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Integration of Green Finance and FinTech in Sustainable Economic Development

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ABSTRACT

This research aims to analyze the development of green finance and financial technology and their contribution in supporting sustainable economic development. The research uses a qualitative approach with a literature study method through the review of various scientific articles published in the last five years. The analysis was carried out descriptively to identify the development of concepts, previous research findings, and research opportunities that are still open. The results show that green finance and Financial Technology (FinTech) are growing significantly and play a role in improving the efficiency of the financial system, expanding financial inclusion, and supporting the implementation of sustainability principles in economic activities. However, studies in both areas still show a tendency to be fragmented and focus more on impact and performance aspects separately. Therefore, a more integrative approach is needed to explain the relationship between technological innovation and sustainable finance. This research makes a conceptual contribution in strengthening understanding of the role of green finance and FinTech, which refers to the application of digital technologies to deliver and automate financial services, supporting sustainable economic development.

Keywords: *Economic Development, Financial Technology, Green Finance, Sustainability, Sustainable Finance.*

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1. | INTRODUCTION

Global economic developments in recent years have shown that there are changes that are increasingly leading to the integration of technological innovation and sustainable development. Digital transformation in the financial sector has driven the birth of various innovations that not only improve the efficiency of the financial system, but also support the achievement of sustainability-oriented development goals. In this context, green finance and financial technology (FinTech) are two concepts that have received great attention in modern economic studies because they are considered to be able to encourage more inclusive and sustainable economic growth (Kwong et al., 2023).

Green finance has developed as an instrument that supports the financing of various economic activities that pay attention to environmental, social, and governance aspects. Meanwhile, the development of FinTech has changed the conventional financial service mechanism through the use of digital technology so as to enable increased efficiency, accessibility, and innovation in the financial sector (Thakor, 2020). The integration between the two concepts further strengthens efforts to create an economic system that is more adaptive to various sustainable development challenges and the changing needs of modern society (Hariram et al., 2023).

Previous studies have shown that green finance has a significant relationship with improved economic performance and company value. The application of sustainable financial instruments is able to provide benefits to shareholders while encouraging an increase in sustainability-oriented investment activities (Tang & Zhang, 2020). In addition, the application of environmental, social, and governance (ESG) principles has also been proven to contribute to the company's resilience in the face of economic uncertainty and improve the company's financial performance sustainably (Broadstock et al., 2021). The perspective of responsible investing is also growing as attention to the integration of ESG factors in investment decision-making increases (Pedersen et al., 2021).

On the other hand, the development of financial technology has resulted in various innovations that are able to improve the efficiency of the financial system through the use of digital technology. FinTech not only expands access to financial services, but also contributes to increasing financial inclusion and overall financial system stability (Ozili, 2023). The use of technology in the financial sector has also opened up new opportunities in various financing activities, risk management, and the development of business models that are more adaptive to changes in the economic environment (Fuster et al., 2019).

However, research developments on green finance and FinTech still show a fragmented trend. Most studies have discussed the two concepts separately and focused on the influence of each variable on various economic indicators. Studies on a more comprehensive relationship between green finance, FinTech, and sustainable economic development are still relatively limited. Bibliometric findings conducted by Kwong et al. (2023) show that research in these two fields focuses more on impact and performance aspects, while studies on integration, innovation, and future research opportunities still require further attention.

In addition, a systematic review conducted by Mudalige (2023) shows that the development of new themes in green finance is happening very quickly and increasingly complex, requiring a more comprehensive synthesis. Research on digital finance and sustainable development also still shows a wide scope for development through a more integrative approach (Yang et al., 2022). Thus, there is still a research gap in the form of limited studies that link the development of green finance and FinTech in the perspective of sustainable economics as a whole.

Based on these conditions, this study aims to examine the development of green finance and FinTech in support of sustainable economic development through a literature review. This research is expected to provide a more comprehensive understanding of concept development, prior research findings, and future research opportunities, thereby making theoretical and practical contributions to the field of economics and the sustainable financial sector.

2. | LITERATURE REVIEW

Green Finance and Sustainable Economic Development

Green finance is one of the approaches in the financial system that aims to support economic activities that pay attention to environmental, social, and governance aspects. This concept is evolving as the need to create economic growth that is not only oriented towards economic profit, but also concerned with the sustainability of resources and social welfare. Sustainable financial instruments such as green bonds, ESG-based investments, and environmentally sound financing are important in supporting economic transformation towards more sustainable development (Tang & Zhang, 2020).

The development of green finance is also related to increasing attention to environmental, social, and governance (ESG) factors in investment decision-making. The integration of ESG aspects in investment activities is considered to be able to create a balance between achieving financial benefits and long-term sustainability, resulting in added value for various stakeholders (Pedersen et al., 2021). In addition, the application of ESG principles has been proven to contribute to increasing the resilience of companies in the face of various economic pressures and market uncertainties (Broadstock et al., 2021).

A bibliometric study conducted by Kwong et al. (2023) shows that research on green finance continues to experience significant development. However, most of the research still focuses on impact and performance aspects, while studies on investment opportunities, innovation, and integration with financial technology still require further development. Therefore, green finance is one of the important elements in supporting sustainability-oriented economic development.

FinTech and the Transformation of the Modern Financial System

The development of digital technology has brought significant changes to the modern financial system through the presence of financial technology (FinTech). The use of technology in the financial sector allows the creation of various innovations that can improve efficiency, expand access to financial services, and encourage wider financial inclusion (Mavlutova et al., 2022). This transformation makes FinTech one of the important factors in supporting the development of the digital economy and the modernization of the financial system (Thakor, 2020).

The innovations produced by FinTech are not only limited to digital payment services, but also include various forms of financing, investment, and data management that are increasingly integrated with the development of information technology. The use of technology in the financing sector has increased the effectiveness of the financial intermediation process and accelerated public access to various financial services that were previously difficult to reach (Fuster et al., 2019). In addition, the development of digital finance also contributes to increasing financial inclusion and financial system stability in the long term (Ozili, 2023).

However, the development of research on FinTech still focuses more on aspects of technological innovation and its application in the conventional financial system. Studies on the relationship between FinTech and sustainable development are still relatively limited. Hariram et al. (2023) explained that more comprehensive research is needed to understand the contribution of FinTech to the achievement of sustainable development goals, especially through integration with the concepts of green finance and sustainable economy.

3. | RESEARCH METHOD

This research uses a qualitative approach with the library research method. This approach was chosen because the research aims to gain a comprehensive understanding of the development of green finance and financial technology (FinTech) in supporting sustainable economic development through the study of various relevant scientific sources. Literature studies allow researchers to identify, study, and synthesize various previous research results so that they can produce a more comprehensive picture of the development of concepts, research themes, and directions for future study development. According to literature-based studies are an effective approach to understand the relationships between developing topics in the fields of green finance and FinTech and identify various research opportunities that are still open.

The data used in this study is secondary data obtained from various scientific articles that have been published in national and international journals and is at least indexed by Google Scholar. The selection of literature sources is carried out purposively by considering the relevance of the topic, the quality of the publication, and the time span of publication between the last five years. The time range was chosen to obtain an overview of the latest research developments on green finance, ESG, FinTech, digital finance, and sustainable economic development. The sources used come from various reputable journals that discuss the relationship between sustainable finance, digital transformation, and innovation in the modern financial system.

The data collection process is carried out through identification, selection, and review of various literature in accordance with the focus of the research. Furthermore, the data was analyzed using qualitative descriptive analysis techniques through the stages of data reduction, information categorization, interpretation, and drawing conclusions based on the results of synthesis from various previous studies. This approach allows researchers to identify research development trends, find research gaps, and formulate theoretical implications related to the integration of green finance and FinTech in supporting sustainable economic development. Thus, the literature study method is expected to be able to produce a systematic, in-depth study, and contribute to the development of contemporary economic literature.

4. | RESULTS

The results of the study show that the development of green finance and financial technology (FinTech) is one of the phenomena that has received great attention in modern economic literature. Both fields are evolving dynamically in response to the growing need for a more efficient, inclusive, and sustainability-oriented financial system. The economic transformation that has occurred in recent years has encouraged innovations that not only focus on economic value creation but also consider environmental and social aspects. These developments make green finance and FinTech two important elements that are increasingly discussed in various contemporary economic studies (Kwong et al., 2023).

A review of various literature shows that green finance has an important role in supporting sustainable economic development. The presence of sustainability-based financial instruments allows companies and investors to integrate environmental, social, and governance aspects into various economic activities. Green bonds, ESG-based investments, and sustainable finance encourage economic growth while increasing environmental awareness. Research conducted by Tang and Zhang (2020) shows that green bond instruments are able to provide benefits to shareholders and encourage an increase in investment activities that are more sustainability-oriented.

The increasing global attention to climate change has strengthened the position of green finance as one of the main pillars of sustainable economic transformation. Governments, financial institutions, and international organizations increasingly encourage financial policies that support environmentally friendly investments. As a result, green finance has become an integral component of long-term economic development strategies by integrating sustainability considerations into financial decision-making.

In addition, the application of environmental, social, and governance (ESG) principles is also gaining more attention in investment decision-making. The integration of ESG factors in investment strategies allows for a balance between economic goals and social responsibility. Pedersen et al. (2021) explain that investments that pay attention to ESG aspects can produce more efficient portfolios and contribute to the achievement of sustainability goals. This shows that the concept of modern economic development is no longer only oriented towards financial gain but also considers long-term sustainability.

The implementation of ESG principles has also changed the way companies formulate corporate strategies. Sustainable business practices improve operational efficiency, strengthen stakeholder trust, and reduce environmental and regulatory risks. Investors increasingly consider non-financial information because sustainability indicators provide insights into long-term business resilience. Consequently, ESG disclosure has become an important consideration in attracting investment and strengthening corporate reputation.

Research developments also show that the application of ESG principles has a relationship with the resilience of companies in facing various economic challenges. Broadstock et al. (2021) found that companies that have good ESG performance tend to be able to maintain stability and increase resilience in the face of economic pressures. Meanwhile, Krueger et al. (2020) explained that environmental risks and climate change are increasingly becoming the main concern in investment decisions, so that sustainability factors are one of the important aspects in managing economic and financial risks.

Growing concern regarding climate-related financial risks has encouraged companies to strengthen sustainability governance by integrating climate risk management into enterprise risk management frameworks. This integration enables companies to identify environmental impacts, improve adaptation capacity, and formulate more sustainable business strategies.

In a broader context, the relationship between ESG performance and corporate performance is also shown by the research of Duque-Grisales and Aguilera-Caracuel (2021). The research explains that the application of sustainability principles can increase company value and strengthen competitiveness in an increasingly complex business environment. Thus, green finance not only serves as an instrument to support sustainable development but also provides tangible economic benefits for various stakeholders.

Green finance also contributes to broader economic development by encouraging innovation, creating employment opportunities, stimulating investment in clean technologies, and accelerating the transition toward a low-carbon economy. On the other hand, the development of financial technology has brought fundamental changes to the modern financial system. The use of digital technology in the financial sector has resulted in innovations that improve the efficiency, speed, and accessibility of financial services. According to Thakor (2020), the development of FinTech has transformed traditional banking and financial services through increasingly sophisticated digital technology. These innovations allow the creation of a more flexible financial system able to reach wider groups of people.

Rapid digitalization has significantly changed consumer behavior in accessing financial services. Customers increasingly expect financial transactions to be conducted quickly, securely, and conveniently through digital platforms. In response, financial institutions have accelerated technological adoption to improve service quality and customer experience. Digital payment systems, online lending platforms, mobile banking applications, and digital investment services represent innovations that have transformed interactions between financial institutions and customers.

The role of technology in the financial sector is also seen through the development of digital-based financing services. Fuster et al. (2019) explained that the use of technology is able to increase the effectiveness of the financing process and accelerate access to financial services. This condition shows that digital transformation not only improves efficiency but also strengthens the overall function of financial intermediation. Meanwhile, Tang (2019) found that digital financing platforms complement the conventional financial system by expanding financing alternatives for the public and business actors.

Digital financing platforms have become particularly important for small and medium-sized enterprises (SMEs), which often face difficulties in accessing conventional financing. Through digital platforms, financing applications can be processed more efficiently while reducing administrative burdens and transaction costs. As digital ecosystems continue to mature, the contribution of FinTech to economic development is expected to become increasingly significant.

The economic value of FinTech innovation is also increasingly visible through developments in financial technology that increase the productivity of the financial sector. Chen et al. (2019) explain that technology-based innovation has high strategic value in driving the growth of the modern financial sector. In addition, the development of digital finance contributes to increasing financial inclusion and economic stability through expanding access to financial services to various community groups that have not previously received optimal services (Ozili, 2023).

The development of financial technology is also increasingly supported by the use of alternative data and machine learning in the financing process. Jagtiani and Lemieux (2019) explained that the use of this technology is able to improve the quality of risk assessment and expand access to financing for various community groups. Thus, technological innovation not only improves the efficiency of the financial system but also encourages the creation of a more inclusive economic system.

However, the results of the study show that research on green finance and FinTech is still developing separately. Most research focuses more on the influence of each variable on economic performance, company value, and financial inclusion. Studies that link the two concepts more comprehensively are still relatively limited. The bibliometric findings conducted by Kwong et al. (2023) show that most research focuses on impact and performance aspects, while research on innovation, investment, and integration between green finance and FinTech still needs greater attention.

These findings are in line with the results of Hariram et al. (2023) research which explains that the relationship between FinTech and sustainable development is still a growing field of research and requires more in-depth study. The integration between technological innovation and the sustainable financial system is seen as having great potential in supporting more inclusive and sustainable economic growth. However, various studies are still needed that are able to explain the relationship between the two concepts more comprehensively.

In addition, the results of a systematic review conducted by Mudalige (2023) show that new themes in green finance continue to develop rapidly. Various new concepts related to sustainability, green investment, and digital innovation show that research in these fields still has wide room for development. Research by Yang et al. (2022) also shows that the relationship between digital finance and green development still needs more in-depth exploration to produce a more comprehensive conceptual framework.

The results of this study show that green finance and FinTech are two fields that have developed significantly and play an important role in supporting sustainable economic development. However, research developments in these two fields still show fragmentation, so a more integrative study is needed to understand the relationship between technological innovation, sustainable finance, and future economic development goals. Furthermore, developing a comprehensive understanding of the interaction between green finance and FinTech is expected to contribute to more effective financial policies, encourage sustainable investment practices, strengthen financial inclusion, and support the transition toward a resilient, technology-driven, and environmentally sustainable global economy.

5. | DISCUSSION

The results of the study show that the development of green finance and financial technology (FinTech) has made a significant contribution to the transformation of the modern economic system towards a more sustainable direction. Increasing attention to environmental, social, and governance aspects has driven a paradigm shift in economic activities and investment. Green finance is no longer seen as just an alternative financing instrument, but has become part of a sustainability-oriented economic development strategy. On the other hand, the development of digital technology in the financial sector has created various innovations that are able to improve efficiency, financial inclusion, and accessibility of financial services for the wider community (Thakor, 2020).

The findings of this study show that the development of the two fields runs in parallel and supports each other. Green finance provides a foundation for the creation of economic activities that pay attention to sustainability, while FinTech acts as a catalyst that is able to accelerate the transformation process through various digital innovations. This supports the view of Hariram et al. (2023) who stated that the integration between financial technology and sustainable development has great potential to produce economic systems that are more inclusive and adaptive to changes in the global environment.

However, the results of the study also show that studies on green finance and FinTech are still developing in a fragmented manner. Most previous research has focused on the two concepts separately and focused on the impact of each on company performance, investment, and financial inclusion. This condition is in line with the findings of Kwong et al. (2023) which show that research on green finance and FinTech is still dominated by the themes of impact and performance, while studies on the integration of the two fields and future research opportunities are still relatively limited. Thus, there is a need to develop a more comprehensive conceptual framework in explaining the relationship between technological innovation and the sustainable financial system.

In addition, the development of new themes in green finance shows that the research space in this field is still very open. Mudalige (2023) explained that various issues related to sustainability and economic transformation continue to develop so that they require a more systematic synthesis. The findings suggest that future research development needs to be directed towards the integration of various concepts that have been developed separately. Research by Yang et al. (2022) also shows that the relationship between digital finance and green development still needs more in-depth exploration to produce a more complete understanding of the contribution of technology to economic sustainability.

From a theoretical perspective, the results of this study reinforce the view that sustainable economic development requires synergy between financial innovation and digital transformation. The integration of ESG principles into investment activities and the development of financial technology can create a more resilient and long-term oriented economic system. This is in line with the concept of responsible investment put forward by Pedersen et al. (2021), which emphasizes the importance of a balance between achieving economic benefits and sustainability. Therefore, future research needs to develop a more integrative model to explain the relationship between green finance, FinTech, and sustainable economic development more comprehensively.

6. | CONCLUSION

This research shows that the development of green finance and financial technology (FinTech) has become an important part of the transformation of the modern economic system that is oriented towards sustainability. Green finance plays a role in encouraging economic activities that pay attention to environmental, social, and governance aspects, while FinTech contributes through various digital innovations that improve financial efficiency, accessibility, and inclusion. Both concepts have great potential to support the creation of more sustainable economic development and are adaptive to various changes that occur in the global economic environment.

The results of the study show that research on green finance and FinTech has developed quite rapidly over the past few years. However, most of the research is still conducted separately and focuses more on the impact and performance aspects of each field. This condition shows that there is still ample room to develop a more integrative study of the relationship between technological innovation, sustainable finance, and economic development.

This research also emphasizes that the integration between green finance and FinTech can be one of the approaches that can support the creation of a more inclusive, efficient, and long-term oriented economic system. Therefore, future research needs to be directed towards the development of a more comprehensive conceptual model so as to be able to explain the relationship between the two fields in supporting sustainable economic development more optimally.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement

Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance research letters*, *38*, 101716.

Chen, M. A., Wu, Q., & Yang, B. (2019). How valuable is FinTech innovation?. *The Review of financial studies*, *32*(5), 2062-2106.

Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, Social and Governance (ESG) Scores and Financial Performance of Multilatinas: Moderating Effects of Geographic International Diversification and Financial Slack: E. Duque-Grisales, J. Aguilera-Caracuel. *Journal of business ethics*, *168*(2), 315-334.

Fuster, A., Plosser, M., Schnabl, P., & Vickery, J. (2019). The role of technology in mortgage lending. *The review of financial studies*, *32*(5), 1854-1899.

Hariram, N. P., Mekha, K. B., Suganthan, V., & Sudhakar, K. (2023). Sustainalism: An integrated socio-economic-environmental model to address sustainable development and sustainability. *Sustainability*, *15*(13), 10682.

Jagtiani, J., & Lemieux, C. (2019). The roles of alternative data and machine learning in fintech lending: Evidence from the LendingClub consumer platform. *Financial Management*, *48*(4), 1009-1029.

Krueger, P., Sautner, Z., & Starks, L. T. (2020). The importance of climate risks for institutional investors. *The Review of financial studies*, *33*(3), 1067-1111.

Kwong, R., Kwok, M. L. J., & Wong, H. S. (2023). Green FinTech innovation as a future research direction: a bibliometric analysis on green finance and FinTech. *Sustainability*, *15*(20), 14683.

Mavlutova, I., Spilbergs, A., Verdenhofs, A., Natrins, A., Arefjevs, I., & Volkova, T. (2022). Digital transformation as a driver of the financial sector sustainable development: An impact on financial inclusion and operational efficiency. *Sustainability*, *15*(1), 207.

Mudalige, H. M. N. K. (2023). Emerging new themes in green finance: a systematic literature review. *Future Business Journal*, *9*(1), 108.

Ozili, P. K. (2023). CBDC, Fintech and cryptocurrency for financial inclusion and financial stability. *Digital Policy, Regulation and Governance*, *25*(1), 40-57.

Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible investing: The ESG-efficient frontier. *Journal of financial economics*, *142*(2), 572-597.

Tang, D. Y., & Zhang, Y. (2020). Do shareholders benefit from green bonds?. *Journal of Corporate Finance*, *61*, 101427.

Tang, H. (2019). Peer-to-peer lenders versus banks: substitutes or complements?. *The Review of Financial Studies*, *32*(5), 1900-1938.

Thakor, A. V. (2020). Fintech and banking: What do we know?. *Journal of financial intermediation*, *41*, 100833.