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INTERNATIONAL EXPERIENCE IN THE APPLICATION OF ARTIFICIAL INTELLIGENCE (AI) IN GREEN FINANCE DEVELOPMENT AND POLICY IMPLICATIONS FOR VIETNAM

EXPERIÊNCIA INTERNACIONAL NA APLICAÇÃO DA INTELIGÊNCIA ARTIFICIAL (IA) NO DESENVOLVIMENTO DAS FINANÇAS VERDES E IMPLICAÇÕES POLÍTICAS PARA O VIETNÃ

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Abstract
In the context of increasing climate change challenges and the growing demand for sustainable development, green finance has become a major trend in the global financial system. At the same time, artificial intelligence (AI) is being increasingly adopted by many countries to enhance ESG governance, assess environmental risks, and optimize green investment decisions. This paper reviews and analyzes international experiences in applying AI to promote green finance in several representative countries, thereby drawing policy implications for Vietnam. Using a literature review and analytical approach, the study shows that countries such as China, Singapore, and Japan have actively applied AI in ESG data analysis, climate risk forecasting, monitoring green financial markets, and detecting greenwashing practices. In addition, these countries place strong emphasis on building environmental databases, developing green fintech ecosystems, and improving regulatory frameworks to support the adoption of digital technologies in the financial system. The findings suggest that integrating AI into green finance not only enhances the transparency of financial markets but also helps direct capital flows toward environmentally friendly and sustainable projects. Based on international experience, the paper proposes several policy implications for Vietnam, including the

Resumo
No contexto dos crescentes desafios das mudanças climáticas e da demanda cada vez maior por desenvolvimento sustentável, as finanças verdes tornaram-se uma tendência importante no sistema financeiro global. Ao mesmo tempo, a inteligência artificial (IA) vem sendo cada vez mais adotada por muitos países para aprimorar a governança ESG, avaliar riscos ambientais e otimizar decisões de investimento verde. Este artigo revisa e analisa experiências internacionais na aplicação da IA para promover as finanças verdes em vários países representativos, extraindo assim implicações políticas para o Vietnã. Utilizando uma revisão da literatura e uma abordagem analítica, o estudo mostra que países como China, Cingapura e Japão têm aplicado ativamente a IA na análise de dados ESG, na previsão de riscos climáticos, no monitoramento dos mercados financeiros verdes e na detecção de práticas de greenwashing. Além disso, esses países dão grande ênfase à construção de bancos de dados ambientais, ao desenvolvimento de ecossistemas de fintech verde e à melhoria de marcos regulatórios para apoiar a adoção de tecnologias digitais no sistema financeiro. Os resultados sugerem que a integração da IA ao financiamento verde não apenas aumenta a transparência dos mercados financeiros, mas também ajuda a direcionar fluxos de capital para projetos ambientalmente

development of a national ESG database, the improvement of green taxonomy systems, the promotion of AI adoption in financial institutions, and the development of technology-oriented human resources. These solutions are expected to contribute to the advancement of green finance and support the achievement of sustainable growth objectives in Vietnam.

Keywords: Artificial Intelligence (AI). Sustainable Development. Green Finance.

corretos e sustentáveis. Com base na experiência internacional, o artigo propõe várias implicações políticas para o Vietnã, incluindo o desenvolvimento de um banco de dados ESG nacional, a melhoria dos sistemas de taxonomia verde, a promoção da adoção da IA em instituições financeiras e o desenvolvimento de recursos humanos orientados para a tecnologia. Espera-se que essas soluções contribuam para o avanço das finanças verdes e apoiem a consecução dos objetivos de crescimento sustentável no Vietnã.

Palavras-chave: *Inteligência Artificial (IA). Desenvolvimento Sustentável. Finanças Verdes.*

1 INTRODUCTION

Facing the increasing challenges of climate change. natural resource depletion. and environmental pollution. sustainable development has become a strategic priority for many countries around the world. The financial system. with its role in mobilizing and allocating resources within the economy. is considered a crucial instrument for promoting the transition toward a green growth model. In line with this trend. green finance has received growing attention as an effective mechanism for directing capital flows toward environmentally friendly economic activities. thereby contributing to the reduction of greenhouse gas emissions. enhancing climate change adaptation. and achieving sustainable development goals. However. the practical implementation of green finance still faces numerous challenges. particularly those related to the collection. processing. and analysis of large volumes of data on environmental. social. and governance (ESG) factors. as well as the assessment of climate risks and the sustainability of investment projects.

Along with the rapid advancement of digital transformation in the financial and banking sectors. artificial intelligence (AI) has emerged as a foundational technology capable of effectively supporting the development of green finance. With its ability to process large datasets. identify complex data patterns. and generate highly accurate predictions. AI enables financial institutions to enhance their capacity for ESG data analysis. assess environmental and climate-related risks. and optimize investment

decisions in line with sustainability objectives. In practice. many countries and international financial institutions have gradually integrated AI into various activities such as sustainability report analysis. green credit scoring. monitoring of green financial markets. and detecting “greenwashing” practices.

For Vietnam. the development of green finance has become an important strategic direction to support the implementation of the National Green Growth Strategy as well as international commitments related to greenhouse gas emission reduction. Nevertheless. the application of advanced technologies. particularly artificial intelligence. in the field of green finance remains at an early stage and has not yet been comprehensively studied. Therefore. examining international experiences in applying AI to the development of green finance. while drawing policy implications suitable to Vietnam’s conditions. is of significant theoretical and practical importance. From this perspective. this paper focuses on analyzing the experiences of several countries in applying artificial intelligence to promote green finance and proposes policy implications to enhance the adoption of AI in the financial system. thereby contributing to the development of the green finance market in Vietnam.

2 THEORETICAL BACKGROUND OF THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN GREEN FINANCE

2.1 Concept of green finance

Green finance has become an increasingly important concept in the context of countries promoting sustainable development and addressing climate change. In general. green finance refers to financial activities that support projects and economic activities beneficial to the environment. contributing to the reduction of greenhouse gas emissions. the protection of natural resources. and the transition toward a low-carbon economy. According to the Organisation for Economic Co-operation and Development (OECD). green finance is understood as the mobilization and allocation of financial resources for projects. products. and services that generate positive environmental impacts while supporting the sustainable growth of the economy (OECD. 2017).

From a broader perspective. the United Nations Environment Programme (UNEP) considers green finance as a component of sustainable finance. encompassing investment. lending. and insurance activities that promote economic development alongside environmental protection and efficient resource management. Under this approach. green finance does not only focus on environmental projects such as renewable energy. sustainable transportation. or waste management. but also includes financial mechanisms that support businesses and organizations in transitioning toward environmentally friendly production models (UNEP. 2016).

According to the World Bank. green finance plays an important role in directing investment flows toward sectors that help mitigate the impacts of climate change and enhance the resilience of economies to environmental risks. Common green financial instruments include green credit. green bonds. green investment funds. and financial products linked to environmental. social. and governance (ESG) criteria (World Bank. 2016).

In summary. green finance can be understood as a system of financial mechanisms and instruments aimed at mobilizing and allocating capital for environmentally friendly and sustainable economic activities. The development of green finance not only contributes to addressing global environmental challenges but also creates momentum for technological innovation and improves the efficiency of resource utilization within the economy.

2.2 Concept and characteristics of Artificial Intelligence in the financial sector

Artificial Intelligence (AI) is considered one of the core technologies of the Fourth Industrial Revolution. with the capability to simulate human cognitive processes and learning through algorithms and computer systems. According to Russell and Norvig (2021). AI is defined as a field of computer science that studies and develops systems capable of performing tasks that typically require human intelligence. such as learning. reasoning. pattern recognition. and decision-making. Owing to its ability to process large volumes of data. learn autonomously. and adapt over time. AI has been increasingly applied across various socio-economic sectors. particularly in the financial industry.

In the financial sector. AI refers to the use of machine learning. deep learning. and advanced data analytics techniques to automate and improve the efficiency of financial activities such as risk analysis. portfolio management. fraud detection. and credit assessment. According to the Financial Stability Board (2017). AI in finance includes systems capable of analyzing large volumes of financial and non-financial data to support financial institutions in making faster and more accurate decisions.

One of the most prominent characteristics of AI in the financial sector is its ability to process and analyze big data. Financial institutions today must handle massive amounts of data from diverse sources. including transaction data. market data. corporate information. and unstructured data from social media. AI technologies are capable of extracting and analyzing these data sources to identify patterns. forecast risks. and support decision-making processes (OECD. 2021).

In addition. the ability to learn autonomously and continuously improve performance over time is another key characteristic of AI. Through machine learning algorithms. AI systems can constantly update analytical models based on new data. thereby enhancing the accuracy of predictions and financial risk assessments. This capability helps financial institutions strengthen risk management and optimize business operations (FSB. 2017).

Moreover. AI contributes to the automation of various financial processes. reducing operational costs and improving efficiency. Applications such as robo-advisors. algorithmic trading systems. and fraud detection technologies have significantly transformed the way global financial markets operate (World Economic Forum. 2020).

Overall. AI has become an important tool that enables financial institutions to enhance operational efficiency. improve risk management capabilities. and support data-driven decision-making. The integration of AI with emerging trends such as green finance and ESG governance is expected to create new opportunities for the sustainable development of the financial system in the future.

2.3 The role of Artificial Intelligence in the development of green finance

Artificial Intelligence (AI) is increasingly playing a crucial role in promoting the development of green finance by improving data analysis capabilities. assessing

environmental risks. and supporting sustainable investment decision-making. As countries strive to achieve sustainable development goals and address climate change challenges. AI is regarded as an effective tool that enables financial institutions to better manage environmental. social. and governance (ESG) factors in financial activities (OECD. 2021).

One of the key roles of AI in green finance is supporting the assessment and measurement of environmental and climate-related risks. Financial institutions often need to process large volumes of data related to carbon emissions. energy consumption. climate variability. and the environmental impacts of investment projects. AI can analyze big data from multiple sources—such as corporate reports. satellite data. and market information—to accurately evaluate the environmental risk levels associated with projects and enterprises (Bolton et al.. 2020). This capability enables financial institutions to make investment decisions that are more aligned with sustainable development criteria.

In addition. AI contributes to improving the efficiency of capital allocation for green projects. Through machine learning algorithms. financial institutions can analyze and identify projects that generate positive environmental impacts. thereby prioritizing capital allocation to sectors such as renewable energy. sustainable transportation. and clean technologies. According to the World Economic Forum (2022). AI can enhance project evaluation processes and reduce transaction costs in green investment activities. thereby encouraging greater private sector participation in environmentally friendly projects.

Furthermore. AI helps improve the transparency and quality of ESG reporting. One of the major challenges in green finance is the inconsistency and lack of transparency in corporate ESG data. AI can be used to collect and analyze information from various sources. including corporate reports. news articles. social media. and public databases. to assess companies' compliance with ESG criteria (OECD. 2021). This provides investors and financial institutions with more reliable information when making investment decisions.

Additionally. AI supports the monitoring and detection of "greenwashing." which refers to misleading or exaggerated claims made by companies regarding the environmental friendliness of their business activities. By analyzing data and cross-referencing information from multiple sources. AI systems can identify inconsistencies

in corporate environmental disclosures. thereby enhancing transparency in green financial markets (UNEP. 2021).

In general. AI has become a key tool for improving the effectiveness of green finance by strengthening data analysis capabilities. enhancing environmental risk assessment. and supporting ESG governance. The application of AI in green finance not only helps channel investment capital into environmentally sustainable sectors but also enhances the transparency and efficiency of financial systems in the pursuit of sustainable development.

3 METHODOLOGY

This study adopts a qualitative research approach combined with the analysis of secondary data to examine international experiences in the application of artificial intelligence (AI) in the development of green finance. This approach enables a systematic synthesis of previous research findings while identifying key trends. models. and policy frameworks that have been implemented in various countries and international organizations.

First. the research data were collected from a wide range of reliable academic and policy sources. Specifically. the materials include scholarly articles published in international journals. as well as reports from international organizations such as the Organisation for Economic Co-operation and Development (OECD). the Bank for International Settlements (BIS). the World Bank. and financial regulatory authorities. The selection of documents was conducted based on criteria including relevance to the research topic. academic reliability. and the timeliness of the data sources. The selected literature focuses on three main thematic areas: theoretical foundations of green finance. applications of artificial intelligence in the financial sector. and models of AI implementation supporting sustainable finance development.

After the data collection stage. the study analyzes and synthesizes the information using a systematic literature review approach. This method allows the classification of existing studies according to major themes. thereby identifying prominent trends in the application of AI in green financial activities. In addition. the research conducts a comparative review of implementation experiences in several representative economies.

including the United States. China. and the European Union. in order to clarify differences in policy approaches. levels of technological adoption. and the roles played by financial institutions.

Furthermore. a comparative analysis method is employed to evaluate the similarities and differences in AI application models for green finance across countries. Through this analytical process. the study identifies key factors that contribute to the development of AI-driven green finance. including policy frameworks. data infrastructure. and the technological capabilities of financial institutions.

The results of this analysis serve as the basis for drawing international lessons and proposing several policy implications for Vietnam to promote the application of artificial intelligence in the development of the green finance market in the coming years.

4 INTERNATIONAL EXPERIENCES IN THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF GREEN FINANCE

In the context of escalating climate change challenges and the increasing need to transition toward a sustainable growth model. green finance has become one of the key pillars of the global financial system. Along with the rapid advancement of digital technologies. particularly artificial intelligence (AI). many countries and regions have actively adopted these technologies to enhance data analysis. strengthen environmental risk management. and direct investment flows toward environmentally friendly sectors. International practices indicate that AI is increasingly becoming an important tool that supports financial institutions in assessing climate risks. measuring the environmental impacts of investment projects. and improving the transparency of Environmental. Social. and Governance (ESG) criteria in financial activities (OECD. 2021).

4.1 Experience of the European Union (EU)

The European Union (EU) is considered one of the leading regions in promoting sustainable finance and applying digital technologies to climate risk management. The EU has established a relatively comprehensive policy framework to support green finance. notably through the Action Plan on Sustainable Finance and the EU Taxonomy

for Sustainable Activities. This taxonomy provides a classification system that identifies which economic activities can be considered environmentally sustainable. thereby creating a foundation for financial institutions and investors to direct capital flows toward appropriate sectors (European Commission. 2020).

In implementing these initiatives. many financial institutions in Europe have begun applying AI to analyze and evaluate environmental data on a large scale. AI systems are capable of collecting and processing data from multiple sources. including corporate sustainability reports. climate datasets. satellite imagery. and unstructured information from the internet. By applying machine learning algorithms. financial institutions can more accurately assess carbon emissions levels. environmental risks. and the capacity of firms within investment portfolios to adapt to climate change.

In addition. AI has been used to support banks and investment funds in developing climate risk assessment models. According to a report by the Bank for International Settlements (BIS). the application of advanced data analytics technologies. including AI. enables financial institutions to better identify climate-related risks and integrate these factors into their investment decision-making processes (Bolton et al.. 2020). This contributes to the reallocation of capital from high-emission industries toward greener sectors of the economy.

4.2 Experience of China

China is one of the countries that has experienced the fastest growth in green finance in recent years. The Chinese government has issued numerous policies to promote the development of the green financial market. notably the Guidelines for Establishing the Green Financial System issued in 2016. This policy encourages financial institutions to expand the provision of green credit. issue green bonds. and apply digital technologies in environmental risk management.

Within this context. artificial intelligence has been widely applied to support banks and financial institutions in assessing the environmental risks associated with enterprises. Large-scale data platforms have been developed to collect information on corporate carbon emissions. energy consumption. and compliance with environmental regulations. Through AI algorithms. financial institutions can analyze these data to

evaluate the environmental risk levels of enterprises before making lending or investment decisions.

Several banks in China have developed AI-based green credit assessment systems to facilitate the analysis of corporate environmental data. These systems are capable of automatically aggregating and analyzing information from various data sources. including government databases. market data. and environmental monitoring systems. According to the UNEP Finance Initiative (2021). the application of AI in environmental data analysis has enabled Chinese banks to enhance risk management efficiency while reducing the costs associated with evaluating green projects.

In addition. China has actively promoted the development of green fintech platforms that integrate financial technology with AI to support small and medium-sized enterprises (SMEs) in accessing financing for environmentally friendly projects. By using AI to analyze both financial and environmental data of enterprises. these platforms can quickly identify projects that qualify for green investment funding (OECD. 2021).

4.3 Experience of Singapore

Singapore is considered one of the leading financial centers in Asia and has introduced numerous initiatives to promote the integration of financial technology. artificial intelligence (AI). and green finance. The Monetary Authority of Singapore (MAS) has implemented various programs to encourage financial institutions to adopt digital technologies in climate risk management and to develop sustainable financial products.

One of the most notable initiatives is the Green Finance Action Plan. announced by MAS in 2019 to promote the development of green finance in Singapore. This plan encourages financial institutions to utilize advanced data analytics technologies. including AI. to assess environmental and climate-related risks in investment activities (MAS. 2020).

In addition. Singapore has actively promoted the use of AI in the analysis and disclosure of ESG data. AI-based tools are capable of collecting and analyzing information from multiple sources. such as corporate reports. financial databases. news sources. and social media. in order to assess companies' compliance with ESG criteria.

This approach helps enhance the transparency of financial markets and supports investors in making sustainable investment decisions (World Economic Forum. 2022).

Furthermore. Singapore encourages collaboration among financial institutions. technology firms. and research institutions to develop AI-based solutions that support green finance. Through innovation support programs and technology investment funds. many fintech companies in Singapore have developed AI-driven tools for analyzing environmental and climate-related data. thereby contributing to the advancement of sustainable financial practices.

Table 1

Comparison of AI Applications in Green Finance in Selected Countries

Criteria	European Union (EU)	China	Singapore
Development Strategy	The European Union (EU) has implemented the Sustainable Finance Strategy and the European Green Deal. which encourage the application of digital technologies and artificial intelligence (AI) to support ESG data assessment and climate risk management.	China has integrated artificial intelligence (AI) into its green credit system and the Green Finance Reform and Innovation Pilot Zones strategy to promote green investment.	Singapore has implemented the Green Finance Action Plan and promoted the application of artificial intelligence (AI) through fintech initiatives and financial innovation hubs.
Application of Artificial Intelligence in Green Finance	AI is used to analyze ESG data. assess the environmental impact of enterprises. and support investors in building sustainable investment portfolios.	AI is applied in the **green credit system** to assess the environmental risks of enterprises and to monitor the use of funds allocated to green projects.	AI is integrated into fintech platforms to analyze environmental data. forecast climate-related risks. and support sustainable investment decisions.
Role of Regulatory Authorities	The **European Commission** and the **European Central Bank** promote sustainable reporting standards and develop the **EU Taxonomy** to standardize green financial activities.	The government plays a central role in issuing green credit policies and developing environmental databases to support the financial system.	The **Monetary Authority of Singapore (MAS)** supports financial institutions in developing AI technologies through regulatory sandbox programs and innovation support initiatives.
Data Infrastructure	The EU has developed ESG data systems and sustainable reporting standards to enhance transparency in financial markets.	China has developed national environmental databases to support the assessment of corporate environmental risks.	Singapore has developed financial and environmental data platforms to support the green fintech ecosystem.
Impact on Financial Markets	Enhances information transparency. improves the assessment of climate-related risks. and promotes investment flows into green projects.	Promotes the expansion of green credit and enhances the environmental monitoring capacity of the financial system.	Enhances innovation in fintech and promotes the development of sustainable financial products.

Source: Compiled by the author

4.4 Lessons for developing countries

Experiences from countries and regions that are leading the development of green finance indicate that the application of artificial intelligence (AI) can play a crucial role in improving the efficiency of financial systems. particularly as nations pursue sustainable development goals and carbon emission reduction targets. For developing countries. studying and learning from these international experiences is important for formulating strategies to develop green finance in parallel with the digital transformation of the financial system.

First. the guiding role of governments and regulatory authorities is a key factor in promoting the application of AI in green finance. Experiences from the European Union. China. and Singapore demonstrate that these economies have established clear strategies and regulatory frameworks to promote sustainable finance while encouraging the adoption of digital technologies in the financial sector. The introduction of green finance taxonomies. ESG disclosure requirements. and incentives for green investment has created favorable conditions for financial institutions to apply AI in assessing and managing environmental risks (European Commission. 2020).

Second. the development of data infrastructure and environmental information systems is an essential condition for AI to function effectively in green finance. AI relies on the ability to collect and analyze large volumes of data from multiple sources; therefore. the establishment of environmental. climate. and emissions databases is a critical foundation for supporting financial institutions in risk assessment and investment decision-making. According to the OECD (2021). the development of open data systems and information-sharing platforms can enhance the effectiveness of AI applications in analyzing ESG factors and managing climate-related risks.

Third. promoting collaboration among financial institutions. technology companies. and regulatory authorities is an important factor in developing AI-based solutions for green finance. In many cases. financial institutions possess advantages in terms of data availability and risk management experience. while technology firms have strong capabilities in developing algorithms and data analytics systems. Cooperation among these stakeholders can foster innovation and facilitate the development of

technological solutions tailored to the needs of financial markets (World Economic Forum. 2022).

Fourth. strengthening technological capacity and developing high-quality human resources are also critical factors in promoting the application of AI in green finance. Training professionals with interdisciplinary expertise in finance. technology. and environmental issues will enable financial institutions to effectively leverage AI technologies in data analysis. risk assessment. and sustainable portfolio management.

Overall. international experiences indicate that the integration of AI with green finance can generate numerous benefits for financial systems. including improved resource allocation efficiency. enhanced risk management capabilities. and greater market transparency. For developing countries. establishing appropriate policy frameworks. developing data infrastructure. and fostering technology ecosystems will be essential for fully leveraging the potential of AI in promoting green finance and supporting the transition toward a sustainable economy.

5 POLICY IMPLICATIONS FOR VIETNAM

In the context of Vietnam promoting its green growth strategy and committing to achieving net-zero emissions by 2050. the development of green finance in conjunction with the application of advanced technologies such as artificial intelligence (AI) has become an important strategic direction for the financial system. International experience shows that AI can effectively support environmental data analysis. climate risk assessment. and improvements in ESG governance quality. On this basis. Vietnam needs to develop appropriate policies to effectively harness the potential of AI in advancing green finance.

First. improving the legal framework and development strategies for green finance associated with digital transformation is an important requirement. The government should continue to develop and refine standards and classification criteria for green finance to provide a clear basis for evaluating environmentally friendly investment projects. At the same time. policies should be introduced to encourage financial institutions to adopt digital technologies. including AI and big data analytics. in the appraisal and monitoring of green projects. According to OECD (2021). establishing clear

policy frameworks for sustainable finance and digital transformation will create favorable conditions for financial institutions to adopt new technologies and enhance environmental risk management.

Second. developing data infrastructure and information systems for green finance is a fundamental factor in promoting the application of AI in this field. AI operates based on the ability to collect and analyze large volumes of data from multiple sources. Therefore. Vietnam should establish national databases on environmental conditions. greenhouse gas emissions. and corporate ESG indicators. The development of open data platforms and information-sharing mechanisms among regulatory agencies. financial institutions. and enterprises will help improve the effectiveness of data analytics systems and AI models in climate risk assessment (UNEP Finance Initiative. 2021).

Third. encouraging the development of the green financial technology (Green FinTech) ecosystem is essential. The government should create favorable conditions for cooperation among financial institutions. technology companies. and research institutions in developing AI-based solutions for green finance. Innovation support programs. technology investment funds. and regulatory sandbox mechanisms can facilitate the development of AI-based financial products and services that support environmentally friendly projects. According to the World Economic Forum (2022). the integration of fintech and AI can reduce transaction costs. improve financial accessibility. and promote investment flows into green projects.

Fourth. strengthening human resource capacity in green finance and digital technology is also a critical factor. The application of AI in green finance requires a workforce with interdisciplinary knowledge. including finance. information technology. and environmental management. Therefore. Vietnam should expand training and research programs related to sustainable finance. data science. and artificial intelligence at universities and research institutions. In addition. financial institutions should be encouraged to invest in training and developing experts capable of utilizing and applying new technologies in financial activities.

Overall. the integration of artificial intelligence and green finance can create significant opportunities for Vietnam in the development of a sustainable financial system. By improving policy frameworks. developing data infrastructure. fostering a technology ecosystem. and enhancing the quality of human resources. Vietnam can

effectively leverage the potential of AI to promote green investment. strengthen environmental risk management. and support the transition toward a low-carbon economy.

6 CONCLUSION

In the face of increasingly significant challenges related to climate change and the growing need to transition toward sustainable development models. green finance has gradually become an essential component of modern financial systems. Alongside this trend. the rapid development of artificial intelligence (AI) has created effective tools that support financial institutions in analyzing environmental data. assessing climate-related risks. and improving investment decision-making processes. Experiences from various countries indicate that the application of AI can enhance the accuracy of ESG assessments. strengthen the transparency of financial markets. and contribute to directing investment flows toward environmentally friendly sectors.

For Vietnam. promoting the application of AI in the development of green finance plays an important role in achieving green growth and sustainable development goals. However. in order to fully exploit the potential of this technology. coordinated efforts among regulatory authorities. financial institutions. and technology enterprises are required. Further improvements in policy frameworks. the development of environmental data infrastructure. the expansion of financial technology ecosystems. and the enhancement of human resource capacity will be key conditions for strengthening the integration of AI and green finance. Through these efforts. the financial system can play a more active role in supporting the transition toward a low-carbon economy and sustainable long-term development.

REFERENCES

Bolton. P.. Despres. M.. Pereira da Silva. L.. Samama. F.. & Svartzman. R. (2020). *The Green Swan: Central Banking and Financial Stability in the Age of Climate Change*. Bank for International Settlements.

European Commission. (2020). *EU Taxonomy for Sustainable Activities*. Brussels: European Commission.

Monetary Authority of Singapore. (2020). *Green Finance Action Plan*. Singapore: MAS.

OECD. (2017). *Investing in Climate. Investing in Growth*. Paris: OECD Publishing.

OECD. (2021). *Artificial Intelligence. Machine Learning and Big Data in Finance: Opportunities. Challenges. and Implications*. Paris: OECD Publishing.

Russell. S.. & Norvig. P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson Education.

UNEP Finance Initiative. (2021). *AI for Sustainable Finance*. Geneva: United Nations Environment Programme.

UNEP. (2016). *Green Finance Progress Report*. United Nations Environment Programme.

World Bank. (2016). *Green Bonds: Frequently Asked Questions*. Washington. DC: World Bank.

World Economic Forum. (2020). *Transforming Paradigms: A Global AI in Financial Services Survey*. Geneva: World Economic Forum.

World Economic Forum. (2022). *Artificial Intelligence for Climate and Sustainable Finance*. Geneva: World Economic Forum.

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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