The Impact of Corporate Social Responsibility on Climate Change Actions for Sustainable Performance: A Survey of Private Banks in Bangladesh Adopting Multi-Variable Analysis

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Abstract

As the world grapples with unprecedented climate change challenges, the banking sector has a unique opportunity to inspire sustainable transformation. This study reveals how climate-friendly banking practices can reshape the financial landscape in Bangladesh, presenting both risks and rewards. By integrating the natural resource-based view and stakeholder theory, we explore the dynamic relationship between corporate social responsibility (CSR) and innovative climate initiatives, revealing their effects on sustainable performance. Through an in-depth analysis of data from commercial banks in Bangladesh and utilising Structural Equation Modelling (SEM) via SmartPLS, we discover that while CSR's direct impact on sustainable performance may be limited, climate change actions emerge as vital mediators in this complex equation. Furthermore, the role of top management becomes essential in enhancing climate initiatives and organisational performance. This research does not only provide a fresh perspective for bank managers seeking sustainable strategies but also underscores the urgent need for climate-conscious approaches in emerging markets like Bangladesh. By aligning banking operations with environmental aspirations, financial institutions can mitigate climate threats while unlocking new growth avenues. This paper therefore demonstrates the critical role the banking sector can play in promoting sustainability by inspiring pro-active strategies that can lead to transformative change.

Keywords- Corporate Social Responsibility, Climate Change Actions, Natural Resource-based view theory, Stakeholders Theory, Sustainable Performance, Bangladesh.

Introduction

The banking sector stands at a pivotal crossroads as it grapples with the profound and multifaceted challenges posed by climate change (Bowman, 2010). Today, the future of financial operations depends not only on maintaining profitability but also on the sector's ability to manage climate-related risks and capitalise on emerging green opportunities. While

uncertainty persists around evolving regulatory frameworks, there is also immense potential for investment in renewable energy technologies and sustainable finance initiatives (Bowman, 2010; Allianz Group & WWF, 2005). As powerful financial intermediaries, banks could influence the direction of climate action. They can either fund projects that contribute to greenhouse gas (GHG) emissions or channel capital toward innovative, low-carbon technologies. This dual role underscores the importance of banks as risk assessors, particularly in evaluating Environmental, Social, and Governance (ESG) factors that shape corporate investment decisions and forecast long-term profitability (Buranatrakul & Swierczek, 2017).

In response to growing global urgency of climate change, financial institutions have a key role to adopt strong corporate social responsibility (CSR) frameworks. These must align with internationally recognised standards such as the United Nations Environmental Program Financial Initiative (UNEP FI) and the Equator Principles, which promote transparency, sustainability, and effective climate change mitigation (Buranatrakul & Swierczek, 2017). The Paris Agreement serves as a landmark global commitment to limit the rise in global temperatures to well below 2°C (Paris Agreement, 2015). However, the implications of climate change extend far beyond environmental degradation—they represent critical business risks that demand strategic responses from all sectors (IPCC, 2013; Mudde & Abadie, 2008). Research indicates that a company's approach to climate change can influence its CSR ethos and the expectations of its stakeholders to drive sustainable performance (Littlewood *et al.*, 2018; Abreu *et al.*, 2017; Boiral, 2012).

Since the 1990s, there has been a growing interest in the link between CSR and organisational performance. Empirical studies consistently show that CSR initiatives are positively correlated with improved business outcomes, reinforcing the need for banks to embed sustainability at the heart of their operations (Ali *et al.*, 2020). Against this backdrop, this study explores the dynamics of climate change and CSR in the context of Bangladesh's banking sector. It investigates how strategic climate actions can enhance sustainable performance and guide banks towards greater resilience and long-term impact. By focusing on the transformative role banks can play, this research seeks to spark a shift in mindset—encouraging financial institutions to fully embrace their potential as catalysts in the global fight against climate change.

The study sets out to solicit answers to the following three research questions:
  i. To what extent do CSR, stakeholders' orientations, and commitment to climate change actions affect the sustainable performance of commercial banks in Bangladesh?
  ii. To what extent does the construct climate change actions mediate the relationship between CSR, stakeholders' orientation, and sustainable performance?
  iii. To what extent does management commitment moderate the relationship between CSR, stakeholders' orientation, climate change actions, and sustainable performance?

Contextual background

In 2011, Bangladesh's central bank introduced the Green Banking Policy to promote sustainable investment practices and mitigate environmental degradation (Millat *et al.*, 2011; Rahman *et al.*, 2023). However, despite this progressive initiative, some banks still continue to fund environmentally harmful industries, such as shipbreaking and brickfields, which are often

linked to serious human rights violations (Ullah & Mia, 2019; Ullah, 2013). As a Least Developed Country, Bangladesh has maintained an impressive annual GDP growth rate of 5.8% (World Bank, 2023). However, this economic expansion has led to rising energy demands and increasing carbon emissions (Sadorsky, 2011). Rapid and unplanned urbanisation, especially in Dhaka, has exacerbated pollution levels, contributing to approximately 80,000 premature deaths in 2015 and resulting in an estimated US$310 million in lost labour productivity (World Bank, 2018).

In 2022, Bangladesh emitted approximately 281.08 million tonnes of CO_2 equivalent representing around 0.52% of global emissions (Crippa *et al.*, 2024). As part of its Intended Nationally Determined Contributions (INDC), the country has committed to reducing greenhouse gas emissions by 20% from business-as-usual levels by 2030. Yet, meeting these targets remains a significant challenge (Hasan & Chongbo, 2020). Bangladesh's vulnerability to climate change is particularly acute. With over fifty-six million people living below the poverty line and agriculture forming the backbone of rural livelihoods, the country faces substantial threats from climate-related events (Gogoi & Kakakhel, 2014). The World Bank Group (2022) estimates annual losses from cyclones at around $1 billion. Furthermore, climate projections suggest that agricultural GDP could decline by one-third by 2050, and cropland may shrink significantly by 2040—making the case for urgent and effective climate action even more compelling.

Literature Review & Theories and Hypotheses Development

In recent years, the pressing challenges posed by climate change have prompted a significant shift in corporate strategies, particularly within the financial sector. As organisations increasingly prioritise sustainability, the intersection of Corporate Social Responsibility (CSR), climate change actions, and sustainable performance has become a critical area of academic inquiry. This literature review aims to critically evaluate existing research and theoretical frameworks that elucidate the dynamics among these elements. We will develop a set of hypotheses guiding empirical research in this domain by synthesising the literature.

Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) encapsulates a company's commitment to conducting business ethically while considering its social, environmental, and economic impacts (Carroll, 1999). In banking and financial services, CSR manifests through practices that promote transparency, responsibility, and sustainability in operations. The growing recognition of the importance of CSR in financial institutions has raised awareness among stakeholders, shifting expectations, and the imperative to mitigate risks associated with environmental and social challenges (Dahlsrud, 2008). One prevalent definition of CSR by Marsden (2006) posits that a socially responsible corporation operates profitably while addressing both positive and negative effects on society. Banks, as pivotal players in the economy, have the potential to materially influence sustainability efforts by financing green initiatives, regulating their investment portfolios, and adopting environmentally responsible practices. This is particularly relevant in the face of increasing scrutiny regarding the social and environmental impacts of financing decisions.

Climate Change Actions (CC)

Climate change actions are the initiatives that organisations undertake to mitigate the effects and risks of climate change. These actions can include risk management strategies, sustainable product development, pro-active greenhouse gas reduction strategies, and comprehensive reporting and transparency measures concerning emissions (Furrer *et al.*, 2011; Weinhofer & Hoffmann, 2010). With the growing urgency of climate change, financial institutions play a crucial role in either facilitating carbon-intensive projects or supporting investments in renewable energy and sustainable technologies. Research suggests that implementing climate change actions can enhance corporate sustainability performance (Suganthi, 2019). For instance, Littlewood *et al.* (2018) argue that organisations should align their strategic actions with climate change initiatives to improve their overall performance. Moreover, effective climate change strategies often require collaboration among various organisational actors, highlighting the need for institutions to adopt integrated governance frameworks (Buranatrakul & Swierczek, 2017).

Sustainable Performance (PER)

Sustainable performance refers to an organisation's ability to fulfil stakeholder expectations over time while minimising negative environmental and social impacts (Stanciu *et al.*, 2014). This is measured using a combination of financial and non-financial indicators, including profitability, social contributions, and environmental stewardship (Morin, 1995; Lee & Saen, 2012). The increasing emphasis on sustainable performance in banking reflects both market dynamics and regulatory pressures, requiring institutions to adopt strategies that foster long-term viability and contribute positively to societal challenges. The relationship between sustainable performance and CSR has garnered considerable attention. A growing body of literature indicates that organisations committed to CSR are more likely to achieve superior sustainable performance (Ali *et al.*, 2017). However, the relationship between CSR and performance can be complex, often influenced by external factors such as stakeholder pressure and organisational practices.

The Interplay of CSR, Climate Change Actions, and Sustainable Performance

Research has consistently highlighted the intricate relationships between CSR, climate change actions, and sustainable performance. Littlewood *et al.* (2018) note that CSR's impact on climate change actions serves as a positive feedback loop; organisations that invest in CSR tend to engage more in climate initiatives, leading to enhanced sustainable performance. Furthermore, the integration of environmental considerations into business strategy is essential for banks navigating today's complexities. Despite the growing consensus around the positive influence of CSR on sustainable performance, studies emphasise the mixed nature of these relationships. For example, while CSR can drive firms toward sustainable practices, there is controversy that this will invariably translate into improved performance. Factors such as organisational culture, management commitment, and stakeholder engagement play critical roles in shaping these dynamics (Hernández *et al.*, 2020).

Stakeholder Orientation and Its Role

Stakeholder theory posits that a firm's success is contingent upon its ability to engage effectively with its stakeholders—individuals or groups that can impact or be impacted by the

organisation (Freeman, 1984). This theory positions stakeholders as central to shaping corporate strategy and performance, suggesting that organisations must recognise and respond to stakeholder interests. In the banking sector, stakeholders—including customers, employees, investors, and regulatory bodies—exert considerable influence on climate change initiatives. Research indicates that organisations driven by strong stakeholder orientation are more likely to adopt climate-friendly practices and commit to sustainability (Linh & Anh, 2017; Bukhari *et al.*, 2022). For instance, banks facing pressure from environmentally conscious stakeholders may prioritise green investments and sustainable lending practices to align with stakeholder expectations.

Management Commitment as a Critical Factor

Management commitment (MC) is a pivotal factor influencing the successful integration of CSR and climate change initiatives within organisational operations. Empirical studies underline that top management's engagement in and support for sustainability objectives significantly impacts organisational commitment to CSR and climate actions (Yusliza *et al.*, 2019). Management commitment fosters a culture of sustainability within organisations, encouraging employees to embrace and actively participate in CSR initiatives. This internal alignment is essential for translating strategic goals into actionable reality, thereby securing competitive advantages (Chadwick *et al.*, 2015). Additionally, a committed management team is more likely to allocate resources effectively, establish sustainability goals, and cultivate stakeholder relationships that reinforce the organisation's sustainability mission. Moreover, higher management commitment is correlated with enhanced organisational performance in sustainability (Fu *et al.*, 2020). By prioritising sustainability at the leadership level, banks not only achieve compliance with regulatory frameworks but also realise long-term benefits through improved stakeholder relationships and brand equity.

The Mediating Role of Climate Change Actions

Climate change actions are essential mediators in the relationships between CSR, stakeholder orientation, and sustainable performance. Existing literature supports the notion that effective climate initiatives can enhance the translation of CSR commitments into tangible performance outcomes. Specifically, firms with robust CSR frameworks implement climate change actions better compared to those with weaker frameworks, which subsequently contribute to improved sustainable performance (Long *et al.*, 2020; Hart, 1995). The Natural Resource-Based View (NRBV) theory provides a compelling framework for understanding how organisations can leverage environmental practices to achieve competitive advantages. According to Hart (1995), the integration of environmental concerns into strategic management can lead to sustainable outcomes while mitigating risks associated with ecological degradation. This perspective posits that organisations must cultivate capabilities aligned with sustainability, which can drive performance improvements and enhance resilience in the face of environmental challenges.

The Natural Resource-Based View Theory (NRBV)

The application of the NRBV theory within the context of this research emphasises the significance of integrating environmental considerations into organisational strategies. The NRBV posits that firms rely on various resources, both internal and external, to gain competitive advantages while addressing ecological and social challenges (Barney, 1991). One

critical aspect of NRBV is its recognition of the natural environment as an essential resource. By leveraging environmental capabilities, organisations can position themselves strategically to navigate sustainability challenges effectively. Hart (1995) argued that a pro-active approach towards environmental management enhances corporate performance and articulates the necessity of adopting environmentally responsible practices that contribute positively to competitive positioning. Furthermore, NRBV extends the resource-based view (RBV) by incorporating environmental dimensions, thereby allowing firms to recognise the constraints posed by ecological degradation while also identifying opportunities for innovation and sustainability (Sharma & Vredenburg, 1998). Organisations that effectively align their strategies with environmental capabilities have been shown to experience improved performance outcomes and greater market resilience (Wang *et al.*, 2024).

Formulating Hypotheses

Building upon the theoretical framework and empirical insights presented in this literature review, we propose the following hypotheses to guide our research:

Hypotheses Related to CSR and Climate Change Actions

H1: CSR has a significant impact on climate change actions adopted by banks.
H2: CSR significantly influences the sustainable performance of banks.

Hypotheses Related to Stakeholder Orientation

H3: Stakeholder orientation positively influences the adoption of climate change actions in banks.
H4: Stakeholder orientation enhances the sustainable performance of banks.

Hypothesis Related to Climate Change Actions

H5: Climate change actions have a positive influence on sustainable performance.

Hypotheses Related to Management Commitment

H6: Management commitment has a positive influence on sustainable performance.
H7: Management commitment moderates the relationship between CSR and sustainable performance.
H8: Management commitment moderates the relationship between stakeholder orientation and sustainable performance.
H9: Management commitment moderates the relationship between climate change actions and sustainable performance.

Mediating Hypotheses

H10: The relationship between CSR and sustainable performance is mediated by climate change actions.
H11: The relationship between stakeholder orientation and sustainable performance is mediated by climate change actions.

The interplay among CSR, climate change actions, and sustainable performance is becoming increasingly critical in the context of contemporary business challenges. Financial institutions, as major actors in the economy, have a critical role to influence social and environmental trajectories through their strategic choices. The growing demand for transparency and accountability necessitates that banks not only adopt ethical practices but also proactively engage in sustainability initiatives to fulfil stakeholder expectations. This literature review highlights the intricate relationships among CSR, stakeholder orientation, climate change actions, and management commitment, proposing a robust framework for understanding how these factors converge to influence sustainable performance.

By empirically evaluating the formulated hypotheses, this research aims to provide valuable insights into the mechanisms by which banks can enhance their sustainability practices and achieve superior performance outcomes. The findings of this study have implications on both scholarship and practical applications within the banking sector. A deeper understanding of the factors driving sustainable performance can empower financial institutions to respond effectively to evolving regulatory landscapes and stakeholder demands. By aligning strategic decisions with sustainability objectives, banks can navigate challenges while capitalising on emerging opportunities thereby ensuring their long-term success and contributing to global sustainability efforts.

Research Methodology & Results
Questionnaire development
To collect relevant data to evaluate the hypotheses developed above, the study has developed a questionnaire with relevant sections. The CSR section was measured using 18 items adapted from Kraus *et al.*, (2020) as well as Hu and Scholtens (2014). The eighteen items are further divided into three dimensions as follows: economic (E), social (S), and environmental (EN). The economic dimension consists of five items, the social dimension includes five items, and the environmental dimension includes eight items.

The attribute of stakeholders' orientation (STK) was measured using 10 items, and all adapted measurements from Choudhury *et al.*, (2013). Climate change actions (CC) were measured using twenty-eight items. Climate change actions consist of organisational involvement (ORG), which includes six items; climate change risks (CRISK), which consists of 6 items; disclosure (DIS), which includes seven items; and product development (PD), which comprises 7 items adapted from Kılıç and Kuzey (2019), Buranatrakul and Swierczek (2017) and Furrer et al (2012).

The sustainable performance (PER) consists of 10 items adapted from Kovilage (2021) and Abreu et al (2017). The Management Commitment (MC) includes 7 items adapted from Furrer et al (2012), Latan et al (2018), Bukhari et al (2022) and Wijethilake & Lama (2019).

The sampling strategy for this study was based on non-probability purposive sampling. This method involved carefully selecting participants who possess considerable experience and an in-depth understanding of the phenomenon being studied, ensuring the data gathered was both relevant and insightful. Surprisingly, senior banking officers from the selected banks were open

to offering their views on CSR, stakeholders' orientation, climate change actions, management commitment, and sustainable performance based on five-item Likert scale questionnaires.

Sampling Strategy

This study focuses on the banking sector in an emerging market in Bangladesh for two reasons. First, banks, as financial service providers, are more responsible for making a significant contribution to sustainable development in Bangladesh. Hossain (2012) contends that Bangladeshi banks extend their Corporate Social Responsibility (CSR) activities to various sectors such as education, health, and others, but they have shown little attention to sustainability issues. For example, Bangladeshi banks support industries that contribute to environmental damage, and lenders inadvertently support environmental harm and unsustainable effects brought on by their clients (Ullah & Mia, 2019; Weber et al, 2015). Second, contrary to a heterogeneous sample, a sample from one sector enables scholars to capture the context of the analysis in detail (Bhatti et al, 2022).

The survey was conducted in 2023 on private commercial banks operating in Bangladesh. The appendix shows the total population for this study was 250 bank employees working in the CSR, sustainability, and loan sanction departments from forty-four participating commercial banks operating in Bangladesh. The survey used 250 self-administered questionnaires, achieving a 60% response rate, with 150 completed and returned questionnaires.

Data Analysis and Results

In this research, five reflective constructs were examined following the established guidelines for evaluating both measurement and structural models in PLS-SEM, as outlined by Hair et al (2017). In this study, PLS-SEM was chosen over CB-SEM due to the complexity of the model and the study's predictive focus. The model includes latent variables (e.g., CSR, STK) with multiple indicators, as well as moderating effects of MC and mediating effect of CC. PLS-SEM is well-suited for handling complex models and interaction effects, which CB-SEM is more restrictive in managing. Furthermore, since the study aims to predict sustainable performance outcomes rather than simply test an existing theory, PLS-SEM is ideal as it focuses on maximising R^2 values and explaining variance in dependent variables, which is essential for prediction-based research. This makes PLS-SEM the appropriate method for addressing the exploratory and predictive nature of the study.

Table 1 in appendix 1 reveals that the lowest outer loading is 0.532 and the highest value is 0.982 which is more than the recommended threshold value by Hair et al (2014) of 0.50, indicating an adequate level of internal reliability in the measurement model (Hair et al, 2014). To test internal consistency, as per Hair et al (2014), researchers used composite reliability guided by a threshold value between 0.70 and 0.90. However, having a value of 0.95 and above indicates that the result is problematic. This, in turn, indicates that the items are redundant, which consequently reduces the construct validity, according to Drolet and Morrison (2001). The composite reliability values of 0.905 (CC), 0.884 (CSR), 0.831 (MC), 0.924 (PER), and 0.910 (STK) demonstrate that these constructs have high levels of internal consistency in this study.

Cronbach's alpha is another measure of internal consistency or reliability that uses the same thresholds as that of composite reliability, but it generates lower values. In this study, Cronbach's alpha values are well above the required threshold of 0.70, according to Hair et al (2019), as shown in Table 1 in appendix 1. The Average Variance Extracted (AVE) is used to check the level of convergence of a given individual construct in comparison to the measure of other constructs (Urbach and Ahlemann, 2010). This indicates the degree to which a latent construct elaborates the variances that exist within its indicators (Hair et al, 2017). Table 1 in appendix illustrates that AVE values for the constructs in the study are above 0.5. Hence, convergent validity is established as per Hair et al (2017).

Discriminant validity, as suggested by Fornell-Larcker (1981), is commonly used to assess the degree of shared variance between the latent variables of the model. The results in Table 2 illustrate satisfactory or sufficient discriminant validity as recommended, where the square roots of AVE (diagonal) are higher than the correlations (off diagonal) for all the reflective constructs.

Henseler et al (2015) developed a unique method for evaluating discriminant validity, namely, the heterotrait-monotrait ratio of correlations (HTMT). Based on that, the HTMT values of the study's constructs are all below the recommended value of 0.90, as shown in Table 2.

Table 2: Discriminant validity

	Fornell-Larcker Criterion					Heterotrait-Monotrait Ratio (HTMT)			
	Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4
CC (Y1)	*0.897*								
CSR (Y2)	0.226	*0.727*				0.140			
MC (Y3)	0.804	0.216	*0.832*			0.807	0.161		
PER (Y4)	0.533	0.124	0.423	*0.841*		0.550	0.169	0.463	
STK (Y5)	0.039	0.004	0.052	0.058	*0.915*	0.043	0.094	0.071	0.066

Note. Bold and Italics values on the diagonal show the Square of AVE.

According to the results shown in Table 3, it can be observed that the inner VIF values (i.e., Variance Inflation Factor) for each construct are within the range of 3.6-1.00 (Diamantopoulos & Siguaw, 2006); thus, it can be said that multicollinearity issues are absent in this study.

Table 3: Inner VIF, f Square, R square, Cross validated redundancy

Construct	Inner VIF		f Square		R Square	R Square Adjusted	Construct Cross validated Redundancy		
	Y1	Y4	Y1	Y4			SSO	SSE	Q^2 (=1-SSE/SSO)
CC (Y1)		2.623		0.236	0.052	0.038	2340.000	2243.030	0.041
CSR (Y2)	1.000	1.054	0.054	0.000					
MC (Y3)		3.595		0.079					
PER (Y4)					0.338	0.317	650.000	514.567	0.208
STK (Y5)	1.000	1.004	0.002	0.003					

The f-square values of 0.35, 0.15, and 0.02 represent large, medium, and small effect sizes, respectively (Hair, Hult, Ringle & Sarstedt, 2016). Based on Table 3, the effect sizes of CSR and STK on CC are 0.054 (medium) and 0.002 (no effect), respectively. In the same way, the effect sizes of CC, CSR, MC, and STK on PER are 0.236 (medium), 0.000 (no effect), 0.079 (small), and 0.003 (no effect).

On the other hand, the coefficient of determination score is used to assist a given model in explaining the relationship between variables. In other words, the R square measures a given model's explanatory power. A study by Hair et al (2017) proposed a range of 0.75, 0.5, and 0.25 as typically substantial, moderate, and weak levels of explanation, respectively. Table 3 suggests that CC and PER indices of 0.052 (5.2%) and 0.338 (33.8%) explain the relationship between CC and PER, indicating a moderate effect. An additional criterion for evaluating the quality of the model is the blindfolding procedure to assess a model's capability to explain factors (Hossan et al, 2020; Hair et al, 2011). Hair et al (2011) recommended using cross-validated redundancy where the use of PLS-SEM is required to estimate both the structural model and the measurement model. Cross-validated redundancy is perfectly suitable for the PLS-SEM approach. Fornell & Cha (1994) suggested that if the Q square value is greater than zero, then the model has explanatory relevance. From Table 3, the values of Q square for CC and PER show that they are greater than 0.00; hence, explanatory relevance is attained.

Hypothesis Test

The structural model analysis was conducted using Smart-PLS 3.1.1 with 5,000 subsamples in a bootstrapping procedure. The results of the structural model analysis are shown in Table 4 and Figure 2, which show that there is a positive significant effect of CSR on CC ($\beta = 0.226$, t= 2.095, p< 0.05). As such, H1 is accepted. While there is a positive significant effect of CC on PER ($\beta = 1.030$, t= 5.703, p< 0.05) and accordingly, the H5 is supported. However, there is no significant effect of CSR on PER ($\beta = 0.115$, t= 0.954, p> 0.05); MC on PER ($\beta = 0.173$, t= 0.891, p> 0.05); STK on CC ($\beta = 0.040$, t= 0.402, p> 0.05); and STK on PER ($\beta = 0.051$, t= 0.629, p> 0.05). Therefore, H2, H3, H4, and H6 are not supported.

Table 4: Path coefficient (direct effect)

	Beta	Sample Mean (M)	Standard Deviation	T Statistics	P Values
CSR -> CC	0.226	0.255	0.108	2.095	0.037
CSR -> PER	0.115	0.140	0.120	0.954	0.340
STK -> CC	0.040	0.037	0.099	0.402	0.688
STK -> PER	0.051	0.047	0.082	0.629	0.530
CC -> PER	1.030	0.995	0.181	5.703	0.000
MC -> PER	0.173	0.148	0.194	0.891	0.373

Moderating effect

Table 5 below shows that MC moderates the relationship between CC and PER ($\beta = 0.482$, t= 5.272, p< 0.05), while there is no moderating effect of MC on the relationship between STK and PER ($\beta = 0.004$, t= 0.056, p> 0.05); and CSR and PER ($\beta = 0.054$, t= 0.264, p> 0.05). Therefore, H9 is supported, whilst H7 and H8 are not supported.

Table 5: Path coefficient (Moderating effect)

	Beta	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
MC *STK -> PER	0.004	0.009	0.075	0.056	0.955
MC*CC -> PER	0.482	0.489	0.092	5.272	0.000
MC*CSR -> PER	0.054	0.099	0.204	0.264	0.792

The simple slope analysis shown in Figure 1 indicates that MC moderates the relationship between CC and PER. When MC is high (+1 SD), the effect of CC on PER is stronger (steeper red line). When MC is low (-1 SD), the effect is weaker (flatter blue line). This confirms that MC enhances the impact of CC on PER at higher levels but reduces it at lower levels.
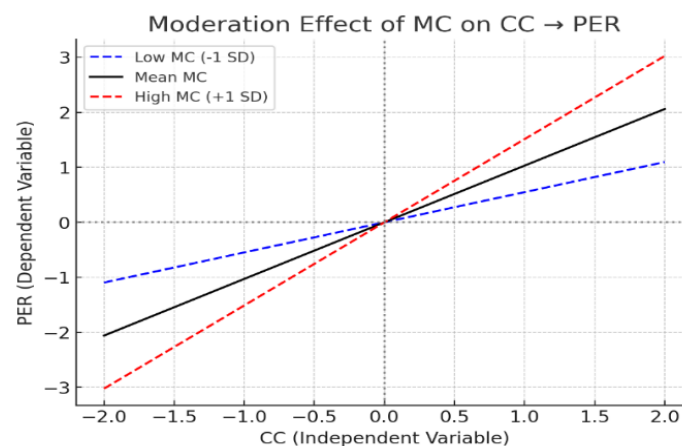

Figure1: Moderation slope plot for MC moderating the relationship between CC and PER

Mediating effect
Table 6 shows that there is a significant mediating effect of CC on the relationship between CSR and PER ($\beta = 0.232$, t= 1.980, p< 0.05) and that CC does not mediate the relationship between STK and PER ($\beta = 0.041$, t= 0.404, p> 0.05). So, H10 is supported, whereas H11 is not supported.

Table 6: Path coefficient (Mediating/ indirect effect)

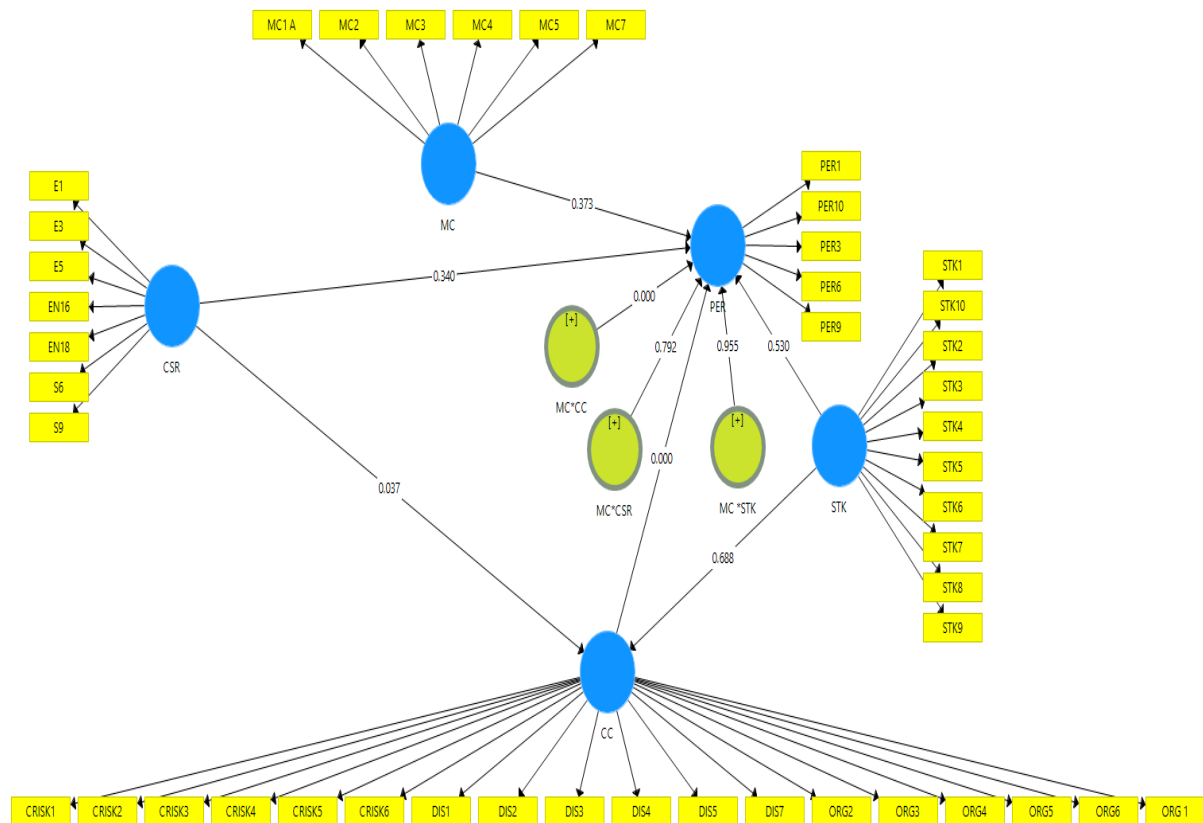|	Beta	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CSR -> CC -> PER	0.232	0.257	0.129	1.980	0.032
STK -> CC -> PER	0.041	0.038	0.102	0.404	0.686

Figure 2: Structural model

Discussion

As previously stated, this study investigates the relationship between corporate social responsibility (CSR) and sustainable performance in private commercial banks in Bangladesh, with a particular focus on the moderating role of management commitment. The findings reveal that CSR does not directly influence sustainable performance. However, there is a significant indirect relationship between CSR and performance, mediated by climate change actions. This suggests that while CSR alone may not lead to improved sustainable performance, it can have a meaningful impact when coupled with pro-active environmental strategies. These results differ from those of Bacinello et al (2020) and Orazalin (2020), who found a direct positive relationship between CSR and organisational performance. Their studies concluded that CSR initiatives enhance financial outcomes, employee satisfaction, and corporate reputation. Similarly, Hernández et al (2020) reported that CSR—particularly in social, economic, and environmental dimensions—positively impacts the profitability, market share, and long-term viability of Spanish micro, small, and medium-sized enterprises. In contrast, the current study suggests that the influence of CSR on sustainable performance may be conditional on other factors such as environmental action and leadership engagement.

The study's findings align with those of Kraus et al (2020), who argued that CSR's environmental, economic, and social dimensions serve as drivers for aligning with broader environmental strategies. While CSR may not have a direct impact on organisational performance, it plays a critical role in shaping climate change actions—an essential aspect of

environmental strategy. This further reinforces the idea that CSR should not be overlooked by management, as it can indirectly influence organisational outcomes through environmental engagement. Climate change actions, in turn, significantly enhance sustainable performance. This aligns with Boiral et al (2012), who noted that organisations' climate commitments are driven mainly by social and environmental concerns—core pillars of CSR. However, this finding contrasts with Littlewood et al (2018), who argued that sustainability practices do not necessarily increase climate change commitment. Nonetheless, the current study supports the Natural Resource-Based View (NRBV) theory, which posits that environmental considerations and resource management can drive sustainable performance (Hart & Dowell, 2011; Hart, 1995).

The study also examined the role of stakeholders' orientation in shaping climate action. It found that stakeholders' orientation does not influence the adoption of climate change actions within Bangladesh's banking sector. This supports Bukhari et al (2022), who similarly found that community pressure had negligible effect on the adoption of green banking practices. These findings challenge stakeholder theory, which posits that strong relationships with stakeholders contribute to organisational success (Barnett & Salomon, 2012; Harrison & Freeman, 1999). Additionally, the study found no significant relationship between stakeholders' orientation and sustainable performance. This is consistent with Boiral et al (2012), who acknowledged that stakeholder pressure is often insufficient to drive meaningful reductions in GHG emissions. The lack of impact in the current study may be attributed to the low levels of climate awareness and engagement within local communities in Bangladesh. As noted by Nurunnabi (2015), a lack of regulation, interest, and stakeholder awareness significantly hinders climate-related action among firms in the country.

Another key finding is that management commitment does not directly influence sustainable performance. This contrasts with prior studies such as Appiah et al (2020), which showed that managerial engagement significantly boosts environmental performance in Chinese manufacturing firms. Similarly, Latan et al (2018), using NRBV theory, demonstrated that top management positively influences environmental outcomes in Indonesian firms certified under ISO 14001. Furthermore, the study found no moderating effect of management commitment on the relationship between CSR and sustainable performance, echoing the findings of Tandoh et al (2022). However, it did find that management commitment significantly moderates the relationship between climate change actions and sustainable performance. This supports Ar (2012), who observed that management commitment enhances the effectiveness of green initiatives on firm performance. It also aligns with Wijethilake et al (2017), who emphasized that without top-level commitment, sustainability initiatives are unlikely to succeed. These insights underscore the critical role of leadership in translating environmental strategies into measurable outcomes in the banking sector. The study also explored whether climate change actions mediate the relationship between stakeholders' orientation and sustainable performance. This hypothesis was not supported, mirroring findings by Guerci et al (2016), who found that green hiring practices did not mediate the relationship between stakeholder engagement and environmental outcomes.

Conclusion

The study concludes that CSR does not directly influence sustainable performance. However, CSR significantly impacts climate change actions, which in turn enhance sustainable outcomes by reducing greenhouse gas emissions, energy consumption, and waste. Importantly, management commitment plays a key moderating role in the link between climate change actions and sustainable performance. These findings confirm the mediating role of climate change initiatives in the relationship between CSR and sustainability, in line with the natural RBV theory. This research offers an original insight based on the empirical data on CSR, stakeholders' orientation, climate change actions, and sustainable performance for the benefit of researchers, managers, and policymakers. The study contributes to the body of knowledge by determining the association between CSR and sustainable performance with the moderating role of management commitment and the mediating role of climate change actions. Therefore, this research makes a significant contribution to these areas as it incorporates CSR (i.e., economic, social, and environmental aspects), climate change actions (i.e., organisational involvement, climate change risk management, product development, and disclosure), stakeholders' orientation and sustainable performance in a single integrative research model framework within the context of the banking sector of Bangladesh.

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Conflict of interests

We the authors declare that there is no conflict of interest that affect the objectivity of this paper.

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Appendices

Appendix 1: Table 1: Outer loadings, Construct Reliability and Validity

	Outer loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
CC		0.985	0.905	0.520
CRISK1	0.855			
CRISK2	0.875			
CRISK3	0.945			
CRISK4	0.894			
CRISK5	0.632			
CRISK6	0.885			
DIS1	0.936			
DIS2	0.898			
DIS3	0.938			
DIS4	0.959			
DIS5	0.925			
DIS7	0.773			
ORG 1	0.982			
ORG2	0.974			
ORG3	0.968			
ORG4	0.904			
ORG5	0.866			
ORG6	0.869			
CSR		0.894	0.884	0.529
E1	0.793			
E3	0.773			
E5	0.882			
EN16	0.810			
EN18	0.552			
S6	0.532			
S9	0.676			
MC		0.911	0.831	0.623
MC1 A	0.856			
MC2	0.848			
MC3	0.858			
MC4	0.849			
MC5	0.834			
MC7	0.744			
PER		0.897	0.924	0.570
PER1	0.819			
PER10	0.870			
PER3	0.839			
PER6	0.807			
PER9	0.870			
STK		0.979	0.910	0.595
STK1	0.842			

STK10	0.892
STK2	0.942
STK3	0.965
STK4	0.965
STK5	0.953
STK6	0.959
STK7	0.920
STK8	0.848
STK9	0.850

Appendix 2: Table 2: Demographic profile of banks

No	Bank Name	n	%
	AB Bank Limited	5	1.7
	Bangladesh Commerce Bank Limited	5	1.7
	BRAC Bank Limited	5	1.7
	City Bank Limited	5	1.7
	Dutch-Bangla Bank Limited	5	1.7
	Eastern Bank Limited	5	1.7
	IFIC Bank Limited	5	1.7
	Meghna Bank Limited	5	1.7
	Mercantile Bank Limited	5	1.7
	Midland Bank Limited	5	1.7
	Modhumoti Bank Limited	5	1.7
	Mutual Trust Bank Limited	5	1.7
	National Bank Limited	6	2.1
	National Credit & Commerce Bank Limited	6	2.1
	NRB Commercial Bank Ltd	6	2.1
	One Bank Limited	6	2.1
	Padma Bank Limited	6	2.1
	Premier Bank Limited	6	2.1
	Prime Bank Limited	6	2.1
	Pubali Bank Limited	5	1.7
	Southeast Bank Limited	5	1.7
	South Bangla and Commerce Bank	6	2.1
	United Commercial Bank Ltd	6	2.1
	Uttara Bank Limited	6	2.1
	Al-Arafah Islami Bank	6	2.1
	Bank Asia Limited	6	2.1
	Dhaka Bank Limited	6	2.1
	Exim bank	6	2.1
	First Security Islami Bank Limited	6	2.1
	ICB Islamic Bank Limited	6	2.1
	Islami Bank Bangladesh Limited	6	2.1
	Jamuna Bank Limited	6	2.1
	Shahjalal Islami Bank Ltd	6	2.1
	Social Islami Bank Limited	6	2.1
	Standard Bank Limited	5	1.7
	Union bank	5	1.7
	Agrani Bank	6	2.1
	Basic Bank	6	2.1
	Bangladesh development banks	6	2.1
	Bangladesh Krishi bank	6	2.1
	Janata Bank	6	2.1
	Rupali Bank	6	2.1
	Sonali Bank	7	2.4
	Rajshahi Krishi bank	7	2.4
	Bank Age		
	0-10	22	7.5
	10-20	34	11.6
	20-30	101	34.6
	30-40	45	15.4
	40-50	48	16.4

50 and above	20	6.8
Branches		
0-100	22	7.5
100-200	198	67.8
200-300	12	4.1
300-400	6	2.1
400-500	5	1.7
500 and above	27	9.2