

Does Green Finance Drive Sustainable Banking? A PLS-SEM Analysis of CSR as a Mediator in Nepal's Commercial Banks

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Abstract

Background: Green finance has emerged as an important mechanism for integrating environmental and social considerations into banking activities. As commercial banks increasingly adopt sustainable financing practices, understanding how green finance contributes to sustainable performance is particularly relevant in emerging economies such as Nepal.

Purpose: This study examines the effect of green finance on the sustainable performance of commercial banks in Nepal, considering corporate social responsibility (CSR) as a mediating variable.

Design/methodology/approach: The study adopts a descriptive and explanatory research design. Data were collected from 400 senior employees of commercial banks using non-probability purposive sampling. The study is grounded in the Triple Bottom Line Theory. Data were collected using KoboToolbox and analyzed using SmartPLS through partial least squares structural equation modeling (PLS-SEM).

Findings: The findings indicate that green finance has a significant positive relationship with all three dimensions of sustainability: environmental, economic, and social sustainability. Furthermore, CSR partially mediates the relationship between green finance and sustainable performance. The study also identifies challenges related to limited awareness and inadequate regulatory support for green finance practices.

Conclusion: The study concludes that green finance significantly contributes to the sustainable performance of commercial banks in Nepal. Strengthening green financing practices, CSR initiatives, awareness, and regulatory support may help banks enhance their contribution to sustainable development.

Keywords: Green financing, sustainable performance, structural equation modelling, corporate social responsibility



Open Access

1. Introduction

The acceleration of climate change, environmental degradation, and resource depletion has brought global efforts toward sustainable development to the forefront. There is increasing pressure on governments, businesses, and financial institutions to align their activities with the Sustainable Development Goals (SDGs) and environmental, social, and governance (ESG) principles (Ozili, 2022). In this context, the financial sector is considered a key enabler of the transition toward sustainable economic development due to its pivotal role in allocating capital and shaping investment decisions (Cheberyako et al., 2021). As a result, green finance has become an important area of discussion as a means of channeling funds into environmentally sustainable initiatives and supporting the transition toward a low-carbon and climate-resilient economy.

Green finance refers to a wide range of financial instruments and services, such as green loans, green bonds, sustainability-linked financing, and investments in environmentally friendly activities (Afzal et al., 2022). Green finance plays a dual role in supporting both climate protection and economic development by promoting energy efficiency, renewable energy, sustainable agriculture, and climate-resilient infrastructure. In developing countries, rapid economic development is increasingly taking place in the context of environmental stress and climate-related risks. Consequently, green finance is increasingly regarded by policymakers and financial regulators as a strategic tool for reconciling economic growth with long-term environmental sustainability.

Commercial banks are key financial service providers in promoting green finance. Banks can contribute to sustainable development through their lending practices, investments, and risk assessment processes by supporting environmentally responsible business activities (Muganyi et al., 2021). Integrating environmental criteria into financial decision-making allows banks to direct investments toward environmentally friendly sectors while discouraging environmentally harmful activities. Beyond their intermediary role, banks are also expected to actively contribute to national and global sustainability agendas by financing activities responsibly and incorporating sustainability into their corporate strategies.

Corporate social responsibility (CSR) is another significant mechanism through which organizations can demonstrate their commitment to sustainable development. CSR refers to a company's social, environmental, and ethical responsibilities, which involve integrating social, environmental, and ethical considerations into business operations (Rodriguez-Gomez et al., 2020). For banks, CSR initiatives may encompass environmental protection, community development, employee welfare, financial inclusion, and good governance. These activities can strengthen stakeholder trust, enhance organizational legitimacy, and improve corporate image. Given their shared focus on sustainability, CSR and green finance can be viewed as complementary approaches that work together to enhance organizational performance and competitiveness.

In recent years, the relationship between green finance and sustainable performance has been increasingly studied. Sustainable performance refers to an organization's ability to achieve economic success while generating positive environmental and social outcomes (Desalegn & Tangl, 2022). Previous research indicates that green finance can positively influence sustainable performance by mitigating environmental risks, improving operational efficiency, strengthening corporate image, and generating long-term value for stakeholders (Zakari, 2022). However, the effectiveness of green finance may depend on organizational practices and institutional mechanisms that facilitate the translation of green investments into broader sustainability outcomes. In this context, CSR can serve as an important intermediary variable by encouraging stakeholder involvement, strengthening organizational commitment to sustainability, and improving the effectiveness of green financial practices in achieving sustainable performance (Cheberyako et al., 2021).

Although the body of literature on green finance and sustainability is growing, empirical evidence on the relationship between green finance, CSR, and sustainable performance remains limited, particularly in

developing economies. Previous studies have often examined green finance and CSR separately, while relatively few have explored their interaction and combined effects on organizational sustainability (Liang & Renneboog, 2020). Moreover, findings from developed countries cannot be directly generalized to developing countries because of differences in environmental awareness, market maturity, institutional capacity, and regulatory environments. Practical challenges, including limited technical skills, inadequate policy support, resource constraints, and low stakeholder awareness, can also affect the implementation and effectiveness of green finance (Yuan et al., 2024).

Nepal presents an important context for examining these relationships. As a developing country, Nepal is highly vulnerable to environmental and climate-related challenges, including climate change, deforestation, land degradation, water scarcity, and increasing environmental risks (Nepal et al., 2024; Bhandari et al., 2024). Consequently, achieving sustainable development alongside economic growth has become a national priority. The banking sector, as a major source of resource mobilization and investment financing, plays an important role in supporting environmentally sustainable development. In recent years, Nepal Rastra Bank and other regulatory bodies have introduced policy measures to promote sustainable financing and green banking practices in Nepal. However, the adoption of green finance among commercial banks remains at a developing stage and varies across institutions, particularly in terms of institutional commitment, implementation capacity, and the integration of sustainability into banking practices (Risal & Joshi, 2018).

The limited empirical evidence available in Nepal indicates an important research gap. Despite growing policy attention toward green finance, the extent to which green finance is associated with the sustainable performance of commercial banks remains insufficiently examined. More importantly, the role of CSR in the relationship between green finance and sustainable performance has received limited empirical attention. Understanding this mechanism is important because CSR activities can potentially strengthen the effects of green finance by building stakeholder trust, enhancing corporate reputation, improving corporate governance, and promoting organizational practices that incorporate sustainability principles (Mudalige, 2023). Examining these relationships can therefore provide valuable insights into how green finance can contribute to the sustainability objectives of banks and the broader economy.

In this context, the present study examines the effect of green finance on the sustainable performance of commercial banks in Nepal and investigates the mediating role of CSR in this relationship. The study focuses on Nepal's banking sector, where interest in sustainable finance is growing but empirical evidence remains limited. Thus, the study contributes to the existing literature on sustainable finance in developing countries. The findings are expected to provide practical implications for policymakers, banking regulators, financial institutions, and other stakeholders seeking to strengthen sustainable banking practices and accelerate the transition toward a greener and more inclusive economy. Overall, the study aims to provide a clearer understanding of how green finance and CSR can work together to support sustainable performance and contribute to long-term development objectives in emerging economies.

2. Theoretical Framework

A theoretical framework gives insight into the relationship that might exist among variables and, therefore, provides a basis for the research questions and hypotheses. In this respect, the theoretical framework places the study onto the ground of established theories and thus provides a lens for the researcher while interpreting the data and drawing conclusions (Mann et al., 2021).

According to the Stakeholder Theory, the drivers for the adoption of green finance by banks would be through demands and expectations of various stakeholders like customers, investors, regulators, and communities that give priority to environmental responsibility and sustainability (Ring, 2022). The interests of their stakeholders are met through the incorporation of practices in green finance, such as the issuance of green bonds or financing renewable energy projects, which will help improve stakeholder relationships, thereby boosting their reputation (Sridhar & Jones, 2013). This, in turn, can lead to sustainable

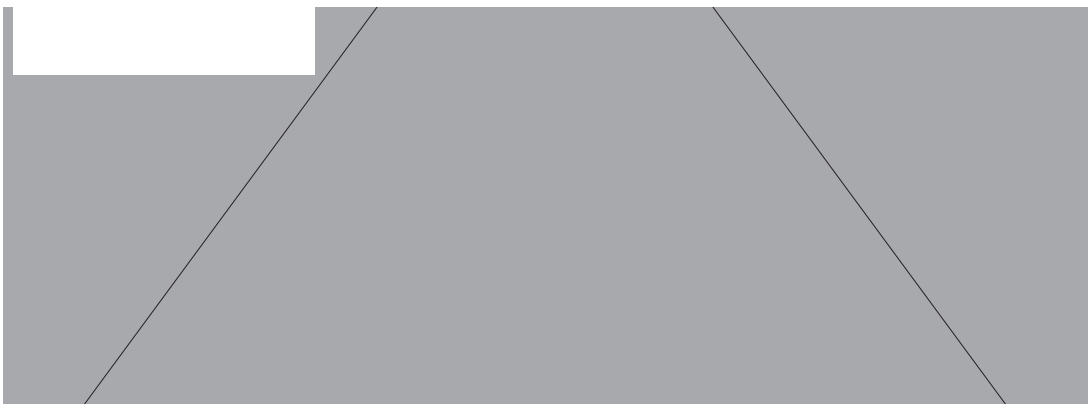
performance since satisfied stakeholders contribute to the bank's long-term success, both financially and socially. The Resource-Based View RBV theory stresses that internal resources and capabilities of the bank, such as expertise in green finance and access to sustainable investment opportunities, are the source of a competitive advantage (Sridhar & Jones, 2013). From a green finance perspective, banks that used their distinctive resources, such as higher technology for tracking carbon or Proprietary knowledge regarding investments in green areas, further improved financial performance and promoted sustainability for the long term (Albert Gisip & Harun, 2013). RBV provides a conceptual framework for the description of superior green finance capability leading to higher market position and sustainable growth for banks.

The theory of Brand Equity states that the insertion of green finance might bring a brand image and brand reputation change. As consumers and investors increasingly value sustainability, banks can build stronger brand equity by offering green financial products and demonstrating environmental responsibility (Freeman et al., 2021). With this in mind, the banks are attracting a group of loyal customers, increasing their market share and improving their bottom line. Therefore, green finance activities have a direct contribution to increasing the value of the bank's brand, which will contribute to long-term financial success and sustainability (Parmar et al., 2010). The TBL Theory extends the conventional notion of performance by incorporating three pillars: profit, people, and the planet (Harrison & Wicks, 2013). The TBL framework postulates that sustainable performance cannot be defined by financial profit alone but must include the social and environmental impacts of their actions for banks engaged in green finance (Donaldson & Preston, 1995). Green finance thus enables banks to yield economic returns while contributing concurrently to social welfare and environmental sustainability. With green finance, banks would thus contribute to the betterment of a sustainable society with equality, and therefore would address broader objectives of TBL theory and ensure their long-term sustainability across financial, social, and environmental dimensions (Freeman, 1994).

This study is majorly based on the Triple Bottom Line Theory and Stakeholder Theory, since these two theories can give a full illustration of how green finance influences the sustainable performance of banks. Both theories are supplemented by the Resource-Based View Theory and Brand Equity Theory to further provide insights into the internal capability of banks in driving sustainability and the value of brand strength in driving sustainability.

Figure 1

Conceptual Framework



Adopted and modified from X. Zhang et al (2022)

The proposed framework is based on the triple bottom line theory, which highlights economic, social, and environmental performance as major dimensions of sustainability (see Figure 1). Economic performance

is related to profitability and financial stability, social performance refers to stakeholders' well-being and contributions to society, whereas environmental performance means minimizing ecological footprints and promoting resource conservation. In this framework, CSR plays a vital mediating role since socially responsible practices reinforce stakeholder trust, strengthen community relationships, and amplify positive outcomes of green financial practices. This integration underlines the coherence between green finance, investment, and the wider objectives of sustainable business development.

Green finance and CSR are related in that they both contribute significantly to sustainability (Darsono et al., 20250). Green finance involves the mobilization of capital for projects related to renewable energy and sustainable infrastructure, while CSR encourages enterprise to incorporate green into business activities (Fu et al., 2023). Supporting projects with financial investment in green and implementing eco-friendly practices within a CSR framework reduces the environmental footprint of a company. Taking together, these facilitate combating environmental challenges, attaining sustainable development, and reducing the ecological footprint of organizations.

H1: Green finance positively Impacts Corporate Social Responsibility.

Corporate social responsibility can contribute to economic sustainability by encouraging responsible business practices, improving organizational efficiency, strengthening stakeholder relationships, and enhancing long-term financial performance (Camilleri, 2017). In the banking sector, CSR activities may support sustainable economic outcomes by promoting responsible investment, improving customer trust, and strengthening the organization's long-term stability.

H2: Corporate social responsibility positively impacts economic sustainability.

Corporate social responsibility can support environmental sustainability by encouraging organizations to adopt environmentally responsible practices (Cetindamar, 2007). In commercial banks, CSR initiatives may include supporting green projects, reducing resource consumption, promoting environmental awareness, and financing environmentally sustainable activities. Such practices can contribute to improved environmental outcomes (Mir & Bhat, 2022).

H3: Corporate social responsibility positively impacts environmental sustainability.

Corporate social responsibility can promote social sustainability by addressing the interests and well-being of employees, customers, communities, and other stakeholders (Fallah Shayan et al., 2022). CSR activities such as community development, employee welfare, social inclusion, and responsible business practices can strengthen social relationships and contribute to positive social outcomes.

H4: Corporate social responsibility positively impacts social sustainability

CSR basically refers to the responsibility of an organization towards ethical practices, environmental preservation, and social well-being. In the banking industry, besides traditional financial motives, CSR introduces a new horizon of activities that are aimed at promoting sustainable development, ranging from financial inclusions and green initiatives to community welfare programs. CSR is an important factor in green finance and acts as an intermediary within the relationship between green financial practices and sustainability performance. With the integration of CSR into their operational strategies, banks address the expectations of their stakeholders in terms of transparency, environmental protection, and social contribution. It not only enhances the level of trust and loyalty among stakeholders but also strengthens the interlinkage between financial decisions and long-term sustainability perspectives.

H5: CSR mediates the relationship between green finance and economic sustainability.

H6: CSR mediates the relationship between green finance and environmental sustainability.

H7: CSR mediates the relationship between green finance and social sustainability.

The details of variables that are verified by SEM is shown below in table 1.

Table 1*Variables construct*

Construct	Observed Variables	Indicator	Explanation
Green Finance	Recycling	GF1	Our bank finances investments in recycling and recyclable products.
	Lending	GF2	Our bank offers green lending to energy-intensive businesses.
	Green Bonds	GF3	Green bonds are issued by our bank to environmentally conscious businesses.
	Budget	GF4	A special budget has been set aside by our bank for green initiatives and projects.
	Procedures	GF5	The bank has put in place procedures to guarantee funding is allocated to ecologically friendly initiatives.
	Loans	GF6	Our bank offers green loans to people and businesses that guarantee waste reduction and the production of green products.
	Investments	GF7	Our bank finances retailers who make greater investments in the growth of the green industry.
Social Sustainability	Satisfaction	SS1	Our bank ensures better customer satisfaction.
	Trust	SS2	Our bank ensures establishment of trust.
	Image	SS3	Green finance activities enhanced the bank's image.
	Branding	SS4	Our bank ensured a green brand image.
Economic Sustainability	Revenue	ES1	Our bank's green finance practices significantly improved revenue and market share compared to competitors over the last three years.
	ROI	ES2	Our bank has earned a better ROI than competitors for the last three years.
	Profit	ES3	Our bank achieves better profit growth than competitors.
	Savings	ES4	Our bank is saving operational and other costs.
Environmental Sustainability	Carbon	ENS1	Our bank decreased carbon emissions from banking activities.
	Energy	ENS2	Our bank meets energy requirements of products and services.
	Waste	ENS3	Our bank produces minimal waste and is conscious about waste recycling and management.
	Consumption	ENS4	Our bank has reduced energy consumption outside the bank from banking activities.
CSR	Safety	CSR1	Our bank is involved in initiatives and campaigns on societal safety.
	Growth	CSR2	Our bank wants to grow considering future generations' requirements.
	Support	CSR3	Our bank supports NGOs that work in troubled regions.
	Rights	CSR4	Our bank goes beyond the law to protect customer rights.
	Compliance	CSR5	Our bank fully and promptly follows all legal regulations.

3. Research Methods

This study adopts an explanatory research design to examine the relationships among green finance, corporate social responsibility, and sustainable performance of commercial banks in Nepal. The methodology covers the study population, sampling technique, data collection instrument, and data analysis procedures. The research design provides a systematic approach to collecting and analyzing data to test the proposed relationships among the study variables.

Study Area, Population and Sample

The study focuses on the commercial banking sector in Nepal, which is considered one of the key drivers for sustainable development through green finance initiatives. The research focuses on the commercial banks operating in Nepal, especially those that are deeply involved in undertaking different green finance practices for environmental sustainability, economic growth, and social well-being. The targeted population comprises all commercial banks of Nepal involved in the operations of green loans, financing renewable energy projects, and/or practicing sustainability-oriented financial products. In addition, it looks for key decision-makers in such banks at executive, managerial, and employee levels, working in departments like sustainability, CSR, or finance. The research focuses on those banks that, through annual reports, sustainability reports, or other public documents, clearly disclose their green finance initiatives and CSR activities. In this way, the study would be able to obtain a holistic view of how green finance contributes to the economic, environmental, and social sustainability of the Nepalese banking sector, with CSR as a mediating variable.

The study employs a non-probability sampling technique to select participants who can provide valuable insights into the relationship between green finance, CSR, and sustainable performance in Nepalese commercial banks. Specifically, purposive sampling is used to target individuals who are directly involved in green finance practices, CSR initiatives, and sustainability efforts within banks. These participants may include senior managers, CSR officers, environmental specialists, and employees responsible for implementing sustainability strategies. This approach ensures that the data collected is relevant and meaningful to the research objectives. Additionally, convenience sampling is utilized to include participants who are easily accessible and willing to participate in the study. Together, these non-probability sampling methods help gather data from a focused and practical sample group.

The sample size for the study was determined using the formula . In this formula, n represents the required sample size, z denotes the Z-score corresponding to the selected confidence level, p represents the estimated population proportion, and E indicates the acceptable margin of error. For a 95% confidence level, a Z-score of 1.96 is generally used. When the population proportion is unknown, $p = 0.50$ is commonly assumed to provide maximum variability, while a margin of error of 5% (0.05) may be applied.

Data Collection and Analysis Technique

A structured questionnaire was used as the primary instrument to collect data on green finance, corporate social responsibility (CSR), and sustainable performance of commercial banks in Nepal. The questionnaire consisted of sections covering the study variables and their respective dimensions. A five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree was used to measure respondents' perceptions and practices. The questionnaire was administered electronically through KoboToolbox, and the collected data were exported to Microsoft Excel for cleaning, coding, and preparation for analysis.

The collected data were analyzed using descriptive and inferential statistical techniques. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the characteristics of the respondents and the study variables. SmartPLS 4.0 was used for partial least squares structural equation modeling (PLS-SEM) to examine the relationships among green finance, CSR, and sustainable performance. The analysis included assessment of the measurement and structural models, as well as the direct and indirect effects, to examine the mediating role of CSR in the relationship between green finance and sustainable performance.

4. Results

Socio- Demographic Information

The demographic characteristics of the 400 respondents indicate (see Table 2) that the sample is predominantly male, with 66.8% of respondents being men and 33.3% being women. In terms of age, 45.5% of respondents are aged 26–35 years, followed by 33.3% aged 36–50 years. Respondents aged 18–25 years account for 20.3% of the sample, while only 1.0% are above 50 years. This indicates that the sample largely consists of young and mid-career professionals. Regarding educational qualifications, 68.8% of respondents hold a Master’s degree, while 29.0% have a Bachelor’s degree. A small proportion of respondents have secondary-level education (1.5%), while 0.8% hold qualifications above a Master’s degree. The educational profile therefore indicates that most respondents possess relatively high levels of academic qualification. In terms of employment sector, 87.0% of respondents are employed in private commercial banks, whereas 13.0% work in government-owned banks. The income distribution shows that 53.3% of respondents earn between NPR 30,000 and 50,000 per month, while 28.5% earn more than NPR 50,000. Similarly, 16.8% earn between NPR 20,000 and 30,000, and only 1.5% earn below NPR 20,000 per month.

Table 2

Demographic Information

Category	Sub-category	Number	Percentage (%)
Gender	Male	267	66.8%
	Female	133	33.3%
Age Groups	18-25 years	81	20.3%
	26-35 years	182	45.5%
	36-50 years	133	33.3%
	Above 50 years	4	1.0%
Education Levels	Secondary level	6	1.5%
	Bachelor’s degree	116	29.0%
	Master’s degree	275	68.8%
	Above Master’s degree	3	0.8%
Bank Type	Private Bank Employees	348	87.0%
	Government Bank Employees	52	13.0%
Income Levels	Below 20,000	6	1.5%
	20,000-30,000	67	16.8%
	30,000-50,000	213	53.3%
	Above 50,000	114	28.5%

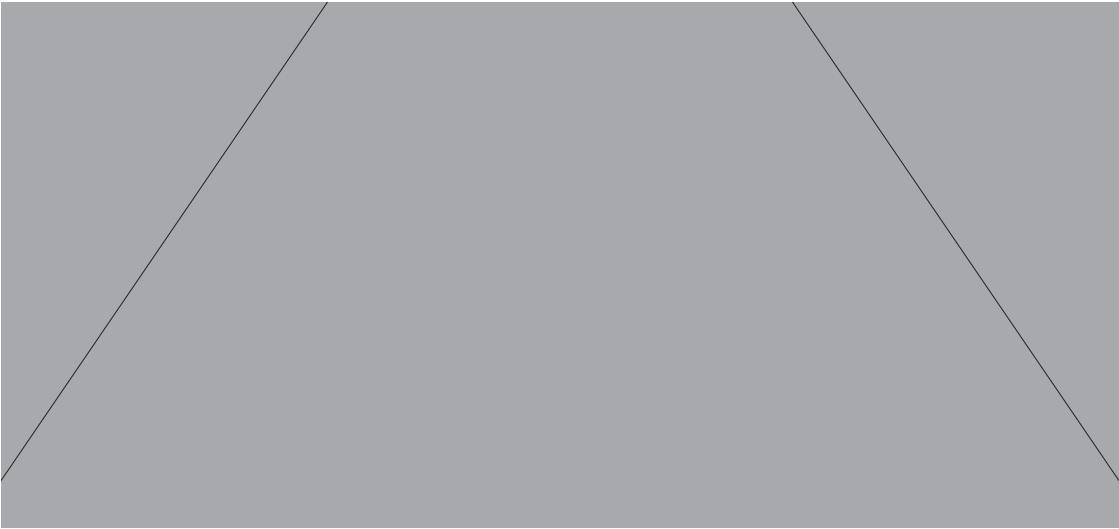
Challenges Faced by Employees on Green Finance Implication

The findings reveal several barriers to green finance implementation, with lack of awareness being the most significant challenge, reported by 61.02% of respondents, followed by regulatory compliance (42.37%), high initial costs (34.75%), and lack of expertise (18.64%), while 1.69% reported other challenges (see Figure 2). To address these barriers, training programs were identified as the most preferred strategy for increasing awareness, reported by 59.32% of respondents, followed by awareness campaigns (45.76%),

stakeholder involvement (36.44%), and internal workshops (27.12%). Regarding the integration of green finance into organizational strategy, including green finance in strategic planning was the most emphasized approach (38.25%), followed by setting clear sustainability targets (26.00%), creating cross-functional teams (19.50%), and aligning incentives (16.50%). Overall, the findings highlight the importance of awareness development, supportive regulations, employee training, stakeholder engagement, and strategic integration to strengthen green finance practices within organizations.

Figure 2

Challenges Related to Green Finance



Inferential Analysis

The Full Collinearity test was conducted to assess common method bias. A VIF value below 5 indicates that common method bias is unlikely to be a concern. The VIF values for green finance (GF), corporate social responsibility (CSR), environmental sustainability (ENS), economic sustainability (ES), and social sustainability (SS) were 1.803, 1.666, 2.152, 2.032, and 1.921, respectively. Since all values are below the recommended threshold of 3.3 or 5 (Dangol & Siddique, 2026), the results indicate that common method bias is not a concern in the study, and the data are suitable for further analysis.

The measurement model was assessed to establish the reliability and validity of the constructs. The assessment included internal consistency reliability, convergent validity, and discriminant validity. Cronbach's Alpha (CA) and Composite Reliability (CR) were used to assess internal consistency. Values above 0.70 are generally considered acceptable, while CR values between 0.70 and 0.90 indicate good reliability (Saud et al., 2026; Shrestha et al., 2025). As shown in Table 3, all constructs meet the recommended thresholds. CA values range from 0.710 to 0.809, while CR values range from 0.787 to 0.875. Specifically, CSR (CA = 0.809, CR = 0.875), ENS (0.775, 0.852), ES (0.766, 0.844), GF (0.736, 0.825), and SS (0.710, 0.787) demonstrate acceptable to good internal consistency, confirming the reliability of the measurement constructs.

Convergent validity was assessed using factor loadings and Average Variance Extracted (AVE). Factor loadings above 0.50 and AVE values above 0.50 (Devkota et al., 2026) are considered acceptable. In this study, GF3, GF4, CSR4, and SS3 were removed because their factor loadings were below the recommended threshold of 0.50. After removing these items, the remaining indicators adequately represented their respective constructs.

Table 3

Average variance extracted (AVE), Cronbach's Alpha (CA) and Composite Reliability (CR)

Construct	Indicator	Outer loading	AVE	CA	CR
csr	csr1	0.722	0.636	0.809	0.875
	csr2	0.8			
	csr3	0.842			
	csr5	0.822			
Environmental Sustianability	ens1	0.716	0.591	0.775	0.852
	ens2	0.829			
	ens3	0.794			
	ens4	0.729			
Economic Sustainability	es1	0.74	0.575	0.766	0.844
	es2	0.749			
	es3	0.787			
	es4	0.757			
Green Finance	gf1	0.592	0.501	0.736	0.825
	gf2	0.716			
	gf5	0.757			
	gf6	0.604			
	gf7	0.805			
Social sustainability	ss1	0.837	0.566	0.71	0.787
	ss2	0.875			
	ss4	0.481			

Discriminant validity was assessed using cross-loadings, the Fornell and Larcker criterion, and the HTMT ratio. The cross-loading results show that each indicator has a higher loading on its respective construct than on other constructs (see Table 4) (Pariyar & Lawaju, 2026). The Fornell and Larcker results also confirm that the square root of AVE for each construct is higher than its correlations with other constructs (see Table 5) (Sharma et al., 2024). In addition, all HTMT values are below 0.90 (see Table 5) (Poudel et al., 2024), confirming adequate discriminant validity among the constructs. Overall, the results indicate that the constructs are sufficiently distinct from one another.

Table 4

Cross Loading

	csr	ens	Es	gf	ss
csr1	0.722	0.318	0.35	0.472	0.346
csr2	0.8	0.479	0.395	0.567	0.487
csr3	0.842	0.373	0.386	0.468	0.405
csr5	0.822	0.406	0.401	0.539	0.55

ens1	0.333	0.716	0.452	0.351	0.311
ens2	0.407	0.829	0.515	0.406	0.352
ens3	0.508	0.794	0.51	0.442	0.431
ens4	0.203	0.729	0.466	0.304	0.169
es1	0.299	0.421	0.74	0.21	0.288
es2	0.279	0.414	0.749	0.228	0.131
es3	0.343	0.559	0.787	0.291	0.311
es4	0.466	0.498	0.757	0.487	0.452
gf1	0.372	0.369	0.219	0.592	0.272
gf2	0.434	0.416	0.283	0.716	0.27
gf5	0.474	0.327	0.35	0.757	0.326
gf6	0.366	0.226	0.28	0.604	0.305
gf7	0.574	0.399	0.378	0.805	0.527
ss1	0.508	0.279	0.288	0.406	0.837
ss2	0.515	0.37	0.298	0.431	0.875
ss4	0.161	0.43	0.526	0.29	0.481

Table 5*HTMT Ratio and Fornell and Larcker Criterion Results*

HTMT Ratio						Fornell and Larcker criterion			
	csr	ens	es	gf	Ss	csr	ens	es	gf
csr	0.798					csr			
ens	0.51	0.765				ens	0.586		
es	0.476	0.631	0.762			es	0.573	0.796	
gf	0.591	0.481	0.399	0.704		gf	0.821	0.642	0.523
ss	0.574	0.429	0.396	0.415	0.749	ss	0.738	0.673	0.679

The hypotheses in the study were tested using structural equation modeling to evaluate the model's ability to explain and predict changes in endogenous variables based on exogenous factors. An R^2 value of at least 0.20 is recommended for ensuring a satisfactory model fit. In this study, the endogenous variable CSR has an R^2 value of 0.417, indicating that 41.7% of its variance is explained by the model, which exceeds the recommended threshold and demonstrates a satisfactory level of predictive accuracy. Similarly, the variable ENS shows an R^2 value of 0.304, meaning 30.4% of its variance is explained by the predictors, reflecting an acceptable fit. The variable ES has an R^2 value of 0.26, indicating that 26% of its variance is explained, which is slightly above the minimum threshold. Lastly, the variable SS has an R^2 value of 0.354, meaning 35.4% of its variance is explained by exogenous factors, confirming an adequate level of predictive power. Overall, all R^2 values exceed the recommended threshold of 0.20, highlighting the model's effectiveness in predicting changes in the endogenous variables.

Figure 3

Path Analysis

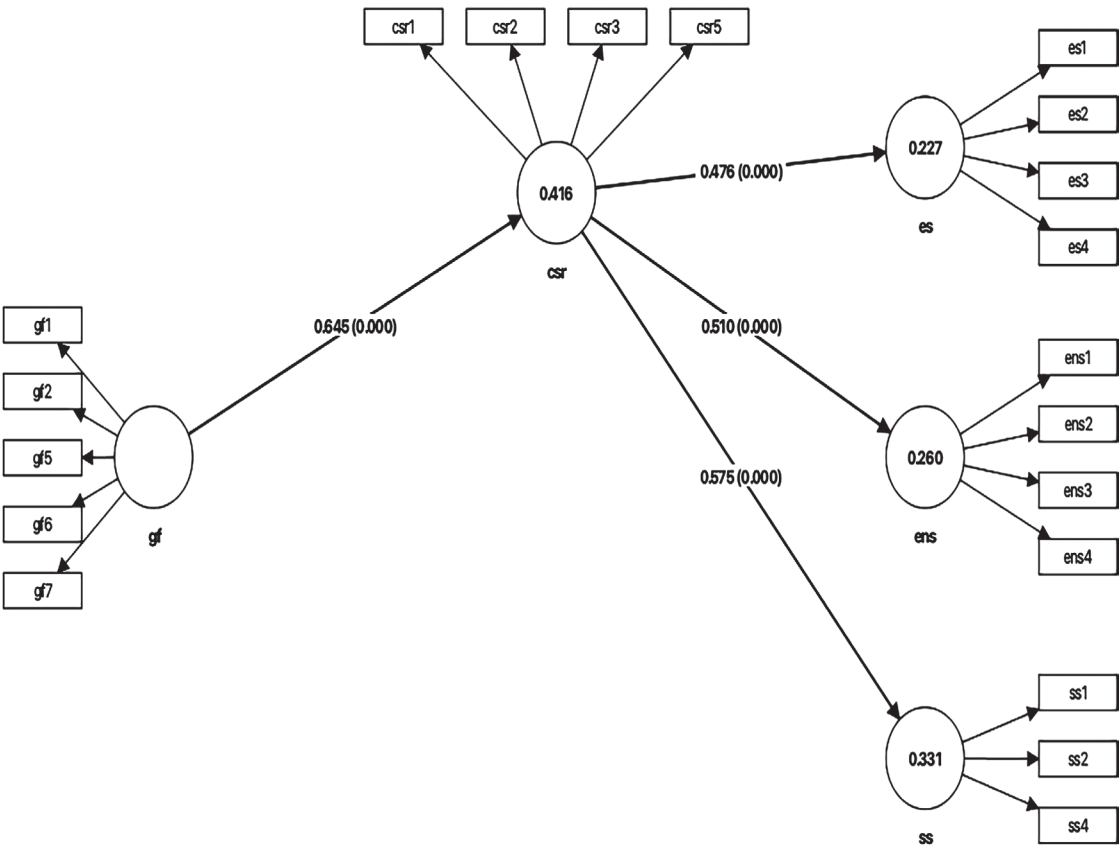


Table 6

Hypothesis test

		beta	SD	T value	P values	LLCI 2.50%	ULCI 97.50%	Decision
H1	gf -> csr	0.645	0.036	17.794	0.000	0.563	0.707	significant
H2	csr -> es	0.341	0.066	5.152	0.000	0.207	0.466	significant
H3	csr -> ens	0.304	0.07	4.312	0.000	0.16	0.435	significant
H4	csr -> ss	0.42	0.059	7.067	0.000	0.292	0.527	significant
H5	gf -> csr -> ens	0.196	0.047	4.166	0.000	0.105	0.288	significant
H6	gf -> csr -> es	0.22	0.047	4.669	0.000	0.13	0.314	significant
H7	gf -> csr -> ss	0.271	0.038	7.053	0.000	0.193	0.345	significant

The hypothesis testing results (see Table 6 and Figure 3) show that all seven hypotheses are statistically significant. Green finance has a positive effect on CSR ($\beta = 0.645$, $t = 17.794$, $p < 0.001$), supporting H1. CSR also has significant positive effects on economic sustainability ($\beta = 0.341$, $t = 5.152$, $p < 0.001$), environmental sustainability ($\beta = 0.304$, $t = 4.312$, $p < 0.001$), and social sustainability ($\beta = 0.420$, $t =$

7.067, $p < 0.001$), supporting H2, H3, and H4, respectively. The mediation results further indicate that CSR significantly mediates the relationships between green finance and environmental sustainability ($\beta = 0.196$, $t = 4.166$, $p < 0.001$), economic sustainability ($\beta = 0.220$, $t = 4.669$, $p < 0.001$), and social sustainability ($\beta = 0.271$, $t = 7.053$, $p < 0.001$). Therefore, H5, H6, and H7 are also supported. The 95% confidence intervals for all hypothesized relationships do not include zero, further confirming their statistical significance.

5. Discussion

The objective of this study was to examine the relationships between green finance, corporate social responsibility (CSR), and economic, environmental, and social sustainability, along with the mediating role of CSR. The hypotheses were tested using PLS-SEM by assessing the significance of the direct and indirect relationships. Hypotheses 1–4 examined the direct effects, whereas Hypotheses 5–7 assessed the mediating effects. All seven hypotheses were supported.

Hypothesis 1 was supported, showing a positive relationship between green finance and CSR. This indicates that greater adoption of green financial practices is associated with stronger CSR practices in the banking sector. The finding supports Darsono et al. (2025), who linked green finance with sustainability performance through CSR, and Fu et al. (2023), who emphasized the contribution of green finance to sustainable development. The findings also provide support for Hypothesis 2, demonstrating that CSR contributes positively to economic sustainability. This implies that responsible business practices, stakeholder relationships, and long-term responsible strategies can strengthen economic sustainability. This result is in line with Camilleri (2017), who highlighted the role of corporate sustainability and responsibility in creating value for businesses, society, and the environment.

Hypothesis 3 received support, confirming the positive effect of CSR on environmental sustainability. The result indicates that CSR practices can encourage environmental responsibility through activities such as supporting green projects, conserving resources, and promoting environmentally sustainable activities. This finding agrees with Cetindamar (2007), who associated CSR with environmentally responsible behavior, and Mir and Bhat (2022), who highlighted the contribution of green banking to sustainability. Similarly, the results supported Hypothesis 4, indicating that CSR is positively associated with social sustainability. This suggests that CSR activities involving community development, employee welfare, social inclusion, and responsible business practices can contribute to positive social outcomes. The finding is consistent with Fallah Shayan et al. (2022), who identified CSR as a framework for addressing sustainable development goals and broader social responsibilities.

For Hypothesis 5, the results confirmed the mediating role of CSR between green finance and economic sustainability. This indicates that green finance can contribute to economic sustainability through the integration of CSR into organizational practices. The finding corresponds with Darsono et al. (2025), who examined CSR as a mediator between green finance and sustainability performance, and Camilleri (2017), who emphasized the value-creating role of corporate responsibility and sustainability. The analysis further supported Hypothesis 6, demonstrating that CSR mediates the relationship between green finance and environmental sustainability. This suggests that the environmental contribution of green finance is strengthened through CSR-based responsible practices. The result is consistent with Darsono et al. (2025), Fu et al. (2023), and Mir and Bhat (2022), who emphasized the connection between green finance, responsible practices, and sustainability.

Finally, Hypothesis 7 was supported, confirming the mediating effect of CSR between green finance and social sustainability. The result suggests that green finance can contribute to social sustainability when financial practices are integrated with CSR activities addressing employees, customers, communities, and other stakeholders. This finding is consistent with Darsono et al. (2025), who identified CSR as an important mechanism linking green finance and sustainability performance, and Fallah Shayan et al. (2022), who highlighted the role of CSR in broader sustainable development objectives.

6. Conclusion

The study concludes that green finance plays an important role in promoting sustainable performance in commercial banks in Nepal. The findings show that green finance has a significant positive effect on corporate social responsibility (CSR), while CSR significantly contributes to economic, environmental, and social sustainability. The mediation results further confirm that CSR significantly mediates the relationship between green finance and all three dimensions of sustainable performance, indicating that CSR provides an important pathway through which green finance contributes to sustainability.

Despite these positive relationships, the findings also reveal several challenges in implementing green finance. Lack of awareness was the most frequently reported challenge, followed by regulatory compliance, high initial costs, and lack of expertise. Respondents identified training programs, awareness campaigns, stakeholder involvement, and internal workshops as important strategies for addressing these challenges. Similarly, integrating green finance into strategic planning, setting clear sustainability targets, creating cross-functional teams, and aligning incentives were identified as approaches for strengthening green finance practices. Overall, the findings suggest that greater awareness, employee capacity development, supportive regulatory mechanisms, stakeholder engagement, and strategic integration of green finance are important for strengthening sustainable banking practices in Nepal.

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