TRANSPUBLIKA
Precise. Resilience. Felicitous.

Original Article

The Role of Green Innovation in Strengthening Green Economy Towards Sustainability Performance: MSMEs in Jumantono District, Karanganyar

Setyaningsih[1*], Dhimas Ridha Arrahman[2]

[1,2]Slamet Riyadi University of Surakarta, Faculty of Economics, Surakarta, Indonesia
Email: [1] u.setya@yahoo.co.id

Abstract

The main objective of this research is to analyze previous studies and assess the viability of companies by utilizing the triple bottom line approach, which takes into account economic, environmental, and social aspects. The expectation is that these metrics will provide an accurate representation of the present situation. The novelty of this study lies in introducing green innovation as a moderating variable that strengthens the influence of the green economy on sustainability performance. The study involved 81 MSMEs located in Jumantono District, Karanganyar. Information was gathered directly from participants through the use of survey tools. The analysis technique employed was Partial Least Squares (PLS). The research findings indicate that the application of green economy practices significantly enhances economic, environmental, and social performance. This implies that the more robust the implementation of green economy strategies, the better the outcomes in terms of business sustainability. Additionally, the study reveals that green innovation strengthens the relationship between green economy and both economic and environmental performance, serving as a reinforcing factor. However, green innovation does not exhibit a moderating effect in the relationship between green economy and social performance, suggesting that its impact in the social dimension may be limited or influenced by other variables not examined in this study. These findings suggest that green economy initiatives are effective in improving sustainability performance, particularly when supported by green innovation strategies. MSMEs are encouraged to adopt balanced economic, environmental, and social practices to enhance long-term sustainability.

Keywords: Green Economy, Green Innovation, Sustainable Performance, Triple Bottom Line Approach, Eco-friendly Business Practices.

1. Introduction

Micro, small, and medium enterprises (MSMEs) are vital in driving the country's economy forward, providing valuable input to economic development, employment opportunities, community development, and addressing economic disparities. The government is trying to accommodate and support the progress of MSMEs because the condition of MSMEs had declined in 2020-2021, namely the first two years of the Covid-19 pandemic. In order to promote the growth and longevity of MSMEs, the government is making efforts to assist and bolster these small businesses. According to a survey carried out by the United Nations Development Program (UNDP) and the University of Indonesia Institute for Economic and Social Research (LPEM UI), over 48% of MSMEs were encountering challenges with sourcing raw materials, 77% experienced a decline in income, 88% saw a drop in product demand, and a staggering 97% saw a decrease in asset value. In connection with these

problems, in the future in 2024, MSMEs must move up a class and be more modern in order to be able to play a role in the digital market.

Sustainability performance has become the goal of all companies (Almashhadani & Almashhadani, 2023), especially now that the sustainability performance of MSMEs has received attention from various parties considering its huge role in economic development in Indonesia. Hence, in order to contribute towards sustainable development goals, it is crucial for MSMEs to consistently improve their performance (Fandeli et al., 2020).

In the past, businesses viewed nature as an abundant and freely available resource, resulting in a lack of emphasis on environmental concerns that ultimately contributed to the problem of the "tragedy of the commons". This neglect has led to increased pollution and depletion of resources (Shaw et al., 2017). Due to the rising number of environmental concerns being brought to light, businesses must now comply with environmental regulations and meet their obligations in safeguarding the natural world.

The emergence of sustainable performance concepts indicates that businesses should not focus solely on economic performance for sustainability, but should also prioritize achieving social and environmental objectives (Bombiak & Marciniuk-Kluska, 2018).

Recent research has indicated a shift towards cleaner production methods, leading to an increased focus on sustainability performance. Some studies are now exploring the connection between various factors, such as green human resources, and sustainability performance (Zaid et al., 2018), green supply chain management (Yildiz Çankaya & Sezen, 2019), sustainability manufacturing (Abdul-Rashid et al., 2017), and green economy (Biby et al., 2023; Chaaben et al., 2024).

Recent studies have focused on the implementation of Green Economy principles. The idea of the green economy, also referred to as a sustainable economy, includes economic strategies that strive to improve people's quality of life and promote fairness in society for a long duration (UNEP, 2011).

In achieving the Sustainability Development Goals (SDGs), the green economy as an approach creates low-carbon economic growth, resource savings and social inclusion by involving communities and stakeholders. As one of the agendas to encourage the acceleration of SDGs in 2030, the World Green Economy Summit has been held, which is a Movement Towards a Green Economy (Nuringsih et al., 2022).

The idea of a green economy presents a new perspective on sustainable progress, with an emphasis on balancing economic, social, and environmental aspects in a harmonious way. Embracing the principles of the green economy can help shape the mindset of businesses, leading to the discovery of new opportunities and driving long-term sustainability for the company (UNEP, 2011).

The green economy serves as a driver for the sustainable growth of businesses in Saudi Arabia, focusing on economic, environmental, and social aspects to enhance the quality of life, minimize environmental hazards, and promote equality within society (Chaaben et al., 2024). Implementing a green economy can address issues like the shortage of natural resources and improvements in social well-being (Himel et al., 2016).

Chaaben et al. (2024) prove that the green economy has a strong and beneficial impact on the sustainability of performance. This discovery aligns with research previously carried out by Biby et al. (2023); D'amato & Korhonen (2021); Dissanayake et al. (2021); Dogaru (2021)

Economic progress is intertwined with not only manufacturing and consumption, but also environmental concerns. The aspiration is for the expansion of the economic sphere to

benefit environmental sustainability. Nevertheless, in practice, economic growth often leads to environmental harm (Ferdiansyah et al., 2023).

The phenomenon related to environmentally friendly business practices according to Asadi et al. (2020), most companies are still focused on achieving profits so that environmental and social orientations are still neglected, this results in less than optimal achievement of sustainability performance. One approach to overcome this weakness is by increasing green innovation. Muangmee et al. (2021) state that In Thailand, the automotive parts industry benefits greatly from green innovation, which has a noticeable impact on its sustainability performance.

Previous research has indicated that adopting eco-friendly practices can enhance productivity, leading to improved financial performance for the company (Asadi et al., 2020; Bock & Hasenkamp, 2013; Roca & Searcy, 2012). In addition, green innovation practices reduce energy consumption costs and reduce waste disposal which have a positive impact on organizational costs (Zhu & Sarkis, 2004). The findings of Zhu & Sarkis (2004) demonstrated that green innovation have a favorable effect on the company's economic performance, primarily through the reduction of waste and expenses.

According to the findings of the preliminary survey conducted by the researcher, numerous MSMEs in Jumantono District, Karanganyar Regency have been capitalizing on the waste generated from their production processes for entrepreneurial ventures. For example, several garment industries in Genengan Village have utilized scrap fabrics into recycled products (bed sheets, bags, foot mats, etc.). The efforts made by Jumantono MSMEs as a form of implementing environmentally friendly economic practices (green economy) have research appeal. In line with the Green Economy movement, production activities and obstacles that hinder the achievement of sustainable performance of MSMEs in Kumantono District are interesting to analyze. Some of these obstacles include limited budget and support for environmentally friendly technology, as well as the innovation capabilities of business actors.

The goal of this research is to explore how well small and medium enterprises in Jumantono District, Karanganyar are able to maintain their sustainability. Existing research will be reviewed to investigate how they have affected the economy, environment, and society. The study aims to use triple bottom line measurements to assess the actual situation of these three dependent variables. This study stands out from previous research by introducing green innovation as a factor that enhances the impact of green economy on sustainability performance.

This research aims to provide a basis for MSMEs in the Jumantono District, Karanganyar to develop strategies for enhancing the sustainability of their businesses. The findings of this study may also offer fresh perspectives on promoting eco-friendly economic activities, thereby contributing to a more sustainable future, especially providing benefits for MSMEs in Jumantono District in developing environmentally friendly innovations as a strategy to overcome obstacles to achieving sustainability goals. In addition, the research is anticipated to make a significant impact on the economics field, particularly in relation to entrepreneurship.

2. Literature Review

2.1. Green Economy

UNEP's report defines the Green Economy as an economic concept that could enhance societal well-being and equality. The concept of the Green Economy is widely known as an economy that prioritizes environmental sustainability and aims to create a more eco-friendly

environment within the economic, industrial, and environmental realms. Some also view the Green Economy as an economic system that promotes environmentally-friendly practices and seeks to prevent harm to the surrounding ecosystems. The idea behind the Green Economy is to mitigate the negative impact that economic growth has on the environment and the consumption of natural resources. Furthermore, it is hoped that the existence of this Green Economy will provide prosperity for all humans on this earth. In line with the five main principles, namely, the Principle of Welfare; Principle of Justice; Principle of Planetary Boundaries; Principle of Efficiency; and Principle of Governance (UNEP, 2011).

A green economy involves undertaking economic activities with the goal of enhancing human well-being and fairness over time by focusing on finding ways to reduce harm to the environment while manufacturing, delivering, and using goods and services. The concept of a green economy, according to the United Nations Environment Program, is characterized by an economic structure that focuses on reducing carbon emissions, efficiently utilizing resources, and ensuring fair treatment for all members of society. Embracing this green economy can stimulate creativity and funding towards achieving long-term sustainable progress (UNEP, 2011).

The Green Economy is built on three main principles, with a focus on the utilization of non-renewable energy sources for advancement, resulting in a decline in environmental health and an increase in greenhouse gas output. The decline in environmental quality has led to the rise of the Green Economy as a method of spurring economic advancement while still prioritizing the health of the environment (Ferdiansyah et al., 2023).

2.2. Green Innovation

Green innovation, also known as eco-friendly innovation, involves creating new or enhancing existing products. It goes beyond just the products themselves to include the development of processes, marketing strategies, and new business practices within a company (Koirala, 2019). Green innovation not only has the potential to reduce harm to the environment, but it can also drive positive change in society by shifting societal norms and values (Muangmee et al., 2021).

In Chen's et al. (2006) view, green innovation is recognized as a tool for innovation that focuses on creating and advancing products and processes. This includes technological advancements that can lead to energy efficiency, reduction in pollution, recycling of waste, designing environmentally friendly products, and implementing sustainable environmental practices. Reuvers (2015) characterizes eco-friendly innovation as the act of enhancing or forming a product or procedure that results in a notable decrease in environmental footprints.

Green innovation can be divided into two main types. The first one is focused on creating eco-friendly products or services that do not harm the environment. The second category is green process innovation, which focuses on implementing more efficient production or delivery methods compared to traditional methods (Chen et al., 2006).

2.3. Sustainable Development Goals (SDGs)

The United Nations initiated a fifteen-year program called the Sustainable Development Goals (SDGs) aimed to be achieved by 2030. These goals aim to expand on the accomplishments of the Millennium Development Goals (MDGs) that were in effect from 2000 to 2015, with a wider scope of seventeen specific objectives in mind. These goals aim to promote sustainability and envision a better future, as illustrated in Figure 1. SDGs are designed as a comprehensive agenda for human well-being and the sustainability of the entire planet (Nuringsih et al., 2022).

Figure 1. Sustainable Development Goals (SDGs)

Figure 1 illustrates the various targets of the Sustainable Development Goals, categorized into social, economic, and environmental domains. Elkington refers to this as the triple bottom line. The progression towards achieving the SDGs is facilitated by the implementation of a green economy, with the goal of reaching the targets by 2030. In order to meet all goals with a worldwide community focus, it is imperative to have strategic partnerships among stakeholders across different nations. These partnerships are demonstrated through assistance in education development, idea development, and overall support for countries, all of which greatly influence the intention to promote environmentally-friendly entrepreneurship (Nuringsih et al., 2022).

Quiroz-Niño & Murga-Menoyo (2017) conducted a study that highlighted the significance of training in developing skills related to SDGs, with the attainment of goals being facilitated through education. This argument further shows the importance of the role of educational institutions to build a learning framework based on SDGs.

2.4. Sustainability Performance

The concept of sustainability emerged since 1987 and currently scholars are increasingly paying attention to it (WCED, 1987). However, society remains concerned about environmental issues, the external environment also forces stakeholders to find solutions due to these challenges (Higgins & Coffey, 2016). The popular definition of sustainability is development directed at meeting current needs but not involving future generations (WCED, 1987).

Goyal et al. (2013) and Labuschagne et al. (2005) further highlight the triple bottom line concept as the basis for business sustainability. Sustainability by Elkington (1994) is a company's strategy and activities directed to protect, maintain and develop human resources and nature for the future.

Elkington's (1994) perspective on sustainable performance is more popular because it aligns with the triple bottom-line principle, encompassing financial success, eco-friendly practices, and social responsibility towards stakeholders, customers, and employees.

The interaction of sustainability and business processes is considered important by researchers because it can achieve effective results, such as efficient and effective resource utilization, environmental pollution and waste reduction. Companies need to create strategies by considering the efficiency of consumption use. However, sustainability strategies are still

constrained so that companies still need to review them (Tseng et al., 2018; Yusliza et al., 2020).

2.5. Triple Bottom Line (TBL) Concept

Sustainability goals have been on the lips of businesses, non-profits, and governments for the past ten years, yet determining the level of sustainability or commitment to sustainable development within an organization remains a challenging task (Yusliza et al., 2020).

The idea of the Triple Bottom Line (TBL) introduced by Elkington (1994) has revolutionized the method by which businesses, non-profits, and governments assess the sustainability and success of their initiatives. The concept of Triple Bottom Line (TBL) provides organizations with the opportunity to assess sustainability in terms of people, planet, and profit. This flexibility allows businesses to tailor the approach to their individual requirements. John Elkington introduced a fresh way to evaluate the sustainability of American firms in the 1990s (Tseng et al., 2018).

The Triple Bottom Line (TBL) is a unique approach to accounting that integrates various aspects of performance including social, environmental, and financial considerations setting it apart from conventional reporting systems (Elkington, 1994). The three dimensions of sustainability performance based on the Triple Bottom Line (TBL) concept can be explained as follows:

a.   Economic Performance

The financial success of a company is crucial for its long-term viability and has an impact on various stakeholders, including both groups and individuals. Economic performance is the relative performance of a company that can change from year to year in a similar industry, characterized by the company's annual return. A business's financial success is defined by its capability to maintain operations and achieve economic prosperity while taking into account the concerns of stakeholders (Putra & Utama, 2022).

b.   Environmental performance

One of the main aspects of maintaining sustainability in a business is its environmental performance. This includes evaluating the company's interaction with the surroundings and determining its effectiveness in operating sustainably to minimize environmental consequences. Environmental performance is not only related to the results and environmental impacts on the company and stakeholders, but also becomes a process of responsiveness and responsibility to the environment and the surrounding community that affects future results and impacts (Wang, 2019).

c.   Social performance

The company's long-term success is also impacted by its social performance, which extends beyond just fulfilling corporate social responsibility and focuses on tangible outcomes. In particular, it highlights the accountability of stakeholders or those with financial interests. Corporate social performance is established through evaluating the social and environmental initiatives carried out by a company. Corporate social performance requires incorporating principles of social responsibility into the company's policies, programs, and various social initiatives that affect its interactions with society (Yusliza et al., 2020).

2.6. The influence of green economy on sustainability performance

Green economy can be used as a company approach to achieve its business sustainability goals. This is because green economy practices can encourage the creation of environmentally friendly economic growth such as low carbon, resource savings and social inclusion by involving the community and stakeholders (Nuringsih et al., 2022).

The company must prioritize a sustainable development agenda that aligns with economic, environmental, and social factors by embracing a green economy. Sustainable growth is critical for overall success. Adopting green economic practices can address issues related to the depletion of natural resources and societal welfare (Himel et al., 2016).

Chaaben et al. (2024) prove that the green economy has a substantial impact on sustainability performance, leading to positive outcomes. This discovery aligns with research done by previous studies led by Biby et al. (2023); D'amato & Korhonen (2021); Dissanayake et al. (2021) and Dogaru (2021).

Economic progress is not just about creating and using goods and services, but also has a strong connection to environmental concerns. There is an expectation that economic growth has the potential to positively influence the conservation of the environment. Nevertheless, in practice, the expansion of the economy often leads to harm to the environment (Ferdiansyah et al., 2023).

Based on the description above, the hypothesis in this study is:

H1: Green economy has a significant influence on the economic performance of MSMEs in Jumantono District, Karanganyar.

H2: Green economy has a significant influence on environmental performance in MSMEs in Jumantono District, Karanganyar.

H3: Green economy has a significant influence on social performance in MSMEs in Jumantono District, Karanganyar.

2.7. The role of green innovation in moderating the influence of green economy on sustainability performance

Green economy practices in MSMEs can indirectly help economic recovery and expand employment opportunities. In addition, green economy practices will help realize Sustainable Development goals, so they must continue to be optimized (Fandeli et al., 2020). Viewed through an economic lens, incorporating eco-friendly innovation has the potential to enhance overall economic success (Green & Inman, 2005). The effects of green innovation on a business can be measured by looking at the financial, supplier, customer, and government aspects (Asadi et al., 2020). Green innovation is a strategy that pays attention to the impacts that arise on the environment while being able to improve economic performance with efficiency in creating new market products, using energy and raw materials and having superior products in competitive advantages (Utama et al., 2020). Green product innovation increases consumer demand and provides good benefits for consumers. This innovation also increases productivity, so it can offset environmental costs (Chen et al., 2006).

The company's action in providing information about green innovation through the company's website, local newspapers, and social media accounts is called green publicity. News and social media are used by companies to persuade consumers about environmental services as well as to add positive publicity to green products to reduce pollution (Zahid et al., 2018).

Environmental performance is strongly linked to how energy, resources, waste, and emissions are managed. By embracing green innovation, a company can greatly influence its environmental performance and gain a competitive edge (Xie et al., 2019). Overall, green innovation has opened up new opportunities for companies to gain a positive active reputation through the green products they produce. By doing this, the company can increase customer knowledge, allowing them to recognize the company's efforts in addressing various environmental issues and promoting awareness about the environment (Lin & Niu, 2018).

The concept of social responsibility has a strategic relationship between environmental and social performance. Green marketing, coupled with business ethics, has the ability to

improve a company's image in a favorable way, promote environmentally conscious and socially accountable behaviors, and ultimately lead to positive financial results (Javed et al., 2020).

Muangmee et al. (2021) stated that green innovation has the potential to greatly enhance sustainability outcomes. Previous researchers concluded that green innovation directly affects operational performance leading to the economic success of the company (Asadi et al., 2020; Bock & Hasenkamp, 2013; Roca & Searcy, 2012). Green innovation practices reduce energy consumption costs and reduce waste disposal which has a positive impact on organizational costs (Zhu & Sarkis, 2004). The findings of Zhu & Sarkis (2004) show the positive impact of green innovation on the economic performance of companies due to reduced waste and costs. Based on the description above, the hypothesis in this study is:

H4: Green innovation can moderate the influence of green economy on economic performance of MSMEs in Jumantono District, Karanganyar.

H5: Green innovation can moderate the influence of green economy on environmental performance of MSMEs in Jumantono District, Karanganyar.

H6: Green innovation can moderate the influence of green economy on social performance of MSMEs in Jumantono District, Karanganyar

3. Methods

This research involves a descriptive approach with a quantitative methodology, utilizing statistical tests for data analysis. The study focused on all MSMEs located in the Jumantono District of Karanganyar. Individuals are the focus of this research. The number of MSMEs in Jumantono District, Karanganyar is reported to be 435 according to data from the Department of Industry, Trade, Cooperatives, and SMEs of Karanganyar Regency in 2023. The study included 81 samples of MSMEs, determined using the Slovin formula.

Table 1. Operational Definition and Measurement of Variables

Operational Definition of Variables	Indicators	Items	Source
Green Economy: Economic efforts or activities carried out by MSMEs to create or improve human welfare and justice in the long term.	- Use of renewable energy sources - Recycling to reduce waste - Maintenance of clean water sources - Environmentally friendly economic literacy	GREEN1 GREEN2 GREEN3 GREEN4	Nuringsih et al. (2022)
Green Innovation: Efforts made by MSMEs to reduce negative environmental impacts through the creation of new processes and products aimed at increasing sustainable competitiveness.	- Use of environmentally friendly raw materials - Environmentally friendly packaging - Recyclable products - Reduction in water, oil, or electricity use during production - Implementation of clean production processes	GINOV1 GINOV2 GINOV3 GINOV4 GINOV5	Muangmee et al. (2022)
Economic Performance: The ability of MSMEs to reduce costs related to purchasing materials, waste processing, waste disposal, energy consumption, and fines related to environmental violations.	- Reduction in material purchasing costs - Reduction in energy consumption costs - Reduction in waste management costs - Reduction in environmental violation fines	ECON1 ECON2 ECON3 ECON4	Yusliza et al. (2019)
Environmental Performance: The ability of MSMEs to reduce emissions, hazardous	- Compliance with environmental standards	LING1 LING2	Yusliza et al. (2019)

materials, energy and material use, and to comply with environmental regulations.	- Reduction of air emissions - Reduction of energy consumption - Reduction of material use - Reduction in hazardous material use - Reduction of water consumption	LING3 LING4 LING5 LING6
Social Performance: The ability of MSMEs to improve welfare and social development, health and safety, public risk control, and worker health and safety.	- Stakeholder welfare - Public health and safety - Reduction of environmental impact and public risks - Employee health and safety	SOCIAL1 SOCIAL2 SOCIAL3 SOCIAL4 Yusliza et al. (2019)

The primary data source utilized for this research consists of responses obtained through a questionnaire containing written inquiries. Respondents were presented with a set of questions rated on a 5-point Likert Scale (SS = 5; S = 4; N = 3; TS = 2; STS = 1) for assessment. The data analysis in this study involved the utilization of SEM-PLS, with Smart-PLS version 3 being the software utilized for data processing.

4. Results and Discussion

4.1. Research Results

4.1.1. Outer Model Evaluation

Table 2. Convergent Validity

Variables	Indicator	Outer Loading
Green Economy	GREEN2	0.864
	GREEN2	0.886
	GREEN3	0.904
	GREEN4	0.865
Green Innovation	GINOV1	0.890
	GINOV2	0.917
	GINOV3	0.889
	GINOV4	0.836
	GINOV5	0.923
Economic Performance	ECON1	0.853
	ECON2	0.866
	ECON3	0.836
	ECON4	0.838
Environmental Performance	LING1	0.879
	LING2	0.894
	LING3	0.874
	LING4	0.900
	LING5	0.903
	LING6	0.892
Social Performance	SOCIAL1	0.871
	SOCIAL2	0.872
	SOCIAL3	0.776
	SOCIAL4	0.924

Source: Processed data, 2024

Table 3.Average Variance Extracted Value

	Average Variance Extracted (AVE)	Information
Green Economy	0.719	Valid
Green Innovation	0.778	Valid
Economic Performance	0.795	Valid
Environmental Performance	0.793	Valid
Social Performance	0.744	Valid

Source: Processed data, 2024

Table 4. Composite Reliability

Variables	Composite Reliability	Cronbach's Alpha
Green Economy	0.911	0.870
Green Innovation	0.946	0.929
Economic Performance	0.939	0.914
Environmental Performance	0.958	0.948
Social Performance	0.920	0.883

Source: Processed data, 2024

All valid items are marked with outer loading > 0.7 and AVE value > 0.5, meaning all are valid in terms of discriminant validity. Composite reliability value > 0.7 and Alpha > 0.6 means all constructs are reliable.

4.1.2. Inner Model Evaluation

Table 5.R-Square and Q-Square Values

	R-Square	Adjusted R-Square
Economic Performance	0.270	0.250
Environmental Performance	0.531	0.518
Social Performance	0.250	0.230

Source: Processed data, 2024

After analyzing the R square value in the model feasibility evaluation, it can be inferred that the PLS model is appropriate for testing the research hypotheses.

4.1.3. Path Coefficient Test
After testing the results proved a positive path in all constructs, in essence there is a positive link as shown in the following figure.
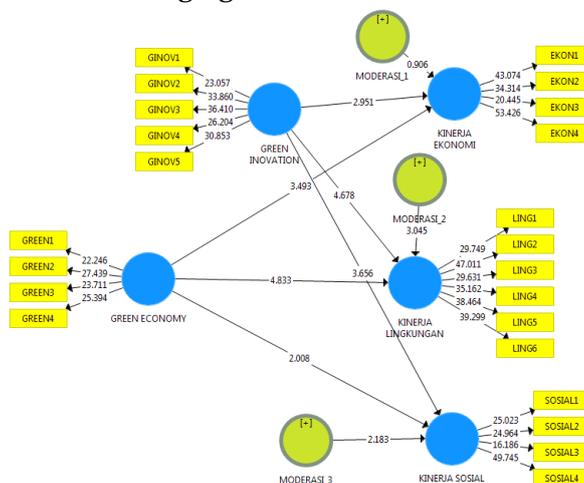

Figure 2. Inner Model

According to the interpretation of the findings, it is evident that every variable in this model has a positive path coefficient value. When the path coefficient increases as it moves from one independent variable to the dependent variable, it suggests that the impact of the independent variables on the dependent variable is strengthening.

4.1.4. Hypothesis Testing

Table 6. Hypothesis Testing

	T Statistics (|O/STDEV|)	P Values
Green Economy -> Economic Performance	3,493	0.001
Green Economy -> Environmental Performance	4,833	0,000
Green Economy -> Social Performance	2,008	0.045
Moderation_1 -> Economic Performance	0.906	0.365
Moderation_2 -> Environmental Performance	3,045	0.002
Moderation_3 -> Social Performance	2,183	0.030

Source: Processed data, 2024

Statistical analysis revealed a significant relationship between the green economy and economic performance, with a p-value of 0.001 and a T statistic of 3.493. This supports H1, indicating that greater implementation of green economy practices improves the economic performance of MSMEs in Jumantono District, Karanganyar.

The study found a significant impact of the green economy on environmental performance, with a p-value of 0.000 and a T statistic of 4.833. These results validate H2, indicating that green economy adoption positively influences the environmental performance of MSMEs in Jumantono District, Karanganyar.

The examination indicates that the green economy has a notable impact on social performance, with statistical significance noted by a p-value of 0.045 and a T statistic of 2.008. Since the p-value is less than 0.05 and the T statistic is more than 1.96, H3 is considered valid. This means that the more actively MSMEs implement green economic principles, the more they contribute to social performance. Hence, the green economy also significantly impacts the social aspects of MSME operations in Jumantono District, Karanganyar.

The research found no significant effect of green innovation on the relationship between the green economy and economic performance, with a p-value of 0.365 and a T statistic of 0.906. As these values do not meet the significance threshold, H4 is rejected. This suggests that green innovation does not significantly influence the link between green economy practices and economic performance among MSMEs in Jumantono District, Karanganyar.

The examination of moderation in the connection between the green economy and environmental performance revealed a p-value of 0.002 and a T statistic of 3.045, proving that H5 is backed by evidence. This infers that the implementation of green innovation has a notable effect on amplifying the influence of the green economy on environmental performance. Hence, incorporating green innovation can boost the ecological advantages obtained from green economy activities among small and medium enterprises in the area.

Finally, the test to see how green innovation affects social performance in the context of the green economy, known as Moderation_3, resulted in a p-value of 0.030 and a T statistic of 2.183. Because the p-value is less than 0.05 and the T statistic is greater than 1.96, we can conclude that the sixth hypothesis (H6) is supported. This suggests that green innovation greatly contributes to enhancing the influence of the green economy on social performance. In conclusion, while green innovation does not moderate economic outcomes, it has a substantial

moderating effect on both environmental and social performance in the context of MSMEs in Jumantono District, Karanganyar.

4.2. Discussion

The discovery demonstrates that adopting a green economy can impact the sustainability efforts of small and medium enterprises in the Jumantono District of Karanganyar. The three suggested theories all suggest that the green economy has a measurable impact on the success of sustainable practices. This indicates that enhancing the green economy can enhance the economic, environmental, and social aspects of MSMEs in the Jumantono District of Karanganyar.

Chaaben et al. (2024) report that a green economy prioritizes improving the well-being of people and promoting equality, while also working to diminish the effects of environmental issues and shortages of resources. Essentially, it can be described as an economy that is mindful of its carbon footprint, uses resources efficiently, and values inclusivity. In the view of Ferdiansyah et al. (2023), the effectiveness of the green economy is evident in the annual reduction of carbon emissions, which serve as a key measure of its success. A rise in carbon emissions signifies a potential lack of progress in implementing green economy practices in Indonesia. On the contrary, a decrease in carbon emissions indicates a successful adoption of green economy principles in the country.

In this case, a good understanding ofgreen economyable to encourage MSME actors in Jumantono District, Karanganyar to achieve sustainable performance. Sustainable development goals (SDGs) shift the focus to enhancing long-term business performance by prioritizing not just economic gains but also taking into account social and environmental factors.

The findings suggests that as the green economy expands, MSME actors will be more inclined to adopt environmentally-friendly practices, thereby aiding in addressing issues like natural resource depletion and social well-being. Green economy which is increasingly higher will have an impact on improving economic performance that can be measured from decreasing costs such as purchasing materials, energy consumption costs, waste costs, and environmental accident fines so that it will have an impact on increasing profitability. In terms of environmental performance, compliance with environmental regulations can be gauged through reductions in air emissions, energy usage, material consumption, hazardous material usage, and water usage. Social performance can be assessed based on the well-being of stakeholders, the promotion of public health and safety, the mitigation of environmental effects and hazards to the community, as well as the well-being of employees.

This discovery serves to validate the results of Chaaben et al. (2024) which demonstrates the strong impact of the green economy on the sustainability efforts of small and medium-sized enterprises in Saudi Arabia. This discovery aligns with research previously carried out by Biby et al. (2023); D'amato & Korhonen (2021); Dissanayake et al. (2021); Dogaru (2021) that increasing the green economy has an impact on increasing the company's sustainability performance.

The findings also validate the significance of eco-friendly advancements in reducing the influence of eco-friendly business practices on the long-term success of small and medium-sized businesses in Jumantono District, Karanganyar. This pertains specifically to the environmental and social components However, there were no notable outcomes in terms of economic performance. The implication of this finding is that the implementation of high green economy and high green innovation will result in higher environmental performance and social performance in MSMEs in Jumantono District, Karanganyar compared to the

implementation of high green economy but low green innovation. The contribution of green innovation plays a significant role in enhancing sustainability performance.

Increasingly high levels of environmentally friendly innovation can encourage the commitment of MSMEs toreducing negative impacts on the environment through the creation of new processes and products aims to increase sustainable competitiveness. As noted by Muangmee et al. (2021), incorporating sustainability into products and processes can involve using eco-conscious materials, eco-friendly packaging, easily recyclable products, decreasing water, oil, and electricity usage, and adopting cleaner production methods.

5. Conclusion

The results of this research point towards several key takeaways. To start, the eco-friendly industry plays a crucial role in impacting the economy, the environment, and society. This indicates that the implementation of green economic principles contributes positively across the three dimensions of sustainability. Furthermore, green innovation may not directly impact the green economy's effect on economic performance, but it does have a moderating influence on the connection between the green economy and environmental performance, as well as the connection between the green economy and social performance.

In order to achieve business sustainability, MSME actors in Jumantono District, Karanganyar expected to continue to strive to improve performance by focusing on the balance of economic, environmental and social aspects. The adoption of green economy and sustainable innovation by MSMEs is crucial for enhancing overall well-being and fairness in society in the future. Future research is expected to enlarge the sample, the object area also needs to be expanded. The limitations of the antecedents are also an agenda to explore this model by adding new moderating or intervening variables.

6. References

Abdul-Rashid, S. H., Sakundarini, N., Raja Ghazilla, R. A., & Thurasamy, R. (2017). The impact of sustainable manufacturing practices on sustainability performance: Empirical evidence from Malaysia. *International Journal of Operations & Production Management*, *37*(2), 182–204.

Almashhadani, M., & Almashhadani, H. A. (2023). Audit Committee Features, Sustainability Disclosure, and Corporate Performance in Charlotte Financial Service Companies. *MARGINAL JOURNAL OF MANAGEMENT ACCOUNTING GENERAL FINANCE AND INTERNATIONAL ECONOMIC ISSUES*, *3*(1). https://doi.org/10.55047/marginal.v3i1.837

Asadi, S., Pourhashemi, S. O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., Aljojo, N., & Razali, N. S. (2020). Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of Cleaner Production*, *258*, 120860.

Biby, S., Asbar, Y., & Jufridar, J. (2023). The Analisys of The Green Economy Implementation on Sustainability Small and Medium Enterprise in lhokseumawe City. *E-Mabis: Jurnal Ekonomi Manajemen Dan Bisnis*, *24*(1), 31–37.

Bock, J., & Hasenkamp, H. (2013). Innovation through Craftmanship. *Management & Marketing*, *8*(3), 451.

Bombiak, E., & Marciniuk-Kluska, A. (2018). Green human resource management as a tool for the sustainable development of enterprises: Polish young company experience. *Sustainability*, *10*(6), 1739.

Chaaben, N., Elleuch, Z., Hamdi, B., & Kahouli, B. (2024). Green economy performance and

sustainable development achievement: empirical evidence from Saudi Arabia. *Environment, Development and Sustainability*, *26*(1), 549–564.

Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, *67*, 331–339.

D'amato, D., & Korhonen, J. (2021). Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework. *Ecological Economics*, *188*, 107143.

Dissanayake, N., Withanawasam, A., & Sarjoon, A. (2021). Conceptual nexuses between sustainable development and blue-green economy: An analysis of the importance of adopting blue-green economic principles in achieving sustainable development goals. *Civilization*, *12*(6).

Dogaru, L. (2021). Green economy and green growth—Opportunities for sustainable development. *Proceedings*, *63*(1), 70.

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, *36*(2), 90–100.

Fandeli, H., Hasan, A., & Amrina, E. (2020). Model konseptual pengaruh keberlanjutan terhadap kinerja industri kecil dan menengah. *Dampak*, *17*(1), 15–24.

Ferdiansyah, M. R. A., Andriansyah, M. R., Maretasari, A., & Yuliwindarti, Y. (2023). Penerapan Green Economy: Seberapa Hijau Ekonomi Indonesia Ditinjau dari Pertumbuhan Ekonomi, Populasi, dan Energi Terbarukan Tahun 1990–2020. *Jurnal Ilmiah Penalaran Dan Penelitian Mahasiswa*, *7*(1).

Goyal, P., Rahman, Z., & Kazmi, A. A. (2013). Corporate sustainability performance and firm performance research: Literature review and future research agenda. *Management Decision*, *51*(2), 361–379.

Green, K. W., & Inman, R. A. (2005). Using a just-in-time selling strategy to strengthen supply chain linkages. *International Journal of Production Research*, *43*(16), 3437–3453. https://doi.org/10.1080/00207540500118035

Higgins, C., & Coffey, B. (2016). Improving how sustainability reports drive change: a critical discourse analysis. *Journal of Cleaner Production*, *136*, 18–29.

Himel, T. H., Muniandy, S. L., & Rahman, A. A. (2016). The relationship between selfefficacy, feasibility and awareness towards green entrepreneurial intention. *Sci. Int.(Lahore)*, *28*(2), 2095–2103.

Javed, M., Rashid, M. A., Hussain, G., & Ali, H. Y. (2020). The effects of corporate social responsibility on corporate reputation and firm financial performance: Moderating role of responsible leadership. *Corporate Social Responsibility and Environmental Management*, *27*(3), 1395–1409.

Koirala, S. (2019). SMEs: Key drivers of green and inclusive growth. *OECD Green Growth Papers*, *2019/03*.

Labuschagne, C., Brent, A. C., & Van Erck, R. P. G. (2005). Assessing the sustainability performances of industries. *Journal of Cleaner Production*, *13*(4), 373–385.

Lin, S., & Niu, H. (2018). Green consumption: E nvironmental knowledge, environmental consciousness, social norms, and purchasing behavior. *Business Strategy and the Environment*, *27*(8), 1679–1688.

Muangmee, C., Dacko-Pikiewicz, Z., Meekaewkunchorn, N., Kassakorn, N., & Khalid, B. (2021). Green entrepreneurial orientation and green innovation in small and medium-sized enterprises (SMEs). *Social Sciences*, *10*(4), 136.

Nuringsih, K., Nuryasman, M. N., & Rosa, J. A. (2022). Mendorong green entrepreneurial intention melalui green economy dan green entrepreneurial orientation. *Jurnal Ekonomi*, *27*(3), 417–440.

Putra, W. E., & Utama, L. (2022). Pengaruh Green Entrepreneurial Orientation dan Green Innovation terhadap Kinerja Berkelanjutan Industri Gigi Palsu. *Jurnal Manajerial Dan Kewirausahaan*, *4*(2), 534–545.

Quiroz-Niño, C., & Murga-Menoyo, M. Á. (2017). Social and solidarity economy, sustainable development goals, and community development: The mission of adult education & training. *Sustainability*, *9*(12), 2164.

Reuvers, F. (2015). *What is new about green innovation*. University of Twente.

Roca, L. C., & Searcy, C. (2012). An analysis of indicators disclosed in corporate sustainability reports. *Journal of Cleaner Production*, *20*(1), 103–118.

Shaw, W. H., Issa, T., Catley, B., & Muntean, D. (2017). *Moral issues in business*. Cengage Australia.

Tseng, M.-L., Chiu, A. S. F., & Liang, D. (2018). Sustainable consumption and production in business decision-making models. In *Resources, Conservation and Recycling* (Vol. 128, pp. 118–121). Elsevier.

UNEP. (2011). Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. In *Sustainable Development UN*. United Nations Environment.

Utama, L., Widjaja, O. H., & Lego, Y. (2020). Pengaruh orientasi kewirausahaan terhadap keunggulan kompetitif pada UKM industri kreatif dengan kapasitas inovatif sebagai faktor mediasi dalam masa pandemik Covid-19. *Jurnal Bina Manajemen*, *9*(1), 30–43.

Wang, C.-H. (2019). How organizational green culture influences green performance and competitive advantage: The mediating role of green innovation. *Journal of Manufacturing Technology Management*, *30*(4), 666–683.

WCED. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. The Brundtland Report.

Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research*. https://doi.org/10.1016/j.jbusres.2019.01.010

Yildiz Çankaya, S., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, *30*(1), 98–121.

Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Faezah, J. N., & Muhammad, Z. (2020). A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, *249*, 119334.

Zahid, M. M., Ali, B., Ahmad, M. S., Thurasamy, R., & Amin, N. (2018). Factors affecting purchase intention and social media publicity of green products: The mediating role of concern for consequences. *Corporate Social Responsibility and Environmental Management*, *25*(3), 225–236.

Zaid, A. A., Jaaron, A. A. M., & Bon, A. T. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study. *Journal of Cleaner Production*, *204*, 965–979.

Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, *22*(3), 265–289.