



## Do Green Banking Practices Enhance Bank Performance? Empirical Evidence from Nepal



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### ABSTRACT

*This paper examines the impact of green banking activities on the financial performance of commercial banks in Nepal. With the growing attention focusing on the environmental sustainability, this green banking becomes one of strategic concept that allows banks to pursue their financial objectives, while reducing their negative impacts on environment. The methodology employed is descriptive and analytical research design where secondary data were collected from all the commercial banks in Nepal for eleven years (FY 2070/71–2080/81). Crucial explanatory variables include green finance, digital banking adoption, corporate social responsibility (CSR) fund distribution and selected bank-specific and macro variables of non-performing assets (NPA), capital adequacy ratio (CAR), gross domestic product (GDP) and inflation. Financial performance is assessed through ROI and ROA. The study is based on descriptive analysis, Correlation analysis and Regression model. The empirical evidences indicate that Nepalese commercial banks have been making a significant effort on incorporating green banking in their operational strategies. Both GFFI and CSR fund investments have significant positive effects on financial performance. digital adoption in banking has become a driving force behind enhanced efficiency and competitiveness. From the opposite perspective, negative relationships of NPA with CAR suggest significance of good credit risk management. Profitability is also a function of GDP and inflation in a less significant way with respect to internal managerial and strategic variables. The paper concludes that green banking practices play a major role in improving the financial performance of commercial banks operating in Nepal. The combination of sustainable development goals along with technology and good risk management practices leads to long term profitability and operation efficiency. The potential contribution of this empirical framework: to inform bank management and regulatory authorities that environmentally sustainable and socially responsible behaviour in banking does not necessarily lead to financial underperformance. Facilitation of green finance, enhancement in digital banking structure development and promotion of CSR activities could be useful in harmonizing sustainable goals with medium term financial prospects for Nepalese banks.*

### Keywords

Green banking, financial performance, ROA, ROI, green finance, CSR, digital banking, Nepal, GDP, inflation

## Introduction

Environmental performance has become a key dimension to lead the economies towards sustainable development. Climate change and the phenomenon of global warming represents major risks for economic stability, financial institutions and long-term growth worldwide. Economists are more and more likely to agree that moving towards a low-carbon economy reduces environmental risks and produces financial rewards. In this regard, commercial banks may proactively channel green finance to those sustainable projects and activities that can help reduce carbon emissions as well as environmental destruction (Rajput et al., 2013).

“Green banking” refers to an environmentally responsible and sustainable banking sector, which integrates environmental, social, and governance (ESG) factors into lending decisions as well as investment process for the industry. As opposed to traditional banking, which emphasizes short term profit maximization through the depletion of natural resources and social degradation, green banking focuses on sustainable environmental management, social accountability as well as financial prosperity. It is intended to create positive environmental and social impacts, as well as economic sustainability and system security in the financial sector (Weber, 2016).

All these practices can be categorized as part of green banking, which, in fact, has several components such as green financing, corporate

social responsibility (CSR), digitalization and risk management innovation strengthened by strong corporate governance. Such practices provide lasting benefits to commercial banks, including a reduction in both credit risk and environmental risks, an enhancement of the brand reputation, identification and resolution of problems: what we have seen it operational efficiency, as well as sustainable economic growth. Thus, applying green banking can be a strategic device for financial and environmental sustainability enhancement (Subedi & Bhattarai, 2024).

Nepal’s financial sector have strong potentials to contribute environmental conservation through ethical banking, particularly in terms of financing renewable energy, hydropower, agriculture and energy conservation projects. Nepal Rastra Bank (NRB) has carried out policy measures such as the Environmental and Social Risk Management (ESRM) guidelines and the Green Taxonomy Framework to promote green banking by commercial banks (Nepal Rastra Bank, 2018). In addition, the adoption of digital financial services like mobile banking, online banking, e-statements and card-less transactions has helped to improve energy efficiency making work paperless.

Thus, we expect commercial banks to lead their financial performance and sustainable development through ecologically-and- socially all-inclusive, well-governed operations. National policy and international framework such as United Nations Sustainable development Goal

(SDGs), G20 initiatives have promoted investments on green finance, corporate social responsibility (CSR) and digital banking infrastructure that connect with improvement in efficiency operations, profitability and customer loyalty (Adhikari et al., 2024). This research assesses the implementation of green banking practices in Nepal and their impact on financial performance of commercial banks measured by Return on Assets (ROA) and Return on Investment (ROI).

Even though there has been a growing attention towards sustainability and the legal backup for green banking in Nepal, it is uncertain how profoundly commercial banks in general have implemented and practice green banking. Even though banks have started to invest into green financing, digital banking and corporate social responsibility initiatives, empirical evidence on the state of play of such activities and their consequences for bank financial performance is still quite underdeveloped. There is also doubt regarding the longer-term effects of green banking methods on key performance indicators, and banks and investors are thereby skeptical regarding sustainability transitions as potential sources of returns. Additionally, green banking involves environmental liability as well as social and financial risk and in scholarly circles, the ways to prevent this risk so that profits can be maximized without compromising on our environment and society have not been fully explored. We have not fully analyzed the macroeconomic indicators—i.e. economic performance and inflation rate—and bank level financial

variables in green banking adoption. The absence of empirical evidence suggests an enormous research vacuum leading the commercial bankers and regulators to take any decision about promoting and sustaining green banking practices in Nepal.

The main focus of this research is to explore the impact of green banking practices on financial performance of commercial banks in Nepal. This study attempts to measure the present level and scope of green banking policies run by Nepalese commercial banks with regard to green finance, digital banking, and social corporate responsibilities. The objective of this study is to assess the relationship between green banking behaviour and financial performance performed by commercial banks through analysing the effects of green banking regulations on profit indicators. The objective is to examine how average green banking practice result of bank-level financial performance correlates with major macroeconomic variables, in order to measure the overall effectiveness and contribution pattern related with national economic development and sustainable development. This study, therefore, attempts to provide an empirical evidence on whether green banking practices facilitate financial performance and sustainable growth in Nepal.

## **Literature Review**

### **Theoretical review**

The green banking framework can be rooted in stakeholder theory, resource-based view (RBV) theory, legitimacy theory and the triple

bottom line (TBL) approach emphasizing strategic importance of sustainability in banking. Stakeholder theory suggests that commercial banks have an obligation not only to shareholders, but also to customers, employees, regulators and society at large, including the environmental stakeholders. As banks move away from taking a profit maximization-seeking approach towards one that takes into account the environment and society, this is expected to improve their image, reduce operational and reputation risks, increase financial performance as well as contribute to macroeconomic stability and growth (Freeman, 1984; Mishkin & Eakins, 2018; Clarkson, 1995). Using the Resource-Based View (RBV), green banking helps banks to develop valuable intangible resources such as their brand reputation, customer trust, regulator's goodwill and IT skills which in turn generates sustainable competitive advantages and financial growth over time (Barney 1991; Hart 1995). Green finance, digital banking and technological innovation are increasing efficiency, reducing costs and advancing environmentally friendly objectives (OECD, 2020). Legitimacy theory argues that in order to continue functioning as a respected institution, banks need to reconcile what they do with prevailing societal norms and legal requirements and social expectations concerning the protection of its environment. The adaption of risk policies for environmental and social risk management activities are observed in green banking, corporate social responsibility programs, credibility building, investor attraction, reputation loss prevention and favorable

regulatory treatment (Jeucken 2001; deegan 2002; Weber & Feltmante, 2016). The triple bottom line focus emphasizes that the financing of green banking activities (for example, those involving renewable energy, paperless and digital services, and environmentally-preferable lending) not only benefits societies and preserves ecosystems but also is profitable. Moreover, TBL-centred green banking initiatives lead to improved financial return and sustainable value creation through cost cutting measures in operations, enhancement of stakeholder trust, and reduction of credit risk and default (Elkington, 1997; Weber, 2005).

### **Empirical review**

Bahl (2012) described green banking as a strategic imperative for financial institutions in minimizing its environmental impact and continuing to achieve their expected financial returns. The study observed that digital banking, energy conservation practices, corporate social responsibility (CSR) and environmentally sustainable financial products are critical components of green Banks. These practices increase customer confidence and enhance brand equity, ensuring the financial viability of the company in long run. According to Ragupathi and Sujatha (2015), green banking reduces cumbersome paperwork through online banking transactions, creates awareness on environmental and social issues among the business players and promotes environment friendly business practices by incorporating environmental criteria in loan-granting decisions. Such approaches will

help quality assuring sustainability and eco-friendly operations in a company for the next generation. Furthermore, green finance represents a crucial transformation for economic stability through the financing of ecofriendly projects and public policies. Banks, financial institutions and regulators from around the world advance green growth and sustainable development through green finance instruments (Ragupathi, 2015).

Akhter et al. (2021) conducted a study of the effect of green banking practices on the financial performance of commercial banks in Bangladesh, through 2016–2018 data. They had the result that the Green Finance Ratio has a positive effect on ROI and ROE, but no significant relationship with ROA. The results show that green banking may increase the operating costs in the short run but it enhances financial performance in long run. Ahamed (2022) found a positive relationship between green banking practices and bank performance in emerging economies, as the implications are improved reputation, trust of stakeholders, brand value, risk management.

Mishra (2023) analysed the adoption of green banking practices in commercial banks based on survey data from bank employees. The findings show a growing emphasis on green banking strategies, which are aimed at improving environmental and social sustainability in addition to long-run profit generation. It is showcased in the literature that green banking reduces manual banking processes and stimulates different forms of sustainability, however the absence of

concrete green-in-banking models represents both a challenge and an opportunity for product differentiation. Mishra and Aithal (2022) highlighted the importance of green financing in Nepal, showing that it reduces capital cost by 10–20 percent and enhances corporate value in harmonizing environmental with economic objectives.

Tandukar et al. (2021) assessed the effectiveness of green banking in perspective of bankers in Nepal and establish that effective implementation requires employee training and convenient digital financial services. Putri et al. (2022) supported this viewpoint by exploring the association between green banking indices and profitability, showing that CSR funds and capital adequacy ratio positively influence ROA, NPLs and loan-to-deposit ratio negatively affect ROA. It is found by researchers that the profitability is weakly influenced by the number of ATMs, owing to their high operational cost.

The banks performance is highly based on the macroeconomic factors. Gautam and Gautam (2021) studied how GDP, interest rate, inflation, and unemployment affect the financial performance of commercial banks in Nepal. They find that GDP, interest rate and inflation have a significant impact on ROE but not for ROA. Unemployment does not seem to affect the performance of banks, showing that macroeconomic stability play an important role in determining financial outcome.

Lalon et al. (2025) showed that green banking activities can significantly increase the

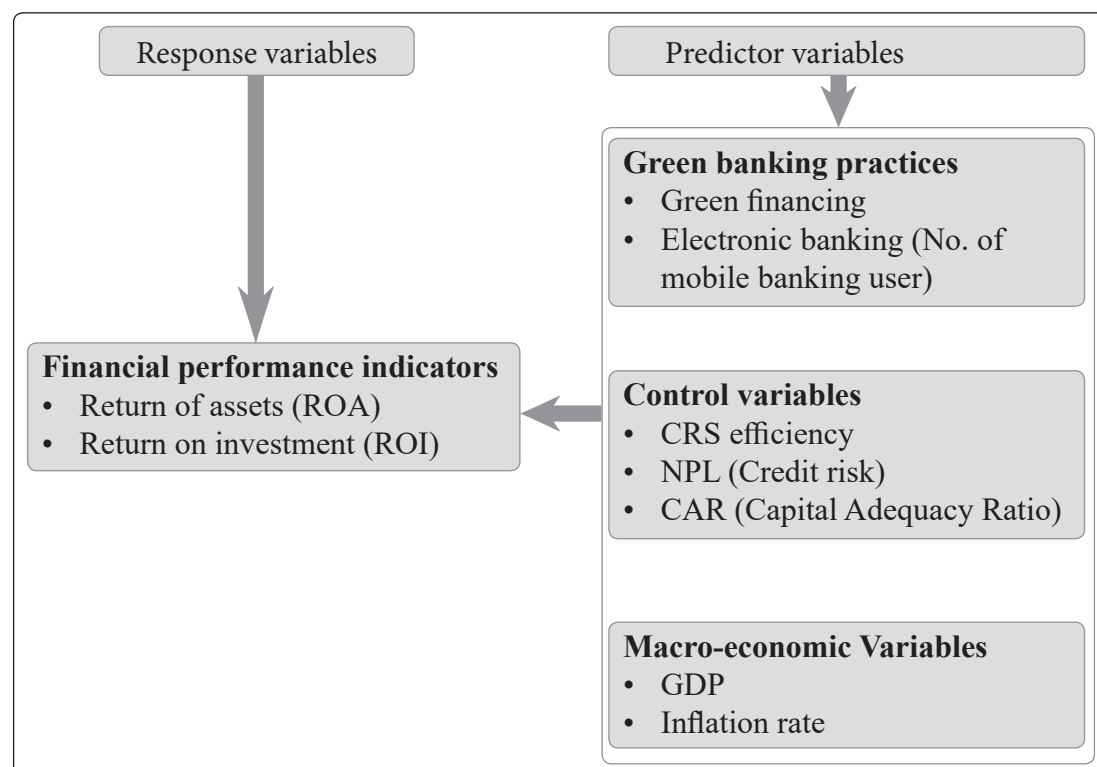
profitability ratios such as ROA, ROE, and net interest margin of emerging countries. Siauwijaya et al. (2023) also showed that green credit policies improve financial performance in the case of Indonesian banking, more so when supported by appropriate institutional and environmental factors. Adhikari et al. (2024) also reported a positive association between green banking practices (i.e., digital lending and energy-efficient operations)

with ROA and ROI, whereas using secondary data. Taken together, the studies offer strong empirical support for the impact of green banking on financial performance enhancement and achievement of sustainable banking.

This research, based on theoretical foundations and a comprehensive literature review, establishes the theoretical framework portrayed in Figure 1.

**Figure 1**

*Conceptual framework*



**Table 1***Description of variables used in research*

Indicators	Variables	Description
Financial performance (Dependent variables)	ROA	A financial metric that evaluates a company's profitability in relation to its total assets.
	ROI	Return on Investment (ROI) is a financial ratio that indicates a company's profitability by measuring how efficiently it generates profit from shareholders' equity.
Green banking practices (Independent variables)	Green financing	The amount of green financing is determined based on sector-wise allocations by commercial banks, as reported in NRB financial statements, including sectors such as agriculture and forestry, fisheries, mining, electricity, gas and water, metal products, and mechanical and electronic equipment.
	Electronic banking	Number of mobile banking users of commercial banks.
	CSR efficiency	Corporate social responsibility funds of commercial banks.
Control variables	NPL	NPL ratio = total non-performing loans/total loan outstanding.
	CAR	Capital adequacy ratio (CAR) is the measurement ratio that assesses the ability of banks to absorb losses.
Macro-economic variables	GDP growth	The GDP growth rate represents the percentage change in a country's gross domestic product over a given period, indicating the overall economic performance and health of the nation.
	Inflation rate	The inflation rate is the percentage increase in the overall price level of goods and services in an economy over a specific period, reflecting a decline in purchasing power.

The financial performance of commercial banks is assessed using key indicators, namely Return on Assets (ROA) and Return on Investment (ROI). Based on this, the following hypotheses are proposed:

- H1:** There is a significant positive relationship between the green financing ratio and the financial performance (ROA/ROI) of commercial banks in Nepal.
- H2:** There is a significant positive relationship between electronic banking adoption and the financial performance (ROA/ROI) of commercial banks in Nepal.
- H3:** There is a significant positive relationship between non-performing loans (NPL) and the financial performance (ROA/ROI) of commercial banks in Nepal.
- H4:** There is a significant positive relationship between CSR efficiency and the financial

performance (ROA/ROI) of commercial banks in Nepal.

- H5:** There is a significant positive relationship between capital adequacy ratio (CAR) and the financial performance (ROA/ROI) of commercial banks in Nepal.
- H6:** There is a significant positive relationship between GDP growth rate and the financial performance (ROA/ROI) of commercial banks in Nepal.
- H7:** There is a significant positive relationship between inflation rate and the financial performance (ROA/ROI) of commercial banks in Nepal.

## Methods

The study utilizes the secondary data collected from the annual reports of commercial bank, NRB publications and others related financial reports over the period of eleven years (FY 2070/71-2080/81). The study consists of green banking behaviours, control factors, and macroeconomic consideration. It encapsulates green financing investment of digital banking services, and contribution in corporate social responsibility (CSR). Good measures and indicators of financial status include: ROA (Return on assets), ROI (Return on investment). Macroeconomic indicators including the GDP growth rate and inflation rate are utilized in this study to reflect the overall economic situation in

$$ROA = \alpha + \beta_1(GF) + \beta_2(DB) + \beta_3(CSR) + \beta_4(NPL) + \beta_5(CAR) + \beta_6(GDP) + \beta_7(IR) + \varepsilon$$

$$ROI = \alpha + \beta_1(GF) + \beta_2(DB) + \beta_3(CSR) + \beta_4(NPL) + \beta_5(CAR) + \beta_6(GDP) + \beta_7(IR) + \varepsilon$$

Here, ROA and ROI are response variables; GF (green financing) and dB (digital banking) represent green banking practices; CSR, NPL, and CAR are control variables; GDP and IR

Nepal. The research employs descriptive and analytic design. The descriptive design provides broad coverage of variables and their relationships, while the analytical design facilitates testing, understanding, and evaluation of relationships among variables using statistical techniques such as correlation and regression.

Multiple regression model was employed in the study in assessing association between predictor variables (green banking practices, control variables and macro-economic factor) with financial performance measurements namely ROA and ROI (Ahamed, 2022). Green banking strategies are multidimensional: green finance, digital banking and corporate social responsibility (CSR) efficiency; where as the control variables include NPA (non-performing assets) and CAR (capital adequacy ratio) and macroeconomic factors considered are GDP growth, inflation. This study provides empirical evidence on the impact of green banking activities and how it benefits bank performance, which in turn contributes to have a more profound understanding for strategic managers of any bank toward environmental sustainability in the financial industry (Jha & Bhome, 2013; Ahamed, 2022).

The general regression models used in the study are:

represent macroeconomic conditions;  $\alpha$  is the constant, and  $\beta_1$ – $\beta_7$  are the coefficients of the respective predictors.

## Results

The descriptive statistics for the key variables in our study are provided in Table 2, which underscores their range, central tendency and distributional variability. The mean NPA is 2.08 and the standard deviation is 0.85. This implies that averagely the quality of assets is average and there are large differences among banks. The GDP varies between negative 2.37 and positive 8.98 with an average value of 4.33. It shows the instability in the economy during the research period. Prices tend to be high but stable, on average they increase by 6.25 percent with standard deviation of 2.07. The average for the Capital Adequacy Ratio is 13.39 which is significantly higher than the minimums of regulators. The small deviation of 1.02 shows, banks are in very good financial condition. The mean is 1.42 (SD = 0.31) for the average ROA, and 3.31

(SD = 1.28) for the average ROI. That's a sign that the company is continually generating cash and earning solid returns. The CSR fund is highly dispersed (0–748.01) and widely spread (SD =230.18) for green banking dimensions. This means that vastly different amounts are spent on social responsibility by the banks. The mean of green financing is 11.92, and the standard deviation is 2.92. This figure indicates that more people are tapping eco-friendly funding though not yet all the time. The most choices are provided for online banking, with minimum and maximum values being 0.77 and 21.14 respectively. The evidence shows that Nepalese commercial banks vary in terms of adopting new technology and going digital. descriptive statistics Macro economic situation and green banking practices can differ, which may influence the amount of money a bank earns.

**Table 2**

*Descriptive analysis of the variables of research*

Variable	Min	Max	Mean	Standard deviation
NPA	1.21	3.76	2.08	0.85
GDP	-2.37	8.98	4.33	3.3
Inflation	3.6	9.94	6.25	2.07
CAR	11.94	14.72	13.39	1.02
ROA	0.89	1.77	1.42	0.31
ROI	1.58	5.21	3.31	1.28
CSR fund	0	748.01	467.87	230.18
Green finance	8.67	17.17	11.92	2.92
Digital banking	0.77	21.14	8.76	7.42

*Source: Author's calculation*

It is found from Table 3 that there are positive correlations between ROA and ROI (Financial Performance Indicators) with green banking variables(h1,h2,h3), control variables(c1,c2), and macro economic variables(mv,mr). The results show a strong and highly significant positive relationship between digital banking and both ROA (0.66) and ROI (0.72), reflecting that banks that are using digital technology tend to have higher financial performance in comparison with their traditional counterparts. The relationship between green finance and ROA is not strong (0.62) but robust with ROI (0.71), suggesting that environmentally friendly financing improves profitability. Results indicate a strong positive relationship between green finance and CSR funds (0.89\*), which indicates the banks implementing green projects also often supplement these with social responsibility initiatives to promote environmental and social sustainability. On the other hand, NPA and CAR show a negative relationship with financial performance, since higher NPAs and less

capital may reduce the profitability. On the other hand, macroeconomic variables such as GDP growth show a positive relationship with ROA and ROI indicating overall economic growth contributes positively to bank performance. On the other hand, inflation has a negative, small correlation coefficient, which implies that its impact on real investment returns is bad. Results reveal that combined implementation of digital banking, green financing and CSR activities significantly enhances financial, environmental as well as social performance of commercial banks in Nepal, accompanied by the requirement to have proficient risk management along with sound capital management (Tandukar et al., 2021). Therefore, necessarily an average may not be able to represent the variability of CSR investments across institutions. The descriptive statistics demonstrate the fact that, among the sample banks of Nepal, it is observed that macroeconomic conditions and actual use of digital banking in Nepal as well as financial indicators are dynamic where as financial indicators are stable.

**Table 3**

*Summary of correlation analysis*

Variables	ROA	ROI	GFR	CSR	DB	NPA	CAR	GDP	Inflation
ROA	1								
ROI	0.68*	1							
GF	0.62*	0.71**	1						
CSR	0.55	0.68*	0.89**	1					
DB	0.66**	0.72**	0.85**	0.82**	1				
NPA	-0.31	-0.41	0.4	0.38	0.51*	1			
CAR	-0.22	-0.27	0.33	0.29	0.31	-0.27	1		
GDP	0.38*	0.35	-0.25	-0.2	-0.37	-0.13	-0.15	1	
Inflation	-0.21	-0.19	0.21	0.18	0.24	0.16	0.1	-0.33	1

*Source: Author's Calculation (\* Correlation is significant at the 0.05 level, \*\* at the 0.01 level.)*

The results established from a multiple regression analysis examining the effects of green banking practices, control variables and macroeconomic determinants on the financial performance in of commercial banks in Npal as measure by ROA and ROI are presented in Table 4. The models are promising, with an adjusted R<sup>2</sup> of 0.682 and 0.721 for ROA and ROI respectively indicating that approximately 68% to 72% of the variance in financial performance can be explained by the predictor variables. Among the factors of green banking, digital banking has the largest contribution to ROA (B = 0.364, p < 0.01) and ROI (B = 0.385, p < 0.01), indicating its practical implications toward enhancing accessibility, reducing expenses for operation and being profitable. Green finance is significantly and positively correlated with ROA (B = 0.298, p < 0.05) and ROI (B = 0.322, p < 0.01), which implies that the investment in green finance will enhance efficiency of enterprise management and risk prevention and public recognition.

The performance-enhancing role of CSR leads to favourable return on assets (B = 0.241, p < 0.05) and return on investment B = 0.255, p < 0.05), underling the advantages stemming from stakeholder trust and community embeddingment. In contrast, NPA have negative and significant effects on ROA (B = -0.215) and ROI (-0.238), implying that insufficient credit quality reduced income generating ability. Capital adequacy ratio (CAR) has a negative (less than at 10%) but insignificant effect which could imply some opportunity cost associated with maintaining high capital cushions. Macroeconomic factors show little influence: GDP positively affects, and inflation marginally negatively influences the firm's financial performance. The study provides evidence that green banking practices such as digital banking, green finance and corporate social responsibility significantly contribute toward the profitability and sustainability of commercial banks in Nepal.

**Table 4**

*Summary of multiple regression analysis*

Dependent variable	Adjusted R <sup>2</sup>	F stats.	Level of significance (Model)	Independent variables	B	Beta	TStats	Level of significance (Variable)	VIF
ROA	0.682	12.46	0.001**	Constant	0.412	-	2.13	0.067	-
				Green finance	0.298	0.42	3.42	0.012**	1.084
				CSR fund	0.241	0.37	2.76	0.026*	1.091
				Digital banking	0.364	0.48	3.98	0.009**	1.093
				NPA	-0.215	-0.29	-2.04	0.081	1.064
				CAR	-0.178	-0.21	-1.77	0.102	1.053
				GDP	0.182	0.25	1.96	0.085	1.041
				Inflation	-0.096	-0.14	-1.23	0.215	1.022

				Constant	0.354	-	2.08	0.071	-
				Green finance	0.322	0.46	3.65	0.010**	1.086
				CSR fund	0.255	0.38	2.83	0.023*	1.089
ROI	0.721	14.02	0.000**	Digital banking	0.385	0.49	4.12	0.007**	1.091
				NPA	-0.238	-0.33	-2.19	0.062	1.067
				CAR	-0.195	-0.27	-1.83	0.096	1.054
				GDP	0.193	0.28	2.01	0.078	1.043
				Inflation	-0.107	-0.16	-1.34	0.193	1.025

*Source: Author's calculation (\* Correlation is significant at the 0.05 level, \*\* at the 0.01 level.)*

## Discussion

In this context, the present study provides detailed insights into the effects of green banking practices on the profitability of commercial banks in Nepal even amidst presence of financial and macroeconomic determinants. The findings show that digital banking, Green finance and CSR funds have significant positive impact on bank performance indicating they are essential drivers of the competitive advantage in terms of sustainability based investments as well as technology innovation. Green finance boosts banks' profitability by promoting efficient resource allocation, reducing the ecological risk and elevating the banking reputation while CSR programs enhance consumer's loyalty and long term investor confidence. Among all the covariates, digital banking exerts the largest effect, indicating its role in decreasing costs and increasing service effectiveness as well financial access. The negative influence of NPA and CAR coefficients suggests that weak asset quality and excess capital can inhibit profitability, therefore the risk and capital management (Ramanjaneyalu et al., 2024) is crucial. The

macroeconomic factors show weak effects with GDP having a positive influence on profitability due to the additional economic activities, but inflation having a negative effect by increasing costs and limiting returns (Tandukar et al., 2021). Performance depends more on internal strategic factors than on the environment. The results also emphasize that combination of digital innovation, eco-responsibility and good governance is a key to achieve sustainable profitability in commercial banks of Nepal (Tandukar et al., 2021).

## Conclusion

In this regard, the present work provides a comprehensive picture of how green banking practices are related with financial and macroeconomic factors for the Nepalese commercial banks. digital banking, green finance and CSR efficiency play the most significant role among the green banking strategies, and have strong positive impacts on profitability. Investment in, and technology adoption of sustainability stand to improve the financial performance by way of supporting optimal resource allocation, managing environment and social risks,

enhancing bank image with customers, shareholders and other stakeholders (Ramanjaneyalu et al., 2024). More notably, CSR schemes increase customer loyalty and corporate image to draw long-term investors and customers.

Due to the fact that Internet and mobile banking have been embraced by financial establishments, banks have an opportunity to innovate services, lower operating expenses and increase service effectiveness. The adoption enhances customer engagement, cuts down on work force and drives financial inclusion. This indicates that digitization is not only an innovative approach but also a decisive factor on profitability (Tandukar et al., 2021). On the other hand, financial measure NPA and CAR report opposite relations with ROA and ROI respectively suggesting deteriorating credit quality and excess capital may bring lower profitability. Higher NPA ratios represent an inferior quality of assets, and a higher CAR in spite of acting as buffer to cover the losses might hinder the credit growth potentialities as well as profitability (Ramanjaneyalu et al., 2024).

Macro-economic factors such as GDP and inflation have lost their power to impact on financial performance. GDP shows a small positive impact, easing bank activities and credit expansion while it has also has negligible negative effect of inflation which increases operating cost but returns are decreasing (Tandukar et al., 2021). The findings imply that internal green banking measures: digital banking, green finance and corporate social

responsibility matter more than external macroeconomic conditions towards enhancing financial performance. Adopting sustainable acquisition and procurement approaches to technology combined with strong financial management can drive long term competitiveness and profitability, but also national economic growth.

### **Implication**

The implications for theory, management and policy of the study are important. The paper suggests, theoretically that green banking dimensions (green finance, corporate social responsibility, digital banking) have strong positive impact on financial performance. These findings support the integration of sustainability and technological innovation as essential features in modern banks. On the part of strategic managers commercial banks should consider investments in green and digital banking services, as well as corporate social responsibility policy to boost profitability acting in line with good business models under the aegis of sound technological capability (Lalon et al., 2025). The results reinforce the importance of regulations and macroeconomic stability for policymakers, suggesting that incentives on green financing and clear policies towards green banking are favored as well as congruent to sustainable development goals can improve resistance, competitiveness, profitability for banks in Nepal. It implies that Green Banking and digitalisation projects are socially ethical as well as commercially beneficial for the developing countries like Nepal.

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