Relationship Between Green Banking Disclosures and Accounting-based Performance: Financial and Operational Performance

Review of Integrative Business & Economics Research

I Putu Sugiartha Sanjaya*
Universitas Atma Jaya Yogyakarta

Yoan Nathanie Larissa
Universitas Atma Jaya Yogyakarta

ABSTRACT

This study provides empirical evidence for simultaneous equation models and determines whether green banking influences financial and operational performance and vice versa. The sample comprises banking companies in 2016–2022 on the Indonesian Stock Exchange. This study collected secondary data from annual and sustainability reports and financial statements. There are 298 observations. The results showed that financial and operational performance significantly positively influences green banking, and vice versa. The results of this study support simultaneous equation models. The results support the regulations issued by the financial service authority in Indonesia Number 51/POJK.03/2017, which requires financial sectors, issuers, and public companies to prepare sustainability reports. The results of this study contribute to legitimacy and stakeholder theory. The implication of this study is to strengthen banking policies to facilitate green banking activities. This strategy can improve financial and operational performance. Green banking strategies include reducing paper use, using renewable energy, and providing environmentally friendly loans that reduce carbon. This strategy aims to reduce global warming due to climate change. Another implication is that banks should increase their performance to implement this green strategy.

Keywords: green banking, financial performance, operational performance, sustainability.

Received 18 April 2024 | Revised 12 November 2024 | Accepted 28 December 2024.

1. INTRODUCTION

Global warming is a climate change phenomenon that occurs worldwide. Global warming occurs because of greenhouse gas emissions. Increasing greenhouse gas emissions are indicators of environmental degradation. According to the Greenhouse Gas Inventory and Monitoring Report, the 2020 verification report shows that in 2004, at the start of President Susilo Bambang Yudhoyono's administration, Indonesia had produced greenhouse gas emissions of 849.96 million tons of carbon dioxide equivalent (CO_2e). In 2009, it increased to 1.19 billion tons of CO_2e. In 2015, greenhouse gas emissions peaked during President Joko Widodo's administration at 2.37 billion tons. After the Paris Agreement was signed, greenhouse gas emissions decreased to 1.3 billion tons of CO_2e but increased again in 2019 to 1.86 billion tons of CO_2e. Some researchers have investigated and found ways to reduce global warming. Nurdiawansyah *et al.* (2018) empirically examined the effects of company size, profitability, leverage, and media exposure on carbon emission disclosure in Indonesia. Nurdiawansyah *et al.* (2018) found that firm size, profitability, and media exposure positively affect carbon emission disclosure at manufacturing companies in

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Indonesia. However, leverage does not affect carbon emission disclosure. Budiharta and Kacaribu (2020) found that managerial ownership positively affects carbon emission disclosure. Managers have an aligned interest in shareholders and believe that carbon emissions are essential information.

Nordin and Hassan (2019) investigated the practice of green entrepreneurship among SMEs, including opportunities for green entrepreneurship in Malaysia. This study helps to understand the role of green strategy opportunities in the practice of entrepreneurship. Kuo et al. (2022) reported an increase in worldwide sustainable awareness that is focused on SDGs. There must be more than just evaluating a company's success as a single indicator of financial performance. However, the company's sustainability practices are also essential. Kuo *et al*. (2022) found that eco-design, laws and regulations, and waste all affect sustainability. Emilisa (2020) studied impact of green management on the career of event organizers such as eco-friendly behavior, commitment, and performance in Jakarta. This study found that green management positively influences eco-friendly behavior, commitment, and performance of event organizers. Companies should reward employees who apply green humanism and are more motivated to join the green movement.

The cause of greenhouse gases is forest and land fires. This forest and land fire phenomenon occurs because the companies received financing from state-owned enterprises such as Bank Rakyat Indonesia amounting to USD 1,722 million and Bank Negara Indonesia amounting to USD 1,086 million in 2019 to several companies, namely, Austindo, Batu Kawan, Cargill, DSN, Genting Group, Harita Group, LG International, Provident Agro, and Rajawali Group (www.tempo.co).

Climate change is a global concern. Therefore, social and community companies, such as banks, should commit to reducing climate change, even if they do not directly contribute to the problem. Banks must monitor and be responsible for ecological impacts because they provide loans to companies for their business activities. Green banking is a banking practice that significantly contributes to reducing environmental damage. Banks conduct green banking activities in our society, such as environmentally friendly financing projects. Banks promote green banking products to their customers. Therefore, banks will help countries achieve sustainable green economies. Banks also implement green banking practices to improve business ethics. Financial institutions, including banks, are responsible for contributing to the environment. Green banking is a strategy involving an initiative toward eco-friendly bank activities. Sustainability is the most important factor for survival in every field. Green banking is a strategy that minimizes carbon emissions such as paperless, during banking operations. The advantage of green banking is that banks can avoid using paper. Banks use online transactions such as SMS text messaging, the internet, and ATMs. Paperless bank operations reduce forest logging. Green banking is a strategy adopted by banks to improve their operational efficiency.

Banks conduct green banking to reduce negative environmental impacts. Green banking is a sustainable concept that focuses on environmental concerns (Aslam & Jawaid, 2023). To support the building of sustainable finance, the Financial Services Authority (OJK) has participated in publishing a sustainable finance roadmap, which contains guidelines and directions for the development of financial sustainability in Indonesia. This measure was also supported by the OJK regulations of 2017, namely, POJK Number 51/POJK.03/2017. This POJK stipulates rules for financial services, issuers, and public companies required to implement sustainable finance in their business activities. OJK requires the financial

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

service sector to create sustainable economic growth by aligning economic, social, and environmental interests.

Financial performance is a factor that influences green banking disclosure. Suppose the company's financial performance conditions are favorable. In this case, the company will be encouraged to maximize its social, economic, and environmental performance to demonstrate an excellent reputation to stakeholders. The Indonesian Responsibank Coalition, which released bank rankings, investigated the following:

Table 1. Bank Ranking

Rating	Bank	Score
1	HSBC	37,83%
2	Citibank	36,08%
3	The Bank of Tokyo -Mitsubishi UFJ	19,81%
4	Danamon	10,98%
5	BNI	6,37%
6	Bank Mandiri	3,46%
7	BRI	3,09%
8	Panin Bank	2,95%
9	BCA	1,74%
10	CIMB Niaga	1,52%
11	OCBC	1,13%

HSBC, Citibank, The Bank of Tokyo–Mitsubishi UFJ, and Bank Danamon ranked in the top four in scores related to environmental awareness, namely, green banking. According to PwC (2023), foreign investors and shareholders are becoming more aware of the effects of business processes on the environment and society, thus encouraging companies to pay more attention to environmental, social, and governance issues to create long-term corporate value. Hoque *et al.* (2022), investigating banking in Bangladesh, showed that financial performance positively affects green banking disclosure. Kurniawan (2021) investigated Indonesia and showed that economic performance positively affects green banking disclosure.

Previous researchers have studied green banking's influence on company performance, such as Hossain *et al.* (2020), Aslam and Jawaid (2023), Putri *et al.* (2022), Hossain and Kalince (2014), Khan *et al.* (2021), and Akhter *et al.* (2021). Apart from that, there is also empirical evidence that green planning does not affect company performance, as reported by Rajput *et al.* (2021), Ikram and Akhtar (2021), and Singh *et al.* (2022). However, two studies proved that financial performance could influence green banking, as recorded by Hoque *et al.* (2022) and Kurniawan (2021). Hoque *et al.* (2022) conducted research in Bangladesh, and Kurniawan (2021) conducted a study in Indonesia.

Several studies also show that green banking has a positive and significant effect on financial performance, as reported by Aslam and Jawaid (2023) in Pakistan, Ratnasari *et al.* (2021) and Putri *et al.* (2022) in Indonesia, and Hossain and Kalince (2014) and Hoque *et al.* (2022) in Bangladesh. However, green banking cannot affect financial resources (Salsabila & Adhariani, 2023). Therefore, this study investigates whether green banking affects financial and operational performance. Conversely, this study also

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

investigates where financial and operational performance influences green banking. There is empirical evidence that green banking can affect financial and operational performance, and other empirical evidence documenting such performance can also affect green banking. The result of this study is to clarify previous research and determine whether this study is a causal or correlational study.

Indonesia is committed to building sustainable finance by implementing green banking. Studies on this issue regarding financial performance and green banking disclosures are needed to motivate the author. The research subjects are banking companies listed on the Indonesia Stock Exchange from 2016 to 2021. Indonesia only implemented green banking at the end of 2014. It follows the OJK's sustainable finance roadmap. The research contribution is the development of knowledge about green banking in Indonesia. The results of this study contribute to supporting the implementation of OJK regulation number 51/POJK.03/2017, which requires the implementation of sustainable finance in the business activities of financing service, issuers, and public companies. The primary contribution of this study is its support of legitimacy and stakeholder theory.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Grand Theory

According to Rankin *et al.* (2023), legitimacy theory is a positive theory used to understand the activities and actions of a company related to social and environmental issues. The foundation of legitimacy theory is the social contract between companies and society. Companies that have received operating permits from the public must also be responsible for what they have conducted and their business operations by providing transparent and accountable information regarding their operational activities. A company can continue to operate if it can comply with social values and norms. Values and norms in social contract have changed. In the past, legitimacy was related only to economic performance, but now that has changed; companies now pay attention to business issues related to environmental and social consequences (Rankin *et al*., 2023). Banking companies can legitimize themselves by disclosing green banking in their annual and sustainability reports. This action is a manifestation that the company's business operations also care and are responsible for the environment and society to increase public trust.

Stakeholder theory states that companies should concentrate not only on increasing profits. Stakeholders include all groups or individuals who influence the achievement of company goals, including managers, shareholders, employees, consumers, society, suppliers, and the government (Rankin *et al*., 2023). Providing information related to company activities and performance is one way for companies to meet the needs and expectations of stakeholders (Rankin *et al*., 2023). The existence of stakeholders will support the company. Therefore, companies must maintain relationships with stakeholders who have power over the availability of resources used for company operational activities by accommodating the needs and desires of stakeholders. The connection with this research is that companies must be able to maintain relationships with stakeholders by disclosing green banking information in their annual and sustainability reports.

2.2. Green Banking

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Climate change is a global issue; therefore, social and community companies, such as the banking sector, should commit to reducing such problems. Banks are responsible for ecological issues because they provide loans. Green banking is a strategy that reduces climate change issues through environmentally friendly financing, green banking products, and improved business ethics. Sustainability is the most crucial global need for survival. Green banking is a paperless strategy because banks use SMS text messaging, the internet, and ATMs.

Green banking is a sustainable concept that focuses on environmental and social concerns (Aslam & Jawaid, 2023). Green banking practices represent a form of bank concern for the environment. Following the regulations in POJK Number 51/POJK.03/2017, green banking practices are expected to be not limited to financing alone but also include bank operational activities aligned with economic, social, and environmental interests. Green banking is a sustainable concept that focuses on environmental concerns (Aslam & Jawaid, 2023). Green banking disclosure focuses on environmental concerns. The smooth running of its financial system and ecological management through its business operations will influence company performance in the long term. Disclosure of information transparency will create a good image for the company. Information on Green Banking disclosure is contained in annual and sustainability reports.

Siddik *et al.* (2024) examined the influence of various sustainable banking (green banking, green finance, and corporate social responsibility) on the environmental sustainability performance of banks in Bangladesh. The empirical findings reveal that green banking practices significantly affect green finance, CSR practices, and banks' sustainable performance. Green finance directly and substantially affects CSR practices and sustainable performance. CSR practices directly and significantly influence banks' sustainable performance.

The following are some empirical studies on green banking. Bukhari *et al.* (2022) empirically examined the determinants of green banking using a self-administered survey of 212 branch managers in five major cities in Pakistan. Bukhari *et al.* (2022) found that competitor pressure is positively related to green banking in Pakistan. Branch image and operational efficiency enhance green banking adoption. Bouteraa *et al.* (2023) investigated the challenges affecting bank consumers' intention to adopt green banking technology in the United Arab Emirates. It employs exploratory sequential mixed methods. First, this study uses preliminary semi-structured interviews with 10 banking professionals to explore the challenges affecting consumers' intention to adopt green banking. The second study uses an online survey of 332 bank customers. Bouteraa *et al.* (2023) found that six new challenges—customer awareness, banking reputation, personal innovativeness, security and privacy, system quality, and government support—influence customers' intention to adopt green banking.

Aslam and Jawaid (2024) investigated the influence of green banking practices on consumer green satisfaction, perceived quality, consumer trust, environmental friendliness, and their continuing relationships with banks. They found that green banking positively influences consumer trust, perceived quality, and satisfaction. Iqbal *et al.* (2024) investigated whether bank policy-related practices are related to green financing sustainability in Pakistan. This study collected data using a structural questionnaire. Iqbal *et al.* (2024) found a positive relationship between bank-employed practices and green

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

banking. Dewasiri *et al.* (2024) examined the effect of green banking practices on the environmental performance of banks listed on the Colombo Stock Exchange in Sri Lanka. Dewasiri *et al.* (2024) used questionnaires with 233 banking employees. This study found that green banking positively affects environmental performance.

Kumari *et al.* (2024) examined the correlation between green banking practices, employee green behavior, and sustainability performance. Employees help banks perform more sustainably by encouraging environmentally friendly banking practices. Beebeejaun and Maharoo (2024) investigated the influence of existing legal and regulatory frameworks on green banking in Mauritius. This study used a black-letter analysis of the existing regulatory framework. The study compared current legal frameworks on green banking in Bangladesh, Indonesia, Pakistan, and the UK. Iqbal *et al.* (2024) investigated demand-side drivers of green banking. This study used a mono-method approach to collect cross-sectional customer responses using structured questionnaires. Iqbal *et al.* (2024) found that attitudes, subjective norms, perceived behavioral control, and environmental concerns influence green banking activities.

2.3. Green Banking in Indonesia

Green banking is an activity that banks must conduct to protect the environment and reduce and prevent global warming and environmental damage. Green banking will affect human, natural, and social sustainability, including that of the company itself. Therefore, companies must conduct their business activities in the spirit of a green economy. According to Nasution (2022), Indonesia's regulations must continue to regulate green banking. In Indonesia, adequate regulations on green banking must still be implemented. Regulations in Indonesia still need to restrict provisions in laws and regulations that expressly stipulate the obligations that banks must perform, including requirements for environmental management and protection. According to Nasution (2022), Indonesia does not yet have statutory regulations that firmly impose responsibility on banks for ecological damage caused by customers who have received financial facilities from banks. One of the green banking reforms in Indonesia, CERCLA provisions should be adopted in Indonesian legislation to become the legal basis for green banking practices in Indonesia.

Aprilia (2024) explained that PT Bank Negara Indonesia Tbk pursues the target of net zero pollution in 2028 and fully to give green credit in 2060. To meet this target, BNI gives green credit, which has grown at an annual average of 23%, with a value reaching IDR 67.4 trillion by the end of March 2024, compared with the end of December 2020 of IDR 29.5 trillion. Green credit distribution accounted for 14.2% of all wholesale loans; in December 2020, it accounted for only 7.8%. One form of green credit distribution is financing the Sidrap Wind Power Plant (PLTB) acquisition in South Sulawesi, which has a 75-MW peak capacity worth IDR 1.6 trillion.

Dihni (2022) reported the results of a survey conducted by the Katadata Insight Center on the Public Perception Survey of Sustainable Financial Products. Based on the survey results, four banks are perceived to be implementing green banking practices. PT Bank Central Asia Tbk was ranked first by 25.7% of respondents, followed by PT Bank Rakyat Indonesia Tbk with a percentage of 23.7%, PT Bank Negara Indonesia Tbk 12.6%, and PT Bank Mandiri Tbk 12.1%. The survey was conducted online from March 28 to April 4, 2022, using a nonprobability sampling method. The survey involved 3105 respondents

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

from across Indonesia, and the criteria were age over 17 years and banking financial product users. Indonesia is committed to developing a green economy, as demonstrated by government policies to encourage carbon emission reduction and support a sustainable economy. Indonesia's geographical environment is extremely vulnerable to natural disasters because it is an archipelagic country located in the Ring of Fire. It has the potential for substantial economic losses.

Wigati (2023) explained that BAPPENAS data show that Indonesia's economic losses due to extreme weather reach IDR 100 trillion per year. If no policy intervention occurs, the potential financial losses in 2020–2024 will be IDR 544 trillion. Green policies in ministries and institutions still need to be integrated to achieve the zero net emission targets of 2060. Wigati (2023) also explained the coordination framework to achieve the main targets driven by the National Green Finance Development Team, namely, the fiscal, natural, and financial sectors. The budgetary sector will provide various sectoral transition policies to support corporations and MSMEs in transforming the business activities of the government from brown to green. The financial industry will support the growth of green financing provided by banks to corporations and MSMEs to perform green activities and invest in green infrastructure, driven by Bank Indonesia as the macroprudential authority and OJK as the macroprudential authority. Policy initiatives from the Ministry of Finance include climate change budget, taxation, and green bond Sukuk framework.

The Central Bank of Indonesia allows banks to adopt a green financing policy to enable people to apply for financing for environmentally friendly property and vehicles with lower down payments. The first macroprudential policy implemented is the green macroprudential intermediation ratio, which aims to manage the banking intermediation function to align with the green economy's capacity and growth targets while maintaining precautionary principles. The government has determined a green macroprudential inclusive financing ratio policy to encourage green, inclusive financing, and specific green sectors—relaxation in fulfilling obligations. There is also a policy for a green macroprudential liquidity buffer to overcome liquidity procyclicality and become a liquidity-based green macroprudential instrument applicable to all banks. To support green economic growth, banks give incentives in the form of freedom to fulfill PLM obligations through the ownership of green securities that meet high-quality liquidity asset standards. A green minimum statutory reserve policy also regulates banking liquidity levels. Policies that are feasible in the short term include green RIM, green RPIM, carbon calculator, green GWM, and studies on expanding eligible green collateral in operations.

2.4. Financial and Operational Performance

Hoque *et al*. (2022) study in Bangladesh for listed on the Dhaka Stock Exchange from 2014 to 2017 using 70 effective samples. The independent variable return on assets positively affects green banking disclosure, whereas debt-to-asset and current ratios do not affect green banking disclosure. Kurniawan (2021) used banking companies listed on the Indonesia Stock Exchange from 2017 to 2019. Kurniawan (2021) shows that green banking positively influences financial performance as proxied by return on assets in green banking disclosures. Good financial and operational performance shows that management has succeeded in managing the business well, and this will encourage the company to disclose green banking to show its good reputation to the public. This aligns with the legitimacy

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

theory that a company's actions are related to providing information to the public. It shows that the company cares about social and environmental issues, including green banking disclosure. Financial performance in this research uses the profitability-to-rentability ratio, which is proxied by return on equity. The higher level of profitability reflects the company's ability to generate high profits and disclose its social and environmental responsibilities in its financial reports. Research results from the research by Hoque *et al*. (2022) also show that financial performance positively affects green banking disclosures. Hoque *et al*. (2022) examined the effect of the quality of financial performance (return on assets, liquidity, and solvency) on the green banking disclosures of 30 listed banks of the Dhaka Stock Exchange from 2014 to 2017. They found that return on assets positively influences green banking disclosures. Banks with enhanced financial and operational performance can significantly implement green banking strategies. Therefore, this study proposed the following hypotheses.

Ha1: Financial performance positively affects green banking disclosure.
Ha2: Operational performance positively affects green banking disclosure.

Green Banking can also influence financial and operational performance. Some empirical evidence has been provided by Hossain and Kalince (2014), Hossain *et al.* (2020), Ratnasari *et al.* (2021), Putri *et al.* (2022), and Aslam and Jawaid (2023). Hossain and Kalince (2014) examined the effects of green banking, loans and advances, deposits, and other accounts, as well as paid-up capital and investments, on banks' performance using profit after tax for 45 banks in Bangladesh in 2012. Green banking, loans, and advances positively and significantly affect banks' performance. However, the variables of investments, deposits, and other accounts negatively and significantly affect banks' performance. Hossain *et al.* (2020) examined the relationship between green banking practices and banks' financial performance (return on asset, return on equity, and market value) listed in the DSE of Bangladesh from 2011 to 2020. They found that green banking positively affects return on assets, equity, and market value in Bangladesh. Ratnasari *et al.* (2021) examined the effects of daily green banking operations, green banking policies, capital adequacy, nonperforming loans, bank efficiency, and bank liquidity on bank profitability. The sample is the Indonesian banking sector listed on the Indonesian Stock Exchange from 2012 to 2016. Ratnasari *et al.* (2021) found that daily green banking operations, capital adequacy, and bank liquidity positively affect bank profitability in Indonesia. Green banking policies and bank efficiency negatively affect bank profitability. Putri *et al.* (2022) examined the effect of green banking and financial performance (CAR, NPL, and LDR) on the banking profitability of state-owned banks in Indonesia. This study collects data from four banks: BRI, BNI, Mandiri Bank, and BTN from 2010 to 2020. Putri *et al.* (2022) found that CSR, CAR, NPL, and LDR significantly affect ROA. However, the number of ATMs did not affect ROA. Aslam and Jawaid (2023) examined the effects of green banking on banking performance (financial, operational, and environmental performance). This study uses primary data from a questionnaire administered to banking personnel in Pakistan. Aslam and Jawaid (2023) found that green banking positively affects banks' environmental, operational, and financial performance in Pakistan. Kumar *et al.* (2024) examined the effects of green banking practices on sustainability performance in India. Kumar *et al.* (2024) found that green banking practices positively influence green finance and sustainability performance in India.

However, Salsabila and Adhariani (2023) examined green banking disclosures on sustainable finance by banks in Indonesia following 35 banks' regulations on sustainable

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

finance and funding initiatives in 2020–2021. Salsabila and Adhariani (2023) showed that green banking disclosure does not significantly influence sustainable finance. Banks with more green banking strategies make the best effort to reduce the impact of climate change. Therefore, their customers are more respectful to banks. This will affect a bank's financial and operational performance. The hypotheses in this study are as follows:

Ha3: Green banking disclosure positively affects financial performance.
Ha4: Green banking disclosure positively affects operational performance.

3. RESEARCH METHOD

3.1. Sample

This study uses a nonprobability sampling method in the form of purposive sampling and specific criteria (Hartono, 2017). The following sample criteria are considered:
1. Banking companies that publish annual and sustainability reports from 2016 to 2022 and
2. Banking companies that publish complete financial reports.
According to Hartono (2017), data collection techniques depend on the strategy and the data source. This study collects annual, and sustainability reports published at the Indonesian Stock Exchange from 2016 to 2022 through the official website of the Indonesian Stock Exchange (www.idx.co.id) and the website used to publish disclosures to the company's banking.

3.2. Variables

The green banking disclosure indicator consists of 21 items compiled by Handajani *et al.* (2019). The indicators are listed in Table 2.

Table 2 Green Banking Disclosure Indicators

No.	Green banking disclosure items
GBDI-1	Bank policy on environmental conservation and climate change
GBDI-2	Financing environmentally friendly projects and their monitoring activities
GBDI-3	Paper reduction (paperless) and waste management
GBDI-4	Adopt policies and technologies to reduce environmental damage in internal bank electronic office operations
GBDI-5	Use of environmentally friendly materials
GBDI-6	Energy conservation from business operations
GBDI-7	Efforts to reduce the impact of climate change and emissions by employees
GBDI-8	Information about green bank products
GBDI-9	Bank initiatives and involvement in building networks on environmental issues
GBDI-10	Competently evaluate the impact on the client's business before sanctioning a financing facility
GBDI-11	Organizing activities to increase community environmental awareness
GBDI-12	Role as an environmentally friendly bank, contribution to environmental improvement, and excellence in environmental reporting practices
GBDI-13	Awards for environmental conservation initiatives
GBDI-14	Bank involvement in supporting facilities that are in line with environmental programs

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

GBDI-15	Information on the establishment of a climate change fund
GBDI-16	Green branch arrangements for operational efficiency purposes
GBDI-17	Internalization of green marketing in internal communication media
GBDI-18	Bank initiatives and involvement to encourage and train its employees on the green movement
GBDI-19	The amount of budget allocated annually for green banking practices
GBDI-20	The actual amount spent on various green banking programs
GBDI-21	Use of separate pages for green banking reporting in the annual report

The measurement will score 1 for each information item disclosed and 0 if the information is otherwise. The study will add all scores. This study uses formula such as follows:

$$\boldsymbol{GB_{it}} = \frac{\textbf{Number of Green Banking Disclosures}_{it}}{\textbf{Total Green Banking Indicators}}$$

This research uses Return on Equity (ROE) and Return on Assets (ROA) as a financial and operational performance proxy.

$$\boldsymbol{ROE_{it}} = \frac{\boldsymbol{Net\ Income_{it}}}{\boldsymbol{Total\ Equity_{it}}}$$

$$\boldsymbol{ROA_{it}} = \frac{\boldsymbol{Net\ Income_{it}}}{\boldsymbol{Total\ Assets_{it}}}$$

This study also inserts a control variable: leverage and size.

$$\boldsymbol{LEV_{it}} = \frac{\boldsymbol{Total\ Debt_{it}}}{\boldsymbol{Total\ Assets_{it}}}$$

$$\boldsymbol{Size_{it}} = \boldsymbol{LnAssets_{it}}$$

3.3. Empirical Model

This study used simultaneous equation models to test the hypothesis. Gujarati (2003) explains the limitations of a one-way or unidirectional cause-and-effect relationship in certain situations. Specifically, when variable Y is influenced by various X variables, and some of these X variables are also affected by Y, this creates a two-way or simultaneous relationship. In such cases, distinguishing between dependent and explanatory variables becomes problematic. Instead, it is more effective to group together variables that are determined simultaneously by other variables, which is the approach taken in simultaneous-equation models. These models consist of multiple equations—each representing the relationships among jointly dependent or endogenous variables.

$$\boldsymbol{GB_{it} = \alpha + \beta_1 ROE_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}} \quad (1)$$
$$\boldsymbol{GB_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}} \quad (2)$$
$$\boldsymbol{ROE_{it} = \alpha + \beta_1 GB_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}} \quad (3)$$
$$\boldsymbol{ROA_{it} = \alpha + \beta_1 GB_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}} \quad (4)$$

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Where:
GB_{it}: Green Banking Disclosure
ROA_{it}: Return on Assets
ROE_{it}: Return on Equity
Lev_{it}: Leverage
$SIZE_{it}$: Size of Company
ε_{it}: Error Term

4. RESULTS AND DISCUSSION

The number of observations that meet the sample criteria is 298 firm years.

4.1. Descriptive Statistics

Descriptive statistics describe minimum, maximum, mean, and standard deviation values. Table 3 shows the descriptive statistical as follows.

Table 3. Descriptive statistics

Variables	Observations	Minimum	Maximum	Mean	Std. Deviation
GB	298	0.050	1.000	0.624	0.232
ROA	298	-0.180	0.040	0.003	0.024
ROE	298	-1.240	0.210	0.018	0.150
LEV	298	0.080	0.940	0.796	0.130
SIZE	298	11.160	21.920	16.670	2.236

Table 3 shows that the mean GB is 0.624 and the standard deviation GB is 0.232. The minimum GB is 0.050, and the maximum GB is 1.000. The mean ROA is 0.003, and the standard deviation ROA is 0.024. The minimum ROA is −0.180, and the maximum ROA is 0.040. The mean ROE is 0.018, and the standard deviation ROE is 0.150. The minimum ROE is −1.240, and the maximum ROE is 0.210. The mean LEV is 0.796, and the standard deviation LEV is 0.130. The minimum LEV is 0.080, and the maximum LEV is 0.940. The mean SIZE is 16.670. The standard deviation of SIZE is 2.236. The minimum SIZE value is 11,160, and the maximum SIZE value is 21,920.

4.2. Correlation

Table 4. Correlation Results

Variables	ROA	ROE	GB	SIZE	LEV
ROA		0.918***	0.129**	0.076	-0.050
ROE	0.918***		0.144**	0.091	0.005
GB	0.129**	0.144**		0.305***	0.185***
SIZE	0.076	0.091	0.305***		0.071
LEV	-0.050	0.005	0.185***	0.071	

Note: *** significant at alpha 1%, ** significant at alpha 5%, and * significant at alpha 10%.

4.3. Results of Financial Performance on Green Banking

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Tabel 5. $GB_{it}=\alpha+\beta_1 ROE_{it}+ \beta_2 LEV_{it}+ \beta_3 SIZE_{it}+\varepsilon_{it}$

Variables	Column 1	Column 2	Column 3	Column 4	
Constant	0.620***	0.358***	0.112	-0.101	
ROE	0.223**	0.221**	0.181**	0.181**	Ha1 supported
LEV		0.329***		0.293***	
SIZE			0.030***	0.029***	
F-test	6.245**	8.509***	17.570***	15.063***	
Adjusted R^2	0.017	0.048	0.100	0.124	

Note: *** significant at alpha 1%, ** significant at alpha 5%, and * significant at alpha 10%.

4.4. Results of Operational Performance on Green Banking

Tabel 6. $GB_{it}=\alpha+\beta_1 ROA_{it}+ \beta_2 LEV_{it}+ \beta_3 SIZE_{it}+\varepsilon_{it}$

Variables	Column 1	Column 2	Column 3	Column 4	
Constant	0.620***	0.347***	0.108	-0.113	
ROA	1.224**	1.315**	1.009*	1.099**	Ha2 supported
LEV		0.343***		0.304***	
SIZE			0.031***	0.029***	
F-test	4.975**	8.288***	17.134***	15.015***	
Adjusted R^2	0.013	0.047	0.098	0.124	

Note: *** significant at alpha 1%, ** significant at alpha 5%, and * significant at alpha 10%.

Based on Table 5, return on equity significantly positively influences green banking. The result supports Ha1. This indicates that financial performance can affect green banking. Banks have more profit and more net assets. Therefore, they have the financial resources to implement more green practices in their activities. These results are consistent with those of Hoque *et al.* (2022) and Kurniawan (2021). The results of this research prove that financial performance positively influences green banking disclosure. The better a bank's financial performance, the greater the bank's ability to conduct green banking disclosures. Good financial performance shows that management succeeded in managing the business well. This will encourage the company to disclose green banking to show the company's excellent environmental reputation to the public. Good financial performance indicates that the company can generate profits.

Based on the results in Table 6, return on assets positively affects green banking. The result supports Ha2. Banks are more practical in operating their assets and generating more profit. Profit is a resource for banks to apply green practices in their activities. These results are consistent with those of Hoque *et al.* (2022) and Kurniawan (2021).

4.5. Results of Green Banking on Financial Performance

Tabel.7. $ROE_{it}=\alpha+\beta_1 GB_{it}+ \beta_2 LEV_{it}+ \beta_3 SIZE_{it}+\varepsilon_{it}$

Variables	Column 1	Column 2	Column 3	Column 4	
Constant	-0.040	-0.021	-0.092	-0.073	
GB	0.093**	0.095**	0.082**	0.085**	Ha3 supported
LEV		-0.025		-0.026	
SIZE			0.004	0.004	

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

F-test	6.245**	3.183**	3.497**	2.375*
Adjusted R^2	0.017	0.014	0.017	0.014

Note: *** significant at alpha 1%, ** significant at alpha 5%, and * significant at alpha 10%.

4.6. Results of Green Banking on Operational Performance

Tabel.8. $ROA_{it}=\alpha+\beta_1 GB_{it}+ \beta_2 LEV_{it}+ \beta_3 SIZE_{it}+\varepsilon_{it}$

Variables	Column 1	Column 2	Column 3	Column 4	
Constant	-0.006	0.005	-0.012	-0.006	
GB	0.014**	0.015**	0.012*	0.014**	Ha4 supported
LEV		-0.014		-0.014	
SIZE			0.001	0.001	
F-test	4.975**	3.341**	2.708*	2.383*	
Adjusted R^2	0.013	0.016	0.011	0.014	

Note: *** significant at alpha 1%, ** significant at alpha 5%, and * significant at alpha 10%.

The results in Table 7 show that green banking positively and significantly affects return on equity. The results of this study support those of previous studies conducted by Hossain and Kalince (2014), Hossain *et al.* (2020), Ratnasari *et al.* (2021), Putri *et al.* (2022), and Aslam and Jawaid (2023). Therefore, the hypothesis that green banking positively affects financial performance is supported. Green banking activities performed by banks will increase the bank's reputation to be trusted by the public. Thus, the public can access various banking services. This will undoubtedly affect the bank's financial performance. The results in Table 8 also show that green banking positively and significantly affects bank operational performance. The use of bank assets is increasingly environmentally friendly, and banks are more influential in running their businesses because of lower costs. This will increase bank profits. The results presented in Table 8 support Ha4. This profit is used for expenses associated with green banking activities, for example, providing costs to build infrastructure to support operational activities to save energy and providing environmental development funds.

When a company has many financial resources, it will try to protect society, the environment, and the earth. This indicates that the company aligns with stakeholder interests. The results of this research align with the legitimacy theory that a company's actions are related to providing information to the public, which shows that the company cares about social and environmental issues, one of which is green banking disclosure. Finally, the results of this study (Tables 5–8) strongly support legitimacy and stakeholder theory. The results of this study support simultaneous equation models indicating financial and operational performance positively influence green banking and vice versa.

5. CONCLUSIONS

Based on the results of the data analysis, financial and operational performance significantly influences green banking disclosures in banking companies listed on the IDX from 2016 to 2022. Financial and operational performance positively influences green banking disclosure. Conversely, green banking disclosure positively and significantly influences financial and operational performance. The results of this study strongly support legitimacy and stakeholder theory. A limitation of this research is the element of

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

subjectivity due to the use of content analysis to measure the dependent variable, namely, green banking disclosure. Suggestions for further study include that researchers should be more careful when interpreting information in green banking disclosures. Future researchers can add other independent variables influencing green banking disclosure, such as sustainability committees and environmental performance. Future research can replicate previous questionnaire-based studies, such as Bukhari *et al.* (2022), Bouteraa *et al.* (2023), Aslam and Jawaid (2024), Kumari *et al.* (2024), Beebeejaun and Maharoo (2024), and Iqbal *et al.* (2024), to study green banking and its nonfinancial aspects.

ACKNOWLEDGEMENT

The authors would like to thank the anonymous reviewers for their suggestions and comments. The authors also thank the Accounting Department of Business and Economics Faculty, Universitas Atma Jaya Yogyakarta, for funding this research.

REFERENCES

[1] Akhter, I., Yasmin, S., Faria, N. (2021), “Green Banking Practices and Its Implication on Financial Performance of the Commercial Banks in Bangladesh”, *Journal of Business Administration*, 42, 1-23.

[2] Aprilia, Z. (2024), “Kredit Hijau BNI Tembus Rp67,4 Triliun per Maret 2024”, *CNBC Indonesia*. https://www.cnbcindonesia.com/market/20240430101802-17-534560/kredit-hijau-bni-tembus-rp674-triliun-per-maret-2024

[3] Aslam, W., Jawaid, S.T. (2023), “Green banking adoption practices: improving environmental, financial, and operational performance”, *International Journal of Ethics and Systems*, 39, 820-840.

[4] Aslam, W., Jawaid, S.T. (2024), "Let’s go green: achieving consumer-related performance outcomes in banks", *International Journal of Ethics and Systems*, 40, 456-476. https://doi.org/10.1108/IJOES-01-2023-0019

[5] Beebeejaun, A., Maharoo, T. (2024), "Green banking laws and regulations in Mauritius: a comparative study with other countries’ policies", *International Journal of Law and Management*, 66, 518-535. https://doi.org/10.1108/IJLMA-10-2023-0243

[6] Bouteraa, M., Hisham, R.R.I., Zainol, Z. (2023), "Challenges affecting bank consumers’ intention to adopt green banking technology in the UAE: a UTAUT-based mixed-methods approach", *Journal of Islamic Marketing*, 14, 2466-2501. https://doi.org/10.1108/JIMA-02-2022-0039

[7] Budiharta, P., Kacaribu, H.E.P.B. (2020), “The Influence of Board of Directors, Managerial Ownership, and Audit Committee on Carbon Emission Disclosure: A Study of Non-Financial Companies Listed on BEI”, *Review of Integrative Business and Economics Research*, 9, 75-87.

[8] Bukhari, S.A.A., Hashim, F., Amran, A. (2022), "Pathways towards Green Banking adoption: moderating role of top management commitment", *International Journal of Ethics and Systems*, 38, 286-315. https://doi.org/10.1108/IJOES-05-2021-0110

[9] Dewasiri, N.J., Hanshani, M.V.P., Rathnasiri, M.S.H., Grima, S. (2024), "Impact of Green Banking Practices on The Environmental Performance of Banks: The Mediating Role of Green Financing in Sri Lanka", Taneja, S., Kumar, P., Reepu, Balusamy, B., Sood, K. and Grima, S. (Ed.) Sustainability Development through

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Green Economics, *Contemporary Studies in Economic and Financial Analysis*, 114, 107-120, Emerald Publishing Limited, Leeds. https://doi.org/10.1108/S1569-375920240000114007

[10] Dihni, V.A. (2022), "Bank dengan Citra 'Green Banking' Terkuat, Siapa Juaranya?", *Katadata Media Network*. https://databoks.katadata.co.id/datapublish/2022/06/07/bank-dengan-citra-green-banking-terkuat-siapa-juaranya.

[11] Emilisa, N., Michelle, Lunarindiah, G. (2020), "Consequences of Green Human Resource Management: Perspective of Professional Event Organizer Employees in Jakarta", *Review of Integrative Business and Economics Research*, 9, 361-372.

[12] Gujarati, D.N. 2003, "*Basic Econometrics*", 4th edition. McGraw-Hill.

[13] Handajani, L. (2019), "Corporate Governance dan Green Banking Disclosure: Studi pada Bank di Indonesia", *Jurnal Dinamika Akuntansi dan Bisnis*, 6, 121– 136.

[14] Hartono, J. (2017), "*Metode Penelitian Bisnis: Salah Kaprah dan Pengalaman Pengalaman*", (Edisi 6). Yogyakarta: BPFE UGM.

[15] Hoque, M.K., Masum, M.H., Babu, M.A. (2022), "Impact of Financial Performance on Green Banking Disclosure: Evidence from the Listed Banking Companies in Bangladesh", *Universal Journal of Accounting and Finance*, 10, 450-456.

[16] Hossain, M.A., Rahman, M.M., Hossain, M.S., Karim, M.R. (2020), "The Effects of Green Banking Practices on Financial Performance of Listed Banking Companies in Bangladesh", *Canadian Journal of Business and Information Studies*, 2, 120-128.

[17] Hossain, M.S., Kalince, M.T.A. (2014), "Green Banking Nexus Banks' Performance", *Swiss Journal of Research in Business and Social Sciences*, 1, 01-16,

[18] Ikram, U., Akhtar, S. (2021), "Green Banking, Corporate Governance and Performance of Selected SAARC Countries", *Review of Economics and Development Studies*, 7, 543-559. https://doi.org/10.47067/reads.v7i4.415

[19] Iqbal, U.P., Jose, S.M., Tahir, M. (2024), "Examining the demand side factors of green banking adoption – a study exploring the case of Oman", *International Journal of Islamic and Middle Eastern Finance and Management*, 17, 213-231. https://doi.org/10.1108/IMEFM-12-2022-0483

[20] Iqbal, Z., Akram, M., Rao, Z.U.R. (2024), "Unlocking green potential: a mediation-moderation analysis of bank policies-related practices and green financing sustainability in Pakistan", *International Journal of Ethics and Systems*, https://doi.org/10.1108/IJOES-02-2024-0057.

[21] Khan, H.Z., Bose, S., Sheehy, B., Quazi, A. (2021), "Green banking disclosure, firm value and the moderating role of a contextual factor: Evidence from a distinctive regulatory setting", *Business Strategy and the Environment*, 30, 3651-3670.

[22] Kumari, J., Gupta, C., Jindal, P., Mishra, A., Sood, K. (2024), "Enhancing Banking Sustainability Through Employee Green Behaviour and Green Banking Initiative: A Synergistic Approach For a Greener Future", Sharma, R., Bhardwaj, I., Grima, S., Sachdeva, T., Sood, K. and Özen, E. (Ed.) Sustainable Development Goals: The Impact of Sustainability Measures on Wellbeing, *Contemporary Studies in Economic and Financial Analysis*, 113A, 133-145, Emerald Publishing Limited, Leeds. https://doi.org/10.1108/S1569-37592024000113A008

[23] Kumar, J., Rani, G., Rani, M., Rani, V. (2024), "Do green banking practices improve the sustainability performance of banking institutions? The mediating role of green

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

finance", *Social Responsibility Journal*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/SRJ-02-2024-0096

[24] Kuo, Y.C., Wu, Y.M. Liu, Y.X. (2022), "Identifying Key Factors for Sustainable Manufacturing and Development", *Review of Integrative Business and Economics Research*, 11, 30-50.

[25] Kurniawan, L. L. (2021), "Pengaruh Kinerja Keuangan terhadap Green Banking Disclosure dengan Mekanisme Kontrol sebagai Variabel Moderasi", *Jurnal Ilmiah Wahana Akuntansi*, 16, 1–16.

[26] Nasution, B.H. (2022), "Green Banking, Bagaimana Penerapannya di Indonesia", *MedanBisnisDaily*. https://medanbisnisdaily.com/news/online/read/2022/12/13/164433/green_banking_bagaimana_penerapannya_di_indonesia/

[27] Nordin, R., Hassan, R.A. (2019), "The Role of Opportunities for Green Entrepreneurship Towards Investigating the Practice of Green Entrepreneurship among SMEs in Malaysia", *Review of Integrative Business and Economics Research*, 8, 99-116.

[28] Nurdiawansyah, Lindrianasari, Komalasar, A. (2018), "Carbon Emission Issues in Indonesia", *Review of Integrative Business and Economics Research*, 7, 20-33.

[29] Putri, P.I., Rahayu, N., Rahmayani, D., Siregar, M.E.S. (2022), "The Effect of Green Banking and Financial Performance on Banking Profitability", *Quality-Access to Success*, 23:38-44.

[30] PwC. (2023), "ESG in Indonesia: Access to Finance 2023", Retrieved from March, 17, 2023. https://www.pwc.com/id/en/esg/esg-in-indonesia-2023.pdf

[31] Rajput, N., Arora, S., Khanna, A. (2021), "An Empirical Study of Impact of Environmental Performance on Financial Performance in Indian Banking Sector", *International Journal of Business and Management Invention*, 2, 19-24.

[32] Rankin, M., Ferlauto, K., McGowan, S., McGowan P. (2023), "*Contemporary Issues in Accounting*", Australia: John Wiley & Sons.

[33] Ratnasari, T., Surwanti, A., Pribadi, F. (2021), "Implementation of Green Banking and Financial Performance on Commercial Banks in Indonesia", Barnett, W.A. and Sergi, B.S. (Ed.) Recent Developments in Asian Economics International Symposia in Economic Theory and Econometrics, *International Symposia in Economic Theory and Econometrics*, 28, 323-336, Emerald Publishing Limited, Leeds. https://doi.org/10.1108/S1571-038620210000028018

[34] Salsabila, M., Adhariani, D. (2023), "How Green Is Green Banking? An Analysis of Slack and Green Practices in the Banking Industry", Biswas, R. and Michaelides, M. (Ed.) Contemporary Issues in Financial Economics: Evidence from Emerging Economies, *Research in Finance*, 37, 63-79, Emerald Publishing Limited, Leeds, pp. 63-79. https://doi.org/10.1108/S0196-382120230000037004.

[35] Siddik, A.B., Yong, L., Sharif, A. (2024), "Do sustainable banking practices enhance the sustainability performance of banking institutions? Direct and indirect effects", *International Journal of Bank Marketing*, 42, 672-691. https://doi.org/10.1108/IJBM-02-2023-0109

[36] Singh, R.P., Nagdev, K., Kishor, N. (2022), "Do Green Banking Initiatives Lead to Competitiveness and Improved Financial Performance? An Empirical Analysis of

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)

Indian Banks", *International Journal of Public Sector Performance Management*, 10, 22-40.

[37] Wigati, N.S. (2023), "OPINI: Kebijakan Keuangan Hijau Bank Indonesia dalam Mendukung Ekonomi yang Berkelanjutan", *Bisnis.com*. https://ekonomi.bisnis.com/read/ 20230815/9/1684816/ opini-kebijakan-keuangan-hijau-bank-indonesia-dalam-mendukung-ekonomi-yang-berkelanjutan?utm_source=Whatsapp&utm medium=Referral&utm campaign=Mobile_Share.

ISSN: 2304-1013 (Online); 2304-1269 (CDROM); 2414-6722 (Print)