Does the Implementation of Green Banking Affect the Profitability of Islamic Banks in Indonesia?

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Abstract

Green banking has been at the peak of popularity over the last few decades. The green movement in the banking industry is triggered by the acceleration of global climate change due to environmental damage. Green banking is an important component of Islamic banking which serves as the basis for environmental protection and also enhances the reputation of the organization. This study investigates the impact of implementing green banking on Islamic banking profitability in Indonesia from 2016 to 2020 by using a sample of nine Islamic Commercial Banks (BUS). To evaluate the relationship among variables, Panel Data Analysis is employed. The findings depict that the implementation of Green Banking had no significant impact on the profitability of Islamic Commercial Banks during the study period. This study shows that the implementation of green banking incurs various costs, such as compliance costs, which will have an impact on profitability. Therefore, the transition to green banking demands a strong commitment to the "green movement" through various aspects for Islamic banks in environmental preservation. In addition, the implications of this research suggest the need for support from regulators in the formulation of national standards for the green category and the utilization of commercial prospects in a sustainable sector.

Keywords: Green banking, Islamic banks, Profitability, Sustainable Finance, Green Economy.
JEL Classification: G21, O35, O43, Q56.

Introduction

In an effort to boost the economy and maximize prosperity, humans continue to engage in environmentally damaging behaviors. As a result of climate change, the world faces issues such as floods and heat waves [24]. Globally and recently among businesses and organizations, concern for environment-related concerns has increased, leading to the creation of a variety of evaluation methods. The consensus for environmental protection, efforts on climate change, and accomplishment of the United Nations Sustainable Development Goals (SDGs) by 2030 has recently brought attention to green finance [25]. Sustainable finance, environmental finance, and green investment are terms used interchangeably to refer to green finance [26].

In recent years, climate issues have remained pertinent, and preventing environmental deterioration has grown even more crucial. The majority of environmental issues are caused

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[24] (Schumacher et al. 2020)

[25] Isaac Akomea-frimpong et al., "A Review of Studies on Green Finance of Banks , Research Gaps and Future Directions and Future Directions," *Journal of Sustainable Finance & Investment* 0, no. 0 (2021): 1–24, https://doi.org/10.1080/20430795.2020.1870202.

[26] (Chen et al. 2022)

by greenhouse gas emissions, primarily from fossil fuels and non-renewable energy sources [27]. These emissions cause health problems and societal and economic risks [28]. It may increase sovereign risk, hinder financial development, and raise the cost of debt. Transitions to sustainable and carbon-neutral company models require substantial funding.

In emerging economies, where banking revenue was dependent on a small number of large corporations, many of whom are heavy emitters, the problem is more problematic. Moreover, the majority of corporate finance is provided by banks [29]. Theoretically, banks must allocate cash to environmentally conscious borrowers to boost green recovery [30]. However, they will require incentives to maintain this behavior over the medium to long term. Exploring explicit benefits for the banking sector is therefore essential for convincing banks to incorporate sustainability objectives into lending criteria. If such benefits exist, banks will increase their support for the green recovery. Consequently, the corporate sector can benefit from the availability of finance without interruption.

Green banking contributes to sustainable development by overcoming institutional impediments and market challenges in order to provide capital to environmentally friendly enterprises [31]. Green banking encompasses the strategic and operational plans of banks [32]. The plan takes into account the transition to a low-carbon economy as well as those internal controls, risk management, and anticipated financial conditions that are based on an accurate evaluation of environmental risks [33]. Banks must go green since the quality of their assets and their profitability are dependent on environmental and ecological factors. This element addresses corporate social responsibility and represents a balanced ecological approach that banks should adopt. Green banking hence requires a dual approach. First, green banking emphasizes the green transformation of all banks' internal processes. It entails that all banks should implement methods of employing renewable energy, automation, and other efforts to reduce their carbon footprint [34].

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[27] Xin Zhang et al., "Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing," *Sustainability (Switzerland)* 14, no. 2 (2022): 1–18, https://doi.org/10.3390/su14020989.

[28] Prerana Sarma and Arup Roy, "A Scientometric Analysis of Literature on Green Banking (1995-March 2019)," *Journal of Sustainable Finance and Investment* 11, no. 2 (2021): 143–62, https://doi.org/10.1080/20430795.2020.1711500.

[29] (Kapoor et al. 2016)

[30] Mirjana Jemović and Jelena Radojičić, "Sustainable Finance and Banking: A Challenge for Regulators and a Risk Management System," *Facta Universitatis, Series: Economics and Organization* 18, no. 1 (2021): 341, https://doi.org/10.22190/fueo210609024j.

[31] Noorjahan Begum, "Green Banking: An Indispensable Step for the Bank To Save Our Environment," *American International Journal of Business and Management Studies* 3, no. 1 (2021): 1–11, https://doi.org/10.46545/aijbms.v3i1.146.

[32] (Bukhari et al. 2019)

[33] Constantin-Marius Apostoaie, "Green Banking: A Shared Responsibility Between Financial Regulators and Banking Institutions," *SEA – Practical Application of Science* VI, no. 18 (2018): 275–81.

[34] Mohammad Nazim Uddin and Monir Ahmmed, "Islamic Banking and Green Banking for Sustainable Development: Evidence from Bangladesh," *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah* 10, no. 1 (2018): 97–114, https://doi.org/10.15408/aiq.v10i1.4563.

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Second, all banks should engage in environmentally responsible finance, which includes evaluating the environmental risks of a project prior to making financing decisions and, in particular, supporting and nurturing the growth of forthcoming "green" initiatives and projects [35]. It is an intelligent and proactive method of thinking with a goal for long-term sustainability. However, the banking business was never deemed a polluting industry. Due to their large use of energy (e.g., lighting, air conditioning, electronic/electrical equipment, IT, etc.), excessive paper waste, absence of green buildings, etc., the current scale of banking operations has significantly increased the carbon footprint of banks. As a result, banks should employ technologies, procedures, and products that significantly lower their carbon footprint while also assisting them in establishing a sustainable business.

Under these conditions, Islamic banking can contribute to the improvement for sustainable development. Islamic banking is an ethical and socially responsible banking system that has no negative environmental impact [36]. This bank is devoted to people and society. It has the ability to significantly contribute to a sustainable financing ecosystem for a clean and green environment [37]. Regarding the link between humans and the environment, Islam emphasizes the protection of natural resources and the necessity of respecting all living things.

In recent years, the problem of green finance has been a major concern for researchers and academics. This level of interest has generated several debates on the subject, which has resulted in countless studies in the field of green banking throughout the years. The empirical research on green banking and profitability for sustainable development has shown different results. Because the community has acknowledged the necessity of maintaining the environment, it affects their investment decisions, the environmentally conscious banking business has a better profit margin [38]. Results also indicate that green lending requirements demand banks to be more proactive about the incorporation of environmental concerns into credit risk assessment procedures [39]. Case [40] further claim that environmental performance enhances the organization's reputation and goodwill and presents business organizations with obstacles and opportunities.

In general, Green Banking practices refer to bank activities that go beyond profit maximization, such as enhancing social welfare and decreasing ecological risks by integrating economic, environmental, and social issues to achieve sustainable development. The emergence of Green Banking in the present day needs enlightening research from an Islamic

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[35] Uddin and Ahmmed.

[36] (Bouteraa cet al. 2020)

[37] Bouteraa, Rizal Iskandar bin Raja Hisham, and Zainol.

[38] Etikah Karyani and Vangi Vinanda Obrien, "Green Banking and Performance: The Role of Foreign and Public Ownership," *Jurnal Dinamika Akuntansi Dan Bisnis* 7, no. 2 (2020): 221–34, https://doi.org/10.24815/jdab.v7i2.17150; Simon Dikau and Ulrich Volz, "Central Banking, Climate Change, and Green Finance," *Handbook of Green Finance*, no. 867 (2019): 81–102, https://doi.org/10.1007/978-981-13-0227-5_17; Akomea-frimpong et al., "A Review of Studies on Green Finance of Banks , Research Gaps and Future Directions and Future Directions."

[39] Akomea-frimpong et al., "A Review of Studies on Green Finance of Banks , Research Gaps and Future Directions and Future Directions."

[40] (2016)

standpoint. The concern for sustainability applies to Islamic corporations as well, which regard integrity and social responsibility as permanent norms. Information about the performance of banks in developing nations such as Indonesia in relation to the implementation of sustainable financing, namely green banking disclosures, is severely limited, and we believe this is a very important area of research. Therefore, this research aims to examine the impact of green banking disclosures on the performance of Islamic banks in Indonesia between 2016 and 2020.

Apart from the introduction, the rest of this article is organized into five sections, including a literature review on green banking and a previous study on the subject in Section 2. Section 3 presents the research technique. Section 4 reports on the findings and discussions, and Section 5 suggests some recommendations and policy implications for boosting green banking practices among Islamic banks in Indonesia

Literature Review

The concept of the green economy appears frequently in a number of contexts throughout the reviewed literature. In this framework, an unrestricted expansion in production and consumption was identified as a concern, along with the need to minimize the share of land maintained for human use, the carrying capacity of the earth's ecosystems, and the need for a more equitable distribution of common resources. In the 1970s, the links between economic development, social interactions, the environment, and natural resources were described and incorporated in the Stockholm Declaration of the United Nations Conference on the Human Environment, which was adopted on 16 June 1972. The initial objective was to define sustainable development in the political, ecological, economic, and social realms [41].

Sustainable development aims to build a more competitive, low-emissions economy, protect the natural environment, create new environmentally friendly technologies and production methods, improve conditions for the development of entrepreneurship, and raise consumer awareness of sustainable financing [42]. Beneficiaries of the services will be customers of banking and financial institutions, as well as the public generally. In a narrow sense, sustainable funding is the combination of financial efficiency and stability with social responsibility, environmental protection, and responsible management [43]. This includes "green funding," i.e. investments targeted at conserving the natural environment, in particular investments in low-carbon projects with the goal of limiting the rise in global mean temperatures. This combination of goals is known as the environmental, social, and governance (ESG) [44].

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[41] Akomea-frimpong et al., "A Review of Studies on Green Finance of Banks , Research Gaps and Future Directions and Future Directions."

[42] Meenakshi Sharma and Akanksha Choubey, "Green Banking Initiatives: A Qualitative Study on Indian Banking Sector," *Environment, Development and Sustainability* 24, no. 1 (2022): 293–319, https://doi.org/10.1007/s10668-021-01426-9.

[43] Zhang et al., "Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing."

[44] (Khairunnessa et al. 2021)

In the 2010s, sustainable development has been associated with interchangeable new terminology, such as "green economy." On the basis of new strategies for goal management by businesses, such as corporate social responsibility (CSR) and socially responsible investment (SRI), further development of the concept is being proposed [45]. Thus, sustainability as a widely construed phenomenon is generating mainstream political phenomena and trends that will impact global economic activity in the next years. Changing the paradigm in the industrial era 4.0 must be tailored to the demands of contemporary human life, and innovation in effecting change must have an effect on the environment. These issues include the Triple Bottom Line problem, which involves Profit, People, and the Environment (Green Finance Concept). In economics, the triple bottom line (TBL) asserts that businesses should prioritize social and environmental concerns alongside profits [46]. The TBL hypothesis proposes that there should be three bottom lines: profit, people, and the environment. A TBL tries to evaluate a company's commitment to corporate social responsibility and its environmental impact over time.

The essence of Green Banking in the banking sector is a financial institution that bases its operations on sustainable development principles [47]. Specifically in terms of funding, the existence of ecological balance (environment), human well-being, and social and cultural growth of the community are essential factors. The Green Banking idea is applied through a variety of environmentally-based service programs, including paperless, e-billing, e-banking, financing environmentally-based projects, and the Go-Green program [48]. Paperless banking services are designed to reduce paper consumption. By reducing paper usage, it will indirectly reduce the quantity of trees cut down for paper production. In the meantime, financing environmental projects is a program that considers risk factors in the distribution of funds; in this instance, it must emphasize environmentally friendly and sustainable businesses [49]. If a business has met the environmental impact analysis (AMDAL) requirements for environmental friendliness, then the new bank can provide finance. If banks lend finance to enterprises that are not environmentally sustainable, they will recognize the magnitude of the ensuing risks, which can be damaging.

Green Banking has become a consideration for the banking system in Indonesia due to the existence of a concept of sustainable finance formulated by Otoritas Jasa Keuangan (OJK) through the Roadmap for Sustainable Finance to create a commitment to sustainable development in the banking sector and to support the financial services industry for sustainable growth resulting from the alignment of economic, social, and environmental

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[45] Grzegorz Paluszak and Joanna Wisniewska Paluszak, "The Role of Green Banking in a Sustainable Industrial Network," *Bezpieczny Bank* 65, no. 4 (2016): 75–95.

[46] S M Mahfuzur Rahman and Suborna Barua, "The Design and Adoption of Green Banking Framework For Environment Protection : Lesson From Bangladesh," *Australian Journal of Sustainable Business and Society* 2, no. 1 (2016): 1–19.

[47] Prakash Pillai and Praveen Raj, "Green Banking Practices : Initiative for Sustainable Development" 3, no. 2008 (2017): 2016–17.

[48] Uddin and Ahmmed, "Islamic Banking and Green Banking for Sustainable Development: Evidence from Bangladesh."

[49] Neyati Ahuja, "Green Banking in India: A Review of Literature," *International Journal for Research in Management and Pharmacy* 4, no. 1 (2015): 11–16, www.raijmr.com.

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interests (POJK Nomor 51/POJK.03/2017). Although green banking has progressed in the worldwide financial system, it remains still unpopular in Indonesia. This concept arose in reaction to the worldwide community's demand that the banking industry actively participate in efforts to combat the environmental problem and the escalating rate of global warming [50]. In particular, green banking signifies that the banking sector must not only focus on its financial responsibility, which is managing its business to generate the maximum profit for shareholders, but must also focus on its responsibility to preserve the environment and universe (planet) and improve social welfare for the community (people).

Several studies have concluded that the usage of green banking in the banking industry, which encourages environmentally responsible financing, yields positive effects. Therefore, banks must be able to include policies into their products that promote environmental sustainability (green products [51]. Miah et al. [52] investigated the factors influencing the environmental performance of the banking industry in Bangladesh. They found that credit-rating scores had a beneficial impact on the environmental performance of banks, as compared to the length of service. Additionally, the study found that highly profitable institutions are more concerned about environmental issues. Shaumya and Arulrajah [53] investigated the effect of green banking practices on the environmental performance of banks in Sri Lanka. Green banking practices had a strong and significant impact on banks' environmental performance.

Although the goals of Green Banking are clearly admirable, implementation issues and the short period of time that the rules have been in effect make it impossible to draw definitive conclusions regarding their effectiveness. Julia and Kassim [54] examines the financial performance of commercial banks offering green financing in Bangladesh in the period 2012-2014. This study uses a maqashid sharia approach by maintaining faith, soul, mind, lineage, and property by using secondary data from annual reports and continuous reports. The results found that there were no banks that fully met the requirements of the green policy, but Islamic banks could implement maqashid values such as maintaining faith, intelligence, and circulation of wealth.

Safitri et al. [55] investigated the implementation of green banking in Indonesia. The research examines that with the administration pattern, associative pattern, and evaluative pattern with the awareness and responsibility of banks throughout Indonesia, economic development in Indonesia shows significant results. However, it has a negative impact on the environment, so on the other hand, banking has a strategic value to achieve development, namely environmental sustainability in terms of credit assessment. Furthermore, Nasution [56] examines how Islamic banking carries out green banking responsibilities in customer

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[50] Karyani and Obrien, "Green Banking and Performance: The Role of Foreign and Public Ownership."

[51] (Handajani et al. 2019)

[52] (2018)

[53] (2017)

[54] (2020)

[55] (2019)

[56] (2018)

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financing policies and sustainable finance efforts. The results conclude that green banking is an effort to change Islamic banks to be more responsible by means of financing provided to customers and efforts to prevent environmental damage from the financing provided.

Indriyani et al. [57] examines green banking practices at Indonesian Islamic Commercial Banks from 2014-2017 using an environmental risk index using 44 variables related to environmental risk management aspects. The results found that Islamic commercial banks in Indonesia are still quite low in water management, paper, employee involvement and environmental commitment and training that must be improved. While, Cahyadin et al. [58] analyzes the relationship between Islamic banking assets and financing, the ICT (Technology, Information, Communication) index, the environmental quality index in Indonesia and the level of readiness of Islamic banking in implementing digital and green banking. The data used in this research are asset growth, financing growth, environmental quality index. The results conclude that Islamic banking has utilized information and communication technology in asset management and financing. However, Islamic banking is considered not sufficiently capable of playing an active role in controlling the environmental impact of financial transactions.

Further, Hanif et al. [59] discusses the profitability of Islamic commercial banks that implement green banking in an Islamic view. The data used is in the form of the annual report of Islamic Commercial Banks for the 2015-2018 period. The dependent variable used in this study is Net Profit Margin (NPM), and green banking indicators as the independent variables. In this study it was found that green banking has a positive effect on the profitability of Islamic commercial banks in Indonesia. In addition, research has been able to align green banking indicators that are appropriate in the Islamic perspective in maintaining and preventing natural damage. The same result is evidenced by the research of Winarto and Nurhidayah [60] who examined the Effect of Green Banking Disclosure on Firm Value in Islamic Commercial Banks in Indonesia. The method used in this study is a quantitative method by conducting an analysis based on the Green Banking Disclosure Index, the study found that green banking disclosure has a positive and significant effect on firm value in Islamic banking.

In this instance, Islamic banking is very capable of adopting the concept of Green Banking due to its high visibility and tendency to highlight the engagement of social images. The engagement of banks in implementing the Green Banking idea enhances the bank's reputation by demonstrating to the broader society that it is a financial organization that not only emphasizes profit, but also considers and achieves good economic sustainability.

Methodology

This research uses quantitative research. The type of data used is secondary data in the form of annual financial reports and sustainability reports, using a sample of nine sharia commercial banks. Furthermore, this study uses a purposive sampling method that focuses on a specific goal. So that in this study the sampling criteria are as follows: Islamic Commercial

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[57] (2019)

[58] (2020)

[59] (2020)

[60] (2021)

Banks (BUS) registered with OJK for the 2016-2020 period, Islamic Commercial Banks which have a sustainability report in 2020, Islamic Commercial Banks which reports annual reports and can be accessed on the bank's official website. Data collection techniques in this study using documentation techniques, which use data derived from existing documents.

The data analysis technique employed is panel data analysis, which is a combination of time series and cross data, i.e., the examination of variables collected over a specific time period. This regression function for panel data is used to determine the impact of two or more independent factors on the dependent variable. Using the Eviews 12 application tool for panel data regression analysis, the panel data regression equation for this study is as follows:

$$ROA_{it} = \alpha_{it} + \beta_1 GB_{it} + \beta_2 CAR_{it} + \beta_3 NPF_{it} + \beta_4 OER_{it} + \beta_5 FDR_{it} + \varepsilon_{it}$$

Where,

ROA = Return on Assets

GB = Green Banking

CAR = Capital Adequacy Ratio

NPF = Net Performing Financing

OER = Operating Efficiency Ratio

FDR = Financing to Deposit Ratio

α = Constanta

β = Coefficient

i = Islamic Commercial Banks (cross section)

t = Period (time)

ε = error

We construct panel data estimation following Baltagi (2005). On the basis of panel data estimates, it can be done through three approaches according to:

1. Common Effect Model

   This model is the simplest approach for estimating the parameters of a panel data model, as it combines cross-sectional and time series data into a single unit, disregarding individual changes across time. This model employs the Ordinary Least Square (OLS) methodology.

2. Fixed Effect Model

   This model estimates panel data by using dummy variables to capture differences in intercepts. This method is predicated on disparities in intercepts between companies, although intercepts remain constant over time. This model utilizes the Least Square Dummy Variable (LSDV) technique.

3. Random Effect Model

   This model estimates panel data in which disturbance factors may be connected across time and individuals. Error accommodates differences between persons and between timeframes. This model employs the Generalized Least Squares (GLS) technique.

Moreover, to identify the optimal model for estimating panel data regression. Several test methods, including the Chow test, are used to choose between common effect and fixed effect models. Second, the Hausman test is used to select the optimal fixed effect or random effect model for panel data regression estimation. Third, the Lagrange Multiplier (LM) test to choose between a model with a common effect and a model with random effects. The next stage, following the selection of the model, is to test the hypothesis. The value of the F statistic, the value of the t statistic, and the value of the coefficient of determination can be used to quantify hypothesis testing. The F test was performed to see whether the study's independent variables could adequately explain changes in the dependent variable. In other words, the F-statistic test is used to determine whether the model's application is appropriate and reliable. In addition, the t-statistic value is utilized to determine the impact of each independent variable on the dependent variable. By examining the value of the coefficient of determination (R), it is possible to determine how accurately the regression model explains the dependent variable.

Result & Analysis
Descriptive Analysis

	ROA	GB	CAR	NPF	OER	FDR
Mean	1.1976	70.7400	21.0833	2.6940	95.3918	84.9502
Maximum	13.5800	100.0000	49.4000	17.9100	217.4000	111.7100
Minimum	-10.77	11.1100	11.5100	0.0200	58.0700	63.9400
Std. Dev.	4.2215	26.3883	7.9673	2.6739	23.2878	10.1317
Observations	45	45	45	45	45	45

Notes: ROA = Return on Assets, GB = Green Banking, CAR = Capital Adequacy Ratio, NPF = Net Performing Financing, BOPO = Biaya Operasional dan Pendapatan Operasional, FDR = Financing to Deposits Ratio.

Based on the results of the descriptive statistical test in table 2, it can be concluded that the number of research samples was 45, indicating that the lowest (minimum) value of ROA (minimum) -10.77 and the highest (maximum) value of 13,5800, for an average ROA of 1.1976 and a standard deviation of 4.2214. Then the Green Banking variable has the lowest (minimum) value of 11.11, the highest (maximum) value of 100, the average (mean) of 70.74 and the standard deviation of 26.3883. Then the CAR (Capital Adequacy Ratio) variable has the lowest (minimum) value of 11.51, the highest (maximum) value of 49.40, the mean of 21.0833 and the standard deviation of 7.9673. The NPF (Net Performing Financing) variable has the lowest (minimum) 0.0200, the highest (maximum) value of 17.9100, the average (mean obtained is 2.6940 and the standard deviation is 2.6739. Then the OER (Operating Efficiency Ratio) variable has the lowest (minimum) value of 58.0700, the highest (maximum) value of 217.4, the average (mean) of 95.3918 and the standard deviation of 23.2878. Then on the FDR (Financing to Deposit Ratio) variable, the lowest (minimum) value is 63.94, the highest (maximum) value is 111.71, the average (mean) is 84.9502 and the standard deviation is 10.317.

The following facts were discovered regarding the Islamic banking industry in Indonesia that resulted in arrests: During the research period, the financial performance of the banking industry was extremely volatile, with some banks exhibiting profitability and others

seeing performance declines. In addition, the CAR value indicates a relatively healthy level. While the NPF variable revealed a rather high value, which suggests that Islamic banking at particular banks continues to be burdened by considerable bad credit issues, The OER variable demonstrates that Islamic banking must continue to sustain operational expenses so that long-term losses do not arise. Moreover, the FDR variable demonstrates that Islamic banking can continue to optimize its financing.

Model Estimation Result

Several panel data regression test, including: Chow test, Hausman test, and Langrage multiplier test were conducted to determine which model would be most appropriate for testing the study's hypothesis. The test results indicate that the fixed effect model is the best regression model for panel data. The following are the outcomes of the panel data regression hypothesis test for the fixed effect model stated in the table under consideration.

Fixed Effect Model

$ROA_{it} = \alpha_{it} + \beta_1 GB_{it} + \beta_2 CAR_{it} + \beta_3 NPF_{it} + \beta_4 OER_{it} + \beta_5 FDR_{it} + e_{it}$

Variabel	Coefficient	t-Stat.	Prob.
C	10.69237	7.829057	0.0000
GB	-0.00604	-0.84963	0.402
CAR	-0.00687	-0.32579	0.7468
NPF	-0.18582***	-3.4689	0.0016
OER	-0.0899***	-21.0946	0.0000
FDR	0.001802	0.172228	0.8644
Adjusted R-squared			0.964943
Uji F			0.0000

Notes: ***significant at 1% significance level, **significant at 5% significance level, *significant at 10% significance level

Based on the results of the panel data regression equation above, a constant value of 10,69237 is obtained. This means that if the conditions of all independent variables are considered constant, then the resulting Return on Assets (ROA) is 10,69237. The coefficient value of the Green Banking (GB) variable in the panel data regression equation above is -0.00604 which means that if the GB variable increases by one unit, the ROA will decrease by -0.00604. The CAR regression coefficient is -0.00687, which means that if the CAR increases by one unit, the CAR decreases by 0.00687. The NPF regression coefficient is -0.00687, which means that if the NPF increases by one unit, the ROA will decrease by -0.18582. The ROA regression coefficient is -0.0899, which means that if the ROA increases by one unit, the ROA variable decreases by -0.0899. The regression coefficient for the FDR panel data is 0.001802, which means that if the FDR variable increases by one unit, the ROA increases by 0.001802.

The first hypothesis testing is that the Green Banking variable shows a probability value of 0.4020 if the value exceeds 0.05, then H_1 is rejected, it can be concluded that the Green Banking variable has no significant effect on the profitability of Islamic commercial banks in Indonesia. The second hypothesis testing is the CAR (Capital Adequacy Ratio)

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variable showing a probability value of 0.7468 meaning that the value exceeds 0.05 then H_2 is rejected, meaning that the capital adequacy variable has no significant effect on the profitability of Islamic commercial banks. The third hypothesis testing is Net Performing Financing (NPF) shows a value of 0.0016, meaning that the value is less than 0.05 with a coefficient of -0.18582 meaning that it reduces profitability, a significant negative value which results in H_3 being accepted, then it can be concluded that the NPF variable has a significant positive effect on the profitability of Islamic commercial banks. Testing the fourth hypothesis, namely OER (Operating Efficiency Ratio) with a probability value of 0.0000 less than 0.05, the value is significant with a coefficient value of -0.0899 meaning that it reduces profitability performance, so the positive value is significant, then H_4 is accepted. Then it can be concluded that the OER variable has a significant positive effect on the profitability of Islamic commercial banks. Testing the fifth hypothesis, namely the Financing to Deposit Ratio (FDR) shows a probability value of 0.8644, meaning that it exceeds 0.05, then H_5 is rejected. Then it can be seen that the liquidity ratio in banks has no significant effect on the profitability of Islamic commercial banks.

The coefficient of determination R^2 measures the ability of how much influence the dependent variable has on the independent variable. The coefficient of determination R^2 is indicated by the R-Squared value in the results of hypothesis testing in Table 3. The table shows that the adjusted r-square value in the regression model equation is 0.964943. This shows that the independent variable in this regression model can explain the dependent variable by 96.49% while the remaining 3.51% is explained by other variables not included in this study.

From table 3 above, it can be seen that the results of the F test in this study have a probability value of 0.0000 or less than the significant level = 0.05, so Ho is rejected and H_1 is accepted or there is a partial influence between the independent variable and the dependent variable.

Robustness Test

Classical assumption test is carried out so that the data used can be validated, therefore the classical assumption test is carried out consisting of normality test, multicollinearity test, heteroscedasticity test.

Classical assumption test		
	Value	Notes
Normality Test	Probability of jarque-bera > 0,05 = 0.8021 > 0.05	Data is normally distributed
Multicolinearity Test	Green banking = 1.779, CAR = 1.7987, NPF = 1.3073, BOPO = 1.6470, FDR = 1.8636	Variance Inflation factor < 10. Data avoids multicollinearity
Heteroskedasticity Test	Probability value= 0.2258 > 0,05	The data is homoscedasticity

Finding

The results of this study demonstrate that Green Banking has a negligible negative influence on the profitability of Islamic Commercial Banks (BUS), as determined by an index of multiple parameters. This study indicates that the implementation of green

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banking practices incurs a number of expenses, including as compliance fees, which will impact profitability. According to Aguilera-Caracuel and Ortiz-de-Mandojana (2013), green innovative firms are positioned in environments with tighter environmental rules and higher environmental normative levels. However, as compared to non-green innovative firms, green innovative firms do not exhibit enhanced profitability. The expansion of these facilities has a detrimental effect on profitability. This study's findings in line with those Nanda and Bihari (2012), who concluded that there is no correlation between the adoption of green banking and bank profitability in India due to a lack of bank effort in implementing green banking practices. The same conclusion was reached by Egbunike and Okoro [61], who discovered that firms' profitability is unaffected by their use of green accounting.

Companies that are proactive in addressing environmental concerns frequently have budget constraints; nonetheless, this creates opportunities that can lead to improved financial performance [62]. This study demonstrates that the use of green banking in Islamic banks has not increased firm profitability. The actual benefits of investing in greener initiatives may not be readily apparent, since managers lack the instruments to evaluate outcomes and regularly ignore lucrative economic opportunities owing to a lack of knowledge. The availability of a realistic instrument to evaluate the costs and benefits of environmental-financial performance can help managerial executives build strategies and make long-term, sustainable financial decisions (Lee et al., 2015). Managers of enterprises that pollute the environment should simultaneously redesign their green strategy. Specifically, companies should change their reactive strategies into proactive environmental decision making utilizing Porter's framework. Ultimately, the successful transformation of green policies will give a competitive advantage to businesses.

In the context of green banking, the comprehensive policy guidelines for green banking produced by Islamic Commercial Banks in Indonesia represent the importance of maintain sustainable banking practices. By regulating financial operations, the fundamental purpose of green banking policy is to conserve natural resources and ecological balance for future generations. Given that numerous factors restrain smaller banks and make them more susceptible to failure, expanding their exposure to green loans can help them diversify certain risks. The majority of the sampled banks have disclosed their green financing statistics alongside climate risk fund and employee training, consumer awareness, and green event funds. Thus, obtaining independent statistics on climate risk funds is challenging, despite the fact that few banks exist. According to the central bank's sustainable policy guidelines, banks are now required to reveal all of their previous performances, current operations, and future green initiatives through independent green banking and sustainability reporting.

As a result, it is necessary to increase the awareness among internal and external stakeholders about the importance of green banking implementation by emphasizing green banking operations in bank decisions and policies [63]. In line with the previous arguments, the

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[61] (2018)

[62] Fahad Khalid et al., "Does Corporate Green Investment Enhance Profitability? An Institutional Perspective," *Economic Research-Ekonomska Istrazivanja* 0, no. 0 (2022): 1–24, https://doi.org/10.1080/1331677X.2022.2063919.

[63] (Zhang et al. 2019)

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shift to green banking necessitates a strong and persistent commitment by banks to the "green movement" through activities that can produce events for Islamic banks and environmental preservation.

This finding suggests that, as a highly regulated business, banks will continue to adapt and attempt to meet the expectations of their stakeholders, including customers, workers, authorities, the government, the community, and other stakeholders, in order to survive. Implementing green banking requires collaboration between banks and their stakeholders to make a significant contribution to addressing climate change concerns and advancing future sustainability objectives [64]. Key bank-stakeholders will play a crucial role in promoting and achieving the successful implementation of green banking. Through meeting the expectations of its major stakeholders, including by implementing green banking, the bank may continue to survive and maintain its reputation, as well as acquire the trust and goodwill of its stakeholders.

In addition, this analysis found that only the Operating Efficiency Ratio (OER) and Non-Performing Financing (NPF) variables, as internal banking variables, significantly affected the profitability performance of Islamic commercial banks. During the study period, no significant relationship was identified between the CAR and FDR variables and the profitability of Islamic commercial banks.

As expected, the operating efficiency ratio (OER) is statistically significant in influencing the profitability of Islamic bank. Widyastuti et al. [65] similarly discovered that operating efficiency ratio had a negative impact on profitability ratio. In contrast, Widarjono [66] concluded that the link between operating efficiency ratio variables and profitability performance is positive. On the basis of these diverse findings, it may be concluded that the relationship between operating efficiency and profitability performance may be bidirectional. First, it suggests excellent expense control, which boosts performance. Second, it might be construed that the bank will incur a bigger compensation expense the more lucrative it is.

Further, Non-performing financing (NPF) variable, which assesses credit risk, has a negative link with profitability ratio according to this model. This research suggests that Islamic banks with extensive involvement in commercial activities are less prone to danger. This phenomenon conforms to Sriyana [67]. Therefore, Islamic commercial banks in Indonesia should better manage their financing to enhance their financial performance.

Conclusion

The social structure is changing dramatically on a daily basis as a result of unplanned city development, deforestation, hill tract excavation, natural disasters, and deregulation. These causes have increased stresses on a country's ecosystem, considerably impeding sustainable development. Banks should be tough in requiring borrowers to follow environmental protection standards in order for the environment to stay in a sustainable state

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[64] Dina Allam et al., "The Relationship between Green Supply Chain Management and Profitability," *OALib* 08, no. 02 (2021): 1–15, https://doi.org/10.4236/oalib.1105892.

[65] (2017)

[66] (2018)

[67] Jaka Sriyana, "Islamic Banks' Profitability amid the Competitive Financing in Indonesia," *International Journal of Applied Business and Economic Research* 13, no. 4 (2015): 1695–1710.

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and civilization to be free of environmental hazards. Green banking, as a component of Islamic banking, can play a proactive role in emerging economies to promote long-term growth.

The purpose of this study is to examine the effect of green banking implementation on Islamic bank performance. Further, this study use several internal banking indicator as control variable to get the best model in estimating the profitability performance of Islamic banks. During the research period, the study indicated that green banking disclosure had no substantial impact on the profitability of Islamic banks. As a highly regulated industry, this conclusion shows that banks will continue to adapt and strive to meet the expectations of their stakeholders, including customers, employees, authorities, the government, the community, and other stakeholders, in order to survive. Implementing green banking needs collaboration between banks and their stakeholders to address climate change issues and advance future sustainability goals. Furthermore, the need for support from regulators in formulating the standardization of green categories at the national level as well as the utilization of business opportunities in the sustainable sector.

This study has significance for the literature on green banking practices, particularly in the setting of developing countries. This conclusion demonstrates the significance of implementing green banking for environmental, social, and governance considerations in all development endeavors. Thus, green banking facilitates the mobilization of other industrial actors to engage in activities and commit resources to the implementation of network strategies for sustainable development. Concerning the transformation of a sustainable mindset, a number of obstacles must be overcome. There is a tremendous need for market transformation to increase demand for financial products services, supported by real programs, development of supporting sectors, and "green" certification. Various programs should also be carried out to increase public awareness of sustainable financial products and services.

This study has significant limitations, and it is possible that further research is required. First, because the current study is based on the implementation of green banking in several Islamic commercial banks, the sample size is relatively small. Second, this paper addresses the Handajani et al. (2019) green banking guidelines. Future research must employ different proxies, such as the Green Banking Disclosure Index (GBDI) created by Bose et al. (2017). Lastly, this study exclusively employs quantitative research methods. Therefore, future research can consider collecting deeper data from respondents.

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