance in the form of innovation and visibility that can increase firm value.

Then the role of green innovation has been done a lot but related to the value of the company is still very little. First, the research was conducted with a survey approach. Some of these studies include (Küçükoğlu & Pınar, 2015) regarding the role of green innovation thought performance that are sensitive to the environment with survey analysis in the Istanbul Industry. In this study, the measurement of green innovation was carried out using a Likert scale through a questionnaire with items including: production facilities, environmental quality and environmental system management certificates. The results of the study found that green innovation had effect on environmental performance and competitive advantage. Then research from (Sezen & Cankaya, 2013) examines the role of green manufacturing and eco-innovation on the company's sustainability performance. Data were collected through a questionnaire-based survey in 53 companies from the automotive, chemical and electronics sectors in Turkey. The results of this study indicate that the application of green manufacturing has a positive thought environmental performance and social performance. (Ge et al., 2018) The research examines the impact of green innovation strategies on sustainable competitive advantage in Chinese companies. This research was using a survey with a questionnaire calculated using a Likert scale with components on environmental protection and the development of green technology transformation. The results show that the green innovation strategy helps companies to gain a sustainable competitive advantage.

Hypothesis Development

Based on RBV theory, company carries out its activities, is not only concerned with its main goal, namely profit but also maximizes the value of the company through activities outside the company's operations by utilizing resources. Environmental responsibility (ER) is one of the resources in the form of corporate responsibility to align environmental protection activities with firm values (Li et al., 2020). ER in carrying out the form of environmental responsibility based on the interests of stakeholders both internal and external. In the view of stakeholders, the existence of ER activities will lead to an increase in company costs and cannot realize profits in the short term (Rivera & Oh, 2013). Then from the view of traditional economists also view ER as a form of loss, because the activities undertaken can reduce profitability thereby weakening the company's financial performance (Elsayed & Paton, 2005).

However, if ER can be managed properly, then the company can make ER a form of competitive advantage in the market because ER can generate a good reputation so that it will have an impact in the form of increasing firm value (Tseng et al., 2020). ER is an investment for future profits so that each stakeholder group is very important in various potential sources of value creation (Wong et al., 2018). The potential source is indicated by the existence of sustainability actors from companies in choosing high-quality

disclosures to signify their superior performance to the market (Hummel & Schlick, 2016; Jacobs et al., 2010). Furthermore, companies that disclose environmentally responsible activities (ER) in the form of appropriate environmental strategies can provide positive between environmental activities and strong financial performance (Clarkson et al., 2011; Wu et al., 2020). Then research from (Lee et al., 2016; Velte, 2017) using ESG performance that environmental activities positive on environmental performance that can increase firm value.

So that, with the development of environmental-related capabilities with the effective use of resources, ER can increase firm value (Dixon-Fowler et al., 2017). So that ER can be used as a form of effective strategy, which leads to operating efficiency (Cai et al., 2016). By utilizing this method, the company will gain support from stakeholders who will offer various facilities and resources that help maximize firm value. So, the hypothesis of this research is

H1. Environmental responsibility positive on firm value

Based on RBV theory, green innovation is resource in the form of innovation consisting of new or modified processes, systems, and products that are beneficial to environment and environmental sustainability (Oltra & Saint Jean, 2009). Currently, green innovation is increasingly being emphasized by policymakers and academics in solving environmental problems because it can increase company sustainability (Kallio & Nordberg, 2006). In aligning with company needs, green innovation can also be used as a unique tool for marketing activities to continuously increase market share (Küçükoğlu & Pınar, 2015). This is in line with research (Rezende et al., 2019) which found that green innovation will show an increase in performance in the following years. As a result, green innovation can positively affect the performance of companies that are sensitive to the environment (Sezen & Çankaya, 2013; Tseng, Wang, et al., 2013)

As a strategy, green innovation will encourage companies to have special abilities that can be an important source of competitiveness in achieving company profits (Ferreira et al., 2010). This advantage is achieved because the company can provide environmental promotion and explore green innovation that can eliminate or reduce the environmental damage that leads to a competitive advantage. This competitive advantage achieved will increase the value of the company in the future (Pedersen et al., 2018; D. Zhang et al., 2019). Even the allocation and direction of resources that always refer to the creation of firm value can significantly improve performance (Chouaibi et al., 2021; Duque-Grisales et al., 2020; Ge et al., 2018). This is what causes green innovation to be a key factor in achieving competitiveness and profitability strategies (Gürlek & Tuna, 2018; Harel et al., 2020). Thus, green innovation is part of important decisions to achieve corporate sustainability. Based on this, green innovation can be used as a strategy that is proactive, effective, and regular in its implementation because it will help companies to achieve and maintain firm value. So, the hypotheses in this study are:

H2: Green Innovation positive on firm value

RESEARCH METHOD

Sample

The study uses quantitative methods and analyzed descriptively. The data needed for this research was obtained from the Thomson Reuters database, annual reports, and sustainability reports that provide financial-related data on Environmental Responsibility and Green Innovation. This study focuses on public energy and mining companies in ASEAN-5 countries (Malaysia, Indonesia, Philippines, Singapore and Thailand) from 2017-2019. The final research sample included in this study was 399 observations.

Measurement

This study uses Tobin's Q as the dependent variable to see the firm value. Tobin's Q refers to the ratio of the firm's market value to the cost of replacing its assets. (Gompers et al., 2003; Tobin, 1969). In addition to this, Tobin's Q is considered a better measure of company performance and value. It not only reflects the past performance but also represents the company's future development expectations. Tobin's Q is measured the market capitalization value plus the book value of debt divided by total assets. Subramanyam (2014) argues that market-based measures Researchers use Tobin's q because the calculation model uses accounting data and financial data available in the market to produce firm value that looks at the company's performance from the input and output side.

The independent variable in this study is Environmental Responsibility (ER). Environmental responsibility is a form of corporate concern for environmental issues. In this study, the ER value was obtained from the results of content analysis by assigning a value to each ER component in a dichotomous manner, namely 1 if the component was disclosed and 0 if it was not disclosed. The ER disclosure calculation formula is in the form of the number of items disclosed divided by the total number of items. The disclosure is measured based on a comprehensive evaluation of five dimensions from several previous studies which include: legal awareness, social evaluation, environmentally friendly production, low carbon, and green management (Li et al., 2020).

The next independent variable is Green Innovation (GI). In this study, green innovation is described by the selected indicators as the overall measure. This study follows the indicator items from Thomson Reuters ASSET4 database. The GI is described by the overall selected indicator. These indicators demonstrate the company's capacity to achieve more ecologically productive results by improving its products and processes.

This study also uses several control variables used from several previous studies (Li et al., 2020; Trumpp & Guenther, 2017; Fosu et al., 2016; Lozano et al., 2016) in the form of: SIZE measured with the Ln of the company's total assets. LEVERAGE measured by the ratio total liabilities divided total assets. ROA is measured by the average rate of return on company assets. GDP is seen from the per capita growth of each country. AGE is measured Ln (firm's age).

Research Model

This study uses the PooledLeast Square (PLS) regression model to see the effect of companies that prioritize stakeholder interests, utilize resources (Resource Based View), through disclosure of environmental responsibility and implementation of Green Innovation from activities carried out on firm value. This study will relate these variables which are formulated as follows:

$$FV\ i,t = \alpha + \beta 1\ \ ER\ i,t + \beta 2\ \ GI\ i,t + \ \beta 3\ size\ i,t + \beta 4\ leverage\ i,t + \beta 5\ ROA\ i,t + \beta 5\ GDP\ i,t + \beta 6\ \ AGE\ i,t + \varepsilon\ i,t$$

RESULTS

Summary of Statistics

Table 1. Descriptive statistics (N=399)

Variable	Mean	Std. Deviation	Minim	Maxim
Firm Value (FV)	8.32	1.64	7.56	12.51
Environmental Responsibility (ER)	0.45	0.13	0.17	0.75
Green Innovation (GI)	0.62	0.13	0.3	0.9
SIZE	10.27	1.27	9.65	13.46
Leverage (LEV)	0.45	0.54	0.01	2.5
ROA	0.13	0.33	-0.58	1.3
GDP	4.54	1.36	1.35	6.93
AGE	3.21	0.74	0.69	4.88

Table 1 shows summary statistics in the study descriptive statistics of the entire sample. Environmental Responsibility (ER) disclosure scores ranged from 0.17 to 0.75 with an average score of 0.45. Then for Green Innovation (GI) the company's disclosures range from 0.3 to 0.9 with an average of 0.62. Dependent variable is Firm Value (FV) as measured by Tobin's q. The greater the value of the company, it will be seen as more valuable by investors so that the company's image is getting better. In table 1, it can be seen that the descriptive statistical results of *Firm Value* have an average value of 8.32. This indicates that the market value of the company is valued at 8 times its book value, which indicates market confidence in the company. The min value is 7.56 and the max value is 12.51 and the std deviation is 1.64. In addition, the independent variables used are Environmental Responsibility (ER), Green Innovation (GI). Within 3 years, the disclosure of environmentally responsible activities (Environmental responsibility or ER) has an average value of 0.45 which means that 45% of environmental responsibility disclosures have been achieved, the min value is 0.17 and the max value is 0.75 and std deviation of 0.13. Then Green Innovation (GI) is an environmentally friendly technique and process through the disclosure of indicators from ASSET4 and the annual report has an average value of 0.62, which means 62% of disclosure indicators have been achieved, a min value of 0.3 and a max value of 0, 9 and the std deviation of 0.13.

This study also uses several control variables in the form of *Size*, *Leverage, ROA, GDP and AGE.* Size in the form of company size reflects the logarithmic value of the total assets owned by the company. *Size* has an average value of 10.27 and a std deviation of 1.27 while the min and max values are 9.65 and 13.46. Then leverage in the form of the company's debt ratio in the current year. *Leverage* has an average value of 0.45, a std deviation of 0.54, a min value of 0.01 and a max value of 2.5. Furthermore, ROA is a ratio of net income to average total assets which reflects the company's ability to earn profits from the utilization of company assets. *ROA* has an average value of 0.13, a std deviation of 0.33, a min value of -0.58, and a max value of 1.3. GDP is seen from the per capita growth of each country. GDP has an average of 4.54 std deviations of 1.36 while the min and max values are 1.35 and 6.93. Finally, AGE is seen from the logarithm of the company's age. AGE has a mean of 3.12 std deviation of 0.74 while the min and max values are 0.69 and 4.88

Table 2. Regression Result Hypothesis

Model *FVit = β0 + β1ERit + β2GIit + β3SIZEit + β4LEVit + β5ROAit + β6AGEit+ β7GDPit+eit*			
Variable	**Expectation**	**Coefficient**	**Probability**
ER	+	1.332619	0.029 **
GI	+	1.883956	0.003 ***
Size	+	0.0279534	0.643
Lev	+	0.0600027	0.668
ROA	+	1.507249	0.000***
AGE	+	-0.0680562	0.523
GDP	+	-0.01780369	0.003***
constant		7.075431	0.000***
N		399	
Adj.R ^{2}		0.1569(15.69%)	
Prob > F		0.0000	

Information:
ER: Environmental Responsibility as the number of items disclosed in environmental responsibility divided by the total number of items = 12 (max score) in year t, **GI**: Green Innovation as the number disclosed in the green innovation indicator evaluated from ASSET4 to determine the level of intensity of green or responsible innovation according to R&D responsibilities, the total number of items is 10 (max score). **FV**: Firm Value as reflected in Tobin's q, **SIZE**: Natural Logarithm of Total Assets in year t, **LEV**: Ratio of Total Debt divided by Total Assets in year t, **ROA**: Ratio of net profit divided by total assets in year t, **GDP**: Growth Ratio Per capita of each country, **AGE**: Natural logarithm of Firm Age.
***significant at the level of = 1% (0.01)
**significant at the level of = 5% (0.05)
*Significant at level = 10% (0,1)

Regression Results for Environmental Responsibility, Green Innovation, Firm value

In the table it can be seen that the ER or Environmental Responsibility variable has a significant positive effect on firm value with a regression coefficient of 1.332619 with a p-stat value of 0.029 (<5%). This means that companies that have high disclosure of environmental responsibility activities will increase the value of the company. Based on this analysis, hypothesis 1a in this study is **supported**. Then the next independent variable, GI or Green Innovation, has a positive effect on firm value with a regression coefficient of 1.883956 with a p-stat value of 0.003 (<1%). This means that companies that have high disclosure of innovation in the form of green innovation will increase the value of the company. Based on this analysis, hypothesis 2 in this study is **supported**.

For the control variable, SIZE showed a positive insignificant effect with a coefficient value of 0.0279534 and a p-stat value of 0.643 (>10%), which indicates that the size of a company does not affect the firm value. The control variable *leverage* shows a positive and insignificant with a coefficient value of 00.0600027 and a p-stat value of 0.668 (< 1%), which indicates that the high/low level of a company's debt ratio does not affect firm value. The ROA control variable shows a positive coefficient value of 1.507249 and a p-stat value of 0.000 (<1%), which indicates that the higher the profitability of the company, the higher the firm value. *AGE* variable has negative impact effect on firm value. This shows that the increasing age of the company, the lower the value of the company. . *GDP* variable has a negative on firm value. This shows that the higher the GDP per capita of a country, the lower the value of companies operating in that country

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DISCUSSION

Based on the results of research on Energy and Mining companies in ASEAN-5 countries it can be seen in table 3 which shows that Environmental Responsibility (ER) has positive impacteffect on firm value, as evidenced by the significance value. p<0.05 with a regression coefficient of 1.33. This result is by the initial prediction that Environmental Responsibility has a positive effect on firm value. These results support hypothesis 1, it can be concluded that the disclosure of Environmental Responsibility activities can increase firm value. This means that the high disclosure of Environmental Responsibility (ER) activities is positively related to firm value, causing an increase in firm value. The results of this study are in line by Wu et al (2020) and Tseng et al (2020) that companies that are responsible for Environmental Responsibility (ER) activities can produce a good reputation so that it will have an impact in the form of increasing firm value. This research by stakeholder theory because companies in managing relationships with stakeholders have communicated appropriately about Environmental Responsibility (ER) so that it is captured as something important and can grow business interests and this is a concern for interested parties. In addition, the RBV theory states that companies see Environmental Responsibility (ER) as a source of sustainable potential in the form of strength over environmental performance so that they are considered to have a good role in managing environmental strategies (Li et al, 2020).

Another thing is because the company's involvement in environmental responsibility can commitment and contribution to sustainable development (Hummel & Schlick, 2016). The existence of corporate accountability in the form of ER in the sustainability report increases the transparency of the company's sustainability information. With the existence of transparent information, investors consider it as information that has value relevance. This will create added firm value so that investors provide more value in accordance with the potential economic, social and environmental benefits in the future (Wong et al, 2017).

Based on results of study on Energy and Mining companies in ASEAN-5 countries it can be seen in table 3 which shows that the application of green innovation by companies has positive on firm value, as evidenced by the significance value of p. <0.01 with a regression coefficient of 1.88. This result is in accordance with the initial prediction, that the application of green innovation has a positive effect on firm value. These results support hypothesis 2, it can be concluded that the application of green innovation will increase firm value. That is, the higher the application of green innovation by the company, the higher the value of the company.

The results of this study are in line by Tseng & Wang et al (2013), Kucukoglu & Pinar (2015), Duque-Grisales et al (2020) that the application of green innovation by companies can increase market share continuously because of Green Innovation (GI) is used as a unique tool or process in marketing to contribute to environmental sustainability. This research is also by the RBV theory which states that the company has deemed it necessary to apply one of the resources in the form of innovation consisting of modified processes, systems and products that are beneficial to the environment so that they consider green innovation as an important factor in the form of friendly innovation. The environment that will increase the value of the product and the level of competition that has an impact on the company's financial growth (Andries and Stephan, 2019). In addition, this study also confirms from a legitimacy point of view that companies that contribute and innovate in green innovation will easily align values, policies and strategies in developing business without violating government regulations (Mousa et al, 2015).

Another thing is that the green innovation implemented by the company aims to increase productivity with environmentally friendly technology and resources effectively so as to reduce negative on the environment. then, consumers' attention to the company's environmental behavior becomes a reference for management to integrate green innovation into business strategy (Yao et al., (2019); Doran & Ryan, (2016). This can strengthen the company's position in accordance with expectations and create environmentally friendly products for sustainable development.

CONCLUSION

The study investigates the effect of environmental responsibility and green innovation practices on firm value. The research findings show that companies that contribute and engage in environmental responsibility practices and the application of green innovation can improve the efficiency and market valuation of the business. This research has implications in the form of a good reference for company management about the fundamental role of environmental responsibility and green innovation practices in creating a good reputation in the market. The need for special attention for companies and regulators to improve the performance of green innovation and establish regulations on the environment. Information on environmental responsibility and green innovation can be used as an effective communication tool to prove that a company can maintain a competitive advantage and attract more investors. The results of this study indicate that higher commitment to environmentally responsible practices and greater adoption of green innovations are likely to lead to increased firm value. In this context, it can be concluded that companies that engage in environmental responsibility practices and the adoption of green innovations can prove to be a sustainable competitive advantage, leading to an increase firm value

LIMITATION

This study has some limitations in this research. First, this research only discusses the performance of environmental responsibility and green innovation of energy and mining companies listed in ASEAN-5 as the research sample. Second, this study explores the impact of the company's internal strategy, namely environmental responsibility and green innovation on firm value and does not look at external factors such as environmental regulations. Therefore, it will be a useful direction to further compare the differences in the above research across different companies and the level of both developed and developing countries, and the need to incorporate corporate governance into the framework of this research, such as ownership structure and the role of board governance in developing Environmental Responsibility and Green Innovation activities. Future studies should consider other data collection methods, such as using questionnaires or interviews.

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DECLARATION OF CONFLICTING INTERESTS

The author hereby declares that in this research there is no element of competition of interest, either personal or financial, which will affect the research reported

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