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The Effect of Green Concepts on Firm Performance Mediated by Sustainable Development

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ABSTRACT

The industry is currently showing a business paradigm shift towards sustainability in order to increase excellence and achieve long-term performance, one of which is through the implementation of green concepts. This study aims to examine the effect of green concepts, which consist of green accounting and green innovation on firm performance with sustainable development as mediating variables. The research focuses on manufacturing companies listed on the Indonesia Stock Exchange. Secondary data were analyzed using path analysis and bootstrapping techniques. The findings revealed a significant effect of green concepts on sustainable development. Sustainable development is proven to have a significant impact on improving firm performance, highlighting its pivotal role in linking green concepts to firm performance. However, green concepts have no direct significant effect on firm performance. The empirical examination of mediation effects demonstrates that the implementation of green concepts exhibits a significant indirect influence on firm performance through the mediation of sustainable development. The results of this study reinforce the role of sustainability-based strategies in bridging environmental and economic goals, particularly in the context of emerging economies. The findings underscore the importance of sustainability-oriented innovations and accounting practices for achieving long-term corporate success.

1. INTRODUCTION

Manufacturing is one of the major classifications in the business landscape and an important driver of the economy. Manufacturing Value Added (MVA) is a measure of the value added generated by manufacturing companies in an economy. The economic improvement indicated by MVA has a bearing on better firm performance. Firm performance refers to a company's ability to achieve its business objectives, including generating profits, increasing shareholder value, and contributing to overall economic growth. Firm performance reflects an organization's capacity to meet stakeholder needs and its ability to ensure long-term sustainability [1]. It includes various aspects such as operational efficiency, innovation, regulatory compliance, and adaptation to market and environmental changes.

Nowadays, environmental issues are increasingly prevalent. Emissions, pollution, and waste are examples of aspects that are of concern to the world today. This encourages the company's success to be measured not only by profit but also by environmental and social aspects. This step shows the company's commitment to applying the principles of social responsibility and sustainability in its operational activities. Manufacturing companies in their role to improve the country's economy, but on the other hand, they are also inseparable from negative impacts on the environment in the process of managing their business. The process of transforming raw materials into products that can be consumed or marketed results in the scarcity of natural resources and contributes to environmental degradation [2].

The green concept plays an important role in addressing with environmental issues that frequently occur today. The green concept emerges as an environmental concept that can motivate companies to adopt more environmentally friendly and responsible ways of doing business. Green accounting and green innovation are two aspects that support each other to minimize negative impacts on the environment. Green accounting is a form of reporting that combines financial and non-financial aspects of a company that has a role to maintain environmental safety and the welfare of the surrounding community [3]. The concept of green innovation emerges as the promotion of green development and environmental protection through innovation with an emphasis on improving processes, technologies, systems, products, and management methods [4]. Green innovation creates new technologies that help companies reduce emissions produced, use raw materials more efficiently, and innovate products that can be recycled [5]. Companies can utilize the concept of green innovation to build a clean and sustainable environment in the future, where economic growth and environmental sustainability can be balanced.

The concept of sustainable development emphasizes principles that integrate social and environmental responsibility into a company's business strategy. Sustainable development focuses on economic, environmental, and social balance, which helps companies achieve holistic long-term goals. Sustainable development efforts require companies to adopt a transparent and accountable approach to reporting and

evaluating their performance. Sustainable development is not only a strategy for survival. It is a pathway for companies to thrive in a business world that increasingly demands accountability, innovation and shared prosperity.

The purpose of this study is to obtain empirical evidence regarding the impact of implementing green accounting and green innovation on firm performance with the role of sustainable development as a mediating variable. This research is important to do considering the limited research that integrates the concept of sustainable development as a mediating variable in explaining the relationship between green practices and firm performance. Although sustainable development is widely regarded as the ultimate objective, there is a notable scarcity of research that examines its role as a mediating variable in connecting green strategies to firm performance. This research provides several significant contributions. First, it provides a new perspective by positioning sustainable development as a strategic bridge that connects the implementation of green accounting and green innovation with improved firm performance. Second, it provides an empirical basis for companies in designing effective sustainability strategies in an era of business competition that increasingly prioritizes environmental aspects.

2. LITERATURE REVIEW

2.1 Stakeholder theory

Stakeholder theory is one of the theories initiated by R. Edward Freeman in 1984, in which the development of the stakeholder concept is systematically discussed in the context of strategic management. Stakeholder theory explains that interested parties are directly related to the decisions and activities of a company, both internal and external. They include employees, customers, suppliers, governments, local communities, shareholders, and even the natural environment. This stakeholder theory is defined as a theory that considers the interests and manages the needs, desires, and demands of its stakeholders [6].

Hörisch et al. [7] describe four main features of Freeman's stakeholder theory. First, organizations engage in reciprocal relationships with stakeholders. Second, companies and stakeholders have aligned goals in creating value. Third, business decisions contain ethical aspects. Fourth, companies disclose information for the benefit of stakeholders that have an impact on the environment, society, and the company. Harrison and Wicks [8] explain that by focusing on ethics and stakeholder values, companies can create sustainable long-term relationships.

2.2 Triple bottom line

Elkington [9] states that the basic concept of the triple bottom line emphasizes the success of companies that are not only measured based on financial benefits, but also need to pay attention to social and environmental aspects. The goal is to ensure that the company's operations do not damage the environment but help maintain and improve ecological conditions for future generations. The profit aspect in the triple bottom line framework refers to the financial performance of the company which is expected to generate profits in line with long-term sustainability. The social aspect emphasizes the importance of a company's responsibility towards its stakeholders in providing positive impacts that contribute to social development and community welfare. The environmental aspect refers to how the company manages the environmental impact of its operations.

2.3 Firm performance

Firm performance reflects the effectiveness and efficiency of the company in achieving the desired results and meeting the specified targets. Firm performance indicators vary depending on the aspects measured but generally include financial performance. This financial performance analysis evaluates the current financial condition and identifies potential future development [10]. This performance measurement not only describes short-term achievements but also becomes an indicator of the company's ability to maintain a competitive advantage and long-term business sustainability.

2.4 Sustainable development

Sustainable development is a concept that maintains a balance between economic, environmental, and social dimensions by seeking long-term prosperity and global welfare [11]. The concept of sustainable development sees the economic, social, and environmental aspects as intertwined and must be considered in a balanced manner so that development can take place sustainably and provide optimal benefits for current and future generations.

Companies should endeavour to meet the needs and expectations of their stakeholders without compromising the ability of others to meet their needs, thereby serving all stakeholders in a balanced and fair manner. This approach ensures that no party is disadvantaged or ignored in the company's decision-making processes and operations. A focus on sustainable development enables organizations to lower costs through operational efficiency and efficient use of resources. It also increases the level of innovation by encouraging the development of greener and more sustainable services and products [12].

2.5 Green accounting

Green accounting is a standard with an evolving form of reporting that includes financial and non-financial data and is reported to users who have a direct interest [3]. Green accounting aims to incorporate environmental costs and benefits derived from business activities, which are then reported in the financial statements. Green accounting system acts as a sustainable accounting system for management to manage traditional economic and environmental objectives.

Companies are encouraged to use the concept of green accounting in their business processes because of the need to track and publish environmental achievements in line with applicable obligations [13]. Green accounting has three main objectives, namely collecting and calculating energy-related materials, reporting the use of environmental costs, and providing information on other costs for environmental protection [14]. Green accounting considers costs relevant to environmental degradation as well as benefits derived from conservation efforts.

2.6 Green innovation

Green innovation is a method, practice, system, and production process that aims to minimize negative effects on

the environment. Green innovation is defined as a form of corporate innovation that incorporates environmentally friendly technologies in its production processes, thereby leading to increased energy efficiency and a reduction in generated pollution. Green innovation is also related to the design of environmentally friendly products so that the waste produced can be recycled [15]. Green innovation is currently highly recommended for use globally in reducing environmental pollution from cutting energy and raw materials [16]. Reducing gas emissions, water waste, and switching from fossil fuels to bioenergy are goals in green innovation by minimizing resources and optimal energy [17].

Lin et al. [18] explained that there are two constructs in green innovation. Firstly, green product innovation which uses non-toxic compounds or biodegradable materials in the production process by changing or modifying the product design with the aim of reducing the impact on the environment. This is achieved through the modification of product designs aimed at reducing waste and enhancing resource efficiency. Second, green process innovation focuses on the optimization of production processes with the primary aim of reducing energy consumption utilized in both production and recycling processes.

2.7 Prior research

Several previous studies have examined the relationship between green accounting and green innovation on sustainable development. Implementation of green accounting can improve sustainable development [19-21]. Green accounting has an important role in sustainable development by combining aspects of measuring environmental impact and cost efficiency to establish harmony between profit and environmental sustainability. Previous research also shows that green innovation has a positive effect on sustainable development [4, 22, 23]. This is because the long-term impact of green innovation can help companies create a more efficient and sustainable system that contributes to development that can balance economic, social, and environmental aspects. Contrary to the research of Hindriani et al. [24] and Utami and Prasetyo [25], who found that green accounting and green innovation have no significant effect on sustainable development. Hindriani et al. [24] and Utami and Prasetyo [25] explain that this fact is due to the lack of reporting of green accounting and green innovation companies so that there is no significant influence between green concepts on sustainable development.

Other studies have also examined the relationship of green accounting and green innovation to firm performance. Several previous studies have shown that green accounting can improve firm performance [20, 26, 27]. This is because green accounting can increase customer trust and loyalty so it has an impact on firm performance. In addition, green innovation also has a positive influence on firm performance [28-30]. This is because the application of green innovation can result in operational cost savings. In contrast, previous research which shows that green accounting and green innovation have no significant effect on firm performance [19, 31-33]. This provides the fact that the application of green accounting and green innovation in developing countries faces different challenges compared to developed countries.

3. HYPOTHESIS

A hypothesis is a temporary statement or conjecture based on initial observations in a study. Figure 1 illustrates the conceptual framework used in this study.

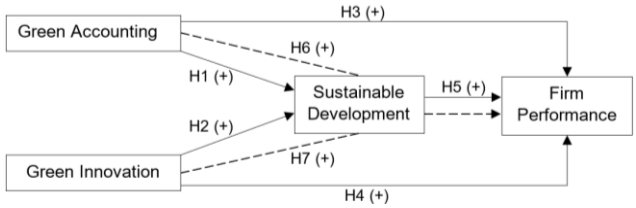

Figure 1. Conceptual framework

3.1 Hypothesis development

3.1.1 Green accounting to sustainable development

Based on the triple bottom line concept, green accounting helps companies account for environmental costs, supports social sustainability, and encourages companies to be proactive towards the environment. These contributions directly support sustainable development, where economic growth goes hand in hand with social responsibility and environmental protection. The purpose of green accounting towards sustainable development is to measure and inform the public about data on various company activities that affect sustainable development [13]. Recent research shows that reporting that integrates environmental aspects in corporate reports plays an important role in supporting sustainable development [21]. Based on this description, the proposed hypothesis is:

H1: *Green Accounting has a positive effect on Sustainable Development.*

3.1.2 Green innovation to sustainable development

Based on the triple bottom line concept, corporate innovation can contribute to long-term profitability through increased operational efficiency, can improve the quality of life by producing environmentally friendly products, and reduce negative environmental footprints through resource efficiency. The application of green innovation can save energy resources through the utilization of environmentally friendly materials and processes, thus contributing to the reduction of negative impacts on the environment [22, 23]. Green innovation is an important aspect in achieving corporate sustainability [4]. Green innovation is a concept that can encourage companies to consider and integrate sustainable efforts that pay more attention to the impact on the surrounding environment [34]. Based on this description, the proposed hypothesis is:

H2: *Green Innovation has a positive effect on Sustainable Development.*

3.1.3 Green accounting to firm performance

Based on stakeholder theory, green accounting helps companies communicate environmental performance in a transparent and accountable manner, making it effective in meeting stakeholder expectations, strengthening the company's image, and building their trust. Green accounting in company reports can increase public loyalty and have an impact on financial improvement [20]. Green accounting is a

form of investment in the environment that can improve firm performance [26, 27]. Green accounting functions as an important information provider in management decision making. Considering and recording costs and benefits related to environmental activities can encourage companies to identify areas that can increase efficiency and minimize negative impacts on the environment. Based on this description, the hypothesis proposed is:

H3: *Green Accounting has a positive effect on Firm Performance.*

3.1.4 Green innovation to firm performance

Stakeholder theory states that the success of a company is determined by various parties who have an interest. Green innovation is a company's effort to fulfill stakeholder expectations for environmentally friendly products and processes, which increases customer satisfaction and loyalty and has a positive impact on firm performance. The more stakeholder expectations are fulfilled, the higher the chance of increasing customer loyalty and company reputation which contributes positively to firm performance. Environmental innovation demonstrates the capacity to minimize energy consumption expenditures and mitigate pollution, thereby enhancing organizational performance. This initiative is implemented through the utilization of environmentally sustainable resources [29, 30]. Product and process innovations that are more environmentally friendly can optimize resource efficiency and reduce costs. Based on this description, the proposed hypothesis is:

H4: *Green Innovation has a positive effect on Firm Performance.*

3.1.5 Sustainable development to firm performance

Based on stakeholder theory, sustainability is not only a corporate social responsibility but also a long-term business strategy that creates value. Meeting stakeholders' needs and expectations through sustainability initiatives can improve overall financial performance. Stakeholder theory emphasizes that value is created through collaboration and interaction between a company and its stakeholders [35]. The practice of sustainable development not only helps in minimizing the negative impact on the environment but also pays attention to social and economic aspects. Sustainable development practices ensure that companies can operate and adapt sustainably without depleting resources or harming the environment. This encourages an increase in reputation and consumer interest who are aware of the importance of the concept of sustainability [36]. Based on this description, the proposed hypothesis is:

H5: *Sustainable Development has a positive effect on Firm Performance.*

3.1.6 Sustainable development mediates the relationship between green accounting and firm performance

Based on stakeholder theory and the triple bottom line, sustainable development encourages the application of green accounting that is economically, socially, and environmentally balanced, improves long-term performance and fulfills corporate responsibility to stakeholders. Sustainable development enables the creation and maintenance of enduring business conditions that generate consumer loyalty. Environmental cost reporting can help companies understand their true costs and assist management in making sustainable decisions [37]. Sustainable development has an important role in linking green accounting practices in assessing sustainability efforts so that it has an impact on financial performance [36]. Based on this description, the hypothesis proposed is:

H6: *Sustainable Development mediates the relationship of Green Accounting to Firm Performance.*

3.1.7 Sustainable development mediates the relationship between green innovation and firm performance

Based on stakeholder theory, sustainable development transforms green innovations into practices that fulfill the expectations of stakeholders who have a focus on sustainable growth. The triple bottom line view explains that green innovation integrated with sustainable development can increase operational efficiency, improve relations with society, and reduce negative impacts on the environment. Sustainable development can encourage companies to create competitive advantages in the application of green innovation and improve financial performance [32]. The concept of sustainable development mediates green innovation on firm performance by ensuring innovation is aligned with sustainable development in environmental, social, and economic aspects. Sustainable development acts as a framework that integrates innovation towards achieving long-term corporate performance [4]. Based on this description, the proposed hypothesis is:

H7: *Sustainable Development mediates the relationship of Green Innovation to Firm Performance.*

4. RESEARCH METHOD

This research focuses on manufacturing companies listed on the Indonesian stock exchange with research samples using purposive sampling techniques. This approach is used to ensure that the selected sample is in accordance with the research objectives, which emphasize corporate reporting and innovation as well as sustainability. Secondary data used in this study were obtained through public sources such as sustainability reports, annual reports, and company financial reports. The reports were accessed through the company's official website and the Indonesian Stock Exchange website. This study applied strict inclusion criteria to maintain data integrity and relevance. The selected samples are manufacturing companies that consistently publish sustainability reports, annual reports, and financial reports throughout the observation period. This ensures the availability of complete and consistent information for analysis. The total sample that meets the criteria in this study is 138 firm-year observations, which represents a significant dataset to explore the relationship of green concepts, firm performance, and sustainable development.

The operational variables of this study consist of independent, dependent, and mediating variables. The first independent variable is green accounting. In this study, green accounting is calculated using the Global Reporting Initiative (GRI) 300 indicator, which focuses directly on disclosures related to environmental impacts. The second independent variable is green innovation. Green innovation in this study is measured through two dimensions, namely process innovation and product innovation, which refer to research by Xie et al.

[38]. The dependent variable used is firm performance proxied by Return on Asset (ROA). The mediating variable used is sustainable development. The calculation of sustainable development in this study refers to the research of Marota et al. [39].

The data analysis used in this study used path analysis method to see the direct effect and bootstrapping test using Process Macro by SPSS to see the effect of mediation. Bootstrapping is a statistical method used to estimate the sampling distribution of a statistic by resampling or resampling repeatedly from existing data [40]. Decision making on the effect of mediation is when the confidence intervals (CI) value consisting of lower and upper values does not include zero. This means that all values in the interval have the same direction [41].

5. RESULT

5.1 Equation

This study collects research data obtained through sustainability reports, annual reports, and company financial reports. Financial reports were used to obtain data on corporate performance variables, while sustainability reports and annual data reports were used to collect data on green accounting, green innovation, and sustainable development. Path analysis was used in the analysis, with the regression model as follows.

$$SD_{it} = \alpha + \beta_1 GA + \beta_2 GI + \varepsilon \quad (1)$$

$$ROA_{it} = \alpha + \beta_3 GA + \beta_4 GI + \beta_5 SD + \varepsilon \quad (2)$$

where,

SD : sustainable development
GA : green accounting
GI : green innovation
ROA : firm performance
i : company
t : year

Table 1 presents descriptive statistical data for each variable used in this study. Descriptive statistics provide important information to understand the distribution and variation of data in research.

Table 1. Descriptive statistics

N = 138	Mean	Max	Min	Std. Dev
GA	0.2981	0.72	0.03	0.17143
GI	0.5788	1.00	0.13	0.21416
ROA	0.0478	0.31	-0.40	0.09531
SD	29.0157	33.43	24.69	1.83304

To test the hypothesis that looks at the direct effect between variables, this study uses the path analysis method. The path analysis in this study employs two equations. The first equation examines the influence of green accounting and green innovation on sustainable development, while the second equation evaluates the impact of green accounting, green innovation, and sustainable development on corporate performance. Table 2 shows the results of the path analysis test that tested the first hypothesis to the fifth hypothesis in this study.

Table 2. Path analysis

Variable	Coef	Std. Error	t-stat	P-Value
GA → SD	0.235	0.913	2.747	0.007
GI → SD	0.337	0.731	3.942	0.000
GA → ROA	-0.065	0.053	-0.672	0.503
GI → ROA	0.106	0.044	1.070	0.286
SD → ROA	0.276	0.005	2.925	0.004

Based on Table 2, it can be observed that H1, H2, and H5 show a value smaller than the significance level of 5%. This shows that H1, H2, and H5 proposed in this study are accepted. Meanwhile, testing H3 and H4 in this study has a P-value of 0.503 and 0.286 respectively, which shows a number greater than the 5% significance level. This shows that H3 and H4 proposed in this study are rejected.

Furthermore, Table 3 presents the results of the mediation test conducted using the bootstrapping method to examine H6 and H7 proposed in the hypotheses of this study.

Table 3. Bootstrapping test

Variable	Indirect Effect	Boot SE	Bootstrapping BC 95% CI	
			Lower	Upper
GA → SD → ROA	0.1219	0.0402	0.0488	0.2052
GI → SD → ROA	0.1178	0.0449	0.0354	0.2109

Table 3 presents the mediation test results, indicating that the confidence interval does not include zero and the interval has the same direction, namely positive. This confirms that sustainable development can mediate green accounting and green innovation on firm performance. Based on these tests, H6 and H7 proposed in this study are accepted.

6. DISCUSSION

6.1 Green accounting to sustainable development

The results of this study indicate that green accounting significantly has a positive impact on sustainable development. This shows that the higher the disclosure of green accounting made by the company, the greater the company's contribution to sustainable development. The results of this study are consistent with the triple bottom line concept, which states that the long-term success of the company is not only seen from the financial aspect but also from the environmental and social aspects. Green accounting as a form of reporting and measuring environmental impacts encourages companies to adopt more environmentally friendly practices such as efficient use of resources and better waste management. Besides focusing on the environment, green accounting also pays attention to social welfare aspects such as positive or negative impacts on local communities or employees and economic aspects by maintaining financial benefits in a sustainable way.

Dura and Suharsono [20] explain that green accounting is a very important indicator in supporting the sustainable development of a company. It is formed through measuring environmental impacts in order to produce a healthy and sustainable environment. Green accounting can identify areas where they can reduce expenses, such as reducing emissions and waste [21]. These savings not only increase economic profits, but also support environmental balance in the long run.

6.2 Green innovation to sustainable development

The results of this study indicate that green innovation significantly has a positive impact on sustainable development. This means that the greater the level of green innovation adopted by companies, the more significant the impact on improving sustainable development. These innovations play a role in reducing negative impacts on the environment, creating efficiency in resource use, and encouraging more sustainable business practices. Consistent with the triple bottom line concept that has an important role in the modern business world, especially in the context of sustainability. Green innovation is currently a concept that transforms conventional models into more responsible practices in achieving a balance of economic, social, and environmental aspects.

Green innovation acts as a key element of sustainability. Green innovation significantly impacts sustainable development by improving environmental performance, driving economic benefits, encouraging social responsibility, and integrating triple bottom line principles [22]. Research by Asadi et al. [4] explains that green innovation refers to measures to reduce the negative impact on the environment from the production and operation side. It focuses on improving processes, technologies, and management methods to improve sustainability.

6.3 Green accounting to firm performance

The results of this study indicate that green accounting does not have a significant impact on firm performance. This explains that although green accounting aims to increase environmental transparency and corporate responsibility for sustainability aspects, its application has not been proven to directly affect firm performance. This can be influenced by several factors. The institutional environment in developing countries has not fully supported the application of green accounting as in developed countries [31]. Limited infrastructure, regulations, and institutional support make the impact on firm performance less than optimal. Although environmental reporting has increased due to stakeholder pressure, the level of compliance is still low so that the effect is not significant.

Another factor is that the high environmental burden and dependence on natural resources make green accounting less influential on firm performance [19]. The primary focus is more on long-term environmental protection and sustainability than short-term profitability. In other words, the application of green accounting is more directed at maintaining environmental sustainability with long-term impacts rather than short-term profitability.

6.4 Green innovation to firm performance

The results of this study indicate that green innovation does not have a significant impact on firm performance. The goal of green innovation in increasing efficiency and added value through sustainable innovation has not been proven to directly affect firm performance. Green innovation requires significant investments, such as the adoption of new technologies that are more environmentally friendly. Investments in new technologies take a long time to show financial impact due to their high cost and effect on short-term profits [42, 43]. Technology implementation often requires operational adjustments and training, which adds to the upfront costs. Therefore, the effect of green innovation on firm performance is only visible after a period of adaptation, when efficiency and productivity increase.

Another insignificant factor is also caused by the lack of institutional support and the lack of strong environmental regulations in providing incentives for companies that carry out environmental innovation [33]. This lack of support has limited the motivation of companies to carry out environmentally friendly and sustainable practices. The lack of strong regulations causes companies to experience fewer direct benefits from their innovations, so attention to these innovations becomes less of a priority.

6.5 Sustainable development to firm performance

The results of this study indicate that sustainable development significantly has a positive impact on firm performance. This explains that the integration of sustainable development in business strategy can be one of the key factors in creating long-term economic value for the company. Consistent with stakeholder theory, which emphasizes the importance of fulfilling the interests of all stakeholders in achieving sustainable long-term relationships to enhance firm performance. The implementation of sustainable development not only encourages companies in operational efficiency and profitability, but also strengthens the company's competitiveness from the perspective of its stakeholders such as increased customer loyalty.

Sustainability that considers economic, social, and environmental aspects can increase stakeholder satisfaction and lead companies to improve corporate performance [44]. The company's sustainability practices can influence the increase in brand loyalty and value, which directly contributes to the firm's performance measured financially [45]. This proves that economic, social, and environmental balance is not just a corporate responsibility but also substantially contributes to firm performance.

6.6 Sustainable development mediates the relationship of green accounting to firm performance

The results of this study indicate that sustainable development has a positive mediating impact on the relationship between green accounting and firm performance. This explains that the application of green accounting can contribute to improving firm performance when integrated with the principles of sustainable development. Consistent with stakeholder theory in which sustainable development helps align the interests of various stakeholders. Triple bottom line framework also explains that the role of sustainable development as a mediating variable ensures that green accounting does not stand alone but is integrated into a broader business strategy in having a significant impact on firm performance. This means that green accounting is not just an environmental recording system but needs to be integrated with aspects of sustainability that consider economic, social, and environmental aspects.

6.7 Sustainable development mediates the relationship of green innovation to firm performance

The results of this study indicate that sustainable development has a positive mediating impact on the relationship between green innovation and firm performance.

This finding indicates that the success of green innovation in improving firm performance is strongly influenced by how companies adopt and implement sustainability principles in their business strategies. Consistent with stakeholder theory, where forms of innovation integrated with sustainability can create value and ethics towards their stakeholders. These values and ethics can then build trust and loyalty of the company to stakeholders. The triple bottom line concept also explains that balancing economic, social, and environmental aspects can create long-term sustainable value.

Overall, aligning innovation and corporate sustainability can affect firm performance by strengthening company competitiveness and ensuring long-term operational sustainability [4]. Sustainable development often encourages companies to make sustainable innovations, both in terms of products and business processes. Environmentally friendly products such as the use of technology aimed at energy efficiency and recycled raw materials can be a significant differentiator in the market. Green innovation is crucial for sustainable development because of its role as a form of investment that can minimize negative impacts on the environment and simultaneously fulfill consumer desires.

7. CONCLUSION

We aimed to assess the effect of green concepts to firm performance with sustainable development as mediating variable. In summary, we tested the effect of green accounting and green innovation on sustainable development shows a significant positive impact. It shows that the practice of green concepts contributes to sustainable development. Green accounting aims to increase corporate transparency regarding environmental issues, which is not only a social responsibility but also helps in sustainable development. Green innovation encourages companies to continue to innovate in creating environmentally friendly products and processes that make a real contribution to sustainability. In contrast to the results of direct testing between green accounting and green innovation variables on firm performance, which show no significance. This shows that the implementation of green concepts is not enough to improve firm performance in the short term. This is due to the high initial investment costs and the long time required to adapt. Testing the sustainable development variable on firm performance shows a significant positive impact. This shows that sustainability efforts have a direct effect on improving firm performance. The mediation test results in this study confirm positive evidence. Mediation testing shows the effect of sustainable development in mediating the relationship between green accounting and green innovation on firm performance.

This research implies that sustainable development has a very important role in improving firm performance. The successful implementation of green accounting and green innovation requires a holistic approach through sustainable development to improve firm performance. The green concept integrated with sustainable development has a greater influence in encouraging improved firm performance. Green accounting and green innovation do not directly affect firm performance, but with the role of sustainable development the influence of green concepts on firm performance becomes stronger.

The limitation of this research lies in the limited access to data where there are several companies that do not have official websites. This has an impact on the difficulty of obtaining data directly from the main source, especially regarding sustainability reports. In addition, this research is also limited to manufacturing companies so that the results of this study cannot be generalized to all types of industries. Therefore, future research can expand the scope of the research sample by adding other sectors so that it can provide a generalizable picture for all industrial sectors.

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