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The Role Of The Green Economy, Technological Innovation, Stock Market Advantages In Sustainable Development

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Abstract. *A green economy to achieve sustainable development provides technological innovation and stock market profits in a sustainable social and environmental economy. To accelerate the transition to an environmentally friendly economy, companies need to understand the impact of implementing environmentally friendly policies and activities on the economy. Results show that green economic growth policies produce future aggregate stock market returns are lower, consistent with the perceived reduction in risk argument by investors. As this research increases our understanding of how the transition to a more sustainable green economy can impact the aggregate profitability of financial markets, implementing a green economy is important to implement appropriate measures to support it sensitively without incurring large costs that adversely impact the health of the economy. Increasing the driving force of technological innovation is the need to comply with environmentally friendly transformation in the economy and realize high-quality economic growth in technological innovation that does not provide support for green economic growth, but over time the impact of technological innovation on economic growth will change to positive. This shows that increasing the ability of technological innovation to encourage environmentally friendly economic efficiency.*
Keywords: *Green Economy, technological innovation, stock market towards development.*

Abstrak. Ekonomi hijau untuk mencapai pembangunan berkelanjutan memberikan inovasi teknologi dan keuntungan pasar saham dalam ekonomi sosial dan lingkungan yang berkelanjutan. Untuk mempercepat transisi menuju ekonomi yang ramah lingkungan, perusahaan perlu memahami dampak penerapan kebijakan dan aktivitas ramah lingkungan terhadap perekonomian. Hasil penelitian menunjukkan bahwa kebijakan pertumbuhan ekonomi hijau menghasilkan imbal hasil pasar saham agregat di masa depan yang lebih rendah, konsisten dengan argumen pengurangan risiko yang dirasakan oleh investor. Karena penelitian ini meningkatkan pemahaman kita tentang bagaimana transisi menuju ekonomi hijau yang lebih berkelanjutan dapat berdampak pada profitabilitas agregat pasar keuangan, maka penting untuk menerapkan langkah-langkah yang tepat untuk mendukung ekonomi hijau secara sensitif tanpa menimbulkan biaya besar yang berdampak buruk pada kesehatan ekonomi. Meningkatkan kekuatan pendorong inovasi teknologi adalah kebutuhan untuk mematuhi transformasi ramah lingkungan dalam perekonomian dan mewujudkan pertumbuhan ekonomi berkualitas tinggi dalam inovasi teknologi yang tidak memberikan dukungan terhadap pertumbuhan ekonomi hijau, namun seiring berjalannya waktu dampak inovasi teknologi terhadap pertumbuhan ekonomi akan berubah menjadi positif. Hal ini menunjukkan bahwa peningkatan kemampuan inovasi teknologi dapat mendorong efisiensi ekonomi yang ramah lingkungan.
Kata Kunci: Ekonomi Hijau, inovasi teknologi, pasar saham menuju pembangunan.

INTRODUCTION

In recent decades, the world has witnessed rapid economic development, but has also experienced a significant increase in environmental degradation and climate instability. Carbon neutrality has emerged as a key issue in the global technological and economic revolution stage. The economy has developed to a stage of high-quality development to overcome resource and environmental constraints, actively address climate change and promote the radical transformation of economic and social growth towards a more environmentally friendly direction and play an important role in global climate governance. Sustainable development is to reduce environmental instability and other potential crises and

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the green economy is considered as one of the main tools to achieve sustainability which aims to meet the needs of the current generation without compromising the ability of future generations to meet their needs. This involves the integration of economic, environmental and social dimensions in development policies and practices. The main challenges in achieving sustainable development include climate change, biodiversity loss, pollution, and social inequality, for which a holistic strategy is needed that involves all stakeholders, including government, the private sector, and civil society.

A green economy can be defined as an economy that produces increased human welfare and social justice while significantly reducing environmental risks and ecological scarcity. Sustainable development can accelerate scientific and technological innovation and actively practice environmentally friendly low-carbon development, in a part that is very important for circulation. encouraging environmentally friendly development, technological innovation and an environmentally friendly economy.

Technological innovation plays a crucial role in supporting the green economy. Environmentally friendly technologies, such as renewable energy (solar, wind, and bioenergy), waste management technology, and sustainable transportation systems, help reduce carbon emissions and increase energy efficiency. In addition, information and communication technology (ICT) such as big data, blockchain, and the Internet of Things (IoT) enable more efficient and transparent resource management, technological innovation also encourages the development of green industry which contributes to the creation of new environmentally friendly jobs .

The stock market has a strategic role in supporting sustainable development through efficient capital allocation. In recent years, there has been a significant increase in investor interest in investments that pay attention to Environmental, Social and Governance (ESG) aspects. Disclosure of ESG information in company financial reports is an important tool for investors to assess risks and opportunities related to sustainability. Companies that demonstrate a strong commitment to sustainability tend to be more attractive to investors, as they are seen as better able to manage long-term risks and capitalize on opportunities from the global trend towards a green economy.

Sustainable development as the most resilient approach to reducing environmental instability and other potential crises, the green economy is considered as one of the main tools for achieving sustainability which can be defined as an economy that produces increased human well-being and social justice while significantly reducing environmental risks and ecological scarcity, with this definition capturing the economic, social and

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environmental dimensions of sustainable development. Green financing has received much attention over the past decades to demonstrate investment and financing operations that create environmentally related benefits, reduce environmental hazards and demonstrate environmentally friendly behavior.

With this definition capturing the economic, social and environmental dimensions of sustainable development, unsustainable economic development has caused overexploitation of natural resources, environmental pollution and climate change which threaten life on earth. To overcome this challenge, the concept of sustainable development has emerged which integrates economic growth, environmental sustainability and social welfare. A green economy is an approach that seeks to reduce environmental risks and ecological unsustainability, as well as improve human well-being and social equality. This approach shifts the focus from conventional economic growth, which often ignores negative impacts on the environment, towards a model that prioritizes resource efficiency, clean energy and sustainable development. Implementing a green economy involves structural changes in the way we produce, distribute, and consume goods and services.

RESEARCH METHOD

This research uses a qualitative approach to explore and understand the role of the green economy, technological innovation, and the stock market in sustainable development. A qualitative approach was chosen because it is able to explore in depth the views, experiences and practices implemented by various stakeholders. Collect and review relevant review literature, including academic journals, industry reports, and government policies related to the green economy, technological innovation, and stock markets. This literature will provide the theoretical basis and context for further analysis.

Journal selection was carried out based on strict inclusion criteria, taking into account the quality of research methodology, relevance to the research topic, and suitability to the research objectives. Once appropriate journals were identified, researchers systematically extracted data from each article, including research objectives, conceptual framework, research methods, population samples, variables studied, main findings, and implications of research results.

Data from the five journals was then analyzed qualitatively using a descriptive approach by highlighting patterns, themes and relationships that emerged from the literature. This analysis takes into account variations in methodological approaches, measurement of variables, and the context in which research is conducted. By integrating findings from each

journal, researchers can identify general trends, patterns of similarity, as well as variability in the research results observed. Next, researchers conducted a comparative analysis to highlight the similarities and differences in findings from each journal, as well as explore the implications of these differences.

This research is based on a qualitative method with the relationship between the variables studied, the role of the green economy, technological innovation and stock market profits on sustainable development, which aims to recognize environmentally friendly logistics and environmentally friendly economics. Domestic researchers have mostly studied the relationship between the two qualitative studies which found that green growth has resulted in initial success in promoting economic development and progressing towards high-quality development in stages aimed at innovation, coordination, green, open and shared development.

In innovation networks, increasing the strength of network connections between nodes plays a positive role in encouraging various knowledge among network members, promoting product and technological innovation, defining costs and risks in the innovation process and promoting environmentally friendly innovation in companies. Currently, academic circles focus on the theme of technological innovation. which are environmentally friendly and study mechanisms that encourage improving quality and efficiency.

RESULTS AND DISCUSSION

Assessing the Role of the Green Economy

Based on research since its launch in 2008, the green economy concept Green Economy has attracted considerable global interest because of its use as a tool to overcome the financial crisis, at the UN conference on sustainable development the Green Economy concept was widely known through the UNEP definition because it shows the harmonization of three issues: human resources, environment, and social justice. The impact of the transition to a Green Economy has become a controversial issue because there are several myths about it, firstly, an unavoidable "trade off" between environmental sustainability and economic processes, secondly, the transition to a Green Economy requires large costs for developing countries because this is a luxury that only developed countries can afford, these three things can also threaten the economic growth of developing countries because they can exploit them for their interests only at the expense of developing countries.

According to the UNEP report, macroeconomic model projections show that the transition to a Green Economy in a few years will generate more growth, create more jobs

and reduce poverty like a Green Economy system. Per capita income growth and employment levels must be determined by private and public green investment. less dependent on the exploitation of natural resources and environmental assets which also reduces carbon emissions, encourages efficient energy use and reduces environmental impacts. Green Economy towards the improvement and development of many sectors, therefore many developing countries are targeting the Green Economy as a new economic growth model increasing global development, solar PV power troops are expected to become one of the most important international energy supply companies in 2030 and a leading energy source in in 2050 to build photovoltaics with a total cumulative installed capacity of 1,050 GW in 2030.

The Dynamic Relationship Between Green Logistics and Technological Innovation

There is a lot of research related to technological innovation and the green economy, most researchers show that technological improvements have a unit positive impact on green economic growth, but the green economy does not contribute much to the growth of technological innovation. Wang and Wu believe that technological innovation as a moderating variable can significantly improve the contribution of environmental monitoring to high-quality green economic growth, Chen et al studied the relationship between green technology development and green economy. Technological innovation and green economic development in the early stages cannot encourage the growth of green logistics, technological innovation as a response variable, the environmentally friendly logistics coefficient lagged by one level is positive and significant at the 1% level and the influence of the green economy is not significant, this shows that the growth of green logistics The environment is a driver of technical progress while environmentally friendly economic growth does not make a big contribution.

Technological innovation when the green economy is used as a response variable, the green logistics coefficient is positive at one stage at the 1% level, while the effect of technological innovation is not significant, indicating that green logistics has a good influence on the green economy, but in the short term technological innovation cannot contribute to green industrial growth.

The Impact of Environmentally Friendly Innovation and Digital Economic Networks

From the existing literature, environmentally friendly innovation in the manufacturing industry is relatively perfect, at the same time regarding the mechanisms and factors that influence the development of the digital economy towards environmentally friendly innovation in the manufacturing industry. However, it is less likely to explore the impact on

green innovation in the manufacturing industry of the externalities of the network structure of the digital economy and society. Digital technology makes networks ubiquitous distribution, diffusion, and inference of information can create and reveal digital economic networks, and their connections represent social and economic relationships, they promote environmentally friendly innovation through network flows. From the perspective of network relationships, existing research is based on multidimensional proximity theory and externality theory to build digital economic association networks. Using social network analysis or complex network models to analyze the evolution laws and trends of digital economic spatial association networks, digital technology cooperation, and technology innovation networks, analyzing the role played by node enterprises, . Existing research has not yet revealed in depth the internal relationship between the digital economic network structure (centrality and intensity) of urban agglomerations and environmentally friendly innovation in the manufacturing industry. At the same time, based on dynamic capabilities theory, the ability of manufacturing industries to acquire and utilize resources in the process of integration into the network of urban digital economic associations plays an important role in improving environmentally friendly innovation performance.

The digital economic network helps the manufacturing industry to integrate external resources, obtain various knowledge and resources based on the external digital economic network, and integrate the mastered internal and external resources to promote value sharing and environmentally friendly innovation, under the complex background of the interaction of digital economic structure optimization, environmental governance, and innovation, the spatial correlation network of the digital economy and the green innovation effect of the manufacturing industry are integrated into an integrated analysis framework, with a focus. digital economic correlation network to deeply study the influence mechanism of digital economy on green innovation in manufacturing industry, which provides a good basis for practical decision making. Subjects in urban agglomeration digital economic networks face the resource advantages brought by such networks, accompanied by strong dominance, data monopoly, and inappropriate competition.

Existing research reveals the negative impact of asymmetric dependence on innovation, the current discussion regarding green innovation in manufacturing industries in the digital economic network has not yet penetrated the assumption of homogeneity of relationships from the main body. It is necessary to test whether this can have an impact on environmentally friendly innovation in the manufacturing industry in the context of the digital economy of urban agglomerations that form networks regarding how to use digital

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economic network connections and a reasonable layout of network connection strengths to realize environmentally friendly innovation pathway mechanisms in the manufacturing industry still needs to be studied further.

Innovation for a Greener Future

GTI is a technical innovation for resource conservation and environmental preservation directly influenced by GF (Green Finance), mostly through financial assistance, information sharing, resource allocation, and risk mitigation. Regarding financial assistance, GF (Green Finance) can expand financing channels for environmentally friendly innovation issues while reducing financing costs covering a large number of small and medium enterprises that usually face high interest rates and financing challenges due to lack of assets and capital.

GF (Green Finance) promotes environmentally friendly innovation policies by encouraging the use of GB, environmentally friendly funds, environmentally friendly insurance and environmentally friendly credit effectively expanding green industrial financing methods to build broad investment theme policies involving foreign capital, private capital, intermediaries finance, government funds and pension funds, meanwhile, by optimizing the financial framework, lowering the cost of financing green industry while increasing pollution-generating projects thereby allowing more businesses to participate in information sharing, GF (Green Finance) can minimize costs tailored to resources by encouraging collaboration and knowledge exchange between companies, financial institutions and corporations. At the same time, the government is actively involved in modifying current financial instruments to expand financing channels for GTI development and current fiscal policy through revenue and distribution adjustments.

By encouraging environmentally friendly investments, discouraging polluting investments, and encouraging capital orientation financial institutions can limit the total amount of funds that businesses can access by limiting further lending to highly polluting companies and limiting the overall amount of funds to reduce investment. and providing incentives to companies can stimulate the growth of the green energy industry through the use of financial subsidies, equity investments, green loans, and GTI. Furthermore, GFs can encourage social capital to participate in the renewable energy industry while recruiting additional land, social capital, labor, and other important resources for the green sector. Economic development, rapid policy change, political strife, and financial crises all contribute to regime change, thereby adding to the asymmetry in the relationship, this investigation will examine each economy solely to address the issues mentioned above.

Fourth, despite their close location, these countries are usually quite autonomous because each country has its own characteristics in terms of the effectiveness of GF in improving

Green Economy And Stock Market Profits

Given the conflicting views regarding the impact of environmentally friendly investments on stock returns, a natural question arises, what is the impact of green economic growth activities and policies on aggregate stock market returns. Therefore, it fills this gap by investigating the impact of green growth policies and activities on future stock market returns on European stock exchanges. The higher the growth of environmentally friendly activities and policies in the economy, the lower the required rate of return on the market portfolio due to reduced perceived investment risk. To the best of the authors' knowledge, this is the first attempt to explore such impacts on aggregate stock market returns. The choice of the European market stems from the fact that Europe, as a whole, constitutes the second largest part of the green economy in terms of green income exposure.

Environmental activities carried out by companies not only reduce costs but also reduce the company's perceived risk, resulting in a lower cost of equity and higher share prices. They develop a conceptual framework that links the cost of equity and value of a firm to its environmental management system and performance. They argue that the channel through which increased corporate environmental activity translates into lower costs of capital and higher market value is when corporate environmental investment policies and performance are communicated to investors, then investors assess the impact of corporate environmental risks. Environmental management system in their study means not only compliance with related environmental laws but also environmental activities integrated into company operations that include supply chain activities including product design, processes, and others. They further stated that the relationship resulted in an “environmental transformation” of the company. They argue that companies that disclose more information about their environmental activities are generally considered less risky by investors. They relate environmental risk to systematic risk as measured by beta and argue that when a company's environmental risk changes, its beta changes with it. However, it should be noted that the estimated costs of environmental activities do not only influence systematic risk.

DISCUSSION

This research shows that these three elements are interrelated and have a significant contribution to sustainable development. The green economy provides a framework for

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efficient resource management, technological innovation offers practical solutions to overcome environmental challenges, and stock market gains encourage companies to adopt sustainable practices. Together, they form a strong foundation for achieving sustainable development goals.

The Role of the Green Economy

The green economy focuses on human welfare and social equality while maintaining environmental sustainability. This involves a transition from a traditional economic model based on the exploitation of natural resources, towards a more sustainable economy with the use of renewable energy and environmentally friendly production practices. The positive impacts:

1. Reducing Emissions and Pollution, Using renewable energy such as solar and wind power can reduce dependence on fossil fuels and reduce greenhouse gas emissions.
2. Resource Management, Green economic practices help in more efficient and sustainable management of natural resources, reducing environmental damage and increasing the availability of resources for future generations.
3. Increasing Social Welfare, Green economy encourages the creation of new jobs in sustainable sectors, improves community welfare and reduces social inequality.

Technological Innovation

Technological innovation acts as a key driver in achieving sustainability. New and innovative technologies provide practical solutions to a variety of environmental and social challenges.

Stock Market Profits

Stock market profits are an important indicator of company performance in the long term. Companies that adopt sustainable practices often show better stock market performance. This is explained through several main points, such as sustainable investments where companies committed to sustainable practices are more attractive to investors who increasingly pay attention to environmental, social and governance (ESG) factors. This can increase the market value of the company's shares.

Synergy between Green Economy, Technological Innovation and Stock Market

This research emphasizes that these three elements support each other and create strong synergy to achieve sustainable development. The green economy provides a framework that allows technological innovation to flourish, while stock market returns provide incentives for companies to adopt sustainable practices. Government policies also play an important role in

supporting this transition through regulations that encourage the use of renewable energy, incentives for green technologies, and support for research and development.

CONCLUSION

The conclusions from this research are as follows:

1. The Role of the Green Economy

A green economy focuses on integrating human well-being and social equality with environmental conservation. Through a transition from a conventional economic model based on the exploitation of natural resources, a green economy emphasizes the use of renewable energy and environmentally friendly production practices. This research shows that the green economy contributes significantly to reducing greenhouse gas emissions and pollution, as well as improving natural resource management. The implementation of a green economy also improves social welfare by creating jobs in sustainable sectors, which helps reduce social disparities and improve people's quality of life.

2. Technological Innovation

Technological innovation is a key driver in achieving sustainability, providing practical solutions to various environmental and social challenges. New and innovative technologies, such as renewable energy, energy efficiency, waste management technology, and agricultural biotechnology, play a key role in reducing energy consumption, reducing waste, and increasing crop yields with minimal environmental impact. This research highlights that technological innovation increases the efficiency of resource use and helps overcome complex environmental problems, making it a crucial element in sustainable development strategies.

3. Stock Market Profits

Stock market profits are an important indicator of company performance in the long term. This research finds that companies that adopt sustainable practices often show better stock market performance. This is due to increasing investor interest in companies that pay attention to environmental, social and governance (ESG) factors. Additionally, sustainable practices improve a company's reputation and consumer trust, which in turn increases sales and profitability. Companies that focus on sustainability are also better prepared to deal with environmental and social risks, making them more stable and profitable in the long term.

This research concludes that the integration of the green economy, technological innovation, and stock market returns is critical to achieving sustainable development goals. These three factors together create an environment that supports inclusive and

environmentally friendly economic growth, ensuring social prosperity and environmental preservation for future generations. The implementation of supportive policies and collaboration between the public and private sectors is urgently needed to accelerate the transition towards a more sustainable future. The results of this research provide clear guidance for policymakers, businesses and society to work together to achieve global sustainability.

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