Jagannath University Journal of Business Studies
Volume 13, No. 2, December 2025, Page 241-258
https://jnu.ac.bd/journal/portal/archives/business.jsp
DOI : https://dx.doi.org/10.5281/zenodo.18302342
ISSN : 2957-8248

IMPACT OF GREEN BANKING AND ENVIRONMENTAL CSR PRACTICES ON SUSTAINABLE PERFORMANCE OF BANKS: THE MEDIATING ROLE OF GREEN FINANCE

Fahimul Kader Siddique[1], Dr. Taslima Akther[2] and Md. Ashanuzzaman[3]

Received Date: 07-10-25 Accepted Date: 30-12-25

Abstract

Sustainable performance has become a critical benchmark for banks, particularly in emerging economies facing environmental and regulatory pressures. This study aims to explore how green finance mediates the associations among green banking activities (GBA), environmental corporate social responsibility (ECSR), and the sustainable performance of commercial banks in Bangladesh, thereby filling gaps in emerging markets. The structured questionnaires were administered to 250 bank employees via convenience sampling. SmartPLS-4.0 with confirmatory factor analysis, bootstrapping (5,000 resamples), and mediation tests was used to analyze a reflective higher-order PLS-SEM. The results indicate that green banking activities (GBA) have a significant positive impact on green finance (β=0.26, p=0.004), which in turn influences sustainable performance (β=0.56, p<0.001). There is no direct relationship between ECSR and green finance (β=0.11, p=0.08), but the effect of ECSR on the sustainable performance relationship is mediated by green finance (indirect β=0.06, t=1.79, p=0.07). Green finance partly mediates the relationship between GBA and sustainable performance (indirect β = 0.14, t = 2.92, p = 0.004), accounting for 30.58% of the total effect. These findings suggest that banks should focus on integrating green finance into GBA and aligning ECSR with financing to promote sustainable performance. The research provides significant insights for bankers and policymakers aiming to improve sustainable financial structures in climate-sensitive developing nations.

Keywords: Green Banking, Environmental Corporate Social Responsibility Practices, Sustainable Performance, Green Finance, Banks

1. Introduction

The global banking sector is progressively shifting from a conventional profit-driven model to one that prioritises regulatory demands for sustainability and heightened

[1] Assistant Professor; Department of Accounting & Information Systems; Begum Rokeya University, Rangpur. https://orcid.org/0009-0007-2396-8435, Email: fksiddique@brur.ac.bd

[2] Professor, Department of Accounting & Information Systems, Jagannath University, Dhaka. https://orcid.org/0000-0002-8764-2692, Email: taslima@ais.jnu.ac.bd

[3] Associate Professor, Department of Accounting & Information Systems, Begum Rokeya University, Rangpur. https://orcid.org/0000-0002-3210-8118, Email: ashanuzzaman@brur.ac.bd

stakeholder expectations. (Saif-Alyousfi & Alshammari, 2025) As key financial intermediaries, banks play a pivotal role in channeling resources to environmentally responsible economic activities; therefore, green banking practices, environmental corporate social responsibility, and green finance are at the core of sustainable development agendas (Gazi et. al. 2024a).

Global regulatory bodies have been pushing banks to incorporate environmental factors into their operations and financial decisions. This transition is notably reflected in Bangladesh through various initiatives by the Bangladesh Bank, such as the sustainable finance policy and green banking guidelines. While such regulatory initiatives have been put in place, the effectiveness of these practices in improving banks' sustainability performance remains highly underexplored in emerging and climate-vulnerable economies.

Green banking is defined as a commitment to both economic growth and environmental protection, aimed at providing banking products and services that minimize direct and indirect environmental impacts while improving resource utilization efficiency and effectiveness (Rahman et al. 2023). It is a consideration of internal operations and external financing decisions. Examples of green banking are paperless banking, energy-efficient branch management, environmental risk assessment, and green credit allocation.

Environmental CSR is an organization’s commitment to responsible operations that focus on minimizing environmental impacts and promoting sustainability through initiatives such as supporting eco-friendly projects and reducing ecological footprints (Gazi et. al. 2024a). Environmental CSR extends the orientation of reflecting banks' voluntary commitments to environmental protection beyond regulatory compliance. Although numerous studies have focused on either green banking or CSR individually, little has been said about how these two practices, together, influence sustainable performance outcomes and the mechanisms by which they do so. There is a growing belief that green finance is a vital transmission channel linking environmental strategy to measurable sustainability performance. Green finance enables banks to convert internal eco-friendly practices and corporate social responsibility commitments into improvements in economic, environmental, and social performance by allocating financial resources to environmentally desirable projects. However, empirical evidence on the mediating role of green finance remains limited, especially in developing financial systems such as Bangladesh's (Zheng et. al. 2021a). Addressing this gap, this paper develops and empirically tests an integrated framework that examines the influence of green banking practices and environmental CSR on banks' sustainable performance, with green finance as a mediating variable. In the next section, this paper contributes to the literature review and develops hypotheses. The research methodology is discussed in the following sections, which include data collection, data analysis, measurement results, and the structural model. Section four presents the discussion. The last two parts are the study contributions and the conclusion.

2. Literature Review & Hypothesis Development

2.1 Literature Review

The relationships among green banking practices, ECSR, green finance, and sustainable performance can be explained using different theories. For example,

institutional theory is a recognized foundation for studying organisational adoption of eco-friendly management practices and is grounded in a research framework based on stakeholder pressures (Bukhari et al. 2025). Stakeholder theory is an appropriate tool for studying banking variables to effectively analyze profitability in the context of environmental sustainability commitments (Chandran, 2025).

Stakeholder theory holds that organisations must be responsible to a wide range of stakeholders, including regulators, consumers, workers, shareholders, and society at large (Schaltegger & Wagner, 2006). Within the banking sector, green banking initiatives appear to enhance legitimacy, stakeholder trust, and reputation (Biswas, 2011; Chen *et al.,* 2022). Green initiatives foster a conducive environment for developing green finance practices within banks by addressing stakeholders' demands for environmental responsibility (Zhang *et al.*, 2022).

Institutional theory can be seen to complement this approach by underlining the importance of regulatory, normative, and coercive forces to which organisations are subject, shaping their behavioural patterns (Bukhari et al. 2025). In emerging nations, the institutions and policies of central banks, as well as the parameters of sustainable development, are becoming increasingly significant in pushing banks to merge green banking and sustainable finance practices (Zheng *et al.*, 2021a). In Bangladesh, the Bangladesh Bank's green banking policy has established green finance as a means to meet organisations' environmental expectations (Millat *et al.*, 2012).

Sustainability is interpreted as the ability of a being to preserve its quality over a long, possibly infinite period. This theory also includes the environmental dimensions. Environment and sustainability are often used interchangeably, but are not synonymous. Sustainability performance encompasses a company's effectiveness across environmental, social, and economic dimensions, as well as the factors influencing corporate sustainability. The three dimensions are commonly known as the triple bottom line concept. Sustainability performance management addresses the triple bottom line in corporate and sustainability management (Schaltegger & Wagner, 2006). Previous studies indicate that an entity's sustainability performance is linked to achieving well-being, considering the longevity of future entities. Sustainability constitutes a long-term commitment rather than a temporary measure.

Nevertheless, the literature is limited in its ability to address the interconnections among the economic, environmental, and social dimensions. Economic performance refers to the financial outcomes of a bank's operations, measured by its ability to generate profits and manage its finances effectively. Environmental performance refers to a bank's effectiveness in managing its environmental impact and contributing to sustainability. Social performance refers to the efficacy with which banks create positive social value for their stakeholders through their operations and the delivery of financial services. A bank primarily focuses on fair employment and employees' well-being, financial inclusion, responsible lending, community development, and support for human rights (Kestane *et al.,* 2019).

The banking industry is crucial to achieving the SDGs through tools such as green banking, green finance, and environmental CSR. Millat et al. (2012) identified green banking as a banking technique that motivates environmentally responsible financing and sustainable internal processes aimed at reducing greenhouse gas (GHG)

emissions. Green banking follows a dual approach. The main priority is to transform internal operations into an environmentally efficient one, then to focus on green initiatives in other sectors of the economy. Green banking and CSR are essential for achieving sustainability in banking operations. Banks can enhance their financial performance, mitigate risks, and satisfy their stakeholders by offering eco-friendly services.

The existing literature identifies ECSR from three different perspectives. The first view is an action-based perspective that posits that ECSR encompasses a range of actions undertaken by establishments at their discretion (Christmann, 2004). Another explanation can be that voluntary environmental actions are related to resources and energy (Punte *et al.*, 2007). The second view is a process-based perspective, which posits that ECSR serves as a means to minimise environmental impact by optimising an organisation's activities and operations. The third and final view on this is a product-oriented perspective, insisting that ECSR is connected to the sustainable goods and services that corporations provide (Gilley *et al.*, 2000). It is a comprehensive system in which a bank engages in social activities focused on environmental sustainability, enabling stakeholders to participate in these efforts (Islam *et al.*, 2019).

Environmental corporate social responsibility is the voluntary actions of banks to conserve the environment, in addition to complying with existing rules and regulations (Christmann, 2004; Islam *et al.*, 2019). Environmental CSR efforts, like other CSR efforts, indicate that banks are concerned about long-term sustainability (Gilley *et al.*, 2000; Weber, 2014). Still, empirical studies suggest that CSR efforts in banks are not, in themselves, sufficient to boost performance without being translated into financial instruments (Guang-Wen & Siddik, 2022).

Thus, green finance can be identified as an important institutional and strategic approach that banks use to implement their environmental strategic initiatives for quantifiable results (Zheng *et al.*, 2021b). By allocating financial resources to environmental benefits, green finance improves economic stability, reduces risk, and increases social value creation (Abuatwan, 2023). Despite the topic's growing relevance, very few empirical studies have examined the significant mediating role of green banking, ECSR, and sustainable performance, especially in the context of developing nations (Karki *et al.*, 2025).

On these theoretical pillars, this study now presents an integrated framework that emphasizes green finance as a transmission channel between green banking practices, environmental CSR, and sustainable performance in the banking sector of Bangladeshi banks.

2.2 Hypothesis Development

Bangladesh's green banking practices have been demonstrated to promote green finance and enhance sustainability (Khatun, 2021). Commercial banks are essential for supporting green finance. In 2020, they gave out green loans worth Tk 11,893 crore (Zheng et al. 2021b). The default rate in green finance is currently 0.83% as of June 2021, which is significantly lower than that of regular banks (Gupta, 2022). Central banks also help make banking more environmentally friendly, which in turn supports the growth of green finance within the banking industry. In general, green

banking practices, such as those initiated by central banks, can positively impact green finance in Bangladeshi banks (Zhixia *et al.,* 2018). Thus, the first proposed hypothesis is:

H_1: Green banking practices have a positive impact on Green finance in banks.

Green finance is a crucial component of environmental, social, and corporate responsibility practices. It can help companies become more sustainable by utilising elements such as green capabilities, innovation, and environmental strategy (Gazi *et al.*, 2024b). CSR can be incorporated into environmental issues. Banks can assess the environmental impact of their loans and investments. It is also a crucial aspect of green finance. This also positively affects their financial performance by increasing profitability and return on assets. ECSR initiatives can also enhance reputation, trustworthiness, and teamwork, ultimately leading to improved financial results. Additional examination is required to comprehend the relationship between reported ECSR initiatives and actual corporate behaviours (Ningning & Mengze, 2022). Thus, the second hypothesis of this study is:

H_2: Environmental corporate social responsibility practices have a positive impact on Green finance in banks.

Banks can contribute to achieving the SDGs by investing in green projects. This is because green financing plays a significant role in financing projects. Banks can finance projects that promote renewable energy initiatives and eco-friendly practices (Abuatwan, 2023). Banks can bring environmental benefits and help economic and social well-being through green finance. Several studies have found that banks can mitigate their negative environmental impacts, ultimately leading to improved environmental performance. The same applies to countries, as nations have been found to achieve economic and environmental benefits by implementing eco-friendly strategies, such as utilising renewable energy sources. Adopting environmentally responsible financing practices, such as these, and implementing eco-friendly strategies can enhance sustainability, improve environmental performance, and increase resilience for future generations. (Kothiyal & Tripathi, 2023). Thus, the following proposed hypothesis is:

H_3: Green finance has a positive impact on sustainable performance in the banking sector.

Furthermore, to align banking practices with the SDGs, it is essential to implement the green and sustainable finance policies issued by the Bangladesh Bank. Governments can foster sustainable innovation by collaborating with banks and developing green products and services. Banks can also significantly contribute to sustainable development and mitigate the effects of climate change by integrating green finance principles into their operations (Zheng *et al.*, 2021a). Karki et al. (2025) stated that green finance serves as a partial mediator in the relationship between green banking practices and bank sustainability performance. Green finance directs environmental goals via investment and credit choices, enhancing sustainability results. Hence, the fourth hypothesis of the study is:

H_4: Green finance mediates the relationship between green banking practices and sustainable performance in banks.

Banks' green finance and sustainable performance are closely linked, leading to better environmental outcomes and helping them achieve their sustainable development goals. Banks' environmental performance improves when they offer green finance, financial products, and services that support environmentally beneficial projects (Bansal *et al.*, 2023). Banks practice environmental corporate social responsibility by reducing their carbon footprints, adopting eco-friendly methods, and investing in green projects. Green finance enables these practices to positively impact their long-term performance. Green finance links environmentally friendly actions with financial plans, which set the standard for sustainable performance in Bangladesh. Green finance, green banking practices, and sustainable performance all work together to strengthen one another. Green finance provides financial solutions that support environmentally beneficial projects, thereby amplifying the positive environmental impact of banks (Abuatwan, 2023). Thus, the last hypothesis of the study is:

H_5: Green finance mediates the relationship between environmental corporate social responsibility practices and sustainable performance in the banking sector.

To visually represent the conceptual model, the following diagram illustrates the relationship among the variables:

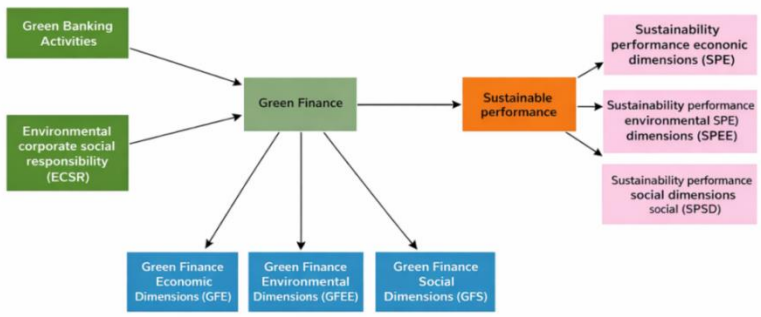

Figure 01: Conceptual Framework

3. Methodology

3.1 Data Collection and Analysis

Data are collected from 250 commercial bank employees who work in lending, operations, or sustainability roles, as they possess direct knowledge of green banking practices, ECSR initiatives, and green finance products, after omitting missing, non-response, and duplicate data using convenience sampling. A convenience sampling technique was employed due to access constraints and the absence of a comprehensive sampling frame covering bank employees engaged in sustainability-related activities across Bangladesh. This approach is appropriate for exploratory and explanatory research in which respondents possess specialised knowledge relevant to the constructs under investigation. To mitigate potential bias, data were collected from multiple banks and functional units, and responses were screened to remove incomplete and duplicate entries. This study used a quantitative approach to collect information through online and offline survey questionnaires. More results are shown in Table 01.

Table 1: Demographic Profile of Respondents

Variables	Category	Frequency
Gender	*Male*	204 (81.6%)
	Female	46 (18.4%)
Age	*21-30 years*	75 (30%)
	31-40 years	139 (55.6%)
	41-50 years	32 (12.8%)
	50+ years	4 (1.6%)
Education	*Graduation*	25 (10%)
	Post-Graduation	217 (86.8%)
	Professional Degree (e.g., CA/CMA/PhD)	4 (1.6%)
	Else	4 (1.6%)
Experience	*<4 years*	108 (43.2%)
	4-6 years	42 (16.8%)
	>6 years	100 (40%)

Partial Least Squares Structural Equation Modelling (PLS-SEM) is a variance-based structural equation modelling (SEM) approach that has gained increasing popularity in finance and banking research. The use of SEM techniques confirms the quality of measurements (Ringle *et al.,* 2024). Thus, a reflective-reflective hierarchical model was constructed using the PLS-SEM lens to examine the effects of endogenous factors on sustainable performance, as implemented in SmartPLS 4.0. The PLS-SEM method is robust and consistent in enhancing the explanatory power of each latent variable's influence on the endogenous variables, employing factor analysis to determine optimal components (Akther & Nur, 2022). Confirmatory factor analysis (CFA) was conducted to assess the validity of the research model. After CFA confirmation, a hypothesis test was performed to ensure the reliability, discriminant validity, and convergent validity of the study model. The PLS algorithm was employed to specify the outer loading and weight, recognising the significance level of each item and achieving significance for the path coefficients. Secondly, a bootstrapping technique involving 5,000 resamples was used to confirm the hypothesis (Henseler *et al.,* 2009). For sample size under the minimum-R-square method, the minimum sample size to show the maximum number of arrows within a construct is 217 (for 6 arrows); hence, this sample size is sufficient to achieve 80% statistical power (Hair *et al.,* 2021).

Recent studies have examined GBA and ECSR as two distinct constructs. GBA comprises six categories, whereas CSR is derived from previous studies (Tu & Dung, 2017; Rehman *et al.,* 2021). Green finance is a second-order construct comprising three dimensions: economic (GFE), social (GFS), and environmental (GFEE) (Raihan *et al.,* 2019; Nwobu *et al.,* 2017). Sustainable performance (SP) is a second-order construct comprising three factors: economic performance (SPE), environmental performance (SPEE), and social performance (SPS) (Khan *et al.,* 2023; Iqbal *et al.,* 2020; Khan & Quaddus, 2015). The constructs were assessed using

a five-point Likert scale, and validity was verified through expert evaluation. A pre-test was conducted to further refine the structure, content, and readability of the questions. SEM has become increasingly prevalent across various domains, including business, banking, marketing, and tourism (Khan & Quaddus, 2015; Rezaei *et al.*, 2017; Zheng *et al.*, 2021b).

This paper conceptualises employees' perceptions of green financing and sustainable performance as a second-order construct. Previous studies revealed that PLS-SEM's reflective-formative and reflective-reflective constructs are applicable across various domains. This study, therefore, proposes a reflective-reflective second-order construct based on the literature review. The two-stage and repeated indicator approaches are the most widely applied techniques for assessing and validating higher-order structures (Wilson & Henseler, 2007; Crocetta *et al.*, 2020; Akther & Xu, 2020). The paper also proposes two tiers of this two-step procedure: the embedded and disjoint approaches. Sarstedt et al. (2019) created a path model using the two-step disjoint method and estimated it. The two-step disjoint model is a methodological approach employed in structural equation modelling (SEM) and other analytical frameworks. It is particularly applicable when a researcher investigates important interrelations among variables but must present precise results regarding what those relations may imply (Hanafiah, 2020). Thus, a two-order path model was developed for this study and analyzed in two vital phases. Firstly, this study examined the first-order components of the second-order construct to define the path without considering the second-order construct itself. All of these are directly related to every construct that the second order potentially relates to. In the second step, the relationships of measurement items and first-order components were investigated using a measurement model assessment. Afterwards, the latent variables (LVs) of the economic (GFE), social (GFS), and environmental (GFEE) aspects for green finance, as well as the LVs of the economic (SPE), environmental (SPEE), and social performance (SPS) aspects for sustainable performance, were identified. In the second step, the two-order construct was analysed using the LVs stored in the original data file. The hypothesis was intended to be validated in the present research, and the estimated model is shown in Figure 2.

3.2 Result of Measurement and Structural Model

The SmartPLS software was utilised for comprehensive data analysis and to assess the validity and reliability of the study instrument and research model. The three steps for data analysis were followed. The reflective measurement model was initially tested by the researcher to verify internal consistency reliability, convergent validity, and discriminant validity (Hair *et al.*, 2021). The hierarchical model was verified in the second step of this research. The third step of this study employed three factors to validate the structural model and identify the hypothesised relationships between the constructs. These were the coefficient of determination (R^2), the path coefficients, and the effect size (f^2).

3.2.1 First-order measurement model

When evaluating the PLS model, the global assessment, its evaluation, and interpretation are divided into two aspects: measurement model reliability and validity, and structural model estimation. To evaluate the measurement model and

enhance and validate the structure and items, CFA was used in this research. This was performed by confirming three criteria: discriminant validity, convergent validity, and internal consistency reliability (Sarstedt *et al.,* 2019). The construct reliability of this study is tested by Cronbach's alpha and composite reliability (CR). Cronbach's alpha values range from 0.728 to 0.865, which meets the standard value. Furthermore, as shown in Table 2, all variables have a general reliability value of over 0.7, indicating that the model is internally consistent. The mean variance extracted was also calculated to assess convergent validity, and all structures exceeded the threshold of 0.50. Composite reliability is also considered a construct validity. All average variance extracted figures are greater than 0.5 and below the threshold limit; therefore, all items have sufficient convergent validity (Hair *et al.,* 2019).

Table 2: Construct and measurement model of first-order constructs

Variables	Items	Outer loadings	VIF	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Environmental corporate social responsibility (ECSR)	ECS01	0.792	2.054	0.865	0.867	0.899	0.598
	ECS02	0.824	2.175				
	ECS03	0.806	2.193				
	ECS04	0.773	1.848				
	ECS05	0.761	1.721				
	ECS06	0.678	1.478				
Green Bank Activities (GBA)	GBA01	0.790	1.826	0.806	0.809	0.861	0.511
	GBA02	0.610	1.381				
	GBA03	0.677	1.526				
	GBA04	0.746	1.902				
	GBA05	0.685	1.471				
	GBA06	0.764	1.721				
Green Finance Economic Dimensions (GFE)	GFE01	0.766	1.789	0.858	0.861	0.898	0.638
	GFE02	0.812	2.033				
	GFE03	0.784	1.842				
	GFE04	0.785	2.304				
	GFE05	0.843	2.760				
Green Finance Environmental Dimensions (GFEE)	GFEE01	0.817	1.557	0.777	0.778	0.870	0.691
	GFEE02	0.839	1.676				
	GFEE03	0.838	1.587				
Green Finance Social Dimensions (GFS)	GFS01	0.721	1.873	0.864	0.886	0.901	0.645
	GFS02	0.788	2.195				
	GFS03	0.832	2.326				
	GFS04	0.877	2.526				
	GFS05	0.789	1.926				

Sustainability performance economic dimensions (SPE)	SPE01	0.815	1.610	0.819	0.825	0.892	0.734
	SPE02	0.872	2.058				
	SPE03	0.881	1.989				
Sustainability performance environmental dimensions (SPEE)	SPEE01	0.769	1.274	0.728	0.727	0.847	0.648
	SPEE02	0.826	1.658				
	SPEE03	0.819	1.597				
Sustainability performance social dimensions (SPE)	SPS01	0.813	1.513	0.764	0.770	0.864	0.680
	SPS02	0.797	1.504				
	SPS03	0.862	1.703				

Table 3 resembles the output of the discriminant validity test of the constructs. This study employed the Fornell-Larcker criterion, which was determined through a cross-validated comparison of the square roots of AVEs with correlations to other latent factors (Chin, 2009; Fornell & Larcker, 1981). In discriminant validity, the off-diagonal values do not exceed their threshold limits, indicating that no construct is highly correlated. (Chin, 2009; Hair *et al.*, 2021).

Table 03: Discriminant validity of the first-order construct

	Fornell-Larcker Criterion								**HTMT analysis**							
	ECS	**GBA**	**GFE**	**GFEE**	**GFS**	**SPE**	**SPEE**	**SPS**	**ECS**	**GBA**	**GFE**	**GFEE**	**GFS**	**SPE**	**SPEE**	**SPS**
ECS									0.774							
GBA	0.829								0.695	0.715						
GFE	0.448	0.518							0.391	0.436	0.799					
GFEE	0.143	0.192	0.517						0.118	0.143	0.421	0.831				
GFS	0.225	0.264	0.750	0.693					0.195	0.224	0.652	0.575	0.803			
SPE	0.513	0.475	0.626	0.600	0.536				0.432	0.389	0.531	0.482	0.472	0.857		
SPEE	0.505	0.537	0.598	0.659	0.566	0.875			0.401	0.418	0.477	0.500	0.468	0.679	0.805	
SPS	0.494	0.573	0.652	0.590	0.589	0.710	0.827		0.401	0.453	0.527	0.458	0.493	0.565	0.621	0.824

The common method variance (CMV) was assessed using a collinearity test to identify common method bias (CMB), following Kock's (2015) recommendation, which is the standard approach for evaluating both vertical and lateral collinearity. Each item under the individual factor showed a lower Variance Inflation Factor (VIF) score (< 3.3), indicating that CMB is not an issue in dealing with data. Finally, multicollinearity among the indicators was assessed using the VIF. All values are

below the threshold of 5; thus, no multicollinearity issue exists. In summary, assessments of the first-order measurement model confirmed internal consistency reliability, convergent validity, and discriminant validity, with all metrics meeting the established threshold values.

3.2.2 Second-order measurement model

In the second-order measurement model, this study coincides with several metrics, similar to the initial measurement model, such as factor loading, CA, rho_A, CR, and AVE, and the output is shown.

Table 04: Measurement model of second-order construct

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
ECS	0.865	0.866	0.899	0.598
GBA	0.806	0.808	0.861	0.510
Green Finance	0.786	0.803	0.875	0.700
Sustainability Performance	0.831	0.831	0.899	0.748

Table 05: Discriminant validity of the second-order construct

	Fornell-Larcker Criterion				HTMT analysis			
	ECS	**GBA**	**Green Finance**	**Sustainability Performance**	**ECS**	**GBA**	**Green Finance**	**Sustainability Performance**
ECS					0.773			
GBA	0.829				0.694	0.714		
Green Finance	0.332	0.394			0.291	0.335	0.837	
Sustainability Performance	0.561	0.587	0.825		0.476	0.485	0.669	0.865

3.2.3 Evaluation of the Structural Model

The researchers employed PLS-SEM to estimate the path coefficients for the structural model, which illustrates the proposed linkage between the constructs, as shown in Table 6. Additionally, before assessing the magnitude of the path coefficients, the bootstrapping option is used to test the significance of the path coefficients under bootstrapping sampling (Hair *et al.,* 2021; Rezaei *et al.,* 2017). The structural model evaluation was justified to test the proposed hypotheses' linkage. This test can be performed when the analysis section of the measurement model shows no violations. Moreover, the overall structural equation model is visualised in Figure 01.

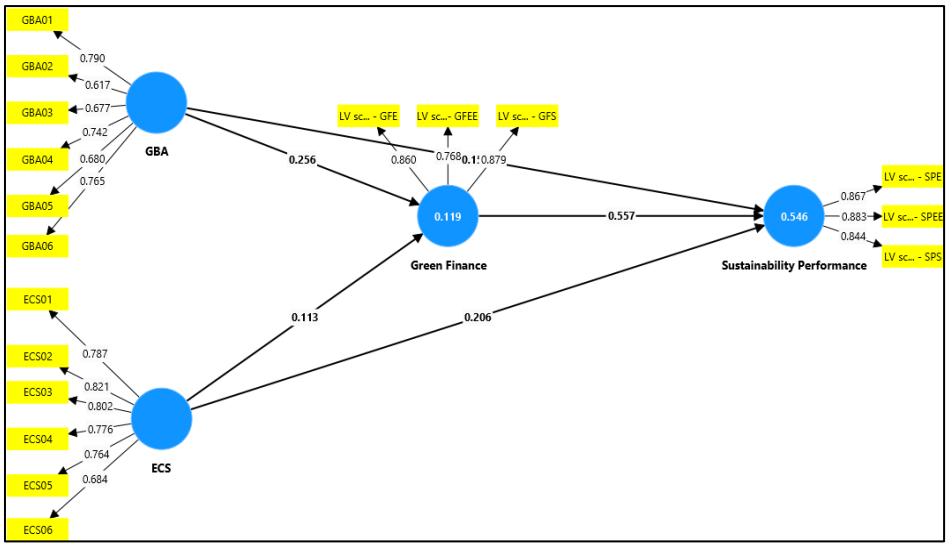

Figure 02: Structural equation model in higher order constructs (HOC) (reflective-reflective second-order construct)

Table 06: Hypothesis testing and structural model with direct, indirect effect, or mediation effect via Green finance, and total impact of the structural model

		Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	f-square	Decision
H1	H1: GBA -> Green Finance	0.256	0.260	0.089	2.876	0.004	0.039	Supported
H2	H2: ECSR -> Green Finance	0.113	0.114	0.063	1.783	0.075	0.008	Not supported
H3	H3: Green Finance -> Sustainability Performance	0.557	0.554	0.044	12.632	0.000	0.604	Supported
	Indirect effect:							
H4	ECSR -> Green Finance -> Sustainability Performance	0.063	0.063	0.035	1.785	0.074		Full mediation
H5	GBA -> Green Finance -> Sustainability Performance	0.143	0.143	0.049	2.917	0.004		Partial mediation

4. Discussion on the result

This study examines the direct and indirect relationships among green banking practices, environmental corporate social responsibility (ECSR), green finance, and sustainable performance in the Bangladeshi banking sector. At first, the hypothesis results are presented, and to enhance clarity, the discussion is structured around direct and mediating effects.

In this study, the first hypothesis (H_1) regarding the impact of GBA on green financing was found to be positively and statistically significant at a 5% significance level. Second Hypothesis (H_2) is not supported. Further, the third hypothesis (H_3) is validated at a 1% significance level about the correlation between green financing and sustainable performance. Moreover, two mediating effects of green finance were also examined. One was complete mediation, and another was partial, involving the mediator as the nexus between ECSR practices, GBA, and sustainable performance, which was statistically significant. In other words, green finance mediates between ECSR practices and green banking habits at 30.58% and between ECSR practices and sustainable performance at 92.25%, respectively.

Results from the direct effects analysis indicate that green banking practices have a significant positive impact on green finance. This suggests that banks that integrate environmental considerations into their internal operations—such as adopting paperless processes, conducting environmental risk assessments, and implementing green lending policies—are better positioned to channel financial resources toward environmentally sustainable projects. From the perspective of stakeholder theory, this finding implies that banks respond to regulatory and stakeholder pressures by first embedding environmental responsibility into their internal business practices, which subsequently enables the expansion of green finance activities. On the other hand, the direct relationship between ECSR and green finance is not statistically significant at conventional levels of significance. That is, voluntary environmental CSR actions may not automatically lead to green financing outcomes unless established financial structures support them. The analysis above further reinforces the finding that there is a strong and positive correlation between green finance and sustainability. By financing projects related to renewable energy, environmental responsibility, and social good, banks can enhance economic resilience, mitigate environmental risk, and increase social value creation. The finding is consistent with the argument that green finance is a strategic tool for delivering sustainability on multiple dimensions.

Mediation analysis helps to shed light on the processes underlying the accomplishment of sustainability outcomes. The role of green finance as a partial mediator between green banking and sustainability performance indicates that green banking practices have both direct and indirect impacts on sustainability, partly through green finance. The view of partial mediation argued for the necessity to synchronize the greening of operations with the use of green finance.

Conversely, green finance serves as a full mediator of the link between ECSR and sustainable performance. This indicates that environmental CSR has a positive influence on sustainability performance only when it is channeled into concrete financial choices and green investment approaches. From an institutional theory viewpoint, this indicates that formal institutions play an instrumental role in converting environmental CSR commitments into performance improvements.

In sum, findings show that green finance is an essential transmission channel through which intentions are translated into outcomes. This therefore means that banks operating in emerging economies can improve sustainability outcomes by incorporating green finance mechanisms into their green banking strategy or approach as part of their CSR strategy, rather than.

5. Study Contributions

This research has made several contributions to the existing body of knowledge on sustainable finance and banking. The first contribution is that it has enhanced theoretical development by combining stakeholder theory and institutional theory to explain how green banking practices and environmental corporate social responsibility (ECSR) can impact sustainability performance through green finance.

Second, this study contributes to the existing body of knowledge by providing empirical insights from Bangladesh. In this climate-vulnerable emerging country, the principles of sustainable finance are still being developed. Unlike studies conducted in developed or highly regulated financial systems, this study demonstrates how regulatory pressure from the central bank and stakeholder expectations interact to shape banks' sustainability outcomes. The findings, therefore, enhance the contextual validity and generalisability of sustainability research in emerging markets.

Third, the study offers methodological contributions by modelling green finance and sustainable performance as reflective–reflective higher-order constructs using PLS-SEM. This approach captures the multidimensional nature of sustainability and provides a more nuanced understanding of how economic, environmental, and social dimensions interact within banking institutions.

Finally, the study provides practical and policy-relevant insights. The results indicate that environmental CSR initiatives contribute to sustainability only when they are operationalised through green finance mechanisms. This underscores the importance of banks and supervisory authorities moving beyond symbolic CSR efforts and making green finance a cornerstone of their banking strategies. This type of research is important for policymakers seeking to enhance sustainable finance policies and for bank managers seeking to improve sustainability performance.

6. Conclusion

This study presents green finance as the pivotal mechanism by which green banking operations enhance the sustainable performance of Bangladeshi commercial banks and fully mediate the impact of environmental corporate social responsibility. These results illuminate the channel through which regulatory efforts are translated into triple-bottom-line outcomes in climate-vulnerable emerging markets. Theoretically, these results combine the resource-based view and stakeholder theory in that they emphasize the role of green finance as a systemic mechanism in emerging markets. In practice, banks should prioritize placing greater emphasis on green finance investments and aligning environmental corporate social responsibility initiatives with financing decisions to enable sustainability, whereas policymakers can improve regulations to encourage such integration. Despite these observations, the research has limitations. The use of convenience sampling among 250 employees introduces potential bias, and the cross-sectional design limits causal inference. Self-reported data is prone to social desirability bias, and the study was limited to one context (Bangladesh) limiting the generalizability of the findings. Future studies may employ longitudinal designs to examine temporal dynamics, use objective performance

metrics, or explore other mediators such as technological innovation. The model would also be confirmed by comparative studies in different economies.

Funding

This research project was funded by the Bangladesh University Grants Commission's Research Grants to Begum Rokeya University, Rangpur, in the Financial Year 2023-2024, under Grant No. UGC/Budget 37.01.0000.052.20.015.20.1567(30), dated 23/06/2023; and BRUR/R&E/2023-24/31(1-87), dated 06/12/2023

Reference

Abuatwan, N. (2023). The Impact of Green Finance on the Sustainability Performance of the Banking Sector in Palestine: The Moderating Role of Female Presence. *Economies*, *11*(10). https://doi.org/10.3390/economies11100247

Akther, T., & Xu, F. (2020). Existence of the audit expectation gap and its impact on stakeholders' confidence: The moderating role of the financial reporting council. *International Journal of Financial Studies*, *8*(1), 4.

Akther, T., & Nur, T. (2022). A model of factors influencing COVID-19 vaccine acceptance: A synthesis of the theory of reasoned action, conspiracy theory belief, awareness, perceived usefulness, and perceived ease of use. *PLoS One*, *17*(1), e0261869.

Bansal, N., Taneja, S., & Özen, E. (2023). Green Financing as a Bridge Between Green Banking Strategies and Environmental Performance in Punjab, India. *International Journal of Sustainable Development and Planning*, *18*, 3155–3167. https://doi.org/10.18280/ijsdp.181017

Biswas, N. (2011). Sustainable green banking approach: The need of the hour. *Business Spectrum*, *1*(1), 32-38.

Bukhari, S. A. A., Bukhari, S. N. Z., Hashim, F., & Amran, A. (2025). Determinants of Green Banking Adoption: A Stakeholder Approach. *Journal of Development Policy Research and Practice (JoDPRP)*, 77–94. https://doi.org/10.59926/jodprp.vol09/05

Chandran, R., Chandran, M. C. S., Achuthan, K., & Sahib, P. R. (2025). Theoretical perspectives on green banking adoption in India: regulatory uncertainty, institutional barriers, and policy solutions. In *Discover Sustainability* (Vol. 6, Issue 1). Springer Nature. https://doi.org/ 10.1007/s43621-025-01406-3

Chen, J., Siddik, A., Zheng, G., Masukujjaman, M., & Bekhzod, S. (2022). The Effect of green banking practices on banks' environmental performance and green financing: an empirical study. *Energies*, *15*(4), 1292. https://doi.org/10.3390/en15041292

Chin, W. W. (2009). How to write up and report PLS analyses. In *Springer eBooks* (pp. 655–690). https://doi.org/10.1007/978-3-540-32827-8_29

Christmann, P. (2004). Multinational Companies and the Natural Environment: Determinants of Global Environmental Policy Standardization. *Academy of Management Journal*, *47*, 747–760. https://doi.org/10.2307/20159616

Crocetta, C., Antonucci, L., Cataldo, R., Galasso, R., Grassia, M. G., Lauro, C. N., & Marino, M. (2020). Higher-Order PLS-PM approach for different types of constructs. *Social Indicators Research*, *154*(2), 725–754. https://doi.org/10.1007/s11205-020-02563-w

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, *18*(3), 382–388. https://doi.org/10.1177/002224378101800313

Gazi, M. A. I., Masud, A. al, Kabir, S. bin, Chaity, N. S., Senathirajah, A. R. bin S., & Rahman, M. K. H. (2024a). Impact of Green Banking Practices on Green CSR and Sustainability in Private Commercial Banks: The Mediating Role of Green Financing Activities. *Journal of Sustainability Research*, *6*(4). https://doi.org/10.20900/jsr20240072

Gazi, M. A. I., Hossain, M. M., Islam, S., Masud, A. al, Amin, M. bin, Senathirajah, A. R. bin S., & Abdullah, M. (2024b). CSR and Sustainable Environmental Performance: An Exploration of Mediating and Moderating Factors. *Sustainability (Switzerland)*, *16*(19). https://doi.org/10.3390/su16198499

Gilley, K. M., Worrell, D., & Davidson, W. (2000). Corporate Environmental Initiatives and Anticipated Firm Performance: The Differential Effects of Process-Driven Versus Product-Driven Greening Initiatives. *Journal of Management - J MANAGE*, *26*, 1199–1216. https://doi.org/10.1016/S0149-2063(00)00079-9

Guang-Wen, Z., & Siddik, A. B. (2022). Do corporate social responsibility practices and green finance dimensions determine environmental performance? An Empirical Study on Bangladeshi banking institutions. *Frontiers in Environmental Science*, *10*. https://doi.org/10.3389/fenvs.2022.890096

Gupta, T. D. (2022, January 22). A rabbit hole of bank scams going unpunished. *The Business Standard*. https://www.tbsnews.net/analysis/rabbit-hole-bank-scams-going-unpunished-360553

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook* (p. 197). Springer Nature.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24.

Hanafiah, M. H. (2020). Formative vs. reflective measurement model: Guidelines for structural equation modeling research. *International Journal of Analysis and Applications*, *18*(5), 876-889.

Henseler, J., Ringle, C., & Sinkovics, R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing. In *Advances in International Marketing* (Vol. 20, pp. 277–319). https://doi.org/10.1108/S1474-7979(2009)0000020014.

Islam, T., Ali, G., & Asad, H. (2019). Environmental CSR and pro-environmental behaviors to reduce environmental dilapidation: The moderating role of empathy. *Management Research Review*, *42*(3), 332–351. https://doi.org/10.1108/MRR-12-2017-0408

Iqbal, Q., Ahmad, N. H., Nasim, A., & Khan, S. A. R. (2020). A moderated-mediation analysis of psychological empowerment: Sustainable leadership and sustainable performance. *Journal of Cleaner Production*, *262*, 121429.

Karki, D., Khanal, D., Khadka, P. B., & Khadka, A. K. (2025). Green Banking Practices and Environmental Performance Mediated by Green Finance. *F1000Research*, *14*, 829. https://doi.org/10.12688/f1000research.165663.1

Kestane, A., Kurnaz, N., & Sizer, M. O. (2019). Assessment of sustainability performance by gray relational analysis method in financial institutions: Applications in Turkish banking sector. *Turkish Studies-Economics, Finance, Politics*, *14*(4), 1323–1358. https://doi.org/10.29228/turkishstudies.30287

Khan, E. A., & Quaddus, M. (2015). Development and validation of a scale for measuring sustainability factors of informal microenterprises–A qualitative and quantitative approach. *Entrepreneurship Research Journal*, *5*(4), 347-372.

Khan, R. U., Saqib, A., Abbasi, M. A., Mikhaylov, A., & Pinter, G. (2023). Green Leadership, environmental knowledge Sharing, and sustainable performance in manufacturing Industry: Application from upper echelon theory. *Sustainable Energy Technologies and Assessments*, *60*, 103540.

Khatun, M. N., Sarker, M. N. I., & Mitra, S. (2021). Green Banking and Sustainable Development in Bangladesh. In *Sustainability and climate change* (Vol. 14, Issue 5, pp. 262–271). Mary Ann Liebert Inc. https://doi.org/10.1089/scc.2020.0065

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec), 11*(4), 1-10.

Kothiyal, H., & SmitaTripathi, Dr. (2023). Effect of Green Finance on Environmental Performance of Banking Institutions: A Critical review. *Frontiers of Finance*, *1*(1), 109. https://doi.org/10.59429/ff.v1i1.109

Millat, K. M., Chowdhury, R., & Singha, E. A. (2012). *Green banking in Bangladesh fostering environmentally sustainable inclusive growth process.* Dhaka: Department of Communications and Publications, Bangladesh Bank.

Ningning, M., & Mengze, Z. (2022). Impact of Digital Economy On Governance System Influencing Digitalization And Social Reforms. *International Journal of Economics and Finance Studies*, *14*(4), 219-251. https://doi.org/10.34109/ijefs.20220112

Nwobu, O. A., Owolabi, A. A., & Iyoha, F. O. (2017). Sustainability reporting in financial institutions: a study of the Nigerian banking sector. *Journal of Internet Banking and Commerce*, *22*(8), 1-15.

Punte, S., Repinski, P., & Gabrielsson, S. (2005). Improving energy efficiency in Asia's industry. *Greener Management International*, (50), 41-51.

Rahman, M. H., Rahman, J., Tanchangya, T., & Esquivias, M. A. (2023). Green banking initiatives and sustainability: A comparative analysis between Bangladesh and India. In *Research in Globalization* (Vol. 7). Elsevier B.V. https://doi.org/10.1016/j.resglo.2023.100184

Raihan, M. Z. (2019). Sustainable finance for growth and development of banking industry in Bangladesh: An equity perspective. *MIST International Journal of Science and Technology*, *7*(1).

Rehman, A., Ullah, I., Afridi, F. E. A., Ullah, Z., Zeeshan, M., Hussain, A., & Rahman, H. U. (2021). Adoption of green banking practices and environmental performance in Pakistan: A demonstration of structural equation modelling. *Environment, Development and Sustainability*, 1-21.

Rezaei, S., Mazaheri, E., & Azadavar, R. (2017). Determinants of experienced tourists' satisfaction and actual spending behaviour: A PLS path modelling approach. *International Journal of Culture, Tourism and Hospitality Research*, *11*(2), 157-181.

Ringle, C.M., S. Wende, and J.-M. Becker. 2024. SmartPLS 4. Bönningstedt: SmartPLS. https://www.smartpls.com/.

Saif-Alyousfi, A. Y. H., & Alshammari, T. R. (2025). Environmental Sustainability and Climate Change: An Emerging Concern in Banking Sectors. *Sustainability (Switzerland)*, *17*(3). https://doi.org/10.3390/su17031040

Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal*, *27*(3), 197-211.

Schaltegger, S., & Wagner, M. (2006). Integrative Management of Sustainability Performance, Measurement and Reporting. *International Journal of Accounting, Auditing and Performance Evaluation*, *3*, 1–19. https://doi.org/10.1504/IJAAPE.2006.010098

Tu, T. T. T., & Dung, N. T. P. (2017). Factors affecting green banking practices: Exploratory factor analysis on Vietnamese banks. *Journal of Economics Development*, *24*, 4–30. https://doi.org/10.24311/jed/2017.24.2.05

Weber, O. (2014). The financial sector's impact on sustainable development. *Journal of Sustainable Finance & Investment*, *4*(1), 1–8. https://doi.org/10.1080/20430795.2014.887345

Wilson, B., & Henseler, J. (2007). *Modelling Reflective Higher-Order Constructs using Three Approaches with PLS Path Modeling: A Monte Carlo Comparison*. University of Twente Research Information. https://research.utwente.nl/en/publications/modeling-reflective-higher-order-constructs-using-three-approache

Zhang, X., Wang, Z., Zhong, X., Yang, S., & Siddik, A. B. (2022). Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing. *Sustainability*, *14*(2), 989. https://doi.org/10.3390/su14020989

Zheng, G. W., Siddik, A. B., Masukujjaman, M., & Fatema, N. (2021a). Factors affecting the sustainability performance of financial institutions in Bangladesh: the role of green finance. *Sustainability*, *13*(18), 10165.

Zheng, G. W., Siddik, A. B., Masukujjaman, M., Fatema, N., & Alam, S. S. (2021b). Green finance development in Bangladesh: The role of private commercial banks (PCBs). *Sustainability*, *13*(2), 795.

Zhixia, C., Hossen, M. M., Muzafary, S. S., & Begum, M. (2018). Green banking for environmental sustainability-present status and future agenda: Experience from Bangladesh. *Asian Economic and Financial Review*, *8*(5), 571–585. https://doi.org/10.18488/journal.aefr.2018.85.571.585

Cite as: Siddique, F. K., Akther, T., & Ashanuzzaman, M. (2025). Impact of green banking and environmental CSR practices on sustainable performance of banks: The mediating role of green finance. *Jagannath University Journal of Business Studies*, *13*(2), 241–258. https://dx.doi.org/10.5281/zenodo.18302342