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THE IMPACT OF GREEN FINANCE ON BANKING PERFORMANCE IN INDONESIA

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Abstrak: Keuangan hijau atau lebih dikenal dengan *green finance* mengacu pada praktik keuangan yang bisa digambarkan melalui layanan dan produk keuangan dengan mempertimbangkan keberlanjutan lingkungan untuk mendukung pembangunan berkelanjutan. Peran *green finance* adalah menghubungkan antara tujuan keuangan dengan lingkungan, yang diharapkan dapat mendorong pertumbuhan ekonomi inklusif. Salah satu bentuk implementasi *green finance* adalah pada lembaga keuangan, khususnya perbankan. Penelitian ini bertujuan untuk menganalisis dampak penerapan *green finance* di sektor perbankan terhadap kinerja perbankan yang diprosi dengan rasio profitabilitas pada periode 2018-2022. Metode yang digunakan adalah *Generalized Method of Moments (GMM)* dinamik panel. Implementasi *green finance* pada perbankan ditunjukkan dengan variabel *Green Daily Operation (GDO)* dan *Green Finance Policy (GFP)*. Variabel independen lainnya menggunakan rasio kinerja perbankan yang terdiri dari rasio kecukupan modal, tingkat kredit macet, dan rasio efisiensi operasional bank. Hasil penelitian menunjukkan bahwa *green finance* yang diwakili oleh implementasi GFP dapat meningkatkan profitabilitas, sedangkan GDO tidak signifikan mempengaruhi profitabilitas bank di Indonesia. Rasio internal perbankan yang tidak signifikan terhadap profitabilitas adalah rasio kecukupan modal, sedangkan untuk tingkat kredit macet dan rasio efisiensi operasional yang semakin tinggi, justru secara signifikan dapat berdampak buruk terhadap kinerja bank karena menurunkan profitabilitas. Penelitian ini mendukung penerapan konsep *green* pada sektor perbankan guna meningkatkan kinerja bank yang berkelanjutan.

Kata kunci: bank, keuangan hijau, kredit macet, profitabilitas, rasio efisiensi, rasio kecukupan modal

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finance implementation in the banking sector on banking performance as proxied by the profitability ratio in the 2018-2022 period. The Generalized Method of Moments (GMM) dynamic panel is used. The Green Daily Operation (GDO) and Green Finance Policy (GFP) variables indicate the implementation of green finance in banking. Other independent variables use banking performance ratios consisting of the capital adequacy ratio, non-performing loans, and the bank's operational efficiency ratio. The study results show that green finance represented by implementing GFP can increase profitability, while GDO does not significantly affect banks' profitability in Indonesia. Furthermore, the internal banking ratio that is not significant to profitability is the capital adequacy ratio, while increasing non-performing loans and operational efficiency ratio significantly negatively impacts bank performance because it reduces profitability. This research supports applying the green concept in the banking sector to improve sustainable bank performance.

Keywords: bad loan, bank, capital adequacy ratio, efficiency ratio, green finance, profitability

INTRODUCTION

Economic development is a process undertaken by a country to achieve sustainable economic growth and improvements in the welfare of its people. But, economic development and other economic activities cannot be separated from their impact on the environment (Laskowska, 2018). Conventional economic development allows environmental degradation to occur, considering that the environment is one of the production factors that will be processed, so ideal development cannot be separated from environmental balance, giving rise to the concept of environmentally aware development (Firmansyah, 2022). As global awareness of the environmental impact of economic activity increases, the concept of the green economy has emerged.

The transition to sustainable economic development requires several changes, including increased investment in low-carbon production, energy efficiency and infrastructure development (Campiglio, 2016). In this regard, the financial sector must play a key role by financing projects supporting clean energy, resource efficiency, and green infrastructure. This is known as green finance, which is part of the evolution of the green economy and aims to mobilize capital for environmentally friendly and sustainable projects. Financial institutions, especially banks, have an essential role in green finance because of their intermediary function: channel funds to support sustainable and environmentally friendly projects (Shershneva & Kondyukova, 2020). Banking implements green banking to help banks improve the sustainability performance of banking institutions (Kumar et al., 2024). In addition, green banking also serves as an agent of change by promoting sustainability and social responsibility in the banking industry (Dave, 2024). Thus, the financial sector plays a crucial role in achieving the Sustainable Development Goals (SDGs) by mobilizing and directing financial resources towards sustainable development.

The increasing global focus on climate change and environmental sustainability has compelled banks to integrate green finance into their operations (Yang, 2024). In Indonesia, the government issues the regulations through the financial services authority in POJK No. 51, 2017, which discusses the implementation of sustainable finance for issuers, financial services institutions, and public companies, further strengthening the application of sustainable finance in Indonesia. In addition, it also explains how to



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implement the achievement of sustainable development goals in PP No. 59, 2017, which is one of the government's efforts by pioneering banking policies in supporting the implementation of green finance. Applying the environmentally friendly concept through banking commitments in implementing green finance requires objective evidence that shows a positive impact. Banks must show that investment in green projects produces concrete economic, social, and environmental benefits, such as reduced carbon emissions, energy efficiency, and job creation in sustainable sectors. This evidence is important to convince stakeholders and ensure that green finance practices truly contribute to sustainable development.

Banking activities as an intermediary institution are essential in supporting sustainable economic activities by providing loans for projects that positively impact the environment (Handayani et al., 2020). In its operational activities, every bank wants profit, so every program implemented aims to provide a higher rate of return. When banks implement the concept of green finance, it can have a different impact on their level of profitability. In the short term, green finance can have a negative impact on profitability because it requires significant capital investments to develop green products and services (Putri & Zuhroh, 2024; Zhang & Zhang, 2024). However, other studies state that in the long term, green finance can increase profitability by improving bank stability and reducing risks associated with environmental factors (Hishamuddin et al., 2024). Banks prioritizing green finance will have a good image and gain more public trust, thereby increasing customer loyalty and brand value, contributing to the bank's profits in the long run (Dave, 2024; Jain & Sharma, 2023).

The financing role of banks creates excellent responsibility and accountability because this indirectly causes environmental pollution if banks fail to carry out vital verification steps regarding the negative environmental impacts of industrial and business financing (Shaumya & Arulrajah, 2016). To carry out green finance, the bank's credit policy for distributing credit to customers must be based on existing environmental aspects. The credit policy must include in detail the terms and documents required by credit applicants because the implementation of green finance is essential in the real sector through capital distribution projects aimed at sustainability. This began with the G20 Finance agenda in 2016, which was attended by 19 countries and the European Union to collaborate in developing a financial system that encourages economic transition towards sustainability, which includes public financing, private projects, and public policies for the benefit of the environment (Falcone, 2020). Therefore, green finance guarantees capital flows in environmental projects and the sustainability of the global financial system (Hasanah & Hariyono, 2022; Kasztelan, 2017).

Green finance's roots are financial innovations oriented towards an ethical economy and a high sense of social responsibility. The form of financial innovation in banking activities in implementing green banking is to utilize technological and internet advances that are currently developing rapidly so that banking activities that were previously paper-based become paperless, which is expected to reduce carbon footprints and carbon emissions (Anggraini et al., 2020). Using technology in banking operations can also reduce the cost of raw materials that cause pollution, making it environmentally friendly. Applying an environmentally friendly concept with green innovation can impact competitiveness, corporate image, corporate value in the capital market, business sustainability, and profits obtained (Lin et al., 2019; Ramadhany et al., 2021a). Thus, banks concerned about the environment and implementing green banking will have a good reputation in society.

Green finance itself is a new topic, and research related to green finance in Indonesia has begun to develop, so it is up-to-date. This can be seen from the implementation of sustainable policies in Indonesia from 2015 to 2019, as stated in the



sustainable finance roadmap batch 1 which prepares the implementation of green finance and related policies, then continued in batch 2 from 2021 to 2025, which continues to experience the development of green financial innovations, such as the development of green financial products, the development of the Sustainable Finance Information Hub (SFIH) and Green Taxonomy. Green finance can also be the next model in the economic sector, where customers will be more satisfied and comfortable using environmentally friendly products. More in-depth research must be conducted, and its validity must be proven, so green finance research is interesting to discuss and analyze the influence of green finance on the financial sector.

Research on "green" is becoming a global focus because it supports achieving sustainable development goals. Therefore, researchers are interested in studying the concept of "green," especially in the financial sector called green finance. This study aims to analyze the impact of implementing green finance on banking performance in Indonesia. The study also adds other variables to support the analysis of banking performance, such as the bank's internal financial ratio, so the analysis is more in-depth and comprehensive.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Implementing the Green Concept is one of the Company's Strategies

Long-term pollution challenges, including environmental damage, use of non-renewable resources and dangerous carbon elements, have led to policies implementing sustainable development as the main principle of economic activity. This is not only the responsibility of the government but also the Company. Applying the green concept internally to the Company is one of the Company's strategies. By disclosing carbon emissions as the Company's responsibility for the emissions it causes, it can make the best contribution to the environment and increase the Company's competitive advantage and sustainability (Xie et al., 2019; Sohn et al., 2020).

Emissions Disclosure and Company's Value

Disclosure of carbon emissions benefits companies because investors tend to invest in companies that have good work practices, business ethics, environmental impact and social responsibility to stakeholders. Carbon disclosure mitigates risks in business activities and builds trust with investors, ultimately increasing the Company's reputation and value (Daromes et al., 2020). Disclosure of company emissions also contributes to stakeholders' decision-making on carbon capacity and techniques for reducing carbon emissions through regulations and sustainability policies.

Green Concept and Practice

The green concept can influence company performance through two approaches. Firstly, through reducing costs. By implementing environmentally friendly practices, raw materials can be reduced, while pollution and waste control can also be minimized. Second, namely increasing income. Companies can acquire new fields by carrying out environmentally friendly concepts. Implementing an environmentally friendly concept can improve the Company's image and value in the capital market and company financing. This is supported by (Lin et al., 2019) and (Ramadhany et al., 2021) that green innovation impacts competitiveness, company sustainability and company profits.

Research Focuses

This research focuses on studies related to the concept of Green Finance on profitability in banking in Indonesia. This is based on environmental conditions resulting from disproportionate consumption of renewable and non-renewable resources (Bukhari



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et al., 2020). The essence of green finance is financial innovation towards an ethical economy and high social responsibility. Supported by the statement (Höhne et al., 2018), green finance is an exclusive financial instrument for environmentally and socially friendly and sustainable projects. The focus of this research is analyzing the influence of the implementation of the green finance concept on profitability in banking in Indonesia, as well as filling in the gaps in previous research where the Green Finance variable is still limited and is carried out using different methods.

Banking Performance

Company performance is seen through various indicators, one of which is Return on Assets (ROA). When the Company's performance is higher, the value of the Company itself will increase. According to the Indonesian Accounting Association (IAI) (Briando et al., 2021), financial performance is a company's ability to manage and control its resources through the analysis and evaluation of financial reports provided by each Company. So, the current evaluation and analysis can be used as a basis for the Company's current and future performance. ROA is used as a benchmark for banking performance; the more significant the ROA value, the higher the rate of return or return so that banking performance improves (Briando et al., 2021).

Green Concept in Banking

The definition of green banking is comprehensive and varied, but the essence of Green Banking itself is banking that incorporates environmental principles in its activities. This follows the opinion of the IFC, which states that the formal definition of green banking depends on the social and economic context and the country's sustainable development stage. , as well as implementing green finance principles in banking practices, distributing bank assets by prioritizing green investment, and integrating social and environmental factors (Bukhari et al., 2020). Meanwhile, according to the UN Environmental Program, Green Banking is an increase in bank capital allocation aimed at environmentally friendly assets, institutional leadership and public commitment, and voluntary support for environmental principles and policy implementation to achieve desired targets (Torinelli & Silva Júnior, 2021). Banking activities through ATMs, internet banking, mobile banking and green loans are bank activities that have implemented the green finance concept. According to (N. V. Kavitha and Usha Rani, 2016), green finance has two elements. The first is how people in banking carry out their activities, whether they are paperless or not. Both banking locations deposit the funds. These two dimensions then explain the practice of green banking. Kapoor et al. (2016) show banking strategies for implementing the concept of Green Financing in its activities by utilizing electronic banking, and bank activities have become more paperless.

Corporate Social Responsibility

Banking's commitment to the 'green' concept shows banking openness through sustainability reporting by displaying the corporate Social Responsibility (CSR) index. With banking showing CSR, it identifies that banking has run its business from an environmental and social responsibility perspective (Uddin, 2016). Supported by consumer interest in environmentally friendly practices and business ethical standards (Grebmer & Diefenbach, 2020), it becomes a banking opportunity to prepare new fields for its business. This is because the more a company carries out CSR voluntarily, the more consumers will see its value, or the Company's value for the products used will increase (Han et al., 2020). Apart from that, CSR disclosure also fosters loyalty among consumers, thereby increasing sales (Knebel & Seele, 2020; Park & Kim, 2020; Raza et al., 2020).



Capital Adequacy

Capital adequacy is a bank's capital for its business activities. This research shows banking capital through the Capital Adequacy Ratio (CAR). Through CAR, it can be seen the bank's ability to provide funds for investment and bear the risks arising from the investments made (Priyanto et al., 2014). So, the higher the CAR ratio, the higher the capital the bank has, and the greater the distribution of financing.

Operational Cost and Operating Income

Operational costs and operating income (BOPO) compares total business operating costs to total income from business operations (Pinasti, 2018). Banks use the BOPO ratio to determine whether they have efficiently managed their production factors following managerial and stakeholder decisions. Therefore, through the BOPO ratio, internal banking parties can estimate banking performance in generating profitability.

Bad Loan

A bad loan is problematic for banks, as described by a ratio of non-performing Loans (NPL). Based on Bank Indonesia Regulation (PBI) No. 6/10/PBI/2004, NPL is a ratio that shows the bank management's ability to manage non-performing loans from financing distribution activities by the bank. In the banking world, credit is classified into five categories: ethical, special attention, lack of ethics, questionable credit, and bad loans. The smaller the NPL, the better the bank's performance is (Lestari et al., 2015).

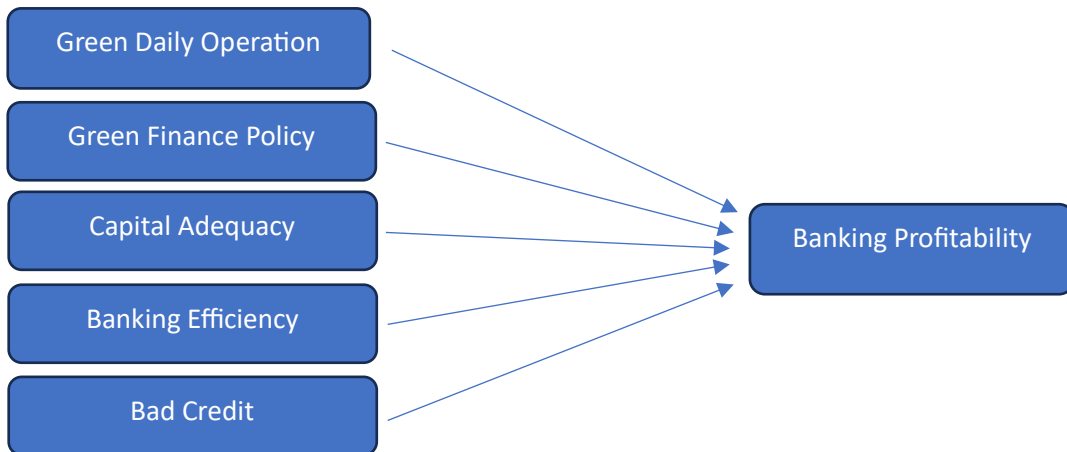


Figure 1. Conceptual Framework

RESEARCH METHOD

This study uses dynamic panel data regression by adding a dependent variable lag as an independent variable because the previous period can influence banking performance as measured by current profitability. The research object is the conventional banking sector in Indonesia from 2018 to 2022 period. The population is 106 commercial banking units in Indonesia, and the sample that meets the criteria of this research is only eight banks. The data used in this research is secondary data that is publicly accessible in the form of financial reports and sustainability reports for banks that have implemented the green banking concept. Financial and sustainability reports were obtained from each bank's official websites, which were the study's objectives.

The sample was selected using a purposive sampling method by determining several criteria. First, banks that have financial and sustainability reports for 2018-2022.



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Second, banks have considered and implemented the concept of green banking, which uses Green Daily Operation (GDO) and Green Finance Policy (GFP). Green Daily Operation (GDO) and Green Finance Policy (GFP) are measured based on online transactions in the form of mobile banking and disclosure of Corporate Social Responsibility (CSR) (Anggraini et al., 2020; C. A. Putri et al., 2023; Ramila & Gurusamy, 2015; Shaumya & Arulrajah, 2016). In addition to using green banking implementation, this study also includes internal banking variables such as capital adequacy ratio (CAR), non-performing loan rate (NPL), and bank operational efficiency (BOPO) ratio to obtain a more comprehensive analysis in viewing banking performance (Dewi, 2017; Pinasti & Mustikawati, 2018).

The approaches to estimating the dynamic panel data regression model are first-difference GMM (FD-GMM) and system GMM (SYS-GMM). The next step is to test the parameter specifications on the model with the Sargan test, validity test with Arellano-Bond, and unbiased test by comparing the GMM dependent lag estimator with FEM (Fixed Effect Model) which is biased downward and PLS (Pooled Least Squares) which is biased upwards. The unbiased estimator will have a value between the FEM and PLS models or $FEM < GMM < PLS$ (Suprayogi, 2023). The model equation of GMM used was as follows:

$$ROA_{i,t} = \beta_0 + \delta ROA_{i,t-1} + \beta_1 GDO_{i,t} + \beta_2 GFP_{i,t} + \beta_3 CAR_{i,t} + \beta_4 BOPO_{i,t} + \beta_5 NPL_{i,t} + \varepsilon_{i,t}$$

Where: $ROA_{i,t}$ represent banking performance in the current year, $ROA_{i,t-1}$ represent banking performance in the last year, $GDO_{i,t}$ represent mobile banking transactions, $GFP_{i,t}$ represent Corporate Social Responsibility (CSR) disclosure, $CAR_{i,t}$ represent capital adequacy ratio, $BOPO_{i,t}$ represent bank operational efficiency and $NPL_{i,t}$ represent non-performing loan rate.

RESULT AND DISCUSSION

In the first stage, the dynamic panel data regression model is estimated using the first difference GMM estimator and system GMM estimator approaches. Both results will be tested for model specification and validity, as in Table 1.

Table 1. Dynamic Panel Model Specification and Validity Test

Model	Sargan Test		Arellano Bond Test	
	Statistical Value	P-Value	Statistical Value	P-Value
FD-GMM	3.554	0.3138	0.765	0.4441
SYS-GMM	4.60	0.5957	0.773	0.4395

The Sargan test results show that FD-GMM and SYS GMM have probability values of 0.3138 and 0.5957, respectively, less than 0.05. This means that errors in both models have no correlation, and the overidentifying restrictions value detects no problems with the instrument's validity or overidentifying conditions when estimating a valid model. Furthermore, the Arellano Bond test results show that the probability values of the two models are 0.4441 for FD-GMM and 0.4395 for SYS-GMM, which are less than 0.05. This shows that there is no autocorrelation, so estimates are consistent.

Table 2. The Results Comparison Between GMM Estimator, FEM, and PLS

Predictor(δ)	Coefficient
FD-GMM	-0.00314
SYS-GMM	0.05419
FEM	0.04505
PLS	0.13600

Table 2 shows the results of the unbiased test by comparing the dependent lag estimators FD-GMM and SYS-GMM with the FEM and PLS models. The FD-GMM



coefficient value of 0.00314 is smaller than FEM and PLS. SYS-GMM has a coefficient value of 0.05419, which is between FEM and the PLS model ($0.04505 < 0.05419 < 0.13600$). This means that the SYS-GMM model meets the unbiased criteria.

Table 3. Summary of Test Results

Model	Criteria		
	Specification	Validity	Unbiased
FD-GMM	Fulfilled	Fulfilled	Not Fulfilled
SYS-GMM	Fulfilled	Fulfilled	Fulfilled

Based on all the tests conducted, it can be concluded that the SYS-GMM model is the best model because all the assumption criteria tests have been met.

Table 4. Parameter Estimation of SYS-GMM Model

Variable	Coefficient (P-Value)	Z
<i>C</i>	7.723 (0.005)	2.78
<i>ROA_{t-i}</i>	0.054 (0.308)	1.02
GDO	-0.128 (0.860)	-1.72
GFP	0.313* (0.001)	3.40
CAR	-0.185 (0.673)	-0.42
BOPO	-1.682* (0.001)	-3.43
NPL	-0.527* (0.000)	-3.70
Uji Wald	9309.60	
P-Value	0.0000	

Note:* indicates significant at at 5%

The analysis of the SYS-GMM model shows that the previous year's banking performance represented by the profitability ratio (ROA) does not significantly affect the current bank performance. Furthermore, implementing green banking in Indonesia that can affect banking performance is only the Green Finance Policy (GFP) with a probability value of $0.001 < 0.05$. At the same time, Green Daily Operation (GDO) is not significant to banking performance, as indicated by a probability value of $0.860 > 0.05$.

Green daily operations in the study used banking transactions via mobile banking. The results of the study showed that when there was an increase in transactions on mobile banking, it did not have a significant impact on bank performance in Indonesia. This is because banks that provide online transactions or the concept of website-based banking services or mobile banking are new to people in developing countries, including Indonesia (Putri et al., 2023). As is known, the spread of digital technology in Indonesia is still uneven, and there is a digital divide in areas that the internet has not reached, so the use of mobile banking transactions to implement green finance is still not massive. It has not been able to increase bank profitability significantly. These results align with research by (Ratnasari et al., 2021) that implementing green banking practices, such as paperless operations and green technology, can initially increase operational costs, so it requires substantial investment in technology and infrastructure, which can strain



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1 profitability. In addition, green banking practices have been shown to have a negative impact on bank profitability because the capital required is greater than the direct financial benefits in the short term (Birzhanova & Nurgaliyeva, 2023; Fikri & Arifin, 2024). The implementation of GDO in Indonesia may have a significant impact on increasing bank profitability in the long term. This is similar to the results of (Pasha & Elbages, 2022), which state that internet-based banking transactions can significantly increase profitability after several years of implementation.

1 Implementing green banking with the Green Finance Policy (GFP) variable can significantly impact banking performance in Indonesia. GFP uses a measure of CSR disclosure reports made by banks. This means that every CSR disclosure can influence banking profitability. Banks that disclose CSR indicate that they have a great concern for the environment and provide social benefits to the community so that they will get a good image and customer trust to use financial services at the bank. This is in line with several studies in various countries which state that CSR disclosure can have a positive and significant impact on banking performance because the higher the value of CSR practices and disclosures, the more valuable it is from the perspective of customers and the CSR costs incurred by the bank are also borne by its customers (Nguyen et al., 2022; Shaheen & Zaytoun, 2024; Shaumya & Arulrajah, 2016; Sholikudin & Hwihanus, 2024; Taşkın, 2015).

The analysis of three internal variables shows that only the capital adequacy ratio is not significant to banking performance in Indonesia. The higher the capital adequacy ratio (CAR), the lower the bank's profitability. This result is in line with several studies that state that the capital adequacy ratio is not significant or negative to bank profitability because other factors may play a more substantial role in influencing profits or excessive capital may not always result in higher profitability (Darmawan et al., 2023; Pinasti & Mustikawati, 2018; Priharta & Gani, 2023; Sudarno et al., 2021). The capital adequacy ratio regulation in Indonesia through Bank Indonesia requires banks to maintain a minimum of 8%, so banks must provide reserve funds for provisions and anticipate the credit ratio. This will affect investments and distributions that banks can make, which can later reduce profitability.

The bank's operational efficiency ratio, measured by comparing operational costs and income, negatively and significantly affects banking performance. This shows that a high bank operational efficiency ratio means that the bank's operational costs are more significant than its operational income, which can reduce the bank's profitability. A higher operational efficiency ratio will reduce banking efficiency, thus decreasing its profitability. This is also supported by Bank Indonesia's regulation for banking in Indonesia which sets a ratio below 85% so that banking efficiency remains maintained. The results of this study are supported by several studies that state that a high operational efficiency ratio will reduce bank profitability (Hartiwi, 2023; Pinasti & Mustikawati, 2018; Swandriya et al., 2024).

The non-performing loan ratio significantly negatively impacts bank performance in Indonesia. The higher the non-performing loan ratio in a bank, the lower its profitability. Customers who fail to pay their loans will cause the non-performing loan ratio to increase. This will negatively impact the bank because it will lose some or the entire principal, thus affecting its income and reducing its profits. The research results are supported by several previous studies which state that a high level of bad debt will have a negative impact on profitability (Hartiwi, 2023; Maulana et al., 2023; Nurzaman & Fatihah, 2022; Sutisna et al., 2023; Swandriya et al., 2024; Widjaja et al., 2023).



CONCLUSION

This study aims to analyze the impact of green finance on banking performance in Indonesia. Based on the results of the study, it can be concluded that of the two indicators in measuring green finance, only one variable can significantly impact bank performance, especially profitability. The Green Finance Policy (GFP) variable can contribute to bank profitability through CSR disclosure. At the same time, the Green Daily Operation (GDO), which uses digital technology in banking operations, has not been able to influence bank profitability in Indonesia. Furthermore, internal banking variables that significantly affect bank profitability are the operational efficiency ratio and the non-performing loan ratio. These two variables must always be maintained according to banking regulations in Indonesia so as not to increase beyond the threshold because it can reduce bank profitability.

The limitation of this study is in the measurement of green finance in the banking sector, considering that research that discusses green banking practices in Indonesia is still limited due to limited data on green banking disclosure. Researchers currently hope that further research can be carried out by adding variables to use more varied green finance measures so that they can be used to compare green finance activities in banking in other countries with Indonesia.

Researchers also appreciate banks that have implemented the concept of green finance and are expected to maintain and further improve their operational activities by carrying the idea of green or caring for the environment so that the public will be more attentive and trust banks that have implemented green finance. Thus, it will impact bank performance, especially as a driver for increasing banking profitability.

REFERENCES

- Anggraini, D., Aryani, D. N., & Prasetyo, I. B. (2020). Analisis Implementasi Green Banking Dan Kinerja Keuangan Terhadap Profitabilitas. *Jurnal Bisnis, Manajemen dan Informatika*, 17(2), 141–161. <https://doi.org/http://dx.doi.org/10.26487/jbmi.v17i2.11264>
- Birzhanova, A., & Nurgaliyeva, A. (2023). The impact of Green practices on Banks' profitability. *ECONOMIC Series of the Bulletin of L.N. Gumilyov ENU*, 1, 285–294. <https://doi.org/10.32523/2789-4320-2023-1-285-294>
- Briando, L., Inggriani, E., & Stanley, W. (2021). *ANALISIS RASIO LIKUIDITAS, SOLVABILITAS, AKTIVITAS DAN PROFITABILITAS UNTUK MENILAI KINERJA KEUANGAN PADA PT. TANTO INTIM LINE*.
- Bukhari, S. A. A., Hashim, F., & Amran, A. (2020). The Journey of Pakistan's Banking Industry Towards Green Banking Adoption. *South Asian Journal of Business and Management Cases*, 9(2), 208–218. <https://doi.org/10.1177/2277977920905306>
- Campiglio, E. (2016). Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. *Ecological Economics*, 121, 220–230. <https://doi.org/10.1016/j.ecolecon.2015.03.020>
- Darmawan, M. W., Sutisna, E., & Suhara, E. (2023). The Influence of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) and Operational Costs of Operational Income (BOPO) On Profitability at PT. Bank Negara Indonesia (Persero) Tbk. *International Journal of Social Science and Human Research*, 06(06). <https://doi.org/10.47191/ijsshr/v6-i6-82>
- Daromes, F. E., Ng, S., & Wijaya, N. (2020). Carbon Emissions Disclosure as Mechanism to Increase Environmental Performance and Control of Idiosyncratic Risk: How They Impact Firm Value. *Indonesian Journal of Sustainability Accounting and Management*, 4(2), 227. <https://doi.org/10.28992/ijssam.v4i2.299>



Rafly Izaz Mada Yafie et al.: *The Impact of Green...*

- Dave, R. (2024). Green Banking: Fostering Sustainability With Responsible Finance. *Futuristic Trends in Management*, 3, 209–216. <https://doi.org/10.58532/v3bhma4p6ch1>
- Dewi, A. S. (2017). Pengaruh CAR, BOPO, NPL, NIM, dan LDR terhadap ROA pada Perusahaan di Sektor Perbankan yang Terdaftar di BEI Periode 2012-2016. *Jurnal Pundi*, 1(3). <https://doi.org/10.31575/jp.v1i3.55>
- Falcone, P. M. (2020). Environmental regulation and green investments: the role of green finance. *International Journal of Green Economics*, 14(2), 159. <https://doi.org/10.1504/IJGE.2020.109735>
- Fikri, A. F., & Arifin, Z. (2024). The impact of green credit distribution on bank performance and influencing factors. *International Journal of Research in Business and Social Science*, 13(1), 323–332. <https://doi.org/10.20525/ijrbs.v13i1.3185>
- Firmansyah, M. (2022). Konsep Turunan Green economy dan Penerapannya: Sebuah Analisis Literatur. *Ecoplan*, 5(2), 141–149. <https://doi.org/10.20527/ecoplan.v5i2.543>
- Grebmer, C., & Diefenbach, S. (2020). The challenges of green marketing communication: Effective communication to environmentally conscious but skeptical consumers. *Designs*, 4(3), 1–16. <https://doi.org/10.3390/designs4030025>
- Han, H., Al-Ansi, A., Chi, X., Baek, H., & Lee, K. S. (2020). Impact of environmental CSR, service quality, emotional attachment, and price perception on word-of-mouth for full-service airlines. *Sustainability (Switzerland)*, 12(10). <https://doi.org/10.3390/SU12103974>
- Handayani, T., Abubakar, L., & Sukmadilaga, C. (2020). Green Loan Banks Policy To Provide Environment Friendly Project. *Diponegoro Law Review*, 5(2), 215–230. <https://doi.org/10.14710/dilrev.5.2.2020.215-230>
- Hartiwi, L. I. A. I. (2023). Pengaruh NPL dan BOPO Terhadap Profitabilitas Pada Bank Umum Konvensional Pada Masa Pandemi Covid 19. *Jurnal Akuntansi, Ekonomi Dan Manajemen Bisnis*, 3(2), 237–243. <https://doi.org/10.55606/jaemb.v3i2.1694>
- Hasanah, N., & Hariyono, S. (2022). Analisis Implementasi Green Financing Dan Kinerja Keuangan Terhadap Profitabilitas Perbankan Umum Di Indonesia. *Jurnal Ekobis: Ekonomi Bisnis & Manajemen*, 12(1), 149–157. <https://doi.org/10.37932/j.e.v12i1.444>
- Hishamuddin, M. R. A., Bujang, I., & Rimin, F. (2024, May 6). Transformative Impacts of Green Finance on Co2 Emissions and Bank Stability. *The European Proceedings of Social and Behavioural Sciences*. <https://doi.org/10.15405/epsbs.2024.05.30>
- Höhne, N., Fekete, H., den Elzen, M. G. J., Hof, A. F., & Kuramochi, T. (2018). Assessing the ambition of post-2020 climate targets: a comprehensive framework. *Climate Policy*, 18(4), 425–441. <https://doi.org/10.1080/14693062.2017.1294046>
- Jain, P., & Sharma, B. K. (2023). Impact of Green Banking Practices on Sustainable Environmental Performance and Profitability of Private Sector Banks. *International Journal of Social Ecology and Sustainable Development*, 14(1), 1–19. <https://doi.org/10.4018/IJSESD.330135>
- Kapoor, N., Jaitly, M., & Gupta, R. (2016). Green Banking: A step towards Sustainable Development. In *International Journal of Research in Management*. www.indusedu.org
- Kasztelan, A. (2017). Green Growth, Green Economy and Sustainable Development: Terminological and Relational Discourse. *Prague Economic Papers*, 26(4), 487–499. <https://doi.org/10.18267/j.pep.626>
- Knebel, S., & Seele, P. (2020). Introducing public procurement tenders as part of corporate communications: a typological analysis based on CSR reporting



- indicators. *Corporate Communications*, 26(3), 484–500. <https://doi.org/10.1108/CCIJ-01-2020-0029>
- 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 finance. *Social Responsibility Journal*. <https://doi.org/10.1108/srj-02-2024-0096>
- Laskowska, A. (2018). Green banking as the prospective dimension of banking in Poland. *Ecological Questions*, 29(1), 129–135. <https://doi.org/10.12775/EQ.2018.011>
- Lestari, T., Andini, R., Raharjo, K., & Si, M. (2015). *Dampak Rasio CAR, NPL, NPM, ROA, LDR, IRR dan Ukuran Perusahaan*.
- Lin, W.-L., Cheah, J.-H., Azali, M., Ho, J. A., & Yip, N. (2019). Does firm size matter? Evidence on the impact of the green innovation strategy on corporate financial performance in the automotive sector. *Journal of Cleaner Production*, 229, 974–988. <https://doi.org/10.1016/j.jclepro.2019.04.214>
- Maulana, Y., Harjadi, D., & Lismawati, L. (2023). Pengaruh Kredit Bermasalah dan Penyaluran Kredit Terhadap Profitabilitas Bank BUMN Terdaftar BEI. *Equilibrium: Jurnal Penelitian Pendidikan Dan Ekonomi*, 20(01), 55–61. <https://doi.org/10.25134/equi.v20i01.6759>
- N. V. Kavitha and Usha Rani. (2016). *Green Banking-towards Sustainable Development*. www.ijird.com
- Nguyen, T. Van, Bui, H. T. T., & Le, C. H. D. (2022). The impacts of corporate social responsibility to corporate financial performance: A case study of Vietnamese commercial banks. *Cogent Economics & Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2132642>
- Nurzaman, W., & Fatimah, D. C. (2022). Pengaruh Resiko Kredit Macet Terhadap Profitabilitas Pada PT. Adira Multifinance. *EKBIS (Ekonomi & Bisnis)*, 9(1), 95–104. <https://doi.org/10.56689/ekbis.v9i1.890>
- Park, H., & Kim, J. D. (2020). Transition towards green banking: role of financial regulators and financial institutions. *Asian Journal of Sustainability and Social Responsibility*, 5(1). <https://doi.org/10.1186/s41180-020-00034-3>
- Pasha, R., & Elbages, B. (2022). Green banking practices: The impact of internet banking on bank profitability in Egypt. *Corporate and Business Strategy Review*, 3(2), 65–75. <https://doi.org/10.22495/cbsrv3i2art6>
- Pinasti, W. F., & Mustikawati, RR. I. (2018). Pengaruh CAR, BOPO, NPL, NIM dan LDR Terhadap Profitabilitas Bank Umum Periode 2011-2015. *Nominal, Barometer Riset Akuntansi Dan Manajemen*, 7(1). <https://doi.org/10.21831/nominal.v7i1.19365>
- Priharta, A., & Gani, N. A. (2023). Determinants of bank profitability: Empirical evidence from Republic of Indonesia state-owned banks. *Contaduría y Administración*, 69(3). <https://doi.org/10.22201/fca.24488410e.2024.4999>
- Priyanto, D., Raharjo, A., Setiaji, B., & Syamsudin, D. (2014). *PENGARUH RASIO CAR, NPL, LDR, BOPO, DAN NIM TERHADAP KINERJA BANK UMUM DI INDONESIA*.
- Putri, A. E., & Zuhroh, I. (2024). Investigating the Impact of Green Banking Disclosure, Profitability, Company Size, and Non-Performing Loans on Company Value. *E-Jurnal Akuntansi*, 34(5). <https://doi.org/10.24843/EJA.2024.v34.i05.p04>
- Putri, C. A., Fasa, M. I., Suharto, S., & Fachri, A. (2023). Inovasi Green Banking pada Layanan Perbankan Syariah. *Mutanaqishah: Journal of Islamic Banking*, 2(2), 69–79. <https://doi.org/10.54045/mutanaqishah.v2i2.402>
- Ramadhany, A. A., Fadlilah, A. H., Richmayati, M., Mustika, I., & Nabella, S. D. (2021a). The Mediation Effect Firm Performance on Green Innovation and Firm Value: Evidence the Mining Industry. *International Journal of Science, Engineering and Management (IJSEM)*, 6(3). <https://doi.org/10.17762/turcomat.v12i3.909>



Rafly Izaz Mada Yafie et al.: *The Impact of Green...*

- Ramadhany, A. A., Fadlilah, A. H., Richmayati, M., Mustika, I., & Nabella, S. D. (2021b). The Mediation Effect Firm Performance on Green Innovation and Firm Value: Evidence the Mining Industry. In *Turkish Journal of Computer and Mathematics Education* (Vol. 12, Issue 3). www.idx.go.id.
- Ramila, M., & Gurusamy, S. (2015). Impact of Green Banking Initiatives on Banks' Profitability A Comparative Study of Public, Private and Foreign Banks. *Commerce Spectrum*, 3(1).
- Ratnasari, T., Surwanti, A., & Pribadi, F. (2021, March 1). Implementation of Green Banking and Financial Performance on Commercial Banks in Indonesia. *Recent Developments in Asian Economics International Symposia in Economic Theory and Econometrics*. <https://doi.org/10.1108/S1571-038620210000028018>
- Raza, A., Saeed, A., Iqbal, M. K., Saeed, U., Sadiq, I., & Faraz, N. A. (2020). Linking corporate social responsibility to customer loyalty through co-creation and customer company identification: Exploring sequential mediation mechanism. *Sustainability (Switzerland)*, 12(6). <https://doi.org/10.3390/su12062525>
- Shaheen, L., & Zaytoun, A. (2024). Examining the Impact of Social Disclosures on the Profitability of Jordanian Commercial Banks: A Comprehensive Study. *Wseas Transactions On Business And Economics*, 21, 1383–1391. <https://doi.org/10.37394/23207.2024.21.113>
- Shaumya, K., & Arulrajah, A. A. (2016). Measuring Green Banking Practices: Evidence from Sri Lanka. *13th International Conference on Business Management*.
- Shershneva, E. G., & Kondyukova, E. S. (2020). Green Banking as a Progressive Format of Financial Activity in Transition to Sustainable Economy. *IOP Conference Series: Materials Science and Engineering*, 753(7), 072003. <https://doi.org/10.1088/1757-899X/753/7/072003>
- Sholikudin, M., & Hwihanus, H. (2024). Is Bank Financial Performance Affected By Corporate Social Responsibility? A Meta-Analysis. *Jurnal Riset Akuntansi*, 2(3), 53–63. <https://doi.org/10.54066/jura-itb.v2i3.2074>
- Sohn, J., Lee, J., & Kim, N. (2020). Going green inside and out: Corporate environmental responsibility and financial performance under regulatory stringency. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/su12093850>
- Sudarno, S., Suyono, S., Yusrizal, Y., & Tambunan, J. (2021). Determinant Models Affecting Financial Performance and Stock Return Companies Registered in Indonesia Stock Exchange. *Jurnal Aplikasi Manajemen*, 19(4), 905–924. <https://doi.org/10.21776/ub.jam.2021.019.04.18>
- Suprayogi, M. A. (2023). Analisis Data Panel Dinamis Pertumbuhan Ekonomi di Indonesia Dengan Metode FD-GMM dan SYS-GMM. *Jurnal Bayesian: Jurnal Ilmiah Statistika Dan Ekonometrika*, 3(1), 38–47.
- Sutisna, E., Ameliana, Y., & Sutisman, E. (2023). Strategi Penyelesaian Kredit Macet dan Dampak terhadap Kinerja Keuangan pada PT Bank BPD Papua Jayapura. *Prosiding Seminar Nasional Forum Manajemen Indonesia - e-ISSN 3026-4499*, 1, 461–470. <https://doi.org/10.47747/snfmi.v1i.1521>
- Swandriya, S., Indarto, I., & Budiati, Y. (2024). Analisis Pengaruh Biaya Operasional Pendapatan Operasional, Net Interest Margin , Loan to Deposit Ratio Terhadap Profitabilitas. *Sustainable Business Journal*, 3(1), 35. <https://doi.org/10.26623/sbj.v3i1.9536>
- Taşkın, D. (2015). Special Issue on Social Responsibility Education and Practices The Relationship between CSR and Banks' Financial Performance: Evidence from Turkey Kurumsal Sosyal Sorumluluk ve Bankaların Finansal Performansları Arasındaki İlişki: Türkiye'den Kanıtlar. *Social Responsibility Education and Practices*, 21–30. <https://doi.org/https://doi.org/10.19168/jyu.97694>



- Uddin, M. N. (2016). "Shari'ah" Based Banking and Green Financing: Evidence from Bangladesh. <https://doi.org/DOI:10.24191/jeeir.v4i2.9088>
- Widjaja, A., Kusuma, T. C., & Tobing, G. L. (2023). Tinjauan Yuridis Penyelesaian Kredit Macet terhadap Profitabilitas Bank. *Syntax Literate; Jurnal Ilmiah Indonesia*, 8(9), 6110–6121. <https://doi.org/10.36418/syntax-literate.v8i9.13831>
- Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research*, 101, 697–706. <https://doi.org/10.1016/j.jbusres.2019.01.010>
- Yang, L. (2024). Analysis of Developing Commercial Bank Green Finance Programs. *Highlights in Business, Economics and Management*, 24, 1710–1719. <https://doi.org/10.54097/t3hd1k23>
- Zhang, F., & Zhang, S. (2024). The Impact of Green Finance on the Profitability of Commercial Banks. *Frontiers in Business, Economics and Management*, 15(3), 136–138. <https://doi.org/10.54097/9geb4k46>