



Green Strategies and Sustainable Performance: Evidence from the Banking Sector

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ABSTRACT

Corporate Social Responsibility (CSR) plays a crucial role in achieving a healthy and sustainable economy while prioritizing environmental considerations. For companies operating in the banking sector, CSR implementation is crucial, as banks play a strategic role in promoting sustainable economic development while simultaneously embracing social responsibility toward society and the environment. These efforts can be strengthened through environmental responsibility, green innovation, and green finance. This study aims to examine the influence of perceived environmental responsibility, green innovation, and green finance on corporate social responsibility and sustainable performance. This study employs a quantitative approach, with questionnaires distributed to 198 banking employees in Batam City. Data were analyzed using SmartPLS to evaluate the outer and inner models. The results demonstrate that perceived environmental responsibility, green innovation, and green finance have a significant positive effect on corporate social responsibility. Corporate social responsibility also has a significant positive effect on sustainable performance. In addition, corporate social responsibility has a significant mediating role in linking the influence of green innovation and green finance on sustainable performance, but is unable to mediate the influence of perceived environmental responsibility on sustainable performance.

Keywords: Corporate Social Responsibility, Green Finance, Green Innovation, Perceived Environmental Responsibility, Sustainable Performance

1. INTRODUCTION

In today's modern era, companies are increasingly demonstrating their responsibility in responding to social and environmental issues based on stakeholder needs [1]. In their production and operational activities, companies are highly dependent on resources to meet customer needs. This high dependence on natural resources has significant impacts, including destructive effects on the environment and negative consequences for society [2]. Therefore, companies must be responsible for maintaining the sustainability and preservation of social aspects [3]. To ensure that this form of obligation is maintained by companies, the concept of Corporate Social Responsibility (CSR) was introduced [4].

This is evident in the various companies that have implemented CSR practices. Data from the Gitnux 2025 Survey reveals that 71% of listed companies are now focused on the implementation of a long-term and comprehensive CSR strategy to support their future [5]. However, significant research questions are raised to determine whether they are truly responsible for these social and environmental actions within the context of corporate profits or for all stakeholders [6]. CSR is defined as a concept or activity carried out by a company based on its responsibility toward society and the environment [7]. In other words, corporate social responsibility is defined as an action carried out by a business that tends to contribute more to the environment, as well as to stakeholders, including the goal of gaining profits in accordance with complying with community regulations and supporting the wider community. This approach supports human development and long-term sustainability [8]. Theoretically, CSR is the core of business ethics, where companies not only have economic and legal obligations to shareholders, but also have obligations to other interested parties [9].

In this case, CSR plays an important role in realizing a healthy and clean economy, as well as prioritizing several factors related to the environment. In addition to reducing damage risk, CSR provides numerous benefits for both companies and stakeholders [10]. The benefits of CSR are as follows: (1) Increasing profitability and stronger financial performance; (2) Improving accountability, assessment, and communication of investments; (3) Encouraging employee trust, because they are cared for and appreciated; (4) Reducing community vulnerability; and (5) Improving the company's reputation and building [11].

For companies operating in the banking sector, CSR implementation is urgent [12]. As financial intermediaries, banks play a strategic role in promoting sustainable economic development while simultaneously assuming social responsibility towards society and the environment [13]. The urgency of implementing CSR in the banking sector is not only moral, but also a regulatory obligation and long-term business strategy. This is emphasized in the Sustainable Finance Roadmap policy issued by the Financial Services Authority (OJK) and regulated in POJK No. 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies. This regulation requires banks to integrate environmental, social, and governance (ESG) aspects into their operations and financing activities [14].

Beyond regulatory factors, CSR implementation also serves as a mechanism to mitigate financial and reputational risks. In the context of climate risk, banks that channel financing to projects with high environmental impacts potentially face the risk of non-performing loans and long-term asset impairments [15]. Furthermore, consistent CSR implementation will enhance reputation and public trust, which are crucial assets for the banking industry. A strong reputation enables banks to obtain a "social license to operate" from the public, strengthening customer loyalty and stakeholder relationships [16]. The implementation of CSR has a significant impact on a company's sustainable performance, including in the banking sector [17]. CSR not only focuses on social activities but also encompasses the integration of environmental, social, and governance (ESG) aspects into all business processes [18]. Through effective CSR implementation, companies can create a balance between economic goals and social responsibility and environmental preservation, which are at the core of the concept of sustainability [19]. In this regard, CSR and sustainable performance can be influenced by several factors, including perceived environmental responsibility, green innovation, and green finance.

Perceived environmental responsibility represents the extent to which an organization is aware of and committed to environmental responsibility in its operational activities [20]. This awareness can encourage companies, including banks, to implement environmentally friendly policies and business practices, which in turn strengthen CSR implementation [21]. Meanwhile, green innovation is a crucial factor because it relates to an organization's ability to create products, services, or processes that focus on resource efficiency and reduce negative environmental impacts. Green innovation not only enhances a company's image as a sustainability-minded entity but also creates long-term competitive added value [22]. Furthermore, green finance plays a significant role in supporting CSR implementation in the banking sector [23]. Through green financing policies, banks can channel funds to activities oriented towards environmental sustainability [24].

The placement of CSR as a mediating variable in this research model is based on the view that corporate social responsibility serves as a mechanism linking environmental and innovation-related factors to sustainable performance [25]. In other words, the higher the level of environmental responsibility, green innovation, and sustainable finance practices implemented by a company, the stronger its CSR implementation, which will ultimately have a positive impact on sustainable performance [26].

Recent studies have extensively examined the roles of corporate social responsibility (CSR), green innovation, green finance, and sustainable performance. Meanwhile, the existing literature tends to analyze these variables in isolation or within non-banking sectors, such as manufacturing and energy industries [27, 28, 29]. Moreover, limited attention has been given to understanding the integrative mechanism through which these variables interact, particularly the mediating role of CSR in linking sustainability-driven practices to organizational performance outcomes. In addition, empirical evidence from emerging economies, especially within the Indonesian banking sector, remains relatively scarce. This is important, as the banking industry plays a strategic role in financing sustainable development and promoting environmentally responsible practices through financial intermediation. Therefore, this study addresses these gaps by developing an integrated model that simultaneously examines perceived environmental responsibility, green innovation, and green finance on sustainable performance, with CSR as a mediating variable, within the context of banking institutions in Batam, Indonesia. By doing so, this research provides both theoretical enrichment and context-specific insights that have not been sufficiently explored in prior studies.

Based on the background described above, the researcher is interested in conducting research entitled "The Influence of Perceived Environmental Responsibility, Green Innovation, and Green Finance on Sustainable Performance Through Corporate Social Responsibility". This research contributes to the sustainable management literature by integrating perceived environmental responsibility, green innovation, and green finance within a PLS-SEM framework, with CSR as a mediating mechanism in the banking sector. Additionally, this study offers empirical evidence from an emerging economy context (Indonesia), which remains underexplored in prior research.

2. METHODS

Stakeholder theory was proposed by R. Edward Freeman in 1984 and has become one of the main theories explaining the basis for implementing Corporate Social Responsibility (CSR) in the modern business world [30]. This theory is based on the view that the sustainability of an organization is determined not only by the company's ability to generate profits for shareholders, but also by its ability to meet the interests and expectations of various parties related to the company's activities, or what are referred to as stakeholders [31]. These stakeholders include employees, customers, suppliers, investors, the community, the government, and the environment in which the company operates. According to Freeman, companies have a moral and social responsibility to pay attention to the impact of each of their business decisions on these groups, because support from stakeholders determines the company's legitimacy and long-term desirability.

In addition to stakeholder theory, this study further strengthens its theoretical foundation by incorporating several complementary perspectives, namely the Resource-Based View (RBV), Triple Bottom Line (TBL), and Legitimacy Theory. The RBV explains that organizational capabilities, such as green innovation and the effective allocation of green finance, can serve as strategic resources that enhance competitive advantage and sustainable performance [31]. Meanwhile, the TBL perspective emphasizes that organizational success should not be measured solely by financial performance but also by environmental and social outcomes, which are closely aligned with the role of CSR in achieving sustainability goals [34]. Furthermore, legitimacy theory highlights that organizations seek to align their activities with societal expectations, where CSR serves as a key mechanism to maintain legitimacy and public trust, particularly in environmentally sensitive contexts.

In the context of this research, those theories serve as a foundational framework because they explain the relationship between perceived environmental responsibility, green innovation, and green finance with the implementation of CSR and its impact on sustainable performance. From this theoretical perspective, CSR activities are seen as a form of corporate responsibility in meeting the social and environmental expectations of stakeholders [32]. When companies demonstrate a commitment to environmental protection, sustainable innovation, and green finance, they not only maintain public trust but also strengthen their reputation and sustainable performance. Sustainable performance is a concept that describes a company's ability to achieve sustainable performance by harmoniously balancing economic, social, and environmental aspects. Unlike conventional performance that focuses solely on achieving financial profits, sustainable performance emphasizes long-term goals through social responsibility and environmental awareness [28]. This concept is applied to the Triple Bottom Line approach proposed by John Elkington, which explicitly states that a company's success is measured not only by its profit aspect (profit), but also by its contribution to people (society) and the planet (environment). Thus, a company with good sustainable performance can create economic value without neglecting social welfare and environmental sustainability [33].

Perceived environmental responsibility reflects the extent to which a company is aware of and responsible for the environmental impacts of its activities [6]. Based on the stakeholder and legitimacy perspective, such awareness creates pressure and motivation for firms to align their activities with societal expectations. Companies that perceive higher environmental responsibility are more likely to institutionalize this awareness into structured organizational practices, particularly through CSR initiatives [16]. This occurs because CSR provides a formal mechanism to translate environmental concern into visible and accountable actions, such as environmental protection programs and community engagement [31]. Therefore, perceived environmental responsibility is not merely a cognitive attitude but functions as a driver that shapes organizational behavior toward CSR implementation [32].

Innovation represents a company's ability to develop environmentally friendly products, processes, and technologies to reduce negative impacts on ecosystems [9]. From the Resource-Based View (RBV), green innovation can be seen as a valuable and rare capability that enhances both environmental and organizational performance [23]. Conceptually, firms that invest in green innovation tend to integrate sustainability into their core operations, which naturally aligns with CSR principles [34]. In this context, CSR acts as an extension of innovation outcomes, ensuring that the benefits of innovation are distributed not only economically but also socially and environmentally [36]. Hence, green innovation strengthens CSR implementation by embedding sustainability into the firm's strategic and operational activities [35]. On the other hand, green finance reflects the alignment of financial decision-making with environmental objectives [34]. Based on the TBL perspective, financial resources should be allocated in ways that generate economic, environmental, and social value simultaneously [24]. The availability and use of green finance encourage firms to invest in sustainable projects, which in turn require accountability and transparency, which are the key elements of CSR [2]. Consequently, CSR becomes a governance mechanism that ensures green financial investments are implemented responsibly and generate broader societal benefits [37]. This indicates that green finance plays a critical role in reinforcing CSR practices within organizations [10].

Corporate social responsibility itself serves as a strategic mechanism that links organizational activities with sustainable performance outcomes [6]. Through CSR, firms are able to balance economic goals with environmental stewardship and social responsibility, which are the core dimensions of sustainable performance [38]. CSR enhances stakeholder trust, improves corporate reputation, and increases operational efficiency, all of which contribute to long-term sustainability [29]. Therefore, CSR is not only an outcome of sustainability-driven practices but also a driver of improved sustainable performance [20]. From a mediating perspective, CSR functions as a transformation mechanism that converts sustainability-oriented inputs into performance outcomes [16]. In the relationship between perceived environmental responsibility and sustainable performance, CSR plays a role in translating environmental awareness into concrete actions [6]. However, this relationship depends on the extent to which environmental perceptions are effectively institutionalized into CSR practices [41]. Without strong implementation, environmental awareness alone may not be sufficient to produce measurable performance outcomes [8].

Similarly, in the relationship between green innovation and sustainable performance, CSR acts as a channel through which innovation outcomes are operationalized into socially and environmentally beneficial activities [22]. Green innovation provides the technical and strategic foundation, while CSR ensures that these innovations are implemented in ways that enhance stakeholder value and sustainability performance [33]. In the context of green finance, CSR also serves as a bridging mechanism that connects financial decisions with sustainability outcomes [24]. Green finance provides the necessary resources, while CSR ensures that these resources are utilized in a manner that supports environmental protection and social welfare. This interaction highlights the integrative

role of CSR in aligning financial strategies with sustainable performance objectives. The research model is presented in Figure 1 as follows:

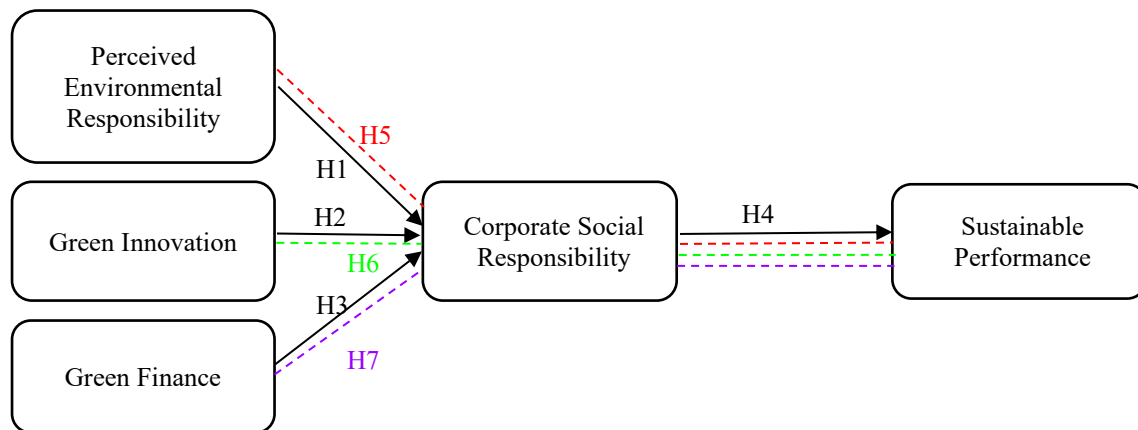


Figure 1. Research Model
Source: Researcher's Thought, 2026

H1: Perceived Environmental Responsibility has a significant effect on Corporate Social Responsibility.

H2: Green Innovation has a significant effect on Corporate Social Responsibility.

H3: Green Finance has a significant effect on Corporate Social Responsibility.

H4: Corporate Social Responsibility has a significant effect on Sustainable Performance.

H5: Corporate Social Responsibility mediates the relationship between Perceived Environmental Responsibility and Sustainable Performance.

H6: Corporate Social Responsibility mediates the relationship between Green Innovation and Sustainable Performance.

H7: Corporate Social Responsibility mediates the relationship between Green Finance and Sustainable Performance.

Basically, research design is a stage that will be taken in a study, which is managed concisely and orderly to obtain accurate data results. Based on the objectives of this study, this study is classified as basic research to test the truth of a theory raised, which is in accordance with the field of study within the academic scope of knowledge. This study uses a causal research design to examine the relationships between independent variables, the mediating variable, and the dependent variable. Specifically, the purpose of this study is to analyze the relationship between the effect of perceived environmental responsibility, green innovation, and green finance on sustainable performance through the mediation of corporate social responsibility, by taking evidence from banking employees in Batam.

The research object consists of banking companies in Batam City. The selected population was all employees from all banking sector companies in Batam City. Considering the exact number of the employee population was unknown, the researcher conducted a preliminary analysis using G-Power software. In this context, the researcher tested the minimum sample size in multiple linear regression analysis with the number of predictor variables 5, effect size 0.15, significance 0.05, and statistical power of 0.95, so that the minimum sample size was 138. The sampling approach used non-probability sampling with its specifications in the form of purposive sampling. The technique refers to an approach to collecting samples based on specific criteria and conditions determined by the researcher. The inclusion criteria required respondents to have an understanding of corporate social responsibility (CSR), green finance, and sustainability-related practices within their organizations, as well as a minimum working experience to ensure familiarity with organizational policies and procedures. Data were collected through a structured questionnaire distributed both online and offline to facilitate wider reach and higher response rates. The distribution process was conducted over a specified period, resulting in 198 valid responses that were deemed suitable for analysis. The adequacy of the sample size is justified based on PLS-SEM requirements, which emphasize its suitability for relatively small to medium sample sizes and complex models. With 198 respondents, the sample exceeds the minimum threshold recommended for PLS-SEM analysis, ensuring sufficient statistical power and reliability for hypothesis testing.

In order to facilitate this research, the researcher utilized operationalizations obtained from previous research publications. All variables were measured using multi-item constructs, measured on a 5-point Likert scale with the following ratings: (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; and (5) strongly agree. In this section, the questionnaire questions were structured in alignment with all research variables, including sustainable performance, corporate social responsibility, perceived environmental responsibility, green innovation, and green finance. A dependent variable is a variable whose existence is influenced by independent variables. In this study, the dependent variable is sustainable performance. Sustainable performance is a concept that reflects a company's ability to achieve sustainable performance by harmoniously balancing economic, social, and environmental aspect. The operational definition of the dependent variable for this study is presented in Table 1.

Table 1. Operational Definition of Dependent Variable

No	Question
1	The implementation of green banking practices has contributed significantly to increasing our bank's revenue and market share.
2	The implementation of green banking practices has helped our bank reduce operational costs.
3	The implementation of green banking practices has increased the efficiency of resource management at our bank.
4	Environmental standards and principles influence our bank's green financing policies and implementation.
5	The implementation of green banking practices has reduced our bank's energy consumption.
6	The implementation of green banking practices has reduced the use of paper and other materials in our bank's operations.
7	Our bank's image and reputation have been enhanced through the implementation of green financing policies.
8	The implementation of green banking practices has increased shareholder and stakeholder trust in our bank.
9	Enhanced environmental responsibility and compliance with social norms and regulations are important aspects of our bank's green banking implementation.

Source: Liu et al. (2023)

An independent variable is defined as a variable characterized by its ability to influence the dependent variable. This study used perceived environmental responsibility, green innovation, and green finance as independent variables. Perceived Environmental Responsibility (PER) is a concept that represents the extent to which a company is aware of and responsible for the environmental impacts of its activities. This awareness drives companies to commit to preserving nature through sustainable business practices. Green innovation is defined as a form of innovation focused on developing environmentally friendly products, processes, and technologies to reduce negative impacts on ecosystems. The implementation of GI helps companies improve resource efficiency, reduce emissions, and create added value for society and the environment. Green finance refers to a financing concept that integrates environmental aspects into financial activities, such as investment in environmentally friendly projects, energy efficiency, and sustainable resource management. The implementation of green finance can encourage companies to carry out social and environmental responsibilities through financial policies that support sustainability. The operational definition for the third independent variable is presented in Table 2:

Table 2. Operational Definition of Independent Variables

No	Question
Perceived Environmental Responsibility	
1	Awareness of environmental protection starts with me.
2	Environmental protection is my responsibility.
3	I have cultivated environmental awareness since I was a child.
4	Protecting the environment in my country is my responsibility.
Green Innovation	
1	Our bank chooses lenders that can effectively reduce emissions of hazardous substances or waste.
2	Our bank chooses lenders that can recycle waste and process emissions and waste for reuse.
3	Our bank can effectively reduce air and electricity consumption and improve the efficiency of operational procedures.
4	Our bank can effectively reduce paper and electric light usage.
Green Finance	
1	Our bank is increasing the amount of funds invested in environmental protection projects.
2	Our bank is allocating more resources to refinanceable and secured loan products.
3	Our bank is increasing investment in waste management and green manufacturing projects for businesses.
4	Our bank is increasing investment in energy efficiency projects for businesses.
5	Our bank has increased its investment in the green industry sector.
6	Our bank is increasing its investment in green marketing activities.

Source: Liu et al. (2023)

A mediating variable is a type of variable that bridges the influence of the independent variable on the dependent variable. The mediating variable used is corporate social responsibility. Corporate social responsibility represents a form of action or concept carried out by a company based on its capabilities as a form of responsibility towards the social/environmental environment around the company's location. It is also characterized as a series of actions carried out by businesses that tend to contribute more to the environment, society, and stakeholders, including the goal of obtaining profits in accordance with legal regulations and supporting the wider community for development and humanit. Operational definitions for the mediating variables are stated in Table 3:

Table 3. Operational Definition of Mediating Variable

No	Question
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-
- 1 Our bank is actively involved in community development activities.
 - 2 Our bank prioritizes ethical practices in its operations and decision-making.
 - 3 Our bank supports environmental protection through specific CSR activities.
 - 4 Our bank contributes to social welfare by supporting education, healthcare, and similar activities.
-

Source: Soomro et al. (2024)

The data collection technique used in this study was a questionnaire. The questionnaire contained closed-ended questions. Each question was presented using a Likert scale ranging from 1 to 5, specifically from "Strongly Disagree" to "Strongly Agree." The data obtained was then explained descriptively and based on the causal relationships they generated. This was accomplished using descriptive and quantitative analysis procedures. The measurement items used in this study were adapted from established scales in prior research to ensure reliability and validity. Meanwhile, several modifications were made to align the items with the specific context of the banking sector in Batam City. These adaptations primarily involved rephrasing certain statements to reflect banking operations, financial services, and sustainability-related practices relevant to the respondents' work environment. To ensure content validity and clarity, a pre-test (pilot test) was conducted with a small group of respondents who met the study criteria. The purpose of this pre-test was to evaluate the comprehensibility, relevance, and wording of the questionnaire items. Feedback obtained from the pilot test was used to refine ambiguous or unclear statements before the full-scale data collection was conducted. This process ensured that the final instrument was both contextually appropriate and capable of accurately capturing the constructs under investigation.

Descriptive statistical analysis is also intended to represent the data description, as measured by its mean, standard deviation, minimum-maximum, range, kurtosis, and so on [34]. The average was measured by identifying the mean of the data, followed by its standard deviation to measure the variance of the data, followed by the maximum value representing the largest data, and the minimum value representing the smallest data. Meanwhile, quantitative analysis was conducted using a program called PLS-SEM. The model is considered capable of identifying, observing, and forming a complete structural model. Meanwhile, PLS is intended as a model that also includes assumptions about research data that are free from distribution, thus excluding distribution magnitudes [35]. In this context, the outer model and inner model tests are applied. The outer model test includes validity and reliability tests. Meanwhile, the inner model test aims to identify the relationships formed between variables, namely through testing the path coefficients and indirect effects. Besides, the researcher also performed additional model assessment indicators to enhance methodological transparency. In this case, to perform common method bias analysis, a full collinearity VIF technique is applied. If all VIF values are <5, the model can be concluded to be free from common method bias. The results are presented in Table 4 as follows:

Table 4. Common Method Bias Analysis

	VIF
CSR1	2.309
CSR2	2.307
CSR3	1.858
CSR4	1.642
GF1	2.111
GF2	2.886
GF3	3.615
GF4	3.719
GF5	3.814
GF6	2.784
GI1	1.960
GI2	1.640
GI3	1.863
GI4	1.784
PER1	1.956
PER2	2.233
PER3	1.887
PER4	1.672
SP1	3.049
SP2	2.760
SP3	4.274
SP4	2.731
SP5	3.436
SP6	1.928
SP7	2.126

SP8	3.301
SP9	3.327

Source: Soomro et al., 2024.

In accordance with the results presented in Table 4, it can be interpreted that all indicator items have a VIF value < 5 , indicating that the model does not experience common method bias. Furthermore, model fit was also evaluated using several commonly recommended indices in PLS-SEM, including the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI), to assess the overall goodness of fit of the model. These additional assessments complement the evaluation of R-square (R^2), Q-square (Q^2), and f-square (f^2), providing a more comprehensive understanding of the model's explanatory power, predictive relevance, and effect size. Overall, these measures ensure that the proposed model meets the necessary criteria for validity, reliability, and robustness in PLS-SEM analysis.

3. RESULT AND DISCUSSION

3.1 Respondent Characteristics

The researcher successfully distributed questionnaires to 198 respondents in less than four months, specifically from October 10, 2025, to February 1, 2026. The entire sample was valid and usable for further analysis. Data obtained from the 198 respondents were then classified based on gender, age, bank where the respondents worked, work position, and working years. This is explained in Table 5 below:

Table 5. Respondent's Demographic Analysis

Criteria	Category	Frequency	Percentage
Gender	Male	85	42.9%
	Female	113	57.1%
	Total	198	100.0%
Age	18-23	63	31.8%
	24-29	37	18.7%
	30-35	33	16.7%
	36-41	27	13.6%
	42-47	24	12.1%
	>48	15	7.6%
	Total	198	100.0%
Bank where the respondents worked	Bank Central Asia (BCA)	55	27.1%
	BPR Dana Nusantara (Danus)	16	7.9%
	Bank Jatim	16	7.9%
	BPR Danamas	15	7.4%
	Bank Rakyat Indonesia (BRI)	14	6.9%
	Bank Danamon	12	5.9%
	Bank Mandiri	11	5.4%
	Bank Syariah Indonesia (BSI)	11	5.4%
	Bank Panin	10	4.9%
	Bank UOB	7	3.4%
	BPR Sejahtera Batam	6	3.0%
	BPR Dana Central Mulia	6	3.0%
	Bank OCBC	6	3.0%
	BPR	3	1.5%
	BPR Dana Mitra Utama	2	1.0%
	BPR Majesty Golden Raya	2	1.0%
	Bank Sinarmas	1	0.5%
	Bank Permata	1	0.5%
	BPR Dana Nagoya	1	0.5%
	Bank Riau Kepri	1	0.5%
Bank Syarikat Madani	1	0.5%	
BPR Kepri Batam	1	0.5%	
Total	198	100.0%	
Work position	Teller	19	9.6%
	Customer Service	18	9.1%
	Funding Officer	15	7.6%
	Marketing Officer	13	6.6%
	Operational SPV	12	12.0%
	Credit Analyst Senior	9	4.5%
	Compliance Officer	9	4.5%
	Credit Analyst Junior	8	4.0%
	BO Junior	8	4.0%

	Risk Officer / Risk Management Officer	8	4.0%
	Sub Branch Manager	7	3.5%
	Account Officer	7	3.5%
	Credit Admin	7	3.5%
	Relationship Manager (RM)	7	3.5%
	Marketing Manager	6	3.0%
	Internal Audit	6	3.0%
	Funding Manager	5	2.5%
	Area / Regional Manager	4	2.0%
	Treasury Officer Senior	4	2.0%
	Legal Officer Senior	4	2.0%
	Frontliner / Front Office	4	2.0%
	Branch Manager	4	2.0%
	Marketing Junior	4	2.0%
	BO Staff / BO Senior	4	2.0%
	HC Manager / HR	3	1.5%
	Relationship Officer (RO)	3	1.5%
	Team Leader of Credit / Marketing	3	1.5%
	Senior Customer Service	2	1.0%
	Senior Teller	2	1.0%
	Branch Operation Supervisor	2	1.0%
	Director	2	1.0%
	Bank Admin	1	0.5%
	Taxation	1	0.5%
	General Staff	1	0.5%
	Total	198	100.0%
Working years	< 1 year	29	14.6%
	1–3 years	48	24.2%
	4–6 years	41	20.7%
	7–10 years	38	19.2%
	> 10 years	43	21.7%
	Total	198	100.0%

Source: Primary data processed by the researcher, 2026

Based on Table 5, the results show that the majority of respondents were female, with a proportion of 113 (57.1%). Meanwhile, 85 (42.9%) were male. Regarding age, the largest group of respondents was in the 18-23 age group, comprising 63 (31.8%). This was followed by the 24-29 age group (37) (18.7%), 30-35 (33) (16.7%), 36-41 (27) (13.6%), 42-47 (24) (12.1%), and 15 (7.6%) over 48 years old. Regarding the bank where the respondents worked, it can be stated that the majority of respondents worked at Bank Central Asia (BCA), comprising 55 (27.1%). This was followed by BPR Dana Nusantara and Bank Jatim with 16 respondents (7.9%) each, and BPR Danamas with 15 respondents (7.4%). Furthermore, respondents also came from several other banks, including Bank Rakyat Indonesia (14 respondents, 6.9%), Bank Danamon (12 respondents, 5.9%), Bank Mandiri and Bank Syariah Indonesia (11 respondents each, 5.4%), and Bank Panin (10 respondents, 4.9%). Other respondents came from various other banks, but in relatively smaller numbers.

Furthermore, based on respondents' work position, the most common position was teller, with 19 respondents (9.6%), followed by customer service with 18 respondents (9.1%), and fund officer with 15 respondents (7.6%). Furthermore, there were 13 respondents (6.6%) who held marketing positions, as well as several other positions such as operational supervisor, senior credit analysts, compliance officers, and various other operational and managerial positions in the banking sector. According to the working years, the majority of respondents (48 respondents) had worked for 1–3 years. This was followed by 43 respondents (21.7%) with more than 10 years of service, and 41 respondents (20.7%) with 4–6 years of service. 38 respondents (19.2%) had worked for 7–10 years, while 29 respondents (14.6%) had worked for less than 1 year. This indicates that the respondents in this study had a fairly diverse range of work experience.

As the initial step in quantitative analysis, the researcher conducted validity tests. One of these tests is convergent validity, measured by the outer loading factor parameters and the Average Variance Extracted (AVE). Outer loading reflects the measurement mechanism of the factor loads reflected in each variable indicator. Its value can be an indication of the validation of the questionnaire items, with the criterion being that an item is considered valid if its outer loading is above 0.6 [16]. Furthermore, AVE reflects the extent to which a latent variable is able to explain the variance of its constituent indicators. A question item is considered valid if it produces an AVE value above 0.5. The test results are further explained in Table 6 as follows:

Table 6. Convergent Validity Testing

	Outer Loading	AVE	Result
CSR1	0.862		
CSR2	0.858		
CSR3	0.830	0.681	Valid
CSR4	0.745		
GF1	0.769		
GF2	0.846		
GF3	0.871		
GF4	0.879	0.720	Valid
GF5	0.893		
GF6	0.826		
GI1	0.831		
GI2	0.782		
GI3	0.824	0.666	Valid
GI4	0.828		
PER1	0.799		
PER2	0.847		
PER3	0.783	0.677	Valid
PER4	0.860		
SP1	0.759		
SP2	0.767		
SP3	0.820		
SP4	0.807		
SP5	0.816	0.607	Valid
SP6	0.706		
SP7	0.717		
SP8	0.836		
SP9	0.771		

Source: Primary data processed by the researcher, 2026

Based on Table 6 above, it can be inferred that all of the measurement items have fulfilled the convergent validity criteria. In other words, the convergent validity specifications can be determined. Next, the researchers conducted a reliability test to assess the consistency of the measuring instrument, determining whether it maintained reliability. Reliability testing was conducted using Cronbach's Alpha and Composite Reliability, with the criteria that an instrument is considered reliable if the Cronbach's Alpha value is ≥ 0.6 and the Composite Reliability value is ≥ 0.7 . The results are presented in Table 7:

Table 7. Reliability Testing

	Cronbach's Alpha	Composite Reliability	Result
Corporate Social Responsibility	0.843	0.853	Reliable
Green Finance	0.922	0.927	Reliable
Green Innovation	0.833	0.836	Reliable
Perceived Environmental Responsibility	0.847	0.921	Reliable
Sustainable Performance	0.919	0.924	Reliable

Source: Primary data processed by the researcher, 2026

Based on Table 7 above, it can be stated that all variables have met the reliability requirements. Furthermore, the researcher also conducted a discriminant validity test. One testing technique is the Fornell-Larcker criterion, which indicates that the square root of the AVE value for each construct must be greater than the correlation of that construct with other constructs in the model. Under certain conditions, if the AVE value is higher than the correlation value between constructs, then discriminant validity can be declared adequate. The test results are presented in Table 8:

Table 8. Fornell-Larcker Criterion Testing

	CSR	GF	GI	PER	SP
CSR	0.825				
GF	0.596	0.848			
GI	0.505	0.477	0.816		
PER	0.292	0.260	0.073	0.823	
SP	0.565	0.647	0.589	0.141	0.779

Source: Primary data processed by the researcher, 2026

Based on Table 8, the results show that the square root of the AVE for each construct is greater than its correlations with other constructs, indicating adequate discriminant validity. Therefore, the Fornell–Larcker criterion has been satisfied. Researchers also conducted an additional test for discriminant validity, called the heterotrait-monotrait ratio (HTMT). HTMT is intended to measure the correlation ratio between indicators of different constructs (heterotrait) against the correlation of indicators within the same construct (monotrait). If the HTMT value obtained is <0.9, it indicates that the questionnaire item is discriminant valid [28]. The results are presented in Table 9:

Table 9. Heterotrait-Monotrait Testing

	CSR	GF	GI	PER	SP
CSR					
GF	0.663				
GI	0.605	0.545			
PER	0.337	0.291	0.081		
SP	0.625	0.690	0.663	0.164	

Source: Primary data processed by the researcher, 2026

Based on the results in Table 9, it can be concluded that all constructs have met the HTMT criteria. In addition to testing the outer model, the researchers also ran an inner model, the modeling of which is presented in Figure 2:

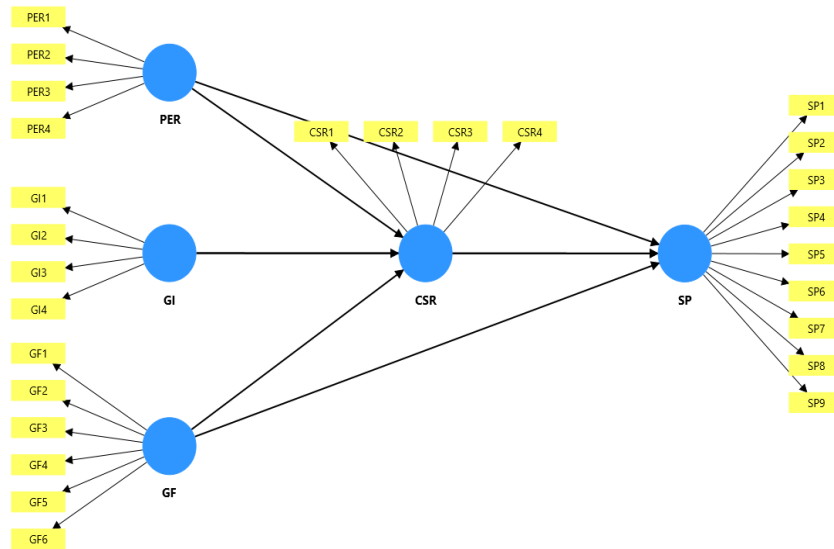


Figure 2. Structural Model

Source: SMARTPLS Output, 2026

In order to test the structural model without mediating variables, a path coefficient analysis was conducted. This test aims to determine the extent to which the independent variables directly influence the dependent variable. The significance level used was 0.05, so a relationship is considered significant if the p-value is <0.05 and the t-statistic exceeds the t-table value of 1.96 [28]. The results of the path coefficient test are presented in Table 10 as follows:

Table 10. Path Coefficients Testing

Relationship	Original Sample	T-Statistics	P-Values	Result	Hypothesis
PER -> CSR	0.163	2.728	0.006	Significant-Positive	H ₁ accepted
GI -> CSR	0.296	4.248	0.000	Significant-Positive	H ₂ accepted
GF -> CSR	0.412	4.383	0.000	Significant-Positive	H ₃ accepted
CSR -> SP	0.182	2.538	0.011	Significant-Positive	H ₄ accepted

Source: Primary data processed by the researcher, 2026

As shown in Table 10, the results show that perceived environmental responsibility has a significant positive effect on corporate social responsibility, as evidenced by the original sample value of 0.163, T-Statistic of 2.728, and P-Value of

0.006. Therefore, H1 is accepted. This finding supports the results of previous studies, which stated that companies with perceived environmental responsibility tend to be more active in implementing CSR, especially in environmental aspects such as waste management, energy efficiency, and natural resource conservation. With increasing environmental awareness, companies not only fulfill moral and legal obligations but also strengthen their positive image and gain support from stakeholders [36]. This result is also in line with previous findings that the perceived environmental responsibility has a positive influence on CSR implementation, considering that environmental responsibility is the basis of sustainable social actio. From a legitimacy and stakeholder perspective, banks that recognize their environmental impact are more likely to formalize this awareness into CSR initiatives to maintain public trust and align with stakeholder expectations. In the banking context, this may be reflected in policies such as green lending criteria, internal environmental programs, and community-based environmental initiatives. This finding confirms that environmental responsibility is not merely symbolic but can drive institutionalized CSR practices.

Furthermore, green innovation also has a significant positive impact on corporate social responsibility, as evidenced by the original sample value of 0.296, T-Statistic of 4.248, and P-value of 0.000. Therefore, H2 is accepted. This finding supports the previous research results that the implementation of green innovation helps companies improve resource efficiency, reduce emissions, and create added value for society and the environment. Green innovation is in line with CSR principles, such as the emphasis on social and environmental responsibility in business activities. This result also supports previous findings that companies that are always oriented towards green innovation usually have a high commitment to CSR because both aim to support sustainable development. From the Resource-Based View (RBV), green innovation can be seen as a strategic capability that enables firms to create value while addressing environmental challenges. In practice, banks that adopt digital financial solutions, paperless systems, or environmentally friendly financial products are more likely to embed these initiatives within CSR frameworks. This indicates that innovation not only improves operational efficiency but also strengthens a bank's commitment to social and environmental responsibility.

Green finance also has a significant positive effect on corporate social responsibility, as evidenced by the original sample value of 0.412, T-Statistic of 4.383, and P-value of 0.000. Therefore, H3 is accepted. This finding supports the research results that the implementation of green finance can encourage companies to carry out social and environmental responsibilities through financial policies that support sustainability. This is in line with the principle of CSR, which requires companies not only to be oriented towards economic profits but also to pay attention to the social and ecological impacts of their business activities [37]. Therefore, the higher the implementation of green finance in a company, the stronger the company's commitment to implementing CSR as a form of responsibility towards the environment and society. In the Indonesian banking context, where regulatory pressure and sustainability reporting are increasing, green finance can act as a catalyst for more structured and impactful CSR programs.

In addition, corporate social responsibility has a significant positive effect on sustainable performance, as evidenced by the original sample value of 0.182, T-Statistic of 2.538, and P-Values of 0.011. Therefore, H4 is accepted. CSR strengthens stakeholder relationships and enhances long-term sustainability performance. Furthermore, CSR also encourages sustainable business practices, such as waste management, energy efficiency, and employee welfare, which overall contribute to improved sustainable performance. This also supports previous findings that the higher a company's commitment to CSR, the better the desired performance the company can achieve. This supports the Triple Bottom Line perspective, where CSR contributes to balancing economic, environmental, and social performance. In banking institutions, effective CSR implementation can enhance corporate reputation, strengthen stakeholder relationships, and improve long-term financial stability. This implies that CSR should not be viewed as a cost center, but rather as a value-generating strategy that supports sustainable growth. In order to test the hypothesis that involves a mediating variable, indirect effect testing is performed. This test aims to assess the extent to which a variable mediates the relationship between the independent and dependent variables. The results are presented in Table 11.

Table 11. Indirect Effect Testing

Relationship	Original Sample	T-Statistics	P-Values	Result	Hypothesis
PER -> CSR -> SP	0.030	1.782	0.075	Insignificant	H ₅ rejected
GI -> CSR -> SP	0.054	2.019	0.044	Significant-Positive	H ₆ accepted
GF -> CSR -> SP	0.075	2.281	0.023	Significant-Positive	H ₇ accepted

Source: Primary data processed by the researcher, 2026

Based on the results presented in Table 11, the results show that corporate social responsibility has a positive but insignificant mediating effect on the relationship between perceived environmental responsibility and sustainable performance. This is evidenced by the original sample value of 0.030, the T-Statistic of 1.782, and the P-Value of 0.075. Therefore, hypothesis H5 is rejected. One possible explanation lies in the indirect and perception-based nature of perceived environmental responsibility. While employees or organizations may demonstrate a high level of environmental awareness, such perceptions do not always translate into concrete and structured CSR initiatives that directly impact sustainable performance. From a contextual perspective, this result may reflect the characteristics of the banking sector, where environmental responsibility is often less operationally embedded compared to manufacturing or resource-based industries. In banking institutions, environmental initiatives tend to be implemented through policies or financing decisions rather than direct environmental actions, which may weaken the observable linkage between perceived responsibility, CSR activities, and performance outcomes.

This result challenges prior studies and highlights a potential gap between environmental intention and actual organizational impact. Specifically, it is not in accordance with research findings, which revealed that when a company has high awareness and responsibility for the environment, it will encourage the implementation of more effective and well-designed CSR programs. These findings are unable to prove that CSR can be a means for companies to translate these environmental commitments into concrete actions, such as efficient resource management, pollution reduction, and community empowerment. Furthermore, this study also does not support the findings of previous studies, which stated that through good CSR implementation, the positive impact of perceived environmental responsibility can be optimized, thereby contributing directly to improving sustainable performance [38].

Furthermore, corporate social responsibility is also indicated to have a significant positive mediating effect on the relationship between eco-friendly innovation and sustainable performance. This is evidenced by the original sample value of 0.054, the T-Statistic of 2.019, and the P-Value of 0.044. Therefore, hypothesis H6 is accepted. This finding aligns with the research findings, which stated that through CSR, the results of green innovation can be translated into concrete initiatives that support sustainability, such as energy efficiency, waste reduction, and improving community welfare [39]. With CSR as a link, green innovation not only provides operational benefits but also contributes to improving overall sustainable performance. This result is also in line with previous findings that state that CSR strengthens the positive effect of green innovation on the construction of corporate performance sustainability [7].

Corporate social responsibility also exhibits a significant positive mediating effect on the relationship between green finance and sustainable performance. This is evidenced by the original sample value of 0.075, the T-Statistic of 2.281, and the P-Value of 0.023. Therefore, hypothesis H7 is accepted. This finding aligns with previous research suggesting that the implementation of green finance enables companies to channel financing and investment into environmentally friendly and sustainable projects [7]. Through CSR, these green finance policies can be realized in the form of social programs and activities that support community welfare and environmental conservation [11]. This finding also supports previous research that the stronger the CSR implementation, the higher the level of sustainable performance achieved by the company [35].

After conducting the direct-indirect effect test, the model fit was further assessed to assess the extent to which the research model accurately represents the relationships between the variables studied. One indicator used is the Standardized Root Mean Square Residual (SRMR), which measures the fit between the measured correlation matrix and the correlation matrix predicted by the model [19]. A research model is considered to have a good fit if the SRMR value is <0.08. Furthermore, model fit can be assessed using the Normed Fit Index (NFI), which indicates the level of fit of the proposed model compared to the baseline model. The closer the value is to 1, the better the model's fit [16].

As a further analysis, the researchers also conducted a Goodness of Fit Index (GoF) test. GoF describes the degree of agreement between the designed theoretical model and the observed covariance matrix. Its value is classified based on the level of agreement: low if it exceeds 0.10, moderate if it exceeds 0.25, and high if it exceeds 0.36 [14]. The results are presented as follows:

$$GoF\ Index = \sqrt{Average\ AVE \times Average\ R^2}$$

$$Average\ AVE = \frac{0.681+0.720+0.666+0.677+0.607}{5} = 0.6702$$

$$Average\ R^2 = \frac{0.442+0.538}{2} = 0.49$$

$$GoF\ Index = \sqrt{0,6702 \times 0.49}$$

$$GoF\ Index = 0.573$$

Based on these calculations, the GoF index value was 0.573, indicating that the structural model is of high quality. The structural model was further evaluated using R-square (R^2) to determine the ability of the independent variables to explain the dependent variable in the research model. The closer the value is to 1, the greater the ability of the independent variables to explain the dependent variable [28]. Furthermore, Q-square (Q^2) was used to assess the predictive relevance of the model, where the model is considered to have good predictive ability if $Q^2 > 0$ [16]. Another test, F-square (f^2), aims to determine the magnitude of the influence of exogenous variables on endogenous variables. The f^2 value is divided into small effects (≥ 0.02), medium effects (> 0.15), and large effects (> 0.35) [14]. The results of the model fit test are presented in Table 12.

Table 12. Model Fit Testing

	Saturated Model
Standardized Root Mean Square Residual (SRMR)	0.074
Normed Fit Index (NFI)	0.749
Goodness of Fit Index (GoF)	0.573
R Square (R^2)	
Corporate Social Responsibility	0.442
Sustainable Performance	0.538
Q Square (Q^2)	
Corporate Social Responsibility	0.433
Sustainable Performance	0.516

	CSR -> SP	0.040
	GF -> CSR	0.220
F Square (f^2)	GF -> SP	0.207
	GI -> CSR	0.121
	GI -> SP	0.141
	PER -> CSR	0.044
	PER -> SP	0.003

Source: Primary data processed by the researcher, 2026

Based on the test results in Table 12, the Standardized Root Mean Square Residual (SRMR) value can be interpreted as 0.074. This value is below the 0.08 criterion limit, indicating that the research model has a good level of fit between the measured correlation matrix and the predicted correlation matrix. Furthermore, the Normed Fit Index (NFI) value of 0.749 indicates that the constructed model has a fairly good level of fit with the baseline model, although it does not approach the ideal value of 1. Furthermore, the Goodness of Fit (GoF) value of 0.573 indicates that the research model has a good level of suitability in explaining the relationships between variables in the research model.

3.2 Discussion

The results of the structural model evaluation indicate that the R^2 value for the corporate social responsibility variable is 0.442, meaning that 44.2% of the variation in corporate social responsibility can be explained by green finance, green innovation, and perceived environmental responsibility, while the remaining 55.8% is explained by other variables outside the research model. Meanwhile, the R-Square value for the sustainable performance variable is 0.538, which indicates that 53.8% of the variation in sustainable performance can be explained by the variables of green finance, green innovation, perceived environmental responsibility, and corporate social responsibility, while the remaining 46.2% is influenced by other factors not examined in this study.

Additionally, the Q^2 value for the corporate social responsibility variable is 0.433, and for the sustainable performance variable is 0.516. Both values are greater than 0, indicating that the research model has good predictive ability in explaining the relationship between the variables studied. The results of the f^2 test show that the level of effect varies from small to medium. More specifically, the influence of corporate social responsibility, green innovation, and perceived environmental responsibility on sustainable performance is relatively small. The influence of green innovation and perceived environmental responsibility on sustainable performance is also relatively small. Meanwhile, the effect of green finance on corporate social responsibility and sustainable performance is classified as moderate.

4. CONCLUSION

This study investigates the influence of perceived environmental responsibility, green innovation, and green finance on sustainable performance through corporate social responsibility (CSR) among 198 banking employees in Batam City. The results indicate that perceived environmental responsibility, green innovation, and green finance have significant positive effects on CSR. Furthermore, CSR has a significant positive effect on sustainable performance and plays a mediating role in linking green innovation and green finance to sustainable performance. However, CSR does not mediate the relationship between perceived environmental responsibility and sustainable performance, suggesting that environmental awareness alone is insufficient without concrete implementation. This study contributes to the literature by offering an integrated understanding of the relationships among perceived environmental responsibility, green innovation, green finance, CSR, and sustainable performance, particularly within the banking sector in an emerging market context. It also highlights that the mediating role of CSR is context-dependent, effectively translating innovation and financial initiatives into sustainability outcomes, but less effective in bridging perception-based factors.

From a managerial perspective, these findings emphasize that banking institutions should position CSR as a strategic mechanism rather than a symbolic or compliance-driven activity. Managers are encouraged to align CSR initiatives with green innovation and green finance by developing environmentally friendly financial products, expanding sustainable financing portfolios, and embedding sustainability into core business operations. Importantly, the results indicate that environmental responsibility must be translated into measurable actions, such as setting clear sustainability targets, integrating environmental performance indicators, and ensuring accountability in implementation, in order to effectively enhance sustainable performance. Despite its contributions, this study has several limitations. First, the sample is limited to banking employees in Batam City, which may restrict generalizability. Second, the study focuses only on selected variables, while other relevant factors may also influence sustainable performance. Third, the use of self-reported quantitative data may introduce response bias. Future research is therefore recommended to include broader geographical areas and different industries, as well as additional variables such as organizational culture, regulatory pressure, and technological capability, to provide a more comprehensive understanding of sustainable performance.

5. REFERENCES

- [1] J. Aftab et al., "Does corporate social responsibility drive financial performance? Exploring the significance of green innovation, green dynamic capabilities, and perceived environmental volatility," *Corporate Social Responsibility and Environmental Management*, vol. 31, no. 3, pp. 1634–1653, 2024, doi: 10.1002/csr.2654.

- [2] H. K. Alay et al., “The impact of green business ethics and green financing on sustainable business performance of industries in Türkiye: The mediating role of corporate social responsibility,” *Sustainability*, vol. 16, no. 17, p. 7868, 2024, doi: 10.3390/su16177868.
- [3] H. A. Al-Ali and B. O’Mahony, “Corporate social responsibility and environmental performance: The mediating role of green capabilities and green innovation,” *Journal of Asia Business Studies*, 2025, doi: 10.1108/JABS-08-2024-0472.
- [4] G. S. Atencio, “Digital banking as a catalyst for sustainable development: Integrating financial inclusion, ESG, and CSR,” *FinTech and Sustainable Innovation*, pp. 1–12, 2025, doi: 10.47852/bonviewFSI52027385.
- [5] M. O. A. Bonsu, Y. Guo, and X. Zhu, “Does green innovation mediate corporate social responsibility and environmental performance? Empirical evidence from emerging markets,” *Journal of Applied Accounting Research*, vol. 25, no. 2, pp. 221–239, 2024, doi: 10.1108/JAAR-10-2022-0271.
- [6] X. Cai and X. Song, “Towards sustainable environment: Unleashing the mechanism between green finance and corporate social responsibility,” *Energy & Environment*, vol. 35, no. 2, pp. 986–1003, 2024, doi: 10.1177/0958305X221133258.
- [7] D. Chen, H. Hu, and C. P. Chang, “Green finance, environment regulation, and industrial green transformation for corporate social responsibility,” *Corporate Social Responsibility and Environmental Management*, vol. 30, no. 5, pp. 2166–2181, 2023. <https://doi.org/10.1002/csr.2476>
- [8] M. L. Chipimo et al., “The role of ESG in driving firm profitability: Implications for stakeholder, resource-based view, and triple bottom line theories in emerging markets,” *SEISENSE Journal of Management*, vol. 8, no. 1, pp. 119–131, 2025, doi: 10.33215/m1c78498.
- [9] F. Cuandra, and C. Candy, “Strategies and innovations for enhancing sustainable performance in SMEs during the 4.0 digital business era.” *Jurnal Organisasi Dan Manajemen*, vol 20, no. 1, pp. 1-16, 2024, <https://doi.org/10.33830/jom.v20i1.6449.2024>
- [10] B. I. Dar, N. Badwan, and J. Kumar, “Investigating the role of fintech innovations and green finance toward sustainable economic development: A bibliometric analysis,” *International Journal of Islamic and Middle Eastern Finance and Management*, vol. 17, no. 6, pp. 1175–1195, 2024, doi: 10.1108/IMEFM-01-2024-0018.
- [11] D. Darsono et al., “Linking green finance to sustainability performance: The mediating role of CSR and the moderating effect of stakeholder pressures,” *Journal of Economic and Administrative Sciences*, 2025, doi: 10.1108/JEAS-04-2025-0221.
- [12] M. A. I. Gazi et al., “CSR and sustainable environmental performance: An exploration of mediating and moderating factors,” *Sustainability*, vol. 16, no. 19, p. 8499, 2024, doi: 10.3390/su16198499.
- [13] M. Gidage and S. Bhide, “Exploring the impact of green finance, CSR and green banking on environmental sustainability performance in Indian banks,” *International Journal of Productivity and Performance Management*, 2025. <https://www.emerald.com/insight/content/doi/10.1108/IJPPM-10-2024-0724/full/html>
- [14] K. Groskurth, M. Bluemke, and C. M. Lechner, “Why we need to abandon fixed cutoffs for goodness-of-fit indices: An extensive simulation and possible solutions,” *Behavior Research Methods*, 2023, doi: 10.3758/s13428-023-02193-3. <https://doi.org/10.3758/s13428-023-02193-3>
- [15] D. S. Gupta, “Sustainable digital banking: Exploring the role of fintech in promoting green finance and sustainable development goals,” *Journal of Information Systems Engineering and Management*, vol. 10, no. 3, 2025, doi: 10.52783/jisem.v10i3.5674.
- [16] J. F. Hair Jr et al., *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Cham: Springer, 2021. <https://link.springer.com/book/10.1007/978-3-030-80519-7>
- [17] B. Han, “Fostering sustainability: Integrating social responsibility, green finance, and corporate performance,” *Economic Change and Restructuring*, vol. 57, no. 2, p. 64, 2024. <https://link.springer.com/article/10.1007/s10644-024-09656-3>
- [18] D. V. Hoang and L. T. Tung, “Environmental concern, perceived marketplace influence and green purchase behavior: The moderation role of perceived environmental responsibility,” *International Journal of Sociology and Social Policy*, vol. 44, no. 11/12, pp. 1024–1039, 2024. <https://doi.org/10.1108/IJSSP-03-2024-0111>
- [19] S. Hussain, A. Rasheed, and S. U. Rehman, “Driving sustainable growth: Exploring the link between financial innovation, green finance and sustainability performance: Banking evidence,” *Kybernetes*, vol. 53, no. 11, pp. 4678–4696, 2024. <https://doi.org/10.1108/JIMA-03-2025-0213>
- [20] M. W. Kamran et al., “Leveraging corporate social responsibility: The mediating role of ambidextrous green innovation in enhancing green performance,” *Corporate Social Responsibility and Environmental Management*, 2025. <https://doi.org/10.1002/csr.70056>
- [21] L. KaoDui et al., “Triple bottom line (TBL) perspective on the business–environment–performance nexus in an emerging market economy,” *Business Ethics, the Environment & Responsibility*, 2026. <https://doi.org/10.1111/beer.70100>
- [22] N. Khababa and M. U. Jalingo, “Impact of green finance, green investment, green technology on SMEs sustainability: Role of corporate social responsibility and corporate governance,” *International Journal of Economics and Finance Studies*, vol. 15, no. 3, pp. 438–461, 2023. <https://doi.org/10.34109/ijefs.202315321>
- [23] H. A. Khairy et al., “Perceived environmental corporate social responsibility effect on green perceived value and green attitude,” *Sustainability*, vol. 15, no. 6, p. 4746, 2023. <https://doi.org/10.3390/su15064746>

- [24] J. Khalid et al., "AI-driven risk management and sustainable decision-making: Role of perceived environmental responsibility," *Sustainability*, vol. 16, no. 16, p. 6799, 2024. <https://doi.org/10.3390/su16166799>
- [25] T. T. Le et al., "Corporate social responsibility, green innovation, environment strategy and corporate sustainable development," *Operations Management Research*, vol. 17, no. 1, pp. 114–134, 2024. <https://doi.org/10.1007/s12063-023-00411-x>
- [26] T. L. Liu, T. T. Lin, and S. Y. Hsu, "Exploring the perspective of bank employees on the impact of green process innovation and perceived environmental responsibilities," *Sustainability*, vol. 15, no. 22, p. 15925, 2023. <https://doi.org/10.3390/su152215925>
- [27] H. Maqsood et al., "FinTech adoption as a driver of sustainable performance," *Journal of Management & Social Science*, vol. 2, no. 3, pp. 308–329, 2025. <https://doi.org/10.63075/d8jkjf33>
- [28] M. A. Memon et al., "PLS-SEM statistical programs: A review," *Journal of Applied Structural Equation Modeling*, vol. 5, no. 1, pp. 1–14, 2021. [https://doi.org/10.47263/JASEM.5\(1\)06](https://doi.org/10.47263/JASEM.5(1)06)
- [29] U. I. Niazi et al., "Green HRM, green innovation and environmental performance," *Environmental Science and Pollution Research*, vol. 30, no. 15, pp. 45353–45368, 2023. <https://doi.org/10.1007/s11356-023-25442-6>
- [30] P. M. Podsakoff et al., "Common method bias: It's bad, it's complex, it's widespread, and it's not easy to fix," *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 11, no. 1, pp. 17–61, 2024. <https://doi.org/10.1146/annurev-orgpsych-110721-040030>
- [31] M. Sarfraz et al., "Toward a new understanding of environmental and financial performance," *Humanities and Social Sciences Communications*, vol. 10, no. 1, 2023. <https://doi.org/10.1057/s41599-023-01799-4>
- [32] B. A. Soomro et al., "Developing environmental performance through sustainable practices," *Social Responsibility Journal*, vol. 20, no. 1, pp. 59–80, 2024. <https://doi.org/10.1108/SRJ-11-2021-0481>
- [33] L. Wang et al., "Green corporate governance, green finance, and sustainable performance nexus," *Sustainability*, vol. 15, no. 13, p. 9914, 2023. <https://doi.org/10.3390/su15139914>
- [34] H. O. Wobo and N. Odoemelam, "Environmental accounting costs and financial performance," *Universal Journal of Management*, vol. 12, no. 4, pp. 45–59, 2024. <https://doi.org/10.13189/ujm.2024.120401>
- [35] X. Q. Xiliang et al., "The impact of ICT, green finance, and CSR on sustainable financial performance," *Economic Research*, vol. 36, no. 3, 2023. <https://doi.org/10.1080/1331677X.2022.2151489>
- [36] Kore, M. H. Riwi, et al., "Strategic alliances and social performance of microfinance institutions in Indonesia." *Strategic Change*, vol 33, no. 3, pp. 219-232. <https://doi.org/10.1002/jsc.2572>
- [37] M. A. K. Zaid et al., "The future of green finance," *Discover Sustainability*, vol. 6, no. 1, p. 480, 2025. <https://doi.org/10.1007/s43621-025-01356-w>
- [38] S. Zhou, W. A. Tiruneh, and M. A. Legese, "The effect of corporate social responsibility on environmental performance," *International Journal of Emerging Markets*, vol. 19, no. 11, pp. 3848–3868, 2024. <https://doi.org/10.1108/IJOEM-02-2022-0211>
- [39] I. Itan et al., "Corporate governance and environmental disclosure: Assessing the role of environmental performance." *Riset Akuntansi Dan Keuangan Indonesia*, vol 8, no. 2, pp. 132-144, 2023. <https://doi.org/10.23917/reaksi.v8i2.2457>