Article

The Effect of Green Banking Practices on Banks' Sustainability Performance and Green Brand Image: An Empirical Study of an Emerging Economy

Md. Abu Issa Gazi [1,2,*], Abdullah Al Masud [3,*], Shanta Islam [3],
Md. Alamgir Hossain [4], Md. Shakhawat Hossain [3],
Abdul Rahman bin S Senathirajah [1]

[1] Faculty of Business and Communications, INTI International University, Persiaran Perdana BBN Putra Nilai, Nilai 71800, Negeri Sembilan, Malaysia

[2] School of Management, Jiujiang University, Jiujiang 332005, China

[3] Department of Management Studies, University of Barishal, Barishal 8254, Bangladesh

[4] Department of Management, Hajee Mohammad Danesh Science and Technology University, Dinajpur 5200, Bangladesh

* Correspondence: Md. Abu Issa Gazi, Email: maigazi@yahoo.com; Abdullah Al Masud, Email: aamasud@bu.ac.bd.

ABSTRACT

This research aims to investigate the significance of implementing green banking (GB) practices on the sustainable achievement and development of a green brand image (GBI) for private commercial banks (PCBs) and state-owned commercial banks (SOCBs) operating in Bangladesh. The study surveyed 397 banking employees from private and SOCBs in Bangladesh. Structural equation modelling (SEM) was applied to identify the significant relationships between the research variables. According to the study's results, the implementation of GB practices has a positive and significant impact on creating a GBI for banks. Moreover, banks' GBI has a statistically significant beneficial influence on their sustainability performance. The study also found that daily operations, employees, and green CSR practices of GB have a significant impact on the sustainable performance of banks, while the impact of customer- and policy-related practices is not significant. This research is the first of its kind to examine how GB practices affect the development of a GBI and how the GBI influences the sustainability performance of PCBs and SOCBs in Bangladesh. The study adds to the current body of knowledge by identifying the factors that influence the impact of GB practices on the sustainability performance of banks (BSP) and their role in creating a GBI. The paper discusses significant consequences for policy and provides recommendations for further investigation in the relevant field.

KEYWORDS: green banking practices; banks' sustainability performance; green brand image; SEM; sustainable growth

ABBREVIATIONS

GB, green banking; GBI, green brand image; PCBs, private commercial banks; SOCBs, state-owned commercial banks; SEM, structural equation modelling; BSFI, Bangladesh Sustainable Finance Initiative; SFRS, Sustainable Finance Refinancing Scheme; GBI, Green Business Index; EFA, explanatory factor analysis; CFA, confirmatory factor analysis; VIF, variance inflation factor; CA, Cronbach's alpha; CR, composite reliability; AVE, average variance extracted

INTRODUCTION

According to Edwards [1], sustainability is an "emerging mega-trend" and a crucial business goal that spurs the development of green business innovation. The current banking industry is experiencing a significant change towards sustainable development, motivated by the urgent need to tackle environmental issues and guarantee long-term economic sustainability. In the pursuit of economic growth and wealth maximization, humans persist in engaging in activities that harm the environment. Despite the varying levels of development, climate change remains a pressing global issue for both developed and developing nations. The current state of climate change places developing nations in an unstable situation due to their continued economic and social development. These countries heavily depend on global climate finance to bolster their efforts to protect against and mitigate climate change [2].

Bangladesh is acknowledged as a prominent developing country with immense potential for economic growth and investment, positioning itself as a significant global participant in the 21st century. Among the nation's most susceptible to the effects of climate change is Bangladesh, which has been greatly impacted by the rise in global sea levels, resulting in ecological degradation and economic hardships for its populace. Consequently, various policies have been implemented to diminish the risks and negative environmental impacts of climate shift. These measures encompass the adoption of GB and the establishment of a GBI in accordance with international standards, along with the promotion of sustainable development, to prevent environmental degradation [2]. GBI is a set of brand perceptions in the consumers' minds that are associated with environmental concerns and commitments. GB represents a form of banking that prioritizes economic, social, and environmental considerations in order to safeguard the ecosystems and renewable resources. It entails investing in environmental services and items to address climate shifts and preserve the environment. In Bangladesh, GB is recognized as a crucial element of sustainable economic development [3]. Hence, it is possible to affirm that GB performs a vital role in worldwide endeavors to address climate change issues and attain the objectives of the Sustainable Development Goals (SDGs).

Bangladesh's banking industry, in particular, can play a significant role in fostering a smooth, litter-free environment that can help meet the growing international demand for such a phenomenon. As a result, GB strategies are becoming increasingly popular in the contemporary banking sector, signaling a shift away from the outdated practices of the past [4]. To prevent environmental degradation, various strategies have been implemented, including the adoption of GB and GBI practices in accordance with international standards as well as the promotion of sustainable economic growth. These strategies aim to encourage environmentally friendly practices in the banking and financial sector and promote sustainable development to mitigate the impact of human activities on the environment [2]. The banking industry's contribution to environmental conservation and sustainability has gained significant attention in international forums like the Paris Agreement, and the G20 group has made considerable efforts to address this issue in their plans [5]. The goal is to improve the efficiency and effectiveness of banking processes while minimizing any negative ecological impact and utilizing IT and physical infrastructure. Bangladesh was recognized as one of the first countries to adopt GB-related practices in 2011, with the aim of achieving sustainable economic development [6]. The Bangladesh Bank (BB), which oversees and regulates the banking sector in Bangladesh, has taken a leading part in promoting GBI through the development of GB. GB serves as a significant precursor to the establishment of a robust green economy, serving as a pathway for economic growth in emerging markets and a means to ensure sustainability by reducing energy consumption and pollution [2].

In recent years, numerous studies have been conducted globally on the topic of GB [2–4,7]. These studies, however, are primarily concerned with GB activity and economic growth in Bangladesh; GB adoption; GB performance and environmental sustainability; and green finance [6]. In addition to the aforementioned topics, a small number of studies have been carried out to evaluate the effect of GB practices on the environmental performance of banks in Pakistan [8], Nepal [9], India [10] and Sri Lanka [4]. There are a few studies that investigate the connection between GB practices, GB performance, and the environmental performance of banks in Bangladesh [3,6,7,11].

However, there are a limited number of studies that explore the impact of GB practices on the sustainability performance of PCBs and SOCBs in Bangladesh and their contribution towards creating a GBI based on primary data. This study's main purpose is to analyze the impact of GB practices on GBI and the sustainability performance of private and SOCBs in Bangladesh. To reach this purpose, the following is the study's key research questions:

RQ1: How do GB practices affect the development of a GBI on the basis of both PCBs and SOCBs in Bangladesh?

RQ2: How does the GBI influence the sustainability performance of these banks?

RQ3: On the basis of both PCBs and SOCBs in Bangladesh, what is the effect of GB practices on the sustainability performance of these banks?

The research adds to the current knowledge on sustainability performance, green branding, and the banking sector in Bangladesh in three ways. Firstly, it fills a research gap by theoretically and empirically examining different GB practices through insights obtained from bankers. Secondly, in the majority of prior investigations, to validate the correlations between the research variables, descriptive statistics and multiple regression analysis were used. In contrast, this research used SEM to assess the impact of GB practices on the sustainability performance of banks [4,9,10]. Thirdly, using data collected from bank workers, the research investigates the connection between several GB practices and their influence on the establishment of a GBI. According to the researcher's information, no other research has been conducted this topic on a global scale, even in developing countries like Bangladesh. Consequently, the research concentrates on PCBs and SOCBs' bankers, who have comprehensive knowledge of GB practices, green branding, and banks' sustainable growth in Bangladesh.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

When exploring the connections between enterprises and their surroundings, the concept of legitimacy defines as "the appraisal of action in terms of shared or common values in the context of the involvement of the action in the social system" ([12], p. 175). The concept of organizational legitimacy is the origin of legitimacy theory, which has been defined as "a condition or status, which exists when an entity's value system is congruent with the value system of the large social system of which the entity is a part. When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy" ([13], p. 122). Preston et al. [14] acknowledge that "legitimacy is understood as congruence between institutional acts and social values and legitimization as activities that institutions take to either signal value congruence or alter social value. Legitimacy is attained by demonstrating that a company's actions align with social values". Complying with legislation, establishing an environmental committee or the position of environmental manager to oversee a company's ecological impact, developing networks or committees with local community representation, conducting environmental audits, establishing an emergency response system, and aligning the company with environmental advocates are all examples of legitimation. Poor environmental performers may choose to disclose biodiversity data on the basis of legitimacy theory [15]. Thus, environmental justice agencies can induce firms with high pollution

intensity to improve their environmental investment and gain an environment-related license via innovative green technologies [16].

The importance of social value in driving organizations to conform to certain practices to gain legitimacy within their environment [17]. Meyer & Rowan [18] argue that organizations adopt formal structures to mimic institutional expectations (myths), even if these structures don't necessarily improve efficiency, in order to gain legitimacy, resources, stability, and enhance their chances of survival. On the other side Brown and Deegan [19] explain that, legitimacy theory focuses on the concept of a social contract, suggesting that a company's sustainability depends on the extent to which it operates within the boundaries and standards of society. Legitimacy theory is commonly believed to explain the phenomenon of firms voluntarily disclosing social and environmental information. Businesses use social and environmental reporting practices to gain, retain, or restore legitimacy, according to the premise of legitimacy theory [20]. According to Suchman [21], "In order to achieve organizational sustainability through the implementation of different activities such as Corporate social responsibility (CSR), GB, and GBI, and to help organizations achieve the country's long-term development, legitimacy is defined as a general perception or assumption that Bangladeshi banks' actions are appropriate within the norms established by the regulator, Bangladesh Bank" [21]. As a result, Businesses must choose practices that are appropriate and consistent with societal perspectives, values, and norms.

Green Banking

GB, sustainable banking, or ethical banking is a banking approach that integrates environmental, social, and governance (ESG) standards into banking practices. GB is an approach that promotes sustainable development, with a focus on protecting the environment and enhancing social and economic development. The concept "Green banking" is first associated with Triodos bank (established in 1980) in Dutch that has directed the banking sector towards environmental sustainability. Green banks aim to align their financial activities with the principles of sustainability by evaluating the environmental and social risks associated with their lending practices and investments. They aim to minimize negative impacts and promote positive environmental and social outcomes. GB practices can include the financing of environmentally friendly projects, such as renewable energy, energy efficiency, and green infrastructure. Green banks may also offer lower interest rates for loans that promote sustainability or invest in sustainable funds and companies. There are four compelling reasons to pursue GB: (a) corporate social responsibilities, (b) environmental concerns, (c) economic benefits, and (d) sustainability risks. GB practices can also help banks to manage risks associated with climate change and reduce their exposure to high-carbon

investments. Additionally, GB can attract socially responsible investors and customers who value environmental and social responsibility [7].

Green Banking in Bangladesh

Although Bangladesh confronts enormous environmental concerns such as air and water pollution, deforestation, and climate change, GB is becoming more popular. In recent years, a significant number of banks in Bangladesh have embraced GB practices in recognition of the significance of solving these concerns. The BB, the country's central bank, has been instrumental in developing GB in Bangladesh. In 2011, it introduced a set of guidelines for banks to follow, known as the GB Policy. The policy requires banks to adopt environmentally sustainable practices and integrate ESG considerations into their lending and investment decisions [3]. Under the GB Policy, banks are required to provide financing for environmentally friendly projects, such as renewable energy, energy efficiency, and green infrastructure. Banks are also encouraged to adopt sustainable practices within their own operations, such as reducing energy consumption and paper use [7]. To further promote GB, the Bangladesh Bank has also launched several initiatives, such as the Bangladesh Sustainable Finance Initiative (BSFI) and the Sustainable Finance Refinancing Scheme (SFRS). The BSFI aims to create a platform for banks, regulators, and other stakeholders to collaborate on sustainable finance initiatives, while the SFRS provides low-interest refinancing for green projects. Banking institutions were requested to create investment strategies that are specific to the industry, taking into account clients' environmental concerns. They were also instructed to construct eco-friendly branches, develop a GBI, include environmental considerations in their structured credit risk requirements, produce a guidebook for project evaluation that addresses environmental risks, and disclose their GB activities to the public [3].

Green Banking Practices and Green Brand Image

A GBI refers to the perception that consumers have of a company's commitment to sustainability and environmental responsibility. There is a positive correlation between GB practices and a GBI [22]. Bank's GBI can be influenced by its GB practices. For example, if a bank adopts sustainable practices such as green CSR, employee-related, operation-related, customer-related, and policy-related practices, including investing in renewable energy, offering green finance solutions, and implementing environmentally friendly policies, it can enhance its reputation as a socially responsible institution with a strong commitment to sustainability. This can help attract environmentally conscious customers, investors, and other stakeholders who value sustainability and environmentally responsible practices. GBI defined as "perceptions formed as a result of interactions between the institute, its personnel,

customers, and the community that are related to environmental commitments and concerns" [4]. A bank can establish a green image by implementing sustainable and stable GB practices that align with the environmental requirements of their customers, demonstrate effective environmental performance, and maintain a strong reputation for being environmentally responsible. A bank with a GBI is seen as environmentally conscious, socially responsible, and committed to reducing its carbon footprint and other negative environmental impacts.

Businesses can create a Green Business Index (GBI) by implementing eco-friendly strategies like employing renewable energy, cutting down on waste and emissions, building a green reputation, retaining and gaining back customers, luring in new ones, succeeding in sustainable achievement, and keeping their environmental commitments credible [23,24].

GB practices have a significant impact on a bank's ability to achieve competitive advantages, improve its GBI and bank value, and pursue creative market prospects. In general, a strong GBI can be a powerful motivator for banks to adopt sustainable practices and integrate environmental considerations into their business operations. This may contribute to the development of a positive feedback loop in which a bank's dedication to sustainability and environmental responsibility improves its standing and draws in more environmentally sensitive clients, which encourages the bank to further its green banking operations [4].

Recently, the connection between GB and a GBI has been observed, and it has been found that there is a significant correlation between banks that implement GB initiatives and the enhancement of their brand image [22]. In addition, there is a positive association between the implementation of GB practices, including operational and policy-related practices, and the enhancement of a bank's green brand equity [23]. Therefore, it can be asserted that GB activities play an important role in boosting a bank's GBI and sustainability performance, ultimately contributing to sustainable economic development in a nation. Based on this reasoning, the research hypotheses are formulated as follows:

Hypothesis (H1): Banks' employee-related practices of GB have a significant impact on the contribution of a GBI.

Hypothesis (H2): The contribution to the establishment of a GBI is substantially affected by the daily operational-related practices of GB.

Hypothesis (H3): The customer-related practices of GB positively influence their contribution towards the creation of a GBI.

Hypothesis (H4): Banks' policy-related practices of GB have a positive influence on the creation of a GBI.

Hypothesis (H5): Banks' green CSR-related practices in GB have made a positive contribution towards the creation of a GBI.

Hypothesis (H6): Banks' contributions towards the creation of a GBI significantly influence the BSP.

Green Banking Practices and Banks' Sustainability Performance

GB practices positively impact BSP. GB practices refer to the adoption of environmentally sustainable policies and practices by banks to reduce their environmental impact while also promoting sustainability. These practices aim to align the financial industry with sustainable development goals and the transition to a low-carbon economy. By adopting these practices, banks can enhance their sustainability performance, contribute to the transition towards a low-carbon economy, and achieve sustainable economic development [4].

"Sustainability can be defined as maintaining well-being by an entity over a long, perhaps even an indefinite, period. This covers the environmental dimensions too. It is sometimes interchangeably understood environment and sustainability in the same context; and environment and sustainability are however not synonymous" [25]. Sustainability performance management is a new term that refers to the environmental, social, and economic (performance) aspects of corporate management in general, as well as corporate sustainability management in particular.

Prior research has indicated that sustainability performance is achieved when an entity operates with the consideration of the longevity of future entities. Sustainability is a long-term concept that involves a combination of three dimensions, namely economic, social, and environmental aspects, referred to as the Triple Bottom Line. While most studies have recognized these dimensions separately, only a limited amount of literature has explored the interconnectedness between the economic, environmental, and social dimensions of sustainability [4,26].

a) **Economic performance:** The economic performance of an organization pertains to its profitability and expansion. It encompasses factors that are commonly disclosed in a company's annual financial report, such as expenditures on human resources, research and development, compensation and benefits, community development, and more [27].

b) **Environmental performance:** Environmental performance refers to a company's ability to surpass societal expectations in attaining sustainability, going beyond regulatory compliance towards a proactive approach in addressing future environmental concerns. However, current environmental performance measurements are limited in scope as they focus primarily on basic environmental impacts like energy consumption, waste generation, pollutant emissions, and natural resource depletion, without considering the long-term environmental effects of a company's operations [28].

c) **Social performance:** "A business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" is what social performance refers to ([29],

p. 693). Social performance encompasses various aspects such as employee relations, health and safety, fair wages that account for the cost of living, non-discrimination policies, employee turnover rates, and opportunities for education and career advancement.

A study conducted in Coimbatore, India, found that these GB activities positively impacted the environmental performance of banks. Similarly, Risal and Joshi [9] conducted to examine the impact of GB practices on the environmental performance of Nepali banks. Their findings revealed that environmental training, green policies, and energy-efficient equipment had a significant influence on environmental efficiency, while customer-related practices had an insignificant effect. According to another study, the most important GB strategies that help a country achieve sustainable economic development are going paperless, using a green checking account, getting a green loan for home improvements, having a green policy, using a green credit card, generating electricity from the sun, and purchasing green products and services [11]. As a result, it is possible to conclude that GB denotes a measure by which banks can reduce carbon emissions and protect the environment in order to enhance their sustainable environmental efficiency and, as a result, enhance their reputation as excellent corporate citizens in the endeavor of sustainable economic development in a county. Therefore, it can be asserted that GB activities play an important role in boosting a BSP. The following research hypotheses are provided:

Hypothesis (H7). The employee-related practices of GB have a positive effect on BSP.

Hypothesis (H8). Banks daily operation-related practices positively impact BSP.

Hypothesis (H9). The BSP is significantly impacted by the customer-related practices of GB.

Hypothesis (H10). Banks' policy-related practices in GB positively impact BSP.

Hypothesis (H11). Banks' green CSR-related practices of GB significantly influence BSP.

RESEARCH METHODOLOGY

The research conducted a survey of employees working in PCBs and SOCBs banks in Bangladesh to examine the connection between GB practices, the BSP, and their GBI. It was primary data that was obtained for the study. In the part that follows, the materials and procedures used in the research will be discussed in depth.

Instruments Development

Appendix A, demonstrates that a questionnaire was used to collect data for the development of the research model. Four elements comprised the questionnaire: demographic information, GB practices, GBI, and BSP.

Based on past research relative to GB, the questionnaire items were created. The demographic component of the questionnaire gathered basic information about the respondents, including their name of bank, marital status, age, gender, educational qualifications, employment position, and number of years working in the organization. To measure the variables of Banks' employee-related practices (BERP), Banks' operation-related practices (BORP), Banks' customer-related practices (BCRP), Banks' policy-related practices (BPRP), and Green CSR practice (GCSRP), initial measurement items were created based on the related studies of reference. A pretest of the first 37-item survey was conducted on 20 randomly chosen bankers from PCBs and SOCBs in Bangladesh. Some measuring items were deleted after conducting exploratory factor analysis (EFA) using the pilot sample respondents because their factor loadings were less than 0.5.

Finally, the research questionnaire contained 28 measurement items and was structured using a seven-point Likert scale, where one represented "strongly disagree" and seven represented "strongly agree".

Sample and Data Collection

There are 6 SOCBs, 3 specialized banks, 43 PCBs, among them 33 conventional PCBs, 10 Islami Shariah-based PCBs, 9 foreign commercial banks (FCBs), and 35 non-bank financial institutions (FIs) supervised by the Bangladesh Bank (BB), the government's central bank [30]. We utilized a convenient sampling method to collect data from experienced (6 SOCBs and 43 PCBs) employees working at the bank in order to gather their valuable insights. Being the largest financier of the practice, PCBs and SOCBs were mostly responsible for the expansion of GB in Bangladesh [2]. As a result, PCBs and SOCBs were specifically chosen for this research. In order to achieve the given research objectives, this study applied primary data. Utilizing a non-probability sampling technique, the majority of the original data was obtained from the employees of the selected PCBs and SOCBs. Throughout September and October 2022, 416 structured questions were distributed for data collection, of which 397 were received. The survey measured the employees' responses on a seven-point Likert scale spanning from one (strongly disagree) to seven (strongly agree).

Data Analysis Strategy

In this study, a quantitative approach, IBM SPSS (version 25.0), AMOS (version 24.0), and a combination of the two were used to evaluate the gathered primary data. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and SEM are the three primary analytical techniques. EFA is a frequently used data-driven technique for determining the link between variables. An EFA encompasses several steps, including data screening and processing, eigenvalue extraction, determining the number of factors in an outcome, factor rotation to

achieve a clearer interpretation, and offering an explanation for the outcome [31]. Additionally, the assessment of standardized coefficients, critical ratios, and other indicators of model fit in the output of a CFA determines the measurement model of research [32]. In addition, a SEM analysis requires the selection of the model, the collection and screening of suitable data, the estimation of the parameters of the model, the examination of the model's fit to the data, the interpretation of the parameters of the model, and the evaluation of the validity of rival models. In this inquiry, a two-step statistical approach was applied to analyze the suggested research model (Figure 1). The first analysis focused on the CFA measurement model. In the next stage, the structural connections between the latent components were determined using SEM.
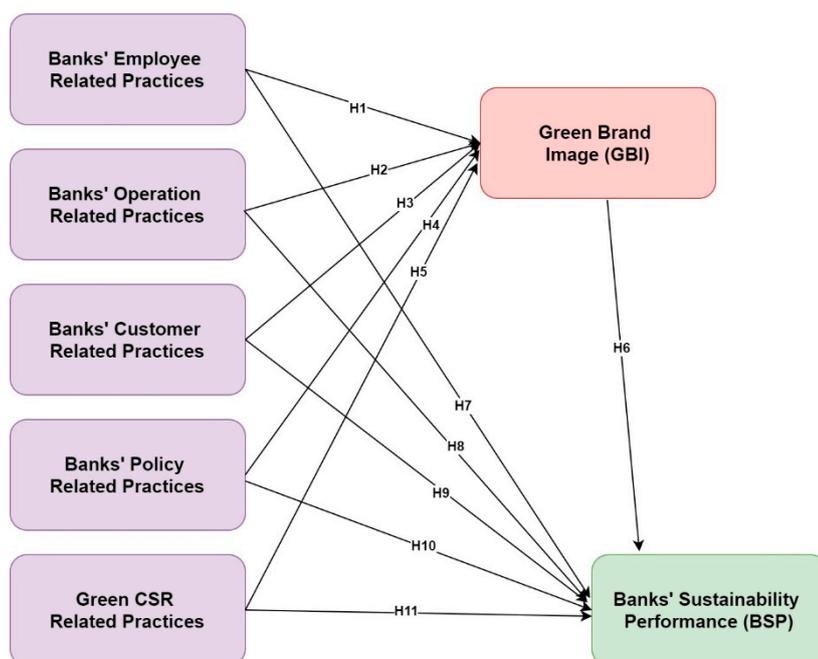

Figure 1. Conceptual framework.

ANALYSIS AND RESULTS

The section on empirical findings includes information about the demographic characteristics of the participants, descriptive statistics, the reliability and validity of the constructs used, the measurement model, SEM, and the outcomes of the study's hypotheses.

Respondent's Profile

The surveyed 397 banking employees respondents' demographic information is displayed in Table 1. The survey found that SOCBs accounted for 48.1% of the sector, while PCBs accounted for 51.0%. The majority of responders (57.7%) were male, while 42.3% were female. 21.4% of respondents were under 25 years old, 34.3% were 25 to 35 years old, 29.7% were 35 to 45 years old, and 14.4% were 46 years and older. Regarding education level, 5.3% had postgraduate qualifications, 41.1%

had a graduate degree, about 46.1% had master's degrees, and 7.6% held a PhD. Thus, it can be assumed that the majority of respondents were highly educated. Regarding the positions held by survey respondents, 22.2% were managers, 18.4% were assistant managers, 31.7% were officers, 18.6% were banking trainees, and 9.1% held other positions. 16.4% of respondents had worked for less than one year, 33.2% for one to two years, 34.3% for three to five years, and 16.1% for more than five years, according to the empirical data. 28.5% of respondents with experience had worked for fewer than two years, 35.8% for two to six years, 23.7% for seven to nine years, and 12.1% for more than ten years.

Table 1. Demographic information of the respondents.

Variable	Items	Percentage
Types of the Bank	SOCBs	48.1%
	PCBs	51.9%
Gender	Male	57.7%
	Female	42.3%
Marital status	Married	46.6%
	Single	55.4%
Age	Below 25 years	21.4%
	25–35 years	34.3%
	35–45 years	29.7%
	Above 45	14.6%
Educational Qualification	Intermediate	5.3%
	Graduate	41.1%
	Master's Degree	46.1%
	PhD	7.6%
Job Position	Manager	22.2%
	Assistant Manager	18.4%
	Officer	31.7%
	Banking Trainee	18.6%
	Other	9.1%
Number of years in present in this Organization	Less than 1	16.4%
	1–2	33.2%
	3–5	34.3%
	Over 5	16.1%
Total experiences	Less than 2	28.5%
	2–6	35.8%
	7–9	23.7%
	Over 10	12.1%

Source: survey results.

The findings of the EFA using principal component analysis are shown in Table 2. The resulting Kaiser-Meyer-Oklin value of 0.913 was deemed acceptable by Kaiser. The communalities of the 28 measurements varied between 0.847 and 0.965. Specifically, the construct with the greatest mean score was BERP4 (5.57), whereas the construct with the lowest mean score was BPRP2 (5.03). The standard deviation for the seven components varied from 1.426 to 1.794.

Table 2. Model estimates and factor extraction outcomes of the EFA. Pattern Matrix.

Variable	Component							*Mean*	*Std. Deviation*
	1	**2**	**3**	**4**	**5**	**6**	**7**		
BSP5	0.930	-	-	-	-	-	-	5.52	1.532
BSP4	0.925	-	-	-	-	-	-	5.55	1.513
BSP6	0.915	-	-	-	-	-	-	5.54	1.426
BSP1	0.862	-	-	-	-	-	-	5.51	1.471
GCSRP3	-	0.953	-	-	-	-	-	5.42	1.641
GCSRP2	-	0.952	-	-	-	-	-	5.39	1.632
GCSRP1	-	0.949	-	-	-	-	-	5.54	1.608
GCSRP5	-	0.943	-	-	-	-	-	5.48	1.568
GCSRP4	-	0.924	-	-	-	-	-	5.35	1.607
BERP4	-	-	0.965	-	-	-	-	5.57	1.596
BERP2	-	-	0.937	-	-	-	-	5.32	1.794
BERP5	-	-	0.928	-	-	-	-	5.50	1.693
BERP1	-	-	0.928	-	-	-	-	5.47	1.596
BORP3	-	-	-	0.956	-	-	-	5.28	1.677
BORP1	-	-	-	0.910	-	-	-	5.37	1.579
BORP5	-	-	-	0.889	-	-	-	5.22	1.640
BCRP3	-	-	-	-	0.945	-	-	5.36	1.589
BCRP1	-	-	-	-	0.943	-	-	5.41	1.528
BCRP5	-	-	-	-	0.942	-	-	5.51	1.596
GBI2	-	-	-	-	-	0.950	-	5.44	1.713
GBI5	-	-	-	-	-	0.919	-	5.31	1.629
GBI4	-	-	-	-	-	0.919	-	5.33	1.621
GBI1	-	-	-	-	-	0.900	-	5.28	1.652
BPRP4	-	-	-	-	-	-	0.956	5.31	1.752
BPRP3	-	-	-	-	-	-	0.940	5.38	1.675
BPRP5	-	-	-	-	-	-	0.939	5.40	1.678
BPRP1	-	-	-	-	-	-	0.878	5.19	1.541
BPRP2	-	-	-	-	-	-	0.847	5.03	1.474

Note: Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.913, Bartlett's test of sphericity = $p < 0.000$.

Common Method Variance

According to a study, the researchers conducted a test for CMV (Common Method Variance) using Harman's single factor test. To determine the presence of CMV problems, suggested that if all the survey items fall under the same factor or if a single factor accounts for more than 50% of the variance, there may be CMV issues. The test results showed that the first factor accounted for only 27.61% of the total variance, and there were several factors with eigenvalues greater than 1, indicating that the data was not affected by CMV problems [33].

Measurement Model Analysis

To confirm the model's validity and dependability, the research analyzed a variety of parameters. Study findings shows that a composite reliability (CR > 0.70) and Cronbach's alpha (>0.70) score to be satisfactory [34]. An extracted average variance (AVE > 0.50) and factor loads (>0.70) were also acceptable for determining composite dependability [35]. Hair et al. [34] determined discriminant validity by comparing inter-variable correlations with the square root of AVE, with the greatest correlation value predicted to be smaller than AVE.

Here, ($X^2/df > 3$), goodness of fit index (GFI > 0.85), average goodness of fit index (AGFI > 0.80), comparative fit index (CFI > 0.90), and approximation (RMSEA 0.05) [34]. Figure 2 depicts the construct model, while Table 3 details the model's validity and reliability. Cronbach's alpha and CR scores are greater than their cutoff value of 0.70 [36], AVE scores are greater than 0.50, factor loads are greater than 0.70, and the inter-construct correlation value is less than the square root of AVEs, indicating divergent and discriminant validity. Model fit indices indicate a satisfactory model fit.
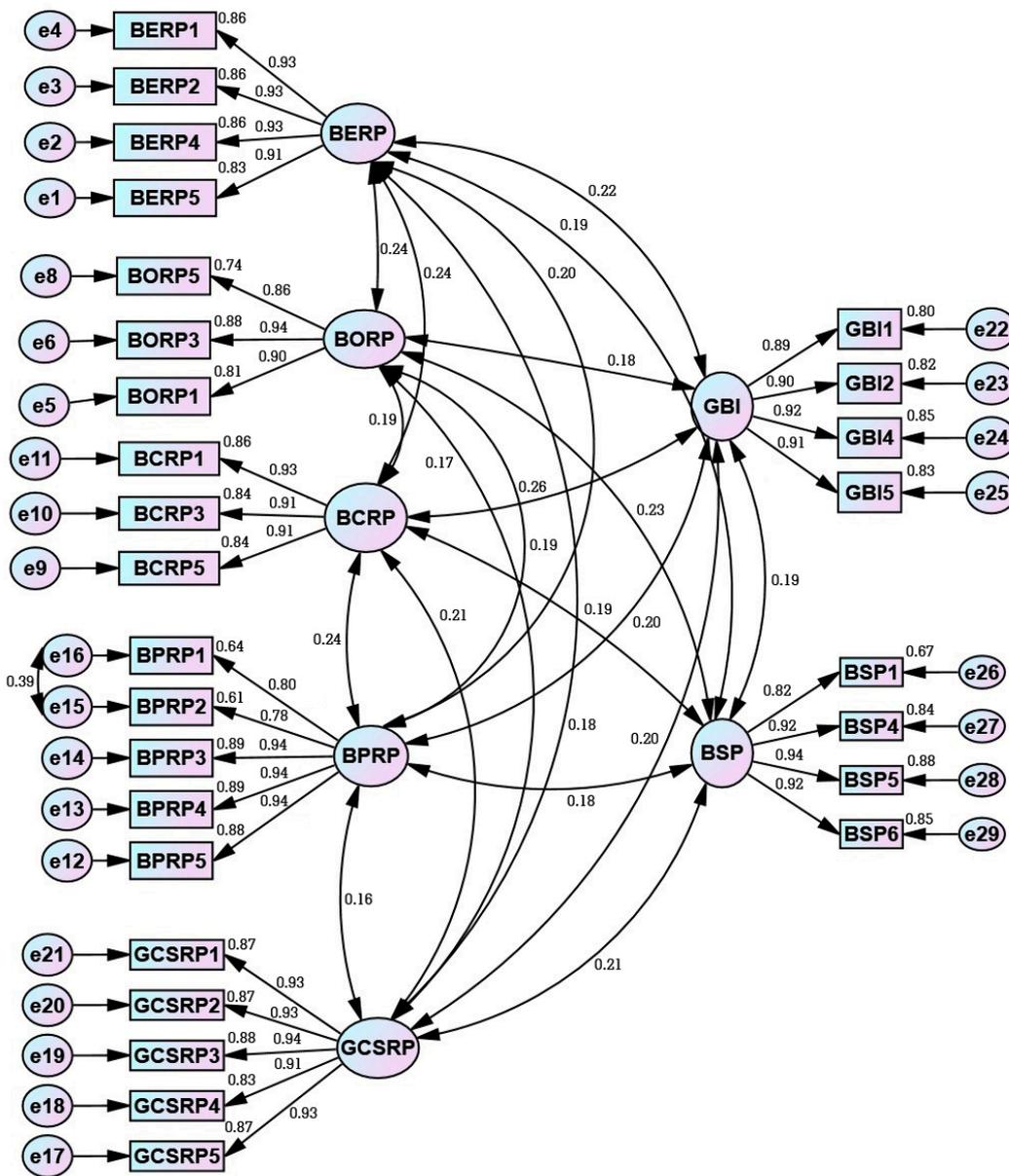
Figure 2. Measurement model.

Discriminant Validity

The gap between the AVE square root value and the correlation coefficient among the components was used to assess discriminant validity [35]. As demonstrated in Table 3, the AVE square root values varied from 0.884 to 0.969, surpassing their interconstruct squared correlations. BERP, BORP, BCRP, BPRP, BCSRP, GBI, and BSP structures had AVE values higher than 0.5. Furthermore, the CR values varied from 0.927 to 0.969, above the permissible limit of 0.6 [34]. In addition, the variance inflation factor (VIF) was used to test for multicollinearity, and the anticipated threshold value was below 10 [34].

Table 3. Discriminant validity.

Constructs	CR	AVE	MSV	MAXR(H)	1	2	3	4	5	6	7	VIF
1. Banks' sustainability performance	0.944	0.808	0.051	0.952	**0.899**	-	-	-	-	-	-	-
2. Green CSR related practices	0.969	0.864	0.046	0.970	0.214	**0.969**	-	-	-	-	-	1.147
3. Banks' employee related practices	0.959	0.854	0.060	0.959	0.192	0.176	**0.924**	-	-	-	-	1.154
4. Banks' operation related practices	0.927	0.809	0.060	0.935	0.226	0.166	0.244	**0.899**	-	-	-	1.128
5. Banks' customer related practices	0.943	0.845	0.070	0.943	0.192	0.205	0.239	0.194	**0.919**	-	-	1.168
6. GBI	0.950	0.825	0.070	0.950	0.194	0.197	0.219	0.183	0.264	**0.909**	-	1.137
7. Bank policy related practices	0.947	0.782	0.059	0.964	0.179	0.163	0.205	0.195	0.242	0.196	**0.884**	1.147

"Model fit indices: X^2/df = 1.168, GFI = 0.939, AGFI = 0.924, CFI = 0.995, TLI = 0.995, IFI = 0.995, NFI = 0.969, RMSEA = 0.021".

Note: bold diagonal values are the square root of AVE value.

The Cronbach's alphas for the seven components in Table 4 varied from 0.926 to 0.969. Cronbach's alpha and CR values are higher than the 0.70 cutoff frequency [36].

Table 4. Model Estimates and CFA.

Variable	Items	Estimate	S.E.	*t*-value	Cronbach's alpha
Banks' employee-related practices	BERP4	1.000	-	-	-
	BERP2	0.956	0.029	33.379	0.958
	BERP5	0.888	0.028	31.669	
	BERP1	0.854	0.025	33.709	
Banks' operation-related practices	BORP3	1.000	-	-	-
	BORP1	0.903	0.032	28.295	0.926
	BORP5	0.894	0.035	25.553	
Banks' customer-related practices	BCRP3	1.000	-	-	-
	BCRP1	0.978	0.032	30.703	0.942
	BCRP5	1.005	0.034	29.586	
Banks' policy-related practices	BPRP4	1.000	-	-	-
	BPRP3	0.956	0.025	37.954	0.949
	BPRP5	0.953	0.026	37.227	
	BPRP1	0.747	0.032	23.411	
	BPRP2	0.697	0.031	22.161	
Green CSR practice	GCSRP3	1.000	-	-	-
	GCSRP2	0.986	0.027	36.372	0.969
	GCSRP1	0.971	0.027	36.129	
	GCSRP5	0.947	0.026	36.227	
	GCSRP4	0.952	0.028	33.729	
Green brand image	GBI2	1.000	-	-	-
	GBI5	0.959	0.033	29.114	0.950
	GBI4	0.966	0.032	29.997	
	GBI1	0.954	0.034	27.693	
Banks' sustainability performance	BSP5	1.000	-	-	-
	BSP4	0.964	0.030	32.467	0.943
	BSP6	0.946	0.029	33.012	
	BSP1	0.838	0.035	23.990	

Structural Model Analysis

Based on the assessment model's fitness, we proceeded to conduct SEM (Figure 3) aimed at assessing the hypothesized paths. SEM model has adequate model fit to the data (X^2/df = 1.501, AGFI = 0.895, GFI = 0.914, CFI = 0.986, TLI = 0.984, IFI = 0.986, RMSEA = 0.036, NFI = 0.959). The data show that the model explained (e.g., R^2 value) 37% and 46%, respectively, of the variance in GBI and BSP.As a consequence, based on the findings of the numerous indices, the overall structural model was deemed appropriate and effective.
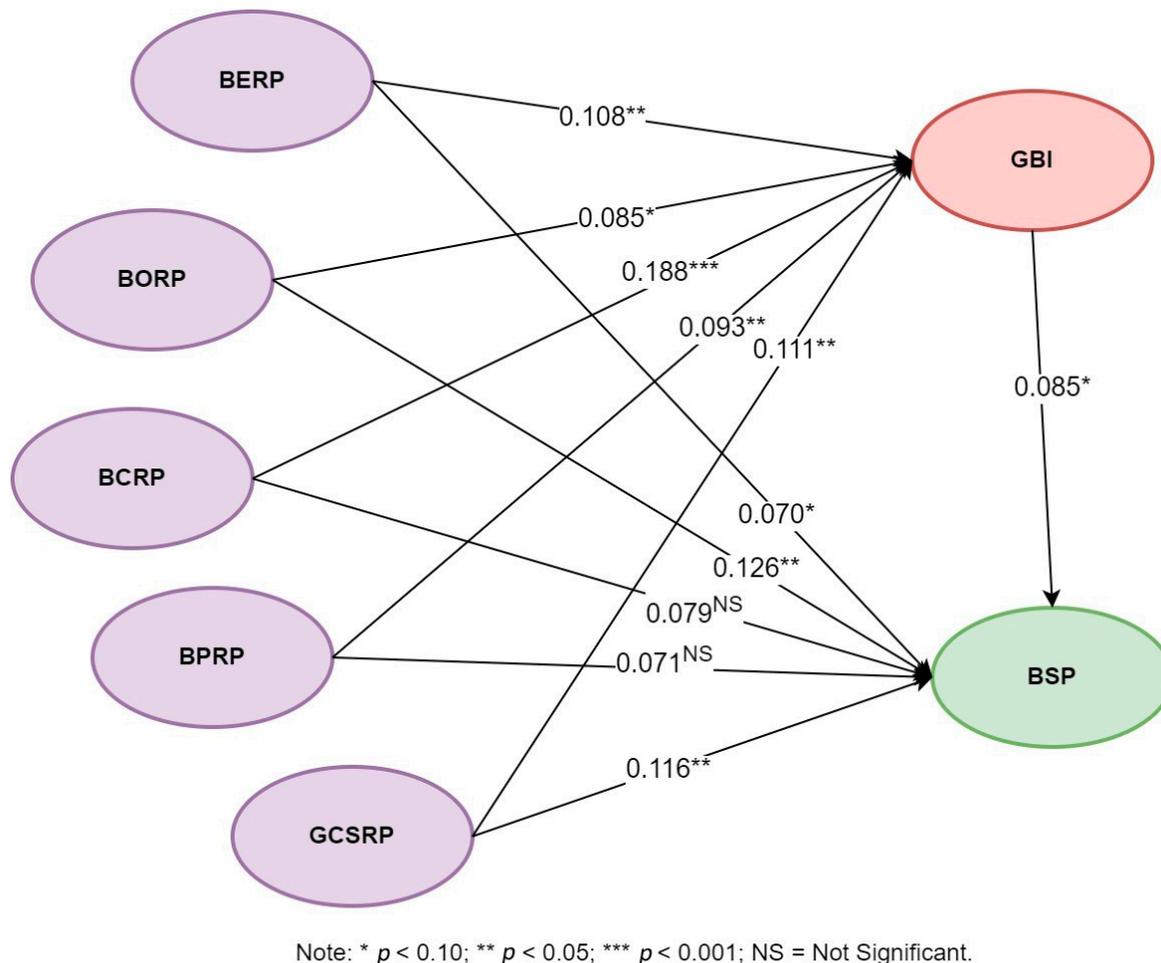
Note: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$; NS = Not Significant.

Figure 3. Structural model.

Test of Research Hypotheses

In the second step, after analyzing the overall model fit indices in the measurement model, the research hypotheses were tested using a structural model. The outcomes of the investigated research hypotheses are shown in Table 5 where, BERP (β = 0.108; t = 2.446), BORP (β = 0.085; t = 1.723), BCRP (β = 0.188; t = 3.510), BPRP (β = 0.093; t = 2.008), and GCSRP (β = 0.111; t = 2.223) had a substantial and positive influence on GBI which corroborate hypotheses H1, H2, H3, H4, H5. Additionally, BERP (β = 0.070; t = 1.702), BORP (β = 0.126; t = 2.754), and GCSRP (β = 0.116; t = 2.486) have significant and positive influence on BSP. In contrast, BCRP had a positive route coefficient but no significant influence on BSP (p = 0.119), implying that H9 is not accepted. The effects of BPRP had a positive path coefficient on BSP (p = 0.103), although this relationship was not statistically significant. The findings indicated that H10 was consequently not supported. Subsequently, the results indicated that GCSRP of GB have a positive influence on BSP (β = 0.116; t = 2.486), indicating the validity of Hypothesis 11. GBI has a satisfactory impact on BSP (β = 0.085; t = 1.708), supporting hypotheses H6.

Table 5. Test of Research Hypotheses.

Hypotheses	Paths	Estimates (β)	S.E.	t-value	p-value	Decision
H1	GBI ← BERP	0.108	0.044	2.446	**	Accepted
H2	GBI ← BORP	0.085	0.049	1.723	*	Accepted
H3	GBI ← BCRP	0.188	0.053	3.510	***	Accepted
H4	GBI ← BPRP	0.093	0.046	2.008	**	Accepted
H5	GBI ← GCSRP	0.111	0.050	2.223	**	Accepted
H7	BSP ← BERP	0.070	0.041	1.702	*	Accepted
H8	BSP ← BORP	0.126	0.046	2.754	**	Accepted
H9	BSP ← BCRP	0.079	0.050	1.559	NS	Rejected
H10	BSP ← BPRP	0.071	0.043	1.631	NS	Rejected
H11	BSP ← GCSRP	0.116	0.047	2.486	**	Accepted
H6	BSP ← GBI	0.085	0.050	1.708	*	Accepted

Note: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$; NS = Not Significant.

DISCUSSION

There is a positive relation between the BERP and their contribution to the establishment of a GBI by PCBs and SOCBS in Bangladesh, thereby supporting Hypothesis 1. According to previous research, there is a positive correlation between bankers' knowledge, beliefs, and attitudes towards GB practices and their contribution to the development of a GBI, which ultimately leads to sustainable economic development in Bangladesh [2,8,22].

The findings of the research validate Hypothesis 2, which proposes that BORP have a favorable impact on the construction of a GBI. This finding is consistent with previous research [2,8,22] suggesting that green-related everyday operations of banks, such as ecologic financial services and a decrease in paper use, have a favorable influence on the improvement of green deposit schemes.

The study's results validate Hypothesis 3, which implies that there is a statistically significant relationship between BCRP and their contribution to the establishment of a GBI. This result is similar to past research [2,9,22,37], which also demonstrates a favorable association between BCRP and the adoption of GB practices to develop a GBI.

The results of the research confirm Hypothesis 4, demonstrating a positive relationship between the BPRP and the development of a GBI. This is consistent with previous studies [8,22] that revealed a favorable correlation between and the establishment of a GBI in connection with the implementation of GB practices.

The findings of this research confirm Hypothesis 5, indicating that GCSRP have a beneficial influence on the formation of a GBI for both PCBs and SOCBs. This result is consistent with earlier studies [2,22], which indicated a favorable correlation between GCSRP and the construction of a GBI among banks. From H1 to H5, we get the answer to our RQ1.

In addition, the study's empirical findings confirm Hypothesis 6, demonstrating that the establishment of a GBI has a favorable impact on the BSP. This outcome is consistent with Malsha et al. [4] where they concluded that a GBI favorably improves the overall BSP. Hence, it is suggested that banking authorities emphasize the construction of a GBI for long-term sustainability and enhanced GB performance, thus reducing negative environmental consequences on society. So, here we get the answer to our RQ2.

The findings of this research confirm Hypothesis 7, demonstrating that there is a significant relationship exists between the BERP and the BSP. This result is consistent with previous research [4,9,37], which suggests that employee-related GB practices, such as providing environmental education and training, sustainable measuring performance methods, and green incentive facilities, positively impact the BSP.

The findings corroborate Hypothesis 8, which shows that the BORP of GB have a beneficial effect on the BSP. This result concurs with prior research [4,9,37], which found that GB daily BORP, such as offering online banking services and reducing paper consumption, can lead to a decrease in adverse environmental effects and improve BSP.

The study's findings Hypothesis 9 is not supported since there is no significant connection between BCRP and BSP. This result is consistent with prior research [4,9,37]. The research demonstrates that while BCRP constitute a component of banks' overall operations, they have no direct impact on actual BSP. This is due to the fact that these practices are closely tied to consumers and have no direct influence on the BSP.

Further, based on these findings, Hypothesis 10 gets rejected because there is no significant association between the BPRP and their BSP. This result contradicts the findings of previous research [3,4,9,37], which found that BPRP, such as establishing more green branches, implementing a green policy, and promoting green relationships with suppliers and shareholders, positively influence their environmental performance [38,39]. The gap in results may be attributable to a lack of understanding and implementation of green policies in the present investigation. Therefore, it is suggested that banking authorities concentrate on enhancing GB performance and reducing adverse environmental impacts by establishing more green branches, implementing a green policy, and promoting green partnerships for suppliers and investors by providing bank policy-related practices.

Finally, the statistical analysis validates Hypothesis 11, which suggests that GCSR have a positive impact on the BSP. This finding is support with previous research [22,40,41], which suggest that GCSRP, such as taking

progressive steps towards reducing carbon footprint, funding projects or organizations that contribute positively to natural environment protection, organizing events to raise awareness about environmental protection, and offering specialized services to investors in the green economy, can improve BSP. From H7 to H11, we get the answer to our RQ3.

CONCLUSION

In conclusion, it could be extrapolated that GB's activities, including employee, customer, policy, operation, and GCSR-related practices, have both indirect and direct impacts on the growth of banks' GBI and BSP. This is due to the fact that these activities contribute to the country's sustainable growth.

Many more entities are concerned about environmental protection, and their strategic movements have connections to preserving the environment for the benefit of future generations. The major objective of the study was to determine the influence of GB practices on the BSP and the creation of a GBI on the basis of PCBs and SOCBs in Bangladesh.

Theoretical Implications

This study extends legitimacy theory by demonstrating how GB practices and GBI as a valuable banking resource can drive sustainable development in banks. The study adds to the existing knowledge on the effect of green banking practices on BSP and GBI building. The findings emphasize that effective alignment with legitimacy theory demonstrated that the BERP, BORP, BCRP, BPRP, and GCSRP procedures of green banking have substantial positive effects on the formation of a GBI. In addition, banks' GBI had a significant effect on their sustainability performance. In addition, BERP, BORP, and GCSR of GB practices were discovered to have major influence on the BSP, as opposed to BPRP and BCRP of GB practices. The study's findings have important significance for academic institutions, financial firms, bankers, managers, and government ministers in Bangladesh, as they promote green banking and provide a GBI to improve BSP and, as a result, the country's sustainable economic development.

Managerial Implications

The conclusions of the study have implications for bankers in the banking industry. This study contributes to the GB literature and helps scholars understand the impact of GB practices the development of a GBI, and the BSP. The most important policy implications were then evaluated:

Firstly, it was noted that GB practices favorably impacted the formation of a GBI for PCBs and SOCBs in Bangladesh. Hence, it was proposed to maintain PCBs and SOCBs and to offer workers the essential environmental training programs in order to support a GBI through the implementation of GB in their day-to-day banking activities.

Secondly, the everyday operations and green CSR policies of green banking have a favorable influence mostly on sustainability performance of financial institutions. Consequently, the managers of PCBs and SOCBs are tasked with incorporating the daily operations and GCSRP of GB into the banking policy through the lowering of paper usage, various initiatives towards lowering their carbon footprint for a stable future, the provision of eco-friendly banking activities such as ATMs and internet banking, the creation of green divisions, various events to publicize concerns about natural environment protection, and a special department to coordinate GCSRP.

Third, the influence of GB's employees, policies, and customer-related operations on the BSP was found to be analytically inconsequential. This suggests that bank workers, policymakers, and customers lack knowledge of Green Bank's efforts to improve the banking system's environmental sustainability performance.

Finally, according to the research, coordination between the administration, banking institutions, and international organizations is necessary to promote GB practices through a GBI and to determine how these practices improve banks' overall sustainability performances. In order to contribute to a nation's sustainable socioeconomic development, Bangladesh Bank may play an active part in teaching, coordinating, promoting, and monitoring GB-related activities.

Research Limitations

Similar to previous research, the current study included certain limitations. The sample size of 397 participants in this study may not be representative of the overall banking industry population. Due to the inclusion of workers of PCBs and SOCBs in the research, the findings can only be extended to a specific community. Hence, the findings of the current research should be improved by evaluating other stakeholders (such as clients and owners) among other banking institutions operating in Bangladesh, such as foreign-owned commercial banks (FCBs), Islamic banks (IBs), and non-bank financial institutions (NBFIs).

Future Research Suggestion

Future research might broaden the scope of this study by analyzing the mediating impacts of GBI on the influence of GB practices on the sustainable performance and profitability of banks or employee green behavior (EGB). Knowledge of GB practices among employees of IBs, FCBs, and NBFIs may vary. Thus, this might be considered for future study by a variety of companies. In order to evaluate the establishment of a GBI and BSP, the study did not take into consideration the views of consumers and proprietors of sample banks but instead included solely staff perceptions on various GB activities.

HUMAN ETHICS AND CONSENT TO PARTICIPATE

This study approval constituted ethical clearance by the School of Management Human Research Ethics Committee of Jiujiang University, China. Informed consent was obtained orally from all participants to the collection, storage, and use of their given information for research purposes.

CONSENT FOR PUBLICATION

We, the authors of our paper, hereby grant consent for its publication in Journal of Sustainability Research.

DATA AVAILABILITY

Data will be provided upon reasonable request.

AUTHOR CONTRIBUTIONS

Conceptualization, SI, MSH and AAM; Data Curation, SI, MAIG, and ARSS; Formal Analysis, AAM, SI, MAH and MSH; Funding Acquisition, MAIG and ARSS; Investigation, MAH, MAIG, AAM, and ARSS; Methodology, AAM, SI, MSH and MAH; Project Administration, MAIG; Resources, SI, AAM, MAH and MSH; Software, MSH, and SI; Supervision, AAM; Validation, SI, MAIG and ARSS; Visualization, MAH; Writing—Original Draft, AAM, SI and MSH; Writing—Review & Editing, MAIG, ARSS, AAM, MAH, MSH and ARSS.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

APPENDIX A. QUESTIONNAIRE ITEMS.

Variables	Items	Descriptions	Sources
"Banks' employee related practices"	BERP1	Provision training and education to the staff on environmental protection	[3,4,22,37]
	BERP2	Environmental sustainability performance evaluation practices	
	BERP4	Suggestions and bring new ideas about environmentally friendly	
	BERP5	Knowledge sharing about the environment with co-workers	
"Banks' operation-related practices"	BORP1	Reduction paper usage and other wastage of materials	[4,37]
	BORP3	Environmental friendly banking practices (e-mail, intranet, e-statements, online approval system, and etc.	
	BORP5	Development green deposit schemes	
"Banks' customer-related practices"	BCRP1	Provision loan to environmental protection and energy saving related projects	[4,37]
	BCRP3	Social and environmental management system or any other mechanisms to evaluate all credit proposals	
	BCRP5	Environmental grievance mechanisms	
"Banks' policy-related practices"	BPRP1	Implementation of a green policy	[4,37]
	BPRP2	Promotes green partnerships among the suppliers and investor	
	BPRP3	Head office level or top management involves in environmental protection related planning and implementation	
	BPRP4	Environment audit is done regularly in our branch/banks	
	BPRP5	Research & development' is continuous on environmental issues	

APPENDIX A. *Cont.*

Variables	Items	Descriptions	Sources
"Green CSR Practice"	GCSRP1	Progressive steps towards reducing the carbon footprint for a sustainable future	[22]
	GCSRP2	Funds projects or organizations which make positive contribution to natural environment protection	
	GCSRP3	Different events to publicize concerns about natural environment protection	
	GCSR4	Publication advertising documents and notices about natural environment protection in their branches.	
	GCSRP5	Special department to fully offer services to business people who seek to invest in the green economy	
"Green Brand Image (GBI)"	GBI1	Commitment to natural environment protection"	[22]
	GBI2	Professionalism manner in natural environment protection	
	GBI4	Great concern about natural environment"	
	GBI5	Reliable with their promise of natural environment protection	
"Banks' Sustainability Performance (SPB)"	BSP1	Improving resource management efficiency	[4]
	BSP4	Significantly reduce paper usage and other materials	
	BSP5	Positive effect on the image	
	BSP6	Better relationship between community and stakeholders	

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