

GREEN INNOVATION PRACTICE ON CORPORATE'S SUSTAINABLE GROWTH IN NON-FINANCIAL: THE MEDIATING EFFECT OF ENVIRONMENTAL MANAGEMENT ACCOUNTING

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ABSTRAK

Dalam memahami bagaimana inovasi hijau dan pertumbuhan berkelanjutan terkait, penelitian ini bertujuan untuk menyelidiki fungsi Akuntansi Manajemen Lingkungan (Environmental Management Accounting-EMA) sebagai mediator. Dengan menggunakan 539 korporasi non keuangan yang terdaftar di Bursa Efek Indonesia (BEI) pada periode 2013-2020 dengan total 2.716 hasil observasi, dengan menggunakan uji analisis jalur dan uji Sobel dalam penelitian ini untuk menguji hipotesis menggunakan software STATA 14. Menurut temuan analisis jalur, jelas bahwa (1) inovasi hijau berpengaruh terhadap EMA; (2) inovasi hijau berdampak pada pertumbuhan berkelanjutan; (3) EMA tidak berdampak pada pertumbuhan berkelanjutan; dan (4) EMA tidak mampu memediasi hubungan antara inovasi hijau dan pertumbuhan berkelanjutan. Last but not least, penelitian ini juga melakukan uji ketahanan dan mendapatkan hasil yang sesuai dengan tes analisis jalur. Harapannya perusahaan menginovasikan berbasis lingkungan ke dalam strateginya yang menawarkan keuntungan signifikan untuk pertumbuhan berkelanjutan dengan mengurangi biaya, meningkatkan keunggulan kompetitif, memastikan kepatuhan terhadap regulasi, dan membuka peluang pasar baru.

Kata kunci: inovasi hijau, akuntansi manajemen lingkungan, pertumbuhan berkelanjutan.

ABSTRACT

This research explores the role of Environmental Management Accounting (EMA) as a mediator in the relationship between green innovation and sustainable growth. This research utilized the STATA 14 program to test hypotheses using the path analysis test and the Sobel test. The analysis was conducted on 2,716 observations from 539 non-financial corporates listed on the Indonesia Stock Exchange (IDX) between 2013 and 2020. The path analysis findings indicate that (1) green innovation positively influences EMA; (2) green innovation positively affects sustainable growth; (3) EMA does not have a significant impact on sustainable growth; and (4) EMA does not operate as a mediator between green innovation and sustainable growth. Additionally, the present research conducted a rigorous robustness test, which yielded results that aligned with those obtained from the path analysis test. Incorporating environmentally focused innovation into company plans provides substantial benefits for achieving sustainable growth, including cost reduction, improved competitive advantage, compliance with regulations, and exploring new market opportunities.

Key words: green innovation, environmental management accounting, sustainable growth.

INTRODUCTION

Each year, the ongoing growth in carbon dioxide emissions remains a significant concern, as it is a crucial element in severe climate change. According to the "BP Statistical Review of World Energy 2020", Indonesia

placed 5th in the Asia Pacific region for carbon dioxide emissions in 2019. It contributed 1.8% of world carbon dioxide emissions, following China, India, Japan, and South Korea (BP p.l.c., 2020). The persistence of statistical issues led to sus-

tainable development, initially suggested in 1972 by the global environmental sector (Marietza and Nadia, 2021).

The idea of sustainable development in business inspires nations and international organizations to adopt a principle that incorporates environmental (E), social (S), and governance (G) considerations to build a framework for sustainable development in society. ESG is a byproduct of responsible investment activities, which include active ownership and techniques and procedures that incorporate ESG factors into investment decisions (PRI, 2022). In order to assess corporate behaviour and potential financial performance, investors frequently utilize ESG as a guideline and method.

In recent years, green innovation (GI) has become a popular concept, along with the problems of global warming and environmental damage, which pose a severe threat to the world's population. Sustainable development addresses humanity's aspirations for a better life while observing the limitations imposed by nature. The 17 sustainable development goals (SDGs) the United Nations (UN) promoted aim to meet current and future stakeholder needs and ensure a better and sustainable future for all while balancing economic, social, and environmental development. Business innovations resulting from the adaptation of sustainability models have brought changes to manufacturing processes by considering the impact of operations on environmental risks, such as green innovation. Through this regulation, companies, such as GI, are indirectly required to innovate by finding or modifying process cycles or environmentally friendly products (Agustia et al., 2022). GI motivation in the industry is carried out if the company uses environmentally friendly innovation strategies in its production value chain.

Adopting innovative, environmentally friendly goods and services is one of the environmental ESG principles that might impact corporate finances, or what can be referred to as green innovation (EBA, 2021). Green innovation is an effort to create

environmentally friendly products with production processes that can minimize energy, reduce the use of materials that can pollute the environment, and prevent the creation of pollution by business actors (Song and Yu, 2018; Li et al., 2020; Novitasari and Agustia, 2021). In addition to reducing negative impacts on the environment, green innovation can also advance performance in sustainability and corporate finance (Sezen and Çankaya, 2013).

One of the growth rates in the financial aspect that can provide future benefits if maintained is sustainable growth, which was first introduced by Higgins (1977) as a concept to test the consistency of growth objectives with corporate financial policies. By measuring sustainable growth, corporations have a reference in managing their internal funds to achieve their growth without borrowing funds from external parties (Higgins, 1977). As a sustainable approach, green innovation can encourage the corporation's sustainable growth through internal cost savings, such as energy consumption costs and waste treatment costs, as well as expanding the corporation's market share (Sezen and Çankaya, 2013). In line with this statement, research by Cigoj (2020), Asadi et al., (2020), Li et al., (2020), and Skare and Porada-Rochon (2022) prove that green innovation can significantly boost a corporation's economic growth. In contrast, in their research, Cai and Li (2018) and Larbi-Siaw et al., (2022) did not find any effect caused by green innovation on the corporation's sustainable growth.

However, corporations also need a lot of costs when starting to implement green innovation, such as research and development (R&D) costs, material acquisition costs, labour safety costs, and product certification costs (Agustia et al., 2019). Due to hidden expenses, corporate managers need help to measure and report information about the environment, especially costs related to the environment, using traditional accounting systems (Gunarathne et al., 2021). In response to these limitations, Environmental Mana-

gement Accounting (EMA) has emerged and is getting more and more attention from business actors. EMA manages quantitative and qualitative information on environmental impacts and financial consequences of business activities relevant to the environment and provides information that supports decision-making, reporting, and accountability (Latan et al., 2018). Agustia et al., (2019) and Chaudhry et al., (2020) reveal that green innovation has a significant positive effect on EMA; this indicates that EMA can help corporations make reliable decisions for the corporation's economic growth. Accounting practices such as EMA can help corporations gain potential environmental advantages while understanding their responsibilities as business actors.

The use of EMA in a corporation can provide important information about the life cycle of a product (life cycle analysis), which is then used as evaluation material. Phan et al., (2017) and Chichan et al., (2021) claim that the application of EMA can provide accurate information about the dimensions of sustainable development and has a remarkable part in improving the corporate's environmental performance by considering environmental issues when making decisions. More effective and efficient cost management through EMA can make it easier for corporates to achieve one of the goals of sustainable growth, namely managing corporate finances to expand without overspending or underspending (Brugmann, 2021). Research by Christine et al., (2019) further indicates that implementing the EMA can significantly boost the corporation's economic growth. Although EMA can produce positive financial performance results in the long term, Riaz and Saeed (2020) argue that by the "cost to be green" ideology inherent in improving environmental management, corporates must incur high costs and may lose money control to manage the corporate's internal funds, so that the corporate cannot maintain its level of sustainable growth. In line with this argument, Testa and D'Amato (2017) prove that environmental certification,

which in this study is a measurement of EMA, has no consequence on the corporation's financial performance.

The application of green innovation and EMA in a corporation is in accord with the theory of legitimacy that counts on a social contract that the corporation will continue to meet society's expectations (Deegan, 2002). The concept of legitimacy is essential for corporations in analyzing their relationship with the environment. Legitimacy theory shows that corporations try to adjust the social values in their business activities with the norms that apply in people's lives (Amir et al., 2020); this is carried out voluntarily so that the community can accept the corporations.

The gap in this research lies in the need for more research results on the relationship between green innovation and sustainable growth. When Przychodzen and Przychodzen (2015), Asadi et al., (2020), Li et al., (2020), and Skare and Porada-Rochon (2022) argue that green innovation can affect a corporate's sustainable growth through higher asset efficiency in generating revenue, better cost management, and achieving market differentiation, Cai and Li (2018) and Larbi-Siaw et al., (2022) argue that the high costs and risks associated with green innovation will make it challenging for corporations to realize financial gains shortly, negating any direct impact of green innovation on the corporate's sustainable growth. The research results must also be more consistent in the relationship between EMA and sustainable growth. The effectiveness and efficiency of cost management generated by EMA can increase the corporation's sustainable growth through internal fund management (Phan et al., 2017; Chichan et al., 2021; Christine et al., 2019). Contrary to this argument, Riaz and Saeed (2020) and Testa and D'Amato (2017) prove that due to large expenditures to improve environmental management, corporations can lose control in managing their internal funds, leading to corporate failures to increase their sustainable growth.

Therefore, the researcher wants to examine the effect of green innovation and sustainable growth with EMA as a mediating variable. This research was also developed by Agustia et al., (2019), which examines the effect of green innovation on firm value with EMA as a mediating variable. The study explains that with a sound management system, corporates can get economic benefits from implementing green innovation because EMA can solve problems that arise from implementing green innovation, such as environmental problems and costs, which escalate the value of a corporation.

This study adds to the knowledge of management accounting in the environmental sector, mainly green innovation, EMA, and sustainable growth. Applying green innovation can reduce the negative environmental impact and boost the corporation's economic and social performance by reducing waste and costs. Creating environmentally friendly production processes and products prompted corporations to adopt EMA to manage costs. However, the corporation's efforts to adopt EMA do not affect sustainable growth because the corporation's inability to control spending from internal funds does not affect sustainable growth.

Therefore, it is essential to obtain empirical evidence on (1) the effect of green innovation on sustainable growth, (2) the influence of green innovation on EMA, (3) the effect of EMA on sustainable growth, and (4) the influence of EMA as a mediating variable between green innovation and sustainable growth. This research can contribute to the management accounting literature in the environmental field, especially green innovation, EMA, and sustainable growth. For business actors, this research is intended to provide information about the importance of green innovation in increasing sustainable growth. The application of green innovation can reduce negative impacts on the environment and improve the company's economic and social performance due to waste and cost reduction. The stakeholders are customers, employees, and governments in

which managers are increasingly pressured to focus more on environmental issues will certainly respond well to innovation efforts made by business actors. This research also contributes to researchers by increasing knowledge about green innovation and its effect on sustainable growth and the role of EMA in mediating the relationship.

THEORETICAL REVIEW

Legitimation Theory, Green Innovation, Environmental Management Accounting and sustainable growth

Legitimacy theory posits that managers should strategically select strategies that maintain the company's social legitimacy. According to this theory, if there is an adverse change in how society perceives the company's operations, the company will be more motivated to actively manage and address that change in perception. Companies strive to maintain legitimacy by adopting various strategies to align with societal norms, aiming to influence perceptions, expectations, and social values. The legitimacy hypothesis is based on the concept of a social contract and the premise that companies will adopt a strategy that demonstrates their commitment to meeting societal expectations (Deegan, 2002). By embracing the legitimacy theory perspective, firm management proactively discloses information about behaviours they perceive as socially expected. Thus, it is evident that external entities grant legitimacy to the corporation, but the company itself can regulate and oversee it (Ashforth and Gibbs, 1990). Legitimacy theory connects management accounting and organizational social responsibility about environmental, social, and economic factors. This connection enables companies to grow methodically and attain sustainable development within the current business environment paradigm (Amir et al., 2020).

Efforts to improve company hardware or software related to environmentally friendly products or processes that can save energy, prevent pollution, or develop envi-

ronmental management practices by companies that encourage sustainability are known as green innovation (Song and Yu, 2018). Tu and Wu (2021) stated that one of the unique characteristics of green innovation is the involvement in creating products or production processes that are environmentally friendly, which can ultimately improve the company's environmental performance or meet regulations related to environmental protection. Consistent with this statement, some researchers argue that green innovation consists of product and process innovation (Song and Yu, 2018; Husnaini and Tjahjadi, 2021). The purpose of green innovation that does not only focus on improving company performance is the difference between green innovation and conventional innovation concepts (Agustia et al., 2019). By creating environmentally friendly products and processes, green innovation aims to create a competitive advantage for companies by reducing negative environmental impacts.

In practice, EMA combines financial accounting, cost accounting, and material flow balance to improve the materials' efficiency, reduce environmental risks and impacts, and reduce environmental protection costs (Sari et al., 2020). EMA practice includes the process of identifying, measuring, analyzing, and interpreting both financial (such as cost measurement) and non-financial (such as the amount of wastewater recycled) of environmentally related business activities (Ferreira et al., 2010; Tashakor et al., 2019).

The use of EMA in the company can help managers identify, classify, and allocate environment-related costs that are often hidden in production overhead costs so that further cost analysis and possible cost reductions can be carried out (Asiaei et al., 2022; Schaltegger et al., 2022). EMA can help companies meet environmental responsibility while identifying economic benefits from improving their environmental and economic performance (Latan et al., 2018).

In addition, EMAs are essential in managers' and stakeholders' decision-making processes. Appropriate EMA can assist managers in managing and analyzing environment-related costs to obtain expected benefits and carry out effective and efficient conservation activities (Agustia et al., 2019; Chichan et al., 2021). The availability of internal and external data and financial and non-financial information by EMA for stakeholders can strengthen decisions related to the environment and the company to be taken. In business, sustainable growth is the maximum benchmark for companies to increase their revenue without reducing their financial resources (Higgins, 1977). Sustainable growth is the maximum percentage of a company's sales growth that can be achieved based on operational targets, debt levels, and dividend distribution.

The level of sustainable growth of the company can be measured by the Sustainable Growth Rate (SGR), which is the maximum level of use of internal company funds to achieve its growth without borrowing money from banks or financial institutions (Higgins, 1977). The combination of operating components (profit margin and asset efficiency) and financial components (capital structure and retention ratio) of the company in one measurement model makes SGR one of the company's financial performance measurements that are very useful for companies (Rahim, 2017; Wahyuni and Dino, 2017). By calculating SGR, companies can manage their financial resources to grow by staying within a reasonable amount of money (Brugmann, 2021). Xu and Wang (2018) stated that companies with stable SGR can avoid unprofitable growth through the management of their financial resources so as not to over-pressure the company's leverage level.

Higgins measures sustainable growth with SGR (Sustainable Growth Rate), which is the maximum rate at which a company can use its internal funds to achieve its growth without borrowing money from banks or financial institutions (Xu and Wang, 2018). With the company's ability to use its internal

funds, it is assumed that its production activities do not need to rely on funds from external parties, so the company is expected to continue to grow and survive.

According to Arora et al., (2018), sustainable growth is a forward-looking approach that helps managers balance their operational and financial strategies. It can also benefit companies as an effective financial planning tool for company survival. By growth, investors and managers can measure whether the company's future growth plans are based on the reality of the company's current performance.

Green Innovation and Sustainable Growth

Instead of solely aiming to lower negative environmental impacts, green innovation aims to impact the environment while improving human life positively (Agustia et al., 2019). Due to the inherent nature of "greening" in economic growth, implementing environmentally friendly innovation is considered to have the potential to help corporations recover from the economic crisis (Karman et al., 2020). Through internal cost savings caused by reducing energy consumption costs, reducing waste processing and disposal costs, avoiding fines in case of violations of environmental regulations, and expanding market share as a result of implementing environmentally based innovations, corporations can increase and maintain their sustainable growth rate (Sezen and Çankaya, 2013). Under the legitimacy theory, applying green innovation reflects the corporation's concern for the surrounding environment. The corporation is considered to have carried out its environmental responsibility and gained legitimacy from the community (Deegan, 2002).

Asadi et al., (2020) show the importance of the role of green innovation in encouraging the realization of sustainable growth. Emerging economic benefits, such as reduced waste management costs, have led many corporations to design products or production processes promoting energy savings and better pollution prevention.

Research by Przychodzen and Przychodzen (2015), Li et al., (2020), and Skare and Porada-Rochon (2022) also prove that green innovation can essentially boost a corporation's economic growth. As previously explained, the researcher formulated the following hypothesis:

H₁: Green innovation has a positive effect on sustainable growth

Green innovation and Environmental Management Accounting (EMA)

Involved in the creation of environmentally friendly products or production processes, and green innovation not only focuses on improving corporate performance but also on environmental management. The corporation strives to create new technologies that can minimize energy, reduce environmental pollution, and prevent the creation of pollution in the production process. However, corporations must spend money to create environmentally friendly products or production processes, such as research and development (R&D) costs, product certification costs, and other environmental related expenses (Agustia et al., 2019). These costs are often hidden in production overhead costs, so corporate managers cannot identify, classify, and analyze these costs quickly. Therefore, corporate managers are encouraged to use EMA, which can assist managers in identifying, organizing, and allocating environmental-related costs (Asiaei et al., 2022; Schaltegger et al., 2022).

Under the legitimacy theory, they are applying green innovation, and EMA is one of the corporate efforts to gain community legitimacy. Implementing these two things reflects the corporation's concern for the surrounding environment. Research by Agustia et al., (2019) and Chaudhry et al., (2020) proves that green innovation significantly affects EMA. In the end, the data offered by EMA can assist managers and stakeholders in making decisions. The researcher develops the following hypothesis in light of the given description:

H₂: Green innovation has a positive effect on
EMA

Environmental Management Accounting (EMA) and Sustainable Growth

EMA's management of environmental-related financial and non-financial information can generate information that supports managers' and stakeholders' decision-making, reporting, and accountability. Corporates implementing EMA have a greater chance of fulfilling their environmental responsibilities while identifying economic benefits and improving their ecological and financial performance (Latan et al., 2018). The community has evidence that the EMA is effective because of its application, which proves that the corporation still pays attention to the benefits for the community and the norms that apply in the community. Legitimacy theory creates a connection between management accounting and corporate social responsibility (Amir et al., 2020), where this responsibility will help corporations in their efforts to encourage sustainable growth.

Phan et al., (2017) prove that EMA information is critical in providing information that increases managers' awareness of environmental issues and allows them to respond better to external pressures. It supports corporations in continuing to consider environmental problems when making decisions. Ultimately, the corporation will take action to improve environmental performance and promote sustainable growth. In line with previous studies, the outcome of research by Christine et al., (2019) and Chichan et al., (2021) also stated that applying EMA provides information that can improve the corporation's financial performance. According to the concept discussed, the researcher formulates the following hypothesis:

H₃: EMA has a positive effect on sustainable
growth

Environmental Management Accounting (EMA) as a Mediation Variable Between Green Innovation and Sustainable Growth

Through green innovation, the corporation no longer only focuses on profit but strives to ensure the corporation's sustainability in the future. The creation of environmentally friendly products or production processes that can encourage sustainability or green innovation seeks to minimize adverse environmental effects to give businesses a competitive edge, expand the corporation's market share, and save internal costs to encourage the corporation's sustainable growth (Tu and Wu, 2021; Agustia et al., 2019; Sezen and Çankaya, 2013). This statement is supported by the research results of Przychodzen and Przychodzen (2015) and Skare and Porada-Rochon (2022), proving that corporations implementing green innovation can increase sustainable growth through asset efficiency to generate income. Li et al., (2020) also prove that green innovation can encourage corporate economic growth through more effective cost management and market differentiation. Due to the lower cost of purchasing materials and energy consumption, reduced waste disposal, and penalties for environmental incidents costs, environmental-based innovation is also considered a form of positive economic promotion (Asadi et al., 2020).

However, green innovation requires sufficient resources and time for the best results. While Agustia et al., (2019) state that there are many costs that corporates have to incur when implementing environmental-based innovations, such as research and development costs (R&D), EMA exists to make it easier for managers to identify, classify, and allocate costs related to the environment and to provide information that can assist stakeholders in making reliable decisions. Chaudhry et al., (2020) prove that when corporations adopt green innovation, they will seek to improve the EMA system for the managers and stakeholders to effectively propose a better and more informative decision through an EMA system. This im-

provement in the EMA system positively contributes to the corporation's financial performance.

According to Phan et al., (2017), the information produced by EMA helps increase managers' awareness of environmental issues. It always involves ecological matters as one of the considerations in decision-making. That way, corporations can promote sustainable growth through activities that can improve corporate performance. The same thing was also stated by Christine et al., (2019) and Chichan et al., (2021), who stated that applying EMA provides information that can help corporates improve their economic performance. As discussed above, the researcher formulates the following hypothesis:

H₄: EMA mediates the effect of green innovation on sustainable growth

Figure 1 shows the research conceptual framework.

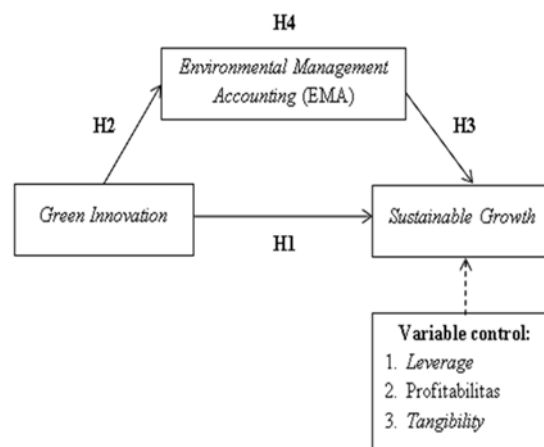


Figure 1
Conceptual Framework

Source: Literature Review, 2024 (Processed)

RESEARCH METHOD

Sample and Data Sources

The data needed in the study were obtained from two primary sources. First, the researcher used the OSIRIS database to obtain corporate financial information. Second, the corporate annual report was used to determine whether the corporation had been certified to ISO 14001.

The study's population consists of all Indonesian corporations listed on the Indonesia Stock Exchange (IDX) between 2013 and 2020. The initial sample consisted of 3,393 observations. The researcher then excluded the 677 observations that did not offer all of the financial data required for the study. Hence, the study's final sample consisted of 2,716 observations.

Measures

Dependent Variable

Sustainable growth is the leading benchmark for corporations to increase revenues without reducing their financial resources (Higgins, 1977; Rahim, 2017). Through the corporation's operational objectives, level of leverage, and dividend payments, the corporation can attain the maximum percentage of sales growth or what is known as sustainable growth. Sustainable Growth Rate (SGR) by Higgins (1981) is used to measure the corporate's value of sustainable growth by multiplying the retention ratio and Return on Equity (ROE).

Independent Variable

Green innovation uses new technology (hardware and software) to create environmentally friendly products or processes that encourage sustainability (Song and Yu, 2018). This study measures green innovation by dividing the total R&D costs by total sales (Tsai and Huang, 2020). Developing environmentally friendly production processes and products begins with research and development (R&D) activities. Companies actively involved in R&D activities will find it easier to develop products by considering environmental issues (Agustia et al., 2019). In addition, R&D costs are a significant factor for companies to improve the technological capabilities needed for green innovation. The increase in R&D spending led to the acceleration of technological innovation and environmentally friendly products, as well as an increase in the company's ability to meet people's expectations.

Mediation Variable

The International Federation of Accountants (IFAC) (2005) interpret Environmental Management Accounting (EMA) as a method of creating and putting into practice accounting procedures in the context of managing the performance of the economy and the environment. In practice, EMA includes identifying, measuring, analyzing, and interpreting all the corporate information from business activities linked to the environs (Tashakor et al., 2019). EMA is a dummy variable, where corporates certified to ISO 14001 are given a score of 1; if they are not certified, they are given a score of 0 (Ong et al., 2016). An international standard known as ISO 14001 specifies the conditions for a structured management strategy relating to the environmental protection of a corporation's business operations.

ISO 14001 certification is an international standard that establishes requirements for a structured management approach related to the environmental protection of a company's business activities. To meet this standard, companies need to integrate environmental management system requirements into their various business processes, such as design and development, procurement, resources, sales, and marketing. Resources needed in improving the environmental management system include resources from outside (external) and from within (internal) the company, including human resources, natural resources, infrastructure, technology, and financial resources such as the cost of purchasing raw materials and related environmental costs. Finally, companies need to manage, measure, and document all financial and non-financial information about the company's efforts to obtain ISO 14001 certification for transparency, accountability, continuity, consistency, training, or ease of audit.

Control Variables

In this study, we included several control variables, namely leverage, profitability, and tangibility. Leverage is the use of debt or

loan funds as a company's effort to increase profits in a business. Leverage is calculated by dividing total assets by total long-term debt. Profitability is a company's ability to generate profits during a specific period with a certain level of sales, assets, and share capital. Earnings Before Interest and Tax (EBIT) divided by total sales is the ratio used to measure profitability. Tangibility or asset structure is part of the source of collateral of the overall assets that can be submitted and received by the bank when the company applies for a loan. Finally, the ratio of total fixed assets to total assets is used to compute tangible value.

Statistical Model

This study examines the effect of green innovation on corporate sustainable growth with EMA as a mediating variable. Therefore, this study uses path analysis to examine the effect of mediation. Ghazali (2018) proposed path analysis as a buildup of multiple linear regression analysis for estimating causal relationships between variables determined based on theory. There are four regression equations formulated to calculate path coefficients and show the hypothesized relationships of variables:

$$\text{SGR} = \alpha + \beta_1\text{GI} + \beta_2\text{LEV} + \beta_3\text{PRO} + \beta_4\text{TAN} + \varepsilon \dots\dots\dots (1)$$

$$\text{EMA} = \alpha + \beta_1\text{GI} + \beta_2\text{LEV} + \beta_3\text{PRO} + \beta_4\text{TAN} + \varepsilon \dots\dots\dots (2)$$

$$\text{SGR} = \alpha + \beta_1\text{EMA} + \beta_2\text{LEV} + \beta_3\text{PRO} + \beta_4\text{TAN} + \varepsilon \dots\dots\dots (3)$$

$$\text{SGR} = \alpha + \beta_1\text{GI} + \beta_2\text{EMA} + \beta_3\text{LEV} + \beta_4\text{PRO} + \beta_5\text{TAN} + \varepsilon \dots\dots\dots (4)$$

Where GI is green innovation as the independent variable, EMA is the mediating variable, SGR is sustainable growth as the dependent variable, and LEV (leverage), PRO (profitability), and TAN (tangibility) are control variables.

The influence of the mediating variable on the explained variable through the explanatory variable is also examined using the Sobel test. This study uses the Sobel calculator (<https://quantpsy.org/sobel/sobel.htm>) to de-

termine the significant effect of the mediating variable.

ANALYSIS AND DISCUSSION

Descriptive Statistics

Descriptive statistics are used to analyze data by describing the collected data without aiming to provide generalized conclusions. Descriptive statistical analysis provides information regarding the variables used in this study, namely Green Innovation (GI), EnVironmental Management Accounting (EMA), and Sustainable Growth (SG). The mean, median, maximum, minimum, and standard deviation of each of these variables will be displayed in this study's descriptive

statistical analysis. Table 1 shows the findings of this study's descriptive statistical analysis.

Based on table 1, GI's lowest and maximum values are 0.000 and 0.009, respectively. The sample corporates' average GI is 0.000, with a 0.001 standard deviation. The SGR variable ranges from a minimum of -167,880 to a maximum of 135,650. The SG variable has an average value of 2,160 and a standard deviation 30,897. Finally, EMA's lowest and highest values are 0.000 and 1,000, respectively. The average EMA owned by the sample corporates is 0.337, with a standard deviation of 0.473.

Table 1
Descriptive statistics

	Mean	Med	Min	Max	Std. Dev
GI	0.000	0.000	0.000	0.009	0.001
SGR	2.160	4.000	-167.880	135.650	30.897
EMA	0.337	0.000	0.000	1.000	0.473
LEV	0.175	0.127	0.000	1.164	0.189
PRO	0.016	0.073	-3.008	1.052	0.461
TAN	0.591	0.608	0.071	0.972	0.233

Source: Authors Process with STATA, 2024

Table 2
Pearson Correlation

	GI	SGR	EMA	LEV	PRO	TAN
GI	1.000					
SGR	0.053*** (0.006)	1.000				
EMA	0.070*** (0.000)	0.035* (0.070)	1.000			
LEV	- 0.058*** (0.003)	-0.043** (0.025)	0.056*** (0.003)	1.000		
PRO	0.019 (0.328)	0.172*** (0.000)	0.101*** (0.000)	-0.037* (0.051)	1.000	
TAN	- 0.075*** (0.000)	- 0.095*** (0.000)	0.010 (0.611)	0.342*** (0.000)	- 0.108*** (0.000)	1.000

Source: Authors Process with STATA, 2024

Pearson Correlation

The Pearson correlation test provides information about the strength of the linear relationship between two variables. The results of the Pearson correlation test in Table 2 show a significant positive relationship between GI and SGR (coef = 0.053***). The data means that the increasing and intense application of green innovation has a strong relationship with the corporation's ability to increase its revenue without reducing its financial resources. The relationship between GI and EMA is also significantly positive (coef = 0.070***), indicating that the application of green innovation is strongly related to environmental management accounting. In addition, there is a significant positive relationship between EMA and SGR (coef = 0.035*).

Table 3
Path Analysis

	(1) SGR	(2) EMA	(3) SGR
GI	1194.419** (2.49)	29.503*** (3.41)	
EMA			2.077* (1.76)
LEV	-2.218 (-0.37)	0.183*** (3.27)	-2.878 (-0.47)
PRO	10.583*** (5.13)	0.106*** (6.49)	10.380*** (5.01)
TAN	-8.831*** (-3.98)	0.078 (1.59)	-9.284*** (-4.21)
SIC	<i>Included</i>	<i>Included</i>	<i>Included</i>
YEAR	<i>Included</i>	<i>Included</i>	<i>Included</i>
_cons	10.337*** (4.36)	0.215*** (5.04)	10.238*** (4.46)
r2	0.043	0.115	0.042
r2_a	0.037	0.109	0.036
N	2709	2709	2709

Source: Authors Process with STATA, 2024

Path Analysis

Path analysis is used to provide information regarding causal relationships between research variables. A direct relationship occurs when one variable affects ano-

ther without a third variable, mediating the relationship between the two variables. An indirect relationship occurs when a third variable mediates the relationship between the two variables. The results of this research path analysis test can be seen in table 3.

This study uses a 95% confidence level limit (p-value of 5%) to accept all hypotheses. Based on table 4, it can be seen that GI significantly positively affects SG, with a coefficient value of 2.49 and a significance value of 0.015 (p-value less than 5%), resulting in the first equation testing the relationship between green innovation and sustainable growth. Then, H₁ is accepted. The second equation explores how environmental management accounting is impacted by green innovation. It is clear that GI significantly positively affects EMA based on the coefficient value of 3.41 and the significance value of 0.001 (p-value less than 5%); it can be concluded that GI has a significant positive effect on EMA. Therefore, H₂ is accepted. The solutions to the third equation show that EMA significantly improves SG with a coefficient value of 1.76 but a significance value of 0.084 (p-value more than 5%). With such a p-value level, H₃ is rejected.

Sobel Test

The Sobel test shows an indirect relationship formed between the explanatory and explained variables through the mediating variable. According to the Sobel test findings shown in Table 4, H₄ is not accepted since EMA cannot mediate the association between GI and SG, which has a t-test value of 1.562 and a significance level of 0.118 (sig > 10%).

Robustness Check

In order to guarantee that testing between the treatment group and the control group was done at random, the Coarsened Exact study employed the CEM (Matching) approach. CEM will partition each research covariate into homogeneous strata of similar size and incorporate it into the CEM model.

Table 4
Sobel Test

	Input	Test Statistic	Std. Error	p-value
a	29.50301	1.56158039	39.23586861	0.11838687
b	2.076736			
Sa	8.651387			
Sb	1.182271			

Source: Authors Process with STATA, 2024

Table 5
Coarsened Exact Matching (CEM)

Panel A			
	EMA = 0	EMA = 1	
All	1800	916	
Matched	1767	915	
Unmatched	33	1	
Panel B			
	(1) SGR	(2) EMA	(3) SGR
GI	1076.747** (2.01)	33.234*** (3.38)	
EMA			2.181* (1.84)
LEV	-4.172 (-0.62)	0.327*** (5.24)	-5.213 (-0.75)
PRO	10.727*** (4.94)	0.105*** (6.02)	10.574*** (4.86)
TAN	-8.631*** (-3.20)	0.010 (0.22)	-8.876*** (-3.35)
SIC	Included	Included	Included
YEAR	Included	Included	Included
_cons	11.026*** (4.75)	0.224*** (5.20)	10.842*** (4.89)
r2	0.044	0.121	0.044
r2_a	0.038	0.115	0.037
N	2682	2682	2682

Source: Authors Process with STATA, 2024

Of the 23 strata produced by the CEM model, 13 include data for companies that have and have not adopted the EMA. Table 5, Panel A provides a concise overview of the corresponding items. Of 916 observations in corporations adopting an EMA, 915 were matched with 1767 out of 1800 observations in corporations not implementing an EMA. The regression results using the CEM ap-

proach are presented in Panel B. The regression results align with the path analysis test results in table 5, indicating that H₁ and H₂ are supported, whereas H₃ is not.

Discussion

Green Innovation and Sustainable Growth

The path analysis test findings show that green innovation considerably increases the company's sustainable growth with a significance value of 0.015 (p-value less than 5%), leading to the conclusion that H₁ is approved. The results suggest that green innovation is advantageous for corporations in terms of efficient financial planning for the corporation's future, sometimes referred to as sustainable growth. Consequently, managers are motivated to cultivate production processes and products that exhibit enhanced environmental sustainability. According to the legitimacy theory, green innovation is seen as a way for corporations to demonstrate their commitment to meeting community expectations (Deegan, 2002). As the level of corporate innovation in developing environmentally-based production processes and products increases, the corporation's ability to manage its finances will also improve. The growth will lead to profitable growth for the company by effectively balancing its operational and financial strategies. By implementing GI, corporations can achieve self-sufficiency and sustain growth by using the benefits of innovation without relying on external funding sources.

This study's results comply with the research conducted by Asadi et al., (2020), who found that implementing green innovation in the workplace considerably improved the

workplace's economic performance. As one of the drivers of economic growth, many corporations are starting to implement green innovation to encourage profitable financial growth in the future. Although the corporation needs to spend money at the beginning, green innovation can provide financial benefits to the corporation in the end, such as reduced spending on waste treatment, lower material and energy consumption costs, and reduced costs related to environmental pollution (Li et al., 2020; Shahzad et al., 2020). Skare and Porada-Rochon (2022) also pointed out the importance of corporations increasing their technological innovation investments to achieve the desired growth rate. Corporations must develop technological innovations that can increase production efficiency and support the growth rates needed to address environmental problems in the short and long periods. Therefore, the application of green innovation in the corporation can increase the corporation's sustainable growth.

Asadi et al., (2020) show the importance of the role of green innovation in encouraging the realization of sustainable growth. Emerging economic benefits, such as reduced waste management costs, have led many corporations to design products or production processes promoting energy savings and better pollution prevention. Research by Przychodzen and Przychodzen (2015), Li et al., (2020), and Skare and Porada-Rochon (2022) also prove that green innovation can essentially boost a corporation's economic growth.

Green Innovation and Environmental Management Accounting (EMA)

Following H_2 in this study, statistically, green innovation proved to have a significant positive effect on EMA with a significance value of 0.001 (p-value less than 5%). The results of this study indicate that creating environmentally friendly production processes and products encourages corporations to apply environmental management accounting or EMA. The correlation between

green innovation and EMA is often associated with EMA's benefits, which can assist managers in identifying, classifying, and allocating corporate-related costs. The emergence of environmental costs tends to be hidden, increasing the use of EMA in fulfilling the corporation's environmental responsibilities. These results support the theory of legitimacy. The implementation of green innovation and EMA reflects the corporation's seriousness in protecting the surrounding environment as well as the corporation's efforts to gain legitimacy from the community.

This study's results align with research conducted by Agustia et al., (2019), which found empirical evidence that green innovation benefits EMA. In decision-making, EMA plays a significant role in managing environmental-related costs, often only categorized as overhead costs in conventional financial statements. EMA's ability to trace R&D, waste treatment, and product certification costs into specific environmental costs clarifies the importance of implementing EMA for corporations actively implementing green innovation. Chaudhry et al., (2020) also provided the same results with this study. Corporations implementing green innovation are better positioned to use and improve the corporate EMA system. The proper use of EMA can help stakeholders to decide by providing information about production costs that is more accurate and efficient. Over time, the increase in EMA in the corporation can positively contribute to the corporation's performance.

Environmental Management Accounting (EMA) and Sustainable Growth

Statistically, EMA has not been proven to significantly affect sustainable growth, with a significance value of 0.084 (p-value more than 5%). The statistical test results contradict the hypothesis formulated in this study, so it can be concluded that H_3 is rejected.

As a form of developing and implementing accounting practices in the context of

environmental and economic performance management (IFAC, 2005), EMA focuses on the process of discovering and evaluating data from corporate activities related to the environment, both financially and non-financially (Tashakor et al., 2019). The results show that the application of EMA in a corporation cannot promote sustainable growth because large expenditures will undoubtedly occur to improve environmental management, so the corporation may lose control of managing its internal funds. In addition, most of the sample corporates in Indonesia (68%) still need to be certified by ISO 14001. Utilization of EMA in the short term cannot produce equivalent cost savings easily and quickly (Marrucci et al., 2022), so investors often need to pay more attention to adopting EMA. Their assumption of EMA can conflict with the fundamental goal of a corporation, namely maximizing shareholder wealth through cost reduction and direct profit increase (Paulraj and De Jong, 2011).

Corporates implementing EMA have a greater chance of fulfilling their environmental responsibilities while identifying economic benefits and improving their ecological and financial performance (Latan et al., 2018). The community has evidence that the EMA is effective because of its application, which proves that the corporation still pays attention to the benefits for the community and the norms that apply in the community.

These results contradict the legitimacy theory, which states a connection between management accounting and CSR (Amir et al., 2020), which can encourage the corporate level of sustainable growth. However, the results of this study indicate that EMA, as a management accounting practice, must maintain the corporation's sustainable growth. The outcome of this study is consistent with the research of Testa and D'Amato (2017), which provides empirical evidence that there is no influence between environmental certification, which in this study is the measurement of EMA and corporate financial performance. The results show that environmental management or

other sustainable and responsible projects sometimes improve with sustainable growth improvements. The short-term economic performance of the corporation is unaffected by the adoption of environmental management, and long-term economic performance is also unaffected or just slightly affected over time. In addition, due to the absence of clear future economic benefits, most corporate environmental management practices are driven by external pressures such as government regulations or restrictions (Phan et al., 2017).

Environmental Management Accounting (EMA) as a Mediation Variable Between Green Innovation and Sustainable Growth

Based on the results of the Sobel test, EMA proved unable to mediate the relationship between green innovation and sustainable growth. A significance level of 0.597 (sig > 10%) can show that H4 is rejected.

Phan et al., (2017) prove that EMA information is critical in providing information that increases managers' awareness of environmental issues and allows them to respond better to external pressures. It supports corporations in continuing to consider environmental problems when making decisions. Ultimately, the corporation will take action to improve environmental performance and promote sustainable growth. In line with previous studies, the outcome of research by Christine et al., (2019) and Chichan et al., (2021) also stated that applying EMA provides information that can improve the corporation's financial performance.

In addition to focusing on profit, the corporation seeks to encourage the sustainability movement by applying green innovation. In order to gain a competitive edge, the corporation develops environmentally friendly products or production methods to reduce their negative environmental impact. Of course, the corporation will incur costs as the first step to creating innovation, such as R&D, raw material purchasing, and product certification costs. The management of these costs can be facilitated by EMA, which, in its

adoption, will incur significant costs. Ultimately, the corporation may lose the ability to manage its internal funds, so it cannot maintain or achieve the sustainable growth it wants (Paulraj and De Jong, 2011). As consumers are not always keen to pay more for products created using environmentally friendly procedures, these results demonstrate that investing in sustainable and ethical projects only sometimes matches better profitability (Testa and D'Amato, 2017). Moreover, 68% of the sample corporations still need to be certified to ISO 14001, so it can be concluded that EMA cannot mediate the relationship between green innovation and sustainable growth.

Additional Analysis

Higgins (1977) defines sustainable growth as the corporation's sales growth without any process of borrowing funds and selling new equity to external parties. In addition to using green innovation as the dependent variable and EMA as a mediating variable, this study uses leverage, profitability, and tangibility as control variables. Interestingly, from the analysis and robustness test results, we highlighted the negative effect of leverage on sustainable growth. These results follow the results of research by Akhtar et al., (2022), which explains that corporations that tend to ignore bankruptcy costs from liquidation can generate debt levels that are higher than the standard level, causing the corporation's performance to decline. The corporation's cash flow and reserves of funds devoted to profitable future projects can be reduced due to debt payments and interest, which can negatively affect the corporation's performance (Stulz, 1990).

CONCLUSION AND SUGGESTIONS

This study examines green innovation's influence on sustainable growth by utilizing Environmental Management Accounting (EMA) in a sample of 539 non-financial corporations listed on the Indonesia Stock Exchange (IDX) between 2013 and 2020. The

ongoing development of environmental challenges has led to the emergence of the ESG concept, which recognizes that green innovation is one of the environmental elements that might affect a company's finances. The findings demonstrated that implementing green innovation has a very beneficial effect on sustainable growth. Green innovation has emerged as a successful financial planning strategy for corporations, allowing them to achieve growth and sustainability through innovative excellence without relying heavily on external funding. Furthermore, research has shown that green innovation significantly improves environmental management accounting (EMA). Implementing environmentally friendly production processes and goods motivates corporations to utilize Environmental Management Accounting (EMA), which aids managers in detecting, categorizing, and allocating costs associated with the environment.

Research findings demonstrate that EMA has little impact on sustainable growth. In order to enhance environmental management, substantial expenses will unavoidably be incurred, perhaps resulting in the corporate entity relinquishing control over its internal financial resources. In order to examine the role of EMA as a mediating variable, the researcher employed the Sobel test and obtained a finding indicating that EMA does not serve as a mediator for the impact of green innovation on sustainable growth. The corporation's lack of ability to effectively handle internal finances, primarily due to substantial expenses and the implementation costs of sustainable projects, coupled with the fact that only 32% of surveyed corporations have obtained ISO 14001 certification, hinders the potential impact of adopting Environmental Management Accounting (EMA) on sustainable growth in Indonesia.

Naturally, this research is not exempt from its limits. This study employs the Ratio of Research And Development (R&D) expenses to total sales to measure green innova-

tion. It utilizes ISO 14001 certification to evaluate the implementation of Environmental Management Accounting (EMA). Future research should utilize alternative methodologies to assess the extent to which green innovation is implemented within a business setting. Corporations can benefit from enhancing their capacity for environmental-based innovation and effectively managing associated expenses. Thus, implementing green innovation can impact the corporation's long-term viability.

REFERENCES

- Agustia, D., T. Sawarjuwono, and W. Dianawati. 2019. The Mediating Effect of Environmental Management Accounting on Green Innovation - Firm Value Relationship. *International Journal of Energy Economics and Policy* 9(2): 299-306. <https://doi.org/10.32479/ijeeep.7438>.
- Agustia, D., S. D. Haryanto, Y. Permatasari, and P. N. Mudiantari. 2022. Product Innovation, Firm Performance and the Moderating Role of Technology Capabilities. *Asian Journal of Accounting Research* 7(3): 252-265. <https://doi.org/10.1108/AJAR-12-2021-0266>.
- Asiaei, K., N. Bontis, R. Alizadeh, and M. Yaghoubi. 2022. Green Intellectual Capital and Environmental Management Accounting: Natural Resource Orchestration Favours Environmental Performance. *Business Strategy The Environment* 31(1): 76-93. <https://doi.org/10.1002/bse.2875>.
- Akhtar, M., K. Yusheng, M. Haris, Q. U. Ain, and H. M. Javaid. 2022. Impact of Financial Leverage on Sustainable Growth, Market Performance, and Profitability. *Economic Change and Restructuring*: 1-38. Springer US. <https://doi.org/10.1007/s10644-021-09321-z>.
- Amir, M., S. A. Rehman, and M. I. Khan. 2020. Mediating Role of Environmental Management Accounting and Control System between Top Management Commitment and Environmental Performance: A Legitimacy Theory. *Journal of Management and Research (JMR)* 7(1): 132-160. <https://doi.org/10.29145//jmr/71/070106>.
- Arora, L., S. Kumar, and P. Verma. 2018. The Anatomy of Sustainable Growth Rate of Indian Manufacturing Firms. *Global Business Review* 19(4): 1050-1071. <https://doi.org/10.1177/0972150918773002>.
- Asadi, S., S. O. Pourhashemi, M. Nilashi, R. Abdullah, S. Samad, E. Yadegaridehkordi, N. Aljojo, and N. S. Razali. 2020. Investigating Influence of Green Innovation on Sustainability Performance: A Case on Malaysian Hotel Industry. *Journal of Cleaner Production* 258. <https://doi.org/10.1016/j.jclepro.2020.120860>.
- Ashforth, B. E. and B. W. Gibbs. 1990. The Double-Edge of Organizational Legitimation. *Organization Science* 1(2): 177-194. <https://doi.org/10.1287/orsc.1.2.177>.
- Brugmann, J. 2021. Is There a Method for Our Measurement? The Use of Indicators in Local Sustainable Development Planning. *The Earthscan Reader in Sustainable Cities*: 394-410. Routledge.
- BP p.l.c. 2020. Statistical Review of World Energy. *Statistical Review of World Energy*. Vol. 69. London, UK. bp.com/statisticalreview.
- Cai, W., and G. Li. 2018. The Drivers of Eco-Innovation and Its Impact on Performance: Evidence from China. *Journal of Cleaner Production* 176: 110-18. <https://doi.org/10.1016/j.jclepro.2017.12.109>.
- Chaudhry, N. I., H. Asad, M. Amir Ch, and R. I. Hussian. 2020. Environmental Innovation and Financial Performance: Mediating Role of Environmental Management Accounting and Firm's Environmental Strategy Naveed. *Pakistan Journal of Commerce and Social Sciences* 14(3): 715-737. <https://www.econstor.eu/bitstream/10419/224961/1/1735158771.pdf>.

- Chichan, H. F., H. K. Mohammed, and T. T. Y. Alabdullah. 2021. Does Environmental Management Accounting Matter in Promoting Sustainable Development? A Study in Iraq. *Journal of Accounting Science* 5(2): 114-126. <https://doi.org/10.21070/jas.v5i2.1543>.
- Christine, D., W. Yadiati, N. N. Afiah, and T. Fitrijanti. 2019. The Relationship of Environmental Management Accounting, Environmental Strategy and Managerial Commitment with Environmental Performance and Economic Performance. *International Journal of Energy Economics and Policy* 9(5): 458-464. <https://doi.org/10.32479/ijeeep.8284>.
- Cigoj, P. 2020. Eco-Innovations and Firms' Financial Performance: a Study of a Relationship between Eco-Innovations and Financial Performance of Firms Who Make Them. *Thesis*. Dalarna University, School of Technology and Business Studies, Business Administration and Management.
- Deegan, C. 2002. Introduction: The Legitimising Effect of Social and Environmental Disclosures—A Theoretical Foundation. *Accounting, Auditing & Accountability Journal* 15(3): 282-311. <https://doi.org/10.1108/09513570210435852>.
- EBA. 2021. EBA Report on Management and Supervision of ESG Risks for Credit Institutions and Investments Frims. *European Banking Authority Report*.
- Gunarathne, A. N., K. H. Lee, and P. K. Hitigala Kaluarachchilage. 2021. Institutional Pressures, Environmental Management Strategy, and Organizational Performance: The Role of Environmental Management Accounting. *Business Strategy and the Environment* 30(2): 825-839. <https://doi.org/10.1002/bse.2656>.
- Ghozali, I. 2018. *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21*. 11th ed. Badan Penerbit Universitas Diponegoro. Semarang.
- Higgins, R. C. 1981. Sustainable Growth under Inflation. *Financial Management* 10(4): 36-40. <https://doi.org/10.2307/3665217>.
- Higgins, R. C. 1977. Much Growth Can Firm Afford? *Financial Management* 6(3): 7-16. <https://doi.org/10.2307/3665251>.
- Husnaini, W. and B. Tjahjadi. 2021. Quality Management, Green Innovation and Firm Value: Evidence from Indonesia. *International Journal of Energy Economics and Policy* 11(1): 255-262. <https://doi.org/10.32479/ijeeep.10282>.
- Karman, A., A. Kijek, and T. Kijek. 2020. Eco-Innovation Paths: Convergence or Divergence? *Technological Economic Development of Economy* 26(6): 1213-1236. <https://doi.org/10.3846/tede.2020.13384>.
- International Federation of Accountants (IFAC). 2005. *International Guidance Document: Environmental Management Accounting*. International Federation of Accountants. New York.
- Larbi-Siaw, O., H. Xuhua, E. Owusu, A. Owusu-Agyeman, B. E. Fulgence, and S. A. Frimpong. 2022. Eco-Innovation, Sustainable Business Performance and Market Turbulence Moderation in Emerging Economies. *Technology in Society* 68(January): 101899. <https://doi.org/10.1016/j.techsoc.2022.101899>.
- Latan, H., C. J. C. Jabbour, A. B. L. de Sousa Jabbour, S. F. Wamba, and M. Shahbaz. 2018. Effects of Environmental Strategy, Environmental Uncertainty and Top Management's Commitment on Corporate Environmental Performance: The Role of Environmental Management Accounting. *Journal of Cleaner Production* 180: 297-306. <https://doi.org/10.1016/j.jclepro.2018.01.106>.
- Li, L., H. Msaad, H. Sun, M. X. Tan, Y. Lu, and A. K. W. Lau. 2020. Green Innovation and Business Sustainability: New Evidence from Energy Intensive Industry in China. *International Journal of Environmental Research and Public Health* 17(21): 1-18.

- <https://doi.org/10.3390/ijerph17217826>.
- Marietza, F. and M. Nadia. 2021. The Influence of Green Innovation and CSR on Sustainable Development Mediated By Green Performance. *Global Financial Accounting Journal* 05(01): 24–36. <https://doi.org/10.37253/gfa.v5i1.4708>.
- Marrucci, L., T. Daddi, and F. Iraldo. 2022. The Circular Economy, Environmental Performance and Environmental Management Systems: The Role of Absorptive Capacity. *Journal of Knowledge Management* 26(8): 2107-2132. <https://doi.org/10.1108/JKM-06-2021-0437>.
- Novitasari, M. and D. Agustia. 2021. Green Supply Chain Management and Firm Performance: The Mediating Effect of Green Innovation. *Journal of Industrial Engineering and Management* 14(2): 391–403. <https://doi.org/10.3926/jiem.3384>.
- Ong, T. S., B. H. Teh, S. H. Ng, and W. N. Soh. 2016. Environmental Management System and Financial Performance. *Institutions and Economies* 8(2): 27–53. <https://mojc.um.edu.my/index.php/ijie/article/view/5035/2871>.
- Paulraj, A. and P. De Jong. 2011. The Effect of ISO 14001 Certification Announcements on Stock Performance. *International Journal of Operations & Production Management* 31(7): 765-788. <https://doi.org/10.1108/01443571111144841>.
- Phan, T. N., K. Baird, and S. Su. 2017. The Use and Effectiveness of Environmental Management Accounting. *Australasian Journal of Environmental Management* 24(4): 355–374. <https://doi.org/10.1080/14486563.2017.1354235>.
- PRI. 2022. What Is Responsible Investment? <https://www.unpri.org/an-introduction-to-responsible-investment/what-is-responsible-investment/4780.article>. Accessed January 31, 2024.
- Przychodzen, J. and W. Przychodzen. 2015. Relationships between Eco-Innovation and Financial Performance—Evidence from Publicly Traded Companies in Poland and Hungary. *Journal of Cleaner Production* 90: 253-263. <https://doi.org/10.1016/j.jclepro.2014.11.034>.
- Riaz, H. and A. Saeed. 2020. Impact of Environmental Policy on Firm's Market Performance: The Case of ISO 14001. *Corporate Social Responsibility Environmental Management* 27(2): 681-693. <https://doi.org/10.1002/csr.1834>.
- Rahim, N. 2017. Sustainable Growth Rate and Firm Performance: A Case Study in Malaysia. *International Journal of Management, Innovation & Entrepreneurial Research* 3(2): 48–60. <https://doi.org/10.18510/ijmier.2017.321>.
- Sari, R. N., A. Pratadina, R. Anugerah, K. Kamaliah, and Z. M. Sanusi. 2020. Effect of Environmental Management Accounting Practices on Organizational Performance: Role of Process Innovation as a Mediating Variable. *Business Process Management Journal* 27(4): 1296-1314. <https://doi.org/10.1108/BPMJ-06-2020-0264>.
- Schaltegger, S., R. L. Burritt, and K. Christ. 2022. Environmental Management Accounting: Development, Context, Contribution and Outlook. *Handbook of Accounting and Sustainability*: 260-278. Edward Elgar Publishing.
- Sezen, B. and S. Y. Cankaya. 2013. Effects of Green Manufacturing and Eco-Innovation on Sustainability Performance. *Procedia-Social and Behavioral Sciences* 99: 154-163. <https://doi.org/10.1016/j.sbspro.2013.10.481>.
- Shahzad, M., Y. Qu, A. U. Zafar, S. U. Rehman, and T. Islam. 2020. Exploring the Influence of Knowledge Management Process on Corporate Sustainable Performance through Green Innovation. *Journal of Knowledge Management* 24(9): 2079–2106. <https://doi.org/10.1108/JKM-11-2019-0624>.
- Skare, M. and M. Porada-Rochon. 2022. The Role of Innovation in Sustainable Growth: A Dynamic Panel Study on Micro and Macro Levels 1990–2019.

- Technological Forecasting and Social Change* 175(November 2021). <https://doi.org/10.1016/j.techfore.2021.121337>.
- Song, W. and H. Yu. 2018. Green Innovation Strategy and Green Innovation: The Roles of Green Creativity and Green Organizational Identity. *Corporate Social Responsibility and Environmental Management* 25(2): 135-150. <https://doi.org/10.1002/csr.1445>.
- Stulz, R. M. 1990. Managerial Discretion and Optimal Financing Policies. *Journal of Financial Economics* 26(1): 3-27. [https://doi.org/10.1016/0304-405X\(90\)90011-N](https://doi.org/10.1016/0304-405X(90)90011-N).
- Tashakor, S., R. Appuhami, and R. Munir. 2019. Environmental Management Accounting Practices in Australian Cotton Farming: The Use of the Theory of Planned Behaviour. *Accounting, Auditing and Accountability Journal* 32(4): 1175-1202. <https://doi.org/10.1108/AAAJ-04-2018-3465>.
- Testa, M. and A. D'Amato. 2017. Corporate Environmental Responsibility and Financial Performance: Does Bidirectional Causality Work? Empirical Evidence from the Manufacturing Industry. *Social Responsibility Journal* 13(2): 221-234. <https://doi.org/10.1108/SRJ-02-2016-0031>.
- Tsai, K. H. and S. C. T. Huang. 2020. Service Creativity Reinforcement and Firm Performance: The Roles of Innovation Intensity and Contexts. *Journal of Service Management* 31(1): 1-23. <https://doi.org/10.1108/JOSM-02-2018-0041>.
- Tu, Y. and W. Wu. 2021. How Does Green Innovation Improve Enterprises' Competitive Advantage? The Role of Organizational Learning. *Sustainable Production Consumption* 26: 504-516. <https://doi.org/10.1016/j.spc.2020.12.031>.
- Wahyuni, N. I. and N. V. G. Dino. 2017. Determinant of the Sustainable Growth Rate. *International Conference on Business and Accounting Studies* 2: 401-416.
- Xu, J. and B. Wang. 2018. Intellectual Capital, Financial Performance and Companies' Sustainable Growth: Evidence from the Korean Manufacturing Industry. *Sustainability* 10(12): 4651. <https://doi.org/10.3390/su10124651>.