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Green Banking and Perceived Financial Performance of Nepalese Commercial Banks

Bishnu Subedi, Bimala Bhattarai

Central Department of Management, Tribhuvan University, Kathmandu, Nepal
Email: bishnusubedi00136@gmail.com

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Abstract

This research investigated the impact of green banking adoption on the financial performance and perceived financial performance of Nepalese commercial banks. The main objectives were to identify key factors driving green banking adoption, explore relationships with perceived sustainability, analyze the impact on financial performance, and assess the current state of green banking practices. The methodology involved collecting primary data from 373 middle-level employees in five Nepalese banks using closed-ended Likert scale questionnaires. Analysis was conducted using SPSS and Excel, employing descriptive and inferential methods, providing insights into green banking practices and their impact on financial performance and perceived sustainability. The research revealed that banks' investments in green banking (green product and services, green investment, green HRM, green business strategy) had a significant impact on the financial performance of commercial banks in Nepal. This suggested that commercial banks could enhance their performance by investing in green banking practices. The research also identified key factors driving green banking adoption and revealed positive relationships between green banking practices and perceived sustainability in the banking industry. Policymakers and banks could benefit from the study's insights to develop effective green banking strategies and foster sustainability in the banking industry, promoting environmentally responsible practices and enhancing overall performance. Overall, the study contributed significantly to fostering sustainability within the banking sector, empowering banks to enhance their performance while contributing positively to the environment and society.

Keywords

Green Banking, Financial Performance, Nepalese Commercial Banks, Green Banking Strategy, Environmental Responsibility, Effective Strategies, Policymaker, Fostering Sustainability

1. Introduction

Green banking emerged as a new way of conducting the banking business, prioritizing clean environmental practices and corporate social responsibility. The study revealed that banks in Bangladesh practiced green banking to cope with globalization and market competition. It represented a relatively new development in the financial world, where banks engaged in activities related to environmental protection and offered sustainable development services (Trehan, 2015).

It is imperative that we confront global warming and its effects in light of the recent devastation caused by storms, floods, droughts, and heat waves. To combat climate change and advance sustainability, governments, businesses, and individuals must all make a contribution. Thankfully, there was growing devotion and knowledge of environmental challenges. To protect the present and future generations, proactive and encompassing action including regulatory bodies, corporations, and individuals is essential (IDRBT release, 2013).

According to Hasan et al. (2023), in recent years, there has been an increasing focus on green banking (GB) as financial institutions which aim to tackle environmental and social challenges without compromising profitability. GB involves integrating environmental and social considerations into banking operations and services to promote sustainable development and combat climate change. The concept gained traction in the 1990s following the Rio Earth Summit, where the need for sustainable development was emphasized. Banks responded by implementing environmental policies and programs, including green lending and socially responsible investment, to support eco-friendly projects. Additionally, green banks adopt measures like reducing paper usage, implementing energy-efficient technologies, and minimizing waste to minimize their own environmental impact and set an example for sustainability.

According to Masukujjaman & Aktar (2014) green banking practices in Bangladesh encompass both in-house efforts, such as managing energy and minimizing paper waste within banking premises, and external initiatives like green financing and raising awareness among customers and stakeholders about environmental issues. Similarly, Afroz (2017) highlights the benefits of green banking, including energy, fuel, water, and paper conservation. These practices are convenient, cost-effective, and time-saving for both customers and employees. Additionally, Deka (2015) emphasized the advantages of adopting green practices. Green banking offered several advantages, such as reducing paper-intensive processes by conducting transactions online. It also raises awareness among businesses about environmental and social responsibility, encouraging them to adopt environmentally friendly practices. Banks following environmental lending standards are a commendable approach that prompts business owners to transition to eco-friendly practices, benefiting future generations. By rationalizing their strategies, policies, decisions, and operational activities, banks contribute to maintaining a green environment and minimizing greenhouse effects.

The idea of "green banking" or "green initiatives" adopted by banks involves developing new technologies, streamlining current processes, and altering customer behavior. It entails encouraging eco-friendly behaviors and lowering the carbon footprint of financial operations. According to Narwal (2007), green banking is not simply an organization's CSR initiative; it also focuses on creating a society that is livable without significantly harming the environment. The principles of sustainability, moral lending, conservation, and energy efficiency are all part of what banking professionals refer to as "green banking."

In the context of Nepal, the idea of "green banking" is new and developing. While banks in Nepal were not found to be particularly active in promoting green banking initiatives, analyzing the recent context revealed that some banks, including Civil Bank, Nepal Investment Bank, and Laxmi Bank, have begun offering loans for bicycle and solar energy. Mehta & Sharma (2016) study indicates that Laxmi Bank is the first bank in Nepal to support the idea of green banking.

The CEO of Laxmi Bank highlights that all staff have a deeply established sense that adopting environmentally friendly procedures is the right thing to do. Through a number of projects, the bank actively promotes cycling as a green form of transportation. Additionally, they offer savings products that encourage customers to adopt environmentally conscious behaviors as well as enticing lending choices for eco-friendly goods. These initiatives demonstrate the bank's steadfast dedication to giving environmental issues first priority (Mehta & Sharma, 2016)

Banks and other financial institutions should embrace environmentally friendly practices as part of their role in the corporate sector. Green banking is essential for lowering both internal and external carbon emissions. Through the use of lighting, air conditioning, electronic devices, and excessive paper usage, banks frequently contribute to carbon emissions. However, these internal emissions can be reduced through the use of automation, renewable energy, and other strategies. Furthermore, by funding initiatives and businesses that prioritize reducing pollution and implementing green technologies, banks can aid in the reduction of external carbon emissions (Risal & Joshi, 2018).

In Nepal, it is recommended that banks prioritize green assets as collateral. These include homes that utilize solar energy, have rainwater harvesting facilities, and are situated in environmentally friendly surroundings. On the other hand, factories and buildings that emit harmful waste into the environment should be given secondary priority. Nabil Bank, according to its CEO, has taken the initiative to promote green banking and green innovation initiatives with the aim of encouraging and facilitating young people in Nepal's innovative ideas for sustainable businesses that can also benefit the environment.

In the present scenario, where people are well-informed about the impact of global warming on human life, there is an urgent need for change to ensure survival. Environmental management requires collective efforts from the government, direct polluters, and other stakeholders, including financial institutions

like banks. Although banking activities may not have a direct physical impact on the environment, they are influenced by the substantial environmental impact caused by their customers (Chinnadorai & Sudhalakshmi, 2014). To significantly reduce carbon footprint, banks must promote products, processes, and technologies that align with environmental sustainability. As a result, banks are incorporating green strategies into their buildings, operations, investments, and financing approaches (Elkington, 1994). The remaining of the study is structured as follows:

Based on above empirical issue and research gap, the following research questions are raised.

1) Do the Nepalese commercial banks adopt the green banking practices?

2) Does there arises any relationship between green banking practices and the financial performance of bank?

3) Do factors of green banking practices most effect the financial performance of the bank?

1.1. Objectives of the Study

The main goal of the study is to comprehend the green banking trends and practices used by commercial banks in Nepal. With this application, what kind of financial performance was grabbed by the respective banks has to be determined with a specific research methodology through the perception of the bank staff.

The specific objectives of the study are given below:

1) To examine the impact of the adoption of Green banking practices on the perceived financial performance of Nepalese commercial banks.

2) To examine the relationship between Green banking practices and financial performance of banks in Nepal.

3) To identify the specific aspects of green banking practices which have most significant impact on a bank's performance.

1.2. Research Hypotheses

The research on green banking practices and their impact on the performance of Nepalese commercial banks draw from a diverse range of empirical studies conducted in various contexts. These studies have explored the significance of sustainability initiatives, such as green product and services, green business strategy, green HRM, and green investment, in fostering environmental responsibility and enhancing bank performance. Findings from research by Devkota et al. (2021), Risal & Joshi (2018), Biswakarma (2017), and others suggest that integrating green practices into banking operations positively influences environmental performance, reputation, and customer awareness. Furthermore, studies by Mir & Bhat (2022), Kaur & Grover (2019), and Tandukar et al. (2021) emphasize the crucial role of green banking in promoting sustainability goals, enhancing efficiency, effectiveness, and economy within the banking sector of Nepal. Through a synthesis of these findings, the research hypotheses formu-

lated aim to investigate the specific relationships between green banking practices and the perceived financial performance of Nepalese commercial banks, providing insights for policymakers, regulators, and bank management to promote sustainable banking practices and enhance overall performance. In this section only alternate hypothesis are presented.

H1: Green product and services has significant positive relation and impacts on performances of commercial banks of Nepal.

H2: Green business strategy has significant positive relation and impacts on performances of commercial banks of Nepal.

H3: Green HRM has significant positive relation and impacts on performances of commercial banks of Nepal.

H4: Green investment has significant positive relation and impacts on performances of commercial banks of Nepal.

H5: Green banking has significant positive relation and impacts on efficiency of commercial banks of Nepal.

H6: Green banking has significant positive relation and impacts on effectiveness of commercial banks of Nepal.

H7: Green banking has significant positive relation and impacts on economy of commercial banks of Nepal.

H8: Green banking has significant positive relation and impacts on performances of commercial banks of Nepal.

1.3. Theoretical Framework

The study was guided by the different aspects of green banking practices.

Environmental Interest Theory: This theory suggests that the emergence of green banking practices stems from a genuine concern for environmental sustainability and a desire to mitigate the ecological footprint of financial institutions. Advocates of this theory argue that banks recognize their role in environmental stewardship and aim to proactively address environmental challenges through the adoption of environmentally friendly policies and practices. By integrating sustainability principles into their operations, banks seek to contribute positively to environmental conservation efforts while also enhancing their reputation as socially responsible institutions (Shaumya & Arulrajah, 2017).

Stakeholder Pressure Theory: According to this theory, pressure from various stakeholders, including customers, investors, regulatory bodies, and civil society organizations, motivates banks to adopt green banking practices. Stakeholders increasingly expect financial institutions to demonstrate environmental responsibility and accountability in their operations. As a result, banks face pressure to align their business practices with societal expectations for sustainable development, driving the adoption of environmentally friendly policies and initiatives (Bhardwaj & Malhotra, 2013).

Policy Guidelines Theory: The Policy Guidelines Theory posits that regulatory frameworks and government policies play a crucial role in shaping green bank-

ing practices. Governments and regulatory authorities may establish guidelines, standards, and incentives to encourage banks to adopt environmentally sustainable operations. These policies may include mandates for reducing carbon emissions, promoting renewable energy financing, and implementing environmental management systems. Banks may align their practices with these policy guidelines to comply with regulatory requirements and capitalize on opportunities for sustainable business growth (Mozib Lalon, 2015).

Economic Incentives Theory: According to the Economic Incentives Theory, banks may adopt green banking practices due to various economic incentives associated with environmental sustainability. Energy-efficient operations, renewable energy financing, and investments in green projects can result in cost savings, revenue generation, and access to green finance instruments such as green bonds and sustainability-linked loans. By leveraging these economic incentives, banks can enhance their financial performance while contributing to environmental conservation efforts (Biswas, 2011).

Consumer Awareness Theory: The Consumer Awareness Theory suggests that increasing awareness and demand for environmentally friendly products and services among consumers drive banks to offer green banking products and initiatives. As consumers become more environmentally conscious, they seek banking services that align with their values and preferences for sustainability. Banks respond to this demand by introducing green products, such as eco-friendly loans, sustainable investment options, and paperless banking solutions, to attract and retain environmentally conscious customers (Mehta & Sharma, 2016).

Competitive Advantage Theory: The Competitive Advantage Theory posits that banks adopt green banking practices as a strategic tool to gain a competitive edge in the market. By differentiating themselves from competitors through environmental leadership and innovation, banks can attract socially and environmentally conscious customers, enhance brand reputation, and strengthen customer loyalty. Moreover, banks that embrace green banking practices may benefit from reduced operational costs, improved risk management, and access to new market opportunities in the rapidly evolving sustainability landscape (Yajurvedi, 2015).

Risk Management Theory: The Risk Management Theory suggests that banks adopt green banking practices as part of their risk management strategy to mitigate potential environmental risks associated with financing environmentally harmful projects. By incorporating environmental considerations into their lending decisions, banks aim to identify, assess, and manage environmental risks effectively. This proactive approach helps banks minimize the likelihood of environmental liabilities, regulatory penalties, reputational damage, and financial losses, thereby safeguarding their long-term viability and resilience (Risal & Joshi, 2018).

Innovation Diffusion Theory: According to the Innovation Diffusion Theory, the adoption of green banking practices follows a pattern of diffusion within the

banking industry. Innovative green banking practices are initially adopted by early adopters, such as progressive banks and financial institutions, before gradually spreading to the broader market. Factors influencing the diffusion of green banking innovations may include technological advancements, regulatory changes, competitive pressures, and stakeholder expectations. As green banking practices become more widespread, they may eventually become industry standards, driving further innovation and evolution within the banking sector (Nirosha et al., 2016).

Corporate Social Responsibility (CSR) Theory: The Corporate Social Responsibility (CSR) Theory posits that banks engage in green banking practices as part of their broader commitment to corporate social responsibility. By integrating environmental considerations into their business operations, banks demonstrate their commitment to sustainable development, environmental stewardship, and community well-being. Green banking initiatives may include investments in renewable energy projects, carbon offset programs, environmental education and awareness campaigns, and partnerships with environmental organizations. Through these CSR efforts, banks seek to create shared value for society while enhancing their corporate reputation and social license to operate (Jayabal & Soundarya, 2016).

Environmental Management Systems (EMS) Theory: The Environmental Management Systems (EMS) Theory suggests that banks implement environmental management systems to systematically identify, monitor, and manage environmental impacts associated with their operations, including lending practices. By adopting internationally recognized standards such as ISO 14001 certification, banks can establish formal frameworks for environmental management, policy development, and continuous improvement. EMS enables banks to enhance their environmental performance, comply with regulatory requirements, and demonstrate accountability and transparency in environmental management. Through effective EMS implementation, banks can mitigate environmental risks, optimize resource efficiency, and contribute to sustainable development goals (Mir & Bhat, 2022).

1.4. Empirical Review

Manoj & Kumari (2023) examined the latest sustainability developments in Indian banks, analyzing their green banking practices and strategies, and the challenges faced during implementation. Based on secondary data sources, the study emphasized the importance of raising awareness among clients and customers, highlighting the core values that green banks contribute to foster an environmentally responsible image.

Khan et al. (2023) investigated green banking practices in Islamic banks in Pakistan and their impact on bank reputation and positive climatic outcomes in Muslim societies. Data from 390 employees were analyzed using Smart-PLS and structural equation modeling. The findings revealed that practices related

to employees, daily operations, customers, and bank policies significantly influenced bank reputation, with employees' environmental awareness moderating these relationships. The study emphasized the importance of sustainable green banking practices and their positive influence on reputation and climate outcomes, highlighted the need for regulators and bank management to implement such practices for environmental sustainability and enhanced reputation.

Mir & Bhat (2022) examined green banking practices, adoption methods, and their significance in promoting environmental sustainability and UN Sustainable Development Goals (SDGs). Employed a conceptual approach, it conducted a thorough literature review and analyzed data from financial institutions' websites and research journals. The study highlighted SBI (India) and MayBank (Malaysia) as examples of financial institutions making contributions to sustainability through green banking practices. Urgent global action was required to combat climate change, with banks playing a crucial role in fostering a low-carbon economy. Incorporating environmental data into decision-making is vital for promoting sustainable development for banks, industries, and the environment, furthering their positive impact on sustainability goals.

Hasan et al. (2022) investigated the factors influencing bankers' green banking usage behavior in Bangladesh during the COVID-19 pandemic. Structural equation modeling (SEM) was applied to analyze data from 366 bankers collected through purposive sampling. The findings revealed that management support, environmental sustainability, perceived cognitive efforts, and subjective norms significantly influenced bankers' attitudes towards green banking. Supportive management, environmental relevance, and addressing cognitive efforts and subjective norms encourage green banking among Bangladeshi bankers for sustainability.

Tandukar et al. (2021) examined the popularity of going green in the banking and finance sectors and explore factors influencing bankers' perceptions of green banking success. Conventional sampling methods gathered data from 326 financial representatives through surveys between June and October. Findings revealed limited awareness of green banking practices among only 5% of respondents, highlighted the need for training and improved online customer support in banks. The study emphasized the importance of raising awareness to promote sustainable and environmentally responsible banking practices.

Devkota et al. (2021) examined the significance of adopting green banking in the Nepalese banking industry. Employing a mixed-method analysis with both primary and secondary data, the study revealed limited awareness of green banking practices among customers and bankers in Nepal. The study concluded that to promote green banking, effective policy interventions by banks and governments were necessary to raise awareness among the people.

Bouteraa et al. (2020) examined green banking from Western and Islamic perspectives, considering the urgency of environmental preservation due to fi-

nancial development's impact on climate change. The analytical approach utilized previous literature on Western and Islamic theories related to green banking. Findings revealed that green banking aligned with Islamic principles found in the Holy Quran. Islamic banks were naturally expected to adopt GB practices, enhancing their contribution to sustainable economic growth while fulfilling. Further empirical research was needed to explore this intersection comprehensively.

Kaur & Grover (2019) investigated the impact of green initiatives on sustainable banking and environmental preservation in addition to identifying the actions made by leading banks to support the goals of green banking. Utilizing secondary sources like bank websites, RBI papers, etc., the research technique used a case study-based approach. The study's findings revealed significant efforts by banks to promote green banking, exemplified by the use of solar energy in ATMs and paperless banking. The study concluded that such initiatives fostered sustainable banking and environmental preservation. Emphasizing and expanding these endeavors was vital for a greener, sustainable banking future.

1.5. Research Gap

The research on green banking practices within the Nepalese banking industry has highlighted a significant gap concerning the link between these practices and the financial performance of commercial banks in Nepal. While studies such as Devkota et al. (2021), Risal & Joshi (2018), and Aubhi (2016) have explored various aspects of green banking adoption and its impact on environmental performance, there remains a lack of research specifically examining how green banking initiatives influence the perceived financial performance of Nepalese banks. This gap is particularly notable in comparison to research conducted in other countries such as Bangladesh and Western nations, where studies have investigated the relationship between green banking practices and both environmental and financial performance (Chen et al., 2022).

Furthermore, the limited awareness and adoption of green banking practices among customers and bankers in Nepal, as identified by Devkota et al. (2021), suggest a need for further research to explore the potential benefits of green banking for enhancing the financial sustainability and competitiveness of Nepalese commercial banks. By addressing this research gap, future studies can provide valuable insights into how green banking initiatives can contribute to improved financial performance, customer satisfaction, and brand reputation within the context of Nepal's banking industry (Singh Tandon & Setia, 2017). Such insights are essential for policymakers, regulators, and banking institutions to develop effective strategies for promoting sustainable banking practices and enhancing the overall financial performance of Nepalese commercial banks.

2. Research Methodology

This section outlines the methodologies employed to collect and analyze data to fulfill the study's objectives. It encompasses details regarding the research de-

sign, demographic characteristics, sample size determination, data collection tools, sources, and methods, as well as the equipment utilized for data gathering. Additionally, it discusses the analytical tools and methodologies employed to interpret the collected data effectively.

2.1. Research Design

To assess the impact of green banking on the perceived performance of commercial banks in Nepal, a quantitative approach with a descriptive and causal research design was employed (Salvadó et al., 2013). The descriptive research design facilitated the examination of current green banking practices and the perception of financial performance among Nepalese banks. Concurrently, a causal research design was utilized to investigate the relationship and impact of independent variables on the dependent variable, employing quantitative methods (Risal & Joshi, 2018). A questionnaire was distributed to gather data on green banking and bank performance, covering factual aspects (Devkota et al., 2021). The study focused on five banks known for their strong support of green banking practices, involving middle-level workers providing banking services (Risal & Joshi, 2018). Additionally, 400 questionnaires were distributed via various social media platforms and emails, resulting in 373 responses from individuals across different commercial banks.

2.2. Population and Sampling Procedure

The study targeted middle-level employees from selected commercial banks in Nepal, comprising a total population of 5280 individuals. Employing convenience sampling, 373 individuals were selected as the study's sample size. Eligible participants had at least six months of work experience. The minimal sample size was determined using the Slovin formula with a population size of 5280, a confidence interval of 95%, and an error level of .05, resulting in a calculated minimal sample size of approximately 372, rounded up to 373.

Additionally, pretests of variables and the questionnaire were conducted in nearby branches of commercial banks to gauge the practice of green banking. This pretesting helped refine the survey instrument and ensure its effectiveness before distribution to the main study participants.

2.3. Research Framework

Conceptual framework to measure effect of green banking and financial performance of commercial banks (**Figure 1**).

Operational Definition of the Variables

Green Product and Services: These refer to banking products and services that are environmentally friendly and promote sustainability. They may include eco-friendly loans, green energy financing, and sustainable investment options. (Source: Mir & Bhat, 2022)

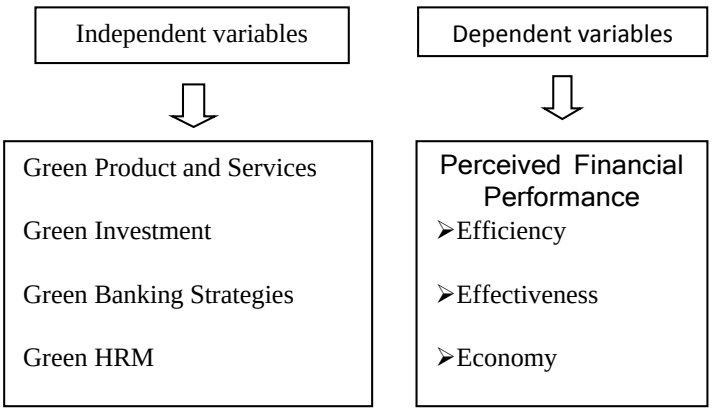

Figure 1. Conceptual framework (EJM, Volume 17, Number 2, 2017).

Green Investment: This variable pertains to investments made by banks in environmentally sustainable projects and initiatives, such as renewable energy projects, green infrastructure, and carbon reduction initiatives. (Source: Jayabal & Soundarya, 2016)

Green Banking Strategies: These encompass the policies, practices, and approaches adopted by banks to integrate environmental considerations into their operations and decision-making processes. It involves initiatives like reducing carbon emissions, promoting recycling, and supporting environmental conservation efforts. (Source: Salvadó et al., 2013)

Green HRM (Human Resource Management): This variable refers to the practices and policies implemented by banks to engage employees in environmental sustainability efforts, such as training programs on green banking, promoting environmentally responsible behavior, and incorporating green criteria into performance evaluations. (Source: Aubhi, 2016)

Perceived Financial Performance: This variable represents the subjective evaluation of a bank's financial performance by stakeholders, including customers, investors, and regulators. It encompasses perceptions of efficiency, effectiveness, and economy in relation to green banking practices. (Source: Biswakarma, 2017; Risal & Joshi, 2018)

2.4. Data Analysis

The data analysis for the research on green banking and perceived financial performance of Nepalese commercial banks encompassed descriptive analysis, examining frequency, central tendency, and variability of variables. Multiple regression analysis assessed the relationship between green banking factors and performance metrics, while Pearson's coefficient of correlation evaluated the strength and direction of these relationships. Additionally, Cronbach's alpha was calculated to test questionnaire reliability. This comprehensive approach utilized statistical techniques to understand the impact of green banking practices on financial performance.

Variable	Measurement	Expectedsign	Source
Green product and services	Awareness, adoption rate, eco-friendly product offerings, sustainable services	Positivesign	Devkota et al. (2021), Mir & Bhat (2022), Kaur & Grover (2019)
Green investments	Investment in environmentally sustainable projects, allocation towards green technology and initiatives	Positivesign	Khan et al. (2023), Masukujjaman & Aktar (2014), Uddin (2019)
Green HRM	Environmental training programs, employee awareness and participation in green initiatives, HR policies promoting environmental sustainability	Positivesign	Hasan et al. (2022), Tandukar et al. (2021), Jha & Bhome (2013)
Green business strategy	Implementation of green policies, integration of sustainability goals in business strategies, CSR initiatives	Positivesign	Biswakarma (2017), Chinnadorai & Sudhalakshmi (2014), Bouteraa et al. (2020)
Perceived financial performance	Growth in reputation as a green bank, customer perception of environmental responsibility, positive climate outcomes	Positivesign	Devkota et al. (2021), Khan et al. (2023)

The basic regression model to analyses the impact of green banking on commercial banks performance is:

$$\text{Commercial banks Performance} = \beta 0 + \beta 1\,(\text{GPS}) + \beta 2\,(\text{GI}) + \beta 3\,(\text{GBS}) + \beta 4\,(\text{GHRM}) + e$$

Using the information provided, the regression model below was created.

$$\text{Efficiency} = \beta 0 + \beta 1\,(\text{GPS}) + \beta 2\,(\text{GI}) + \beta 3\,(\text{GBS}) + \beta 4\,(\text{GHRM}) + e$$

$$\text{Effectiveness} = \beta 0 + \beta 1\,(\text{GPS}) + \beta 2\,(\text{GI}) + \beta 3\,(\text{GBS}) + \beta 4\,(\text{GHRM}) + e$$

$$\text{Economy} = \beta 0 + \beta 1\,(\text{GPS}) + \beta 2\,(\text{GI}) + \beta 3\,(\text{GBS}) + \beta 4\,(\text{GHRM}) + e$$

where:

B0: Constant.

β1: Performance slope with variable GPS, holding variables GBS, GI and GHRM constant.

β2: Performance slope with variable GI, holding variables GPS, GBS and GHRM constant.

ssβ3: slope of performance with variable GBS, holding variables GPS, GHRM, and GI constant.

β4: slope of performance with variable GHRM, holding variables GPS, GBS, and GI constant.

Constant e: Error term

Measurement of Variables

Reliability Test

Table 1 presents the outcomes of a reliability assessment employing Cronbach's alpha for seven distinct variables associated with financial performance. The Cronbach's alpha values range from .711 to .836. All coefficients surpass the generally acknowledged threshold of .7, suggesting acceptable to good internal consistency across all variables (Nunnally, 1978).

3. Results and Analysis

In this segment, the outcomes of the data analysis are showcased. The examination involved assessing the study variables through correlation coefficients and regression analysis, employing descriptive and inferential statistics. These analyses were conducted to explore the research inquiries and validate the hypotheses posited in the study.

3.1. Descriptive Analysis

This research employed a five-point Likert scale to gauge responses, encompassing options such as "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." By leveraging these values, the researcher conducted data analysis based on frequencies and percentages, yielding significant insights into respondent behavior.

Table 2 presents descriptive statistics for variables related to green banking and financial performance. Ranging from 1 to 5, where 1 signifies "strongly agree" and 5 "strongly disagree," the mean values for Green Product and Services, Green Investment, Green Business Strategy, and Green Human Resource Management fall around 2.3 to 2.4. Efficiency, Effectiveness, and Economy have means close to 2.4 to 2.42. Standard deviations indicate moderate variability in responses across all variables, suggesting diverse perceptions among respondents.

Table 1. Summary of reliability analysis.

Variables	Items	Cronbach's Alpha
Green Product and Services	5	.711
Green Investment	5	.706
Green Banking Strategies	5	.768
Green HRM	5	.730
Efficiency	4	.836
Effectiveness	4	.770
Economy	8	.741

Source: Field Survey, 2023.

Table 2. Descriptive statistics (N = 373).

variables	minimum	maximum	mean	sd. Deviation
GPS	1	5	2.316	.5692
GI	1	5	2.354	.5542
GBS	1	5	2.338	.5504
GHRM	1	5	2.388	.5728
EF	1	5	2.4225	.5735
EFF	1	5	2.3	.5365
EO	1	5	2.375	.5568

3.2. Correlational Analysis between Green Banking and Bank's Performance

Correlational matrix of green banking and banks' performances

	Factors	GI	GHRM	GPS	GBS	EF	EFF	EO
GI	Pearson Correlation	1						
GHRM	Pearson Correlation	.072	1					
GPS	Pearson Correlation	.169**	.070	1				
GBS	Pearson Correlation	.151**	.200**	.298**	1			
EF	Pearson Correlation	.412**	.518**	.474**	.621**	1		
EFF	Pearson Correlation	.413**	.529**	.507**	.631**	.962**	1	
EO	Pearson Correlation	.435**	.549**	.527**	.631**	.951**	.962**	1

Source: Field Survey 2023. **. Correlation is significant at the .01 level (2-tailed).

Correlation matrix table provides the degree to which various aspects of green banking (GHRM, GI, GPS, GBS) are correlated with bank success. The correlation coefficient is the primary outcome of a correlation. It spans the range of −1 to +1. The more closely the two variables are related, the closer r is to +1 or −1. There is no link between the variables if r is close to 0. If r is positive, both variables increase in size as one increases. If r is negative, it indicates that as one value increases, the other value decreases (this is known as an inverse correlation). *Statistical significance levels are denoted as follows: *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

The correlation analysis conducted on the factors related to green banking and banks' performances reveals several significant findings. Firstly, Green Innovation (GI) shows a perfect positive correlation with itself (r = 1), as expected. However, Green Human Resource Management (GHRM) exhibits a very weak and insignificant positive correlation with GI. On the other hand, Green Product and Service (GPS) display a moderate positive correlation with GI, and a weak positive correlation with GHRM, both of which are statistically significant. Similarly, Green Banking Strategy (GBS) demonstrates moderate to strong positive correlations with GI, GHRM, and GPS, all of which are statistically significant.

Secondly, when considering efficiency (EF), it has a relatively strong positive correlation with GI, GHRM, and GPS, with the highest correlation observed with GBS (r = .621). These positive correlations are all statistically significant. Likewise, effectiveness (EFF) showcases similar strong positive correlations with GI, GHRM, and GPS, and the highest correlation with GBS, EF, and EO. Furthermore, it displays a very high positive correlation with EO (r = .962). All of these correlations are statistically significant at the .01 level.

In summary, the correlation analysis indicates that there are positive relationships between the factors related to green banking and banks' performances.

The findings emphasize the importance of adopting green practices, implementing effective human resource management, developing green products and services, and formulating comprehensive green banking strategies. Such measures can contribute to enhanced environmental and financial performance in banking institutions.

3.3. Regression Analysis between Green Banking and Bank's Performance

3.3.1. Model Summary of Independent Variables and Overall Performances of Commercial Banks of Nepal

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876[a]	.768	.765	.07033

Sources: Field Survey 2023. a. Predictors: (Constant), GBS, GI, GHRM, GPS.

Table reveals a strong positive correlation (correlation coefficient = .876) between the different dimensions of green banking and the overall financial performance of commercial banks in Nepal. This finding indicates that as the green banking initiatives increase, there is a corresponding improvement in the financial performance of these banks.

Furthermore, the adjusted R-square value of .765 demonstrates that approximately 76.5% of the variation in the performance of commercial banks in Nepal can be attributed to the influence of the various dimensions of green banking. This suggests that a significant portion of the banks' financial performance can be explained by the implementation and effectiveness of green banking practices.

3.3.2. ANOVA of Independent Variables and Overall Performance of Commercial Banks of Nepal

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.021	4	1.505	304.332	.000[b]
	Residual	1.820	368	.005		
	Total	7.841	372			

Source: Field Survey 2023. a. Dependent Variable: OFP, b. Predictors: (Constant), GBS, GI, GHRM, GPS.

The results presented in Table indicate that the F-statistic value is 304.332. Significantly, the p-value associated with this statistic is less than .05, which demonstrates that the overall model provides a strong fit and establishes a statistically significant connection between the dimensions of green banking and the overall performance of commercial banks in Nepal.

Based on these findings, we can confidently accept the hypothesis that there exists a significant positive relationship between green banking practices and the financial performance of commercial banks in Nepal. This suggests that incor-

porating green banking initiatives contributes positively to the financial outcomes of banks operating in the country.

3.3.3. Beta Coefficient of Independent Variables and Overall Performances of Commercial Banks of Nepal

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	−.983	.094		−10.408	.000
	GI	.287	.026	.280	10.932	.000
	GHRM	.394	.024	.414	16.155	.000
	GPS	.307	.026	.309	11.633	.000
	GBS	.470	.030	.420	15.587	.000

Source: Field Survey 2023. a. Dependent Variable: OFP.

According to Table, the results indicate that green human business strategy has the highest influence on the economy of commercial banks in Nepal, with a β coefficient of .420. The corresponding t-value is 15.587, which is statistically significant at a significance level of .05. This suggests that green banking strategy has a significant and positive impact on overall financial performance of commercial banks. On the other hand, green investment is found to have a significant positive impact on economy as well, although its influence is relatively lower compared to other factors. The β coefficient for green investment is .280, and the associated t-value is 10.932, both of which are statistically significant at the .05 level. Subsequently the multiple regressions equation is:

Overall performance

= −.983+ .287 (GI) + .394 (GHRM) + .307 (GPS) + .470 (GBS)

3.4. Regression Analysis of Independent Variable and Efficiency of Commercial Banks of Nepal

3.4.1. Model Summary of Independent Variables and Efficiency of Commercial Banks of Nepal

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.842[a]	.708	.705	.07790

Source: Field Survey 2023. a. Predictors: (Constant), GBS, GI, GHRM, GPS.

Table demonstrates the relationship between various dimensions of green banking and the efficiency of commercial banks. The correlation coefficient in this analysis is .842, indicating a strong positive correlation between the dimensions of green banking and bank efficiency. Additionally, the adjusted R-square is .705, meaning that approximately 70.5% of the variation in the efficiency of commercial banks in Nepal can be explained by the dimensions of green banking.

3.4.2. ANOVA of Independent Variables and Efficiency of Commercial Banks of Nepal

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.421	4	1.355	223.290	.000[b]
	Residual	2.233	368	.006		
	Total	7.654	372			

Source: Field Survey 2023. a. Dependent Variable: EF, b. Predictors: (Constant), GBS, GI, GHRM, GPS.

Table shows the F-statistic value as 223.290, and it is found to be significant at a 5% significance level because the corresponding *p*-value is less than .05. This suggests that the overall model provides a reasonable fit and indicates a statistically significant association between the dimensions of green banking and the efficiency of commercial banks in Nepal. The significance of the F-statistic also supports the acceptance of the hypothesis that there is a significant positive relationship between green banking and the efficiency of commercial banks in Nepal.

3.4.3. Beta Coefficient of Independent Variables and Efficiency of Commercial Banks of Nepal

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	−.818	.105		−7.812	.000
	GI	.277	.029	.274	9.512	.000
	GHRM	.371	.027	.396	13.750	.000
	GPS	.271	.029	.276	9.264	.000
	GBS	.463	.033	.419	13.869	.000

Source: Field Survey 2023. a. Dependent Variable: EF.

According to the table, the results indicate that green banking strategy has the highest influence on the efficiency of commercial banks in Nepal, with a β coefficient of .419. The corresponding t-value is 13.869, which is statistically significant at a significance level of .05. This suggests that green banking strategy has a significant and positive impact on bank efficiency. On the other hand, green investment is found to have a significant positive impact on efficiency as well, although its influence is relatively lower compared to green banking strategy. The β coefficient for green investment is .274, and the associated t-value is 9.512, both of which are statistically significant at the .05 level. Subsequently the multiple regressions equation is:

Efficiency = −.818+ .274 (GI) + .396 (GHRM) + .276 (GPS) + .419 (GBS)

3.5. Regression Analysis of Independent Variable and Effectiveness of Commercial Banks of Nepal

3.5.1. Model Summary of Green Banking and Effectiveness of Commercial Banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.863[a]	.745	.742	.07447

Sources: Field Survey 2023. a. Predictors: (Constant), GBS, GI, GHRM, GPS.

Table shows the model summary which presents the relationship between various dimensions of green banking and the effectiveness of commercial banks. The correlation coefficient reported is .863, indicating a strong positive correlation between the dimensions of green banking and bank effectiveness. Furthermore, the adjusted R-square value is .742, suggesting that approximately 74.2% of the variation in the effectiveness of commercial banks in Nepal can be explained by the dimensions of green banking. In summary, the analysis reveals that green banking has a substantial impact on the effectiveness of commercial banks in Nepal.

3.5.2. ANOVA of Independent Variables and Effectiveness of Commercial Banks of Nepal

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.954	4	1.489	268.405	.000[b]
	Residual	2.041	368	.006		
	Total	7.995	372			

Source: Field Survey 2023. a. Dependent Variable: EFF, b. Predictors: (Constant), GBS, GI, GHRM, GPS.

Table shows the F-statistic value as 268.405, and it is found to be significant at a 5% significance level because the corresponding *p*-value is less than .05. This suggests that the overall model provides a reasonable fit and indicates a statistically significant association between the dimensions of green banking and the effectiveness of commercial banks in Nepal. The significance of the F-statistic also supports the acceptance of the hypothesis that there is a significant positive relationship between green banking and the effectiveness of commercial banks in Nepal.

3.5.3. Beta Coefficient of Independent Variables and Effectiveness of Commercial Banks of Nepal

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	−.961	.100		−9.609	.000
	GI	.278	.028	.268	9.969	.000

Continued

GHRM	.389	.026	.405	15.057	.000
GPS	.310	.028	.309	11.087	.000
GBS	.472	.032	.417	14.790	.000

Sources: Field Survey 2023. a. Dependent Variable: EFF.

According to table, the results indicate that green banking strategy has the highest influence on the effectiveness of commercial banks in Nepal, with a β coefficient of .417. The corresponding t-value is 14.790, which is statistically significant at a significance level of .05. This suggests that green banking strategy has a significant and positive impact on bank effectiveness. On the other hand, green investment is found to have a significant positive impact on effectiveness as well, although its influence is relatively lower compared to green banking strategy. The β coefficient for green investment is .268, and the associated t-value is 9.969, both of which are statistically significant at the .05 level. Subsequently the multiple regressions equation is:

Effectiveness = -.961+ .268 (GI) + .405 (GHRM) + .309 (GPS) + .417 (GBS)

3.6. Regression Analysis of Independent Variable and Economy of Commercial Banks of Nepal

3.6.1. Model Summary of Independent Variables and Economy of Commercial Banks of Nepal

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.887[a]	.787	.784	.07042

Source: Field Survey 2023. a. Predictors: (Constant), GBS, GI, GHRM, GPS.

The table demonstrates the relationship between various dimensions of green banking and the economy of commercial banks. The correlation coefficient in this analysis is .887, indicating a strong positive correlation between the dimensions of green banking and bank economy. Additionally, the adjusted R-square is .784, meaning that approximately 78.4% of the variation in the economy of commercial banks in Nepal can be explained by the dimensions of green banking.

3.6.2. ANOVA of Independent Variables and Economy of Commercial Banks of Nepal

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.732	4	1.683	339.326	.000[b]
	Residual	1.825	368	.005		
	Total	8.557	372			

Source: Field Survey 2023. a. Dependent Variable: EO, b. Predictors: (Constant), GBS, GI, GHRM, GPS.

The given table shows the F-statistic value as 339.326, and it is found to be significant at a 5% significance level because the corresponding p-value is less than .05. This suggests that the overall model provides a reasonable fit and indicates a statistically significant association between the dimensions of green banking and the economy of commercial banks in Nepal. The significance of the F-statistic also supports the acceptance of the hypothesis that there is a significant positive relationship between green banking and the economy of commercial banks in Nepal.

3.6.3. Beta Coefficient of Independent Variables and Economy of Commercial Banks of Nepal

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	−1.171	.095		−12.379	.000
	GI	.308	.026	.287	11.688	.000
	GHRM	.422	.024	.425	17.267	.000
	GPS	.341	.026	.328	12.880	.000
	GBS	.474	.030	.405	15.715	.000

Source: Field Survey 2023. a. Dependent Variable: EO.

According to table, the results indicate that green human resource management has the highest influence on the economy of commercial banks in Nepal, with a β coefficient of .425. The corresponding t-value is 17.267, which is statistically significant at a significance level of .05. This suggests that green human resource management has a significant and positive impact on bank performance on economic aspect. On the other hand, green investment is found to have a significant positive impact on economy as well, although its influence is relatively lower compared to other factors. The β coefficient for green investment is .287, and the associated t-value is 11.688, both of which are statistically significant at the .05 level. Subsequently the multiple regressions equation is:

3.7. Tolerance & Multicollinearity through VIF

In regression analysis, tolerance is used to detect multicollinearity, a condition where independent variables are strongly correlated with each other. Multicollinearity can undermine the reliability of statistical inferences, as variables become difficult to differentiate in their effects on the dependent variable. Addressing multicollinearity is essential for ensuring the validity of statistical analyses and drawing accurate conclusions.

Tolerance and multicollinearity test through VIF

Model		Unstandardized Coefficients		Standardized Coefficients	Sig.	Collinearity Statistics	
		B	Std. Error	Beta		Tolerance	VIF
1	(Constant)	−.983	.094		.000		
	GI	.287	.026	.280	.000	.959	1.043
	GHRM	.394	.024	.414	.000	.958	1.044
	GPS	.307	.026	.309	.000	.896	1.116
	GBS	.470	.030	.420	.000	.871	1.148

According to table based on the collinearity statistics, the tolerance values are all greater than .1, there is no indication of excessive multicollinearity in the model. Additionally, all VIF values are less than 10, which further supported the absence of severe multicollinearity, Pallant (2016).

In summary, based on the recommended cutoff points (Tolerance > .1, VIF < 10), there doesn't appear to be a significant multicollinearity problem in the model using the given collinearity statistics. This research underscores the importance of adopting environmentally sustainable practices in the banking sector and provides empirical evidence for policymakers and stakeholders in Nepal's banking industry to enhance their sustainability initiatives while maintaining financial performance.

Economy = −1.171+ .308 (GI) + .422 (GHRM) + .341 (GPS) + .474 (GBS)

3.8. Summary of Hypotheses Testing Results

Based on linear regression and process macro seven hypothesis were accepted.

Table 25 Summary of Hypotheses Testing

Hypothesis	Supported/ Unsupported	Evidence
H1: Green product and services has significant positive relation and impacts on performances of commercial banks of Nepal.	Supported	β = .309, $p < .001$
H2: Green business strategy has significant positive relation and impacts on performances of commercial banks of Nepal.	Supported	β = .420, $p < .001$
H3: Green HRM has significant positive relation and impacts on performances of commercial banks of Nepal.	Supported	β = −.414, $p < .001$
H4: Green investment has significant positive relation and impacts on performances of commercial banks of Nepal.	Supported	β = .280, $p < .001$
H5: Green banking has significant positive relation and impacts on efficiency of commercial banks of Nepal.	Supported	*P* value .001 < .05
H6: Green banking has significant positive relation and impacts on effectiveness of commercial banks of Nepal.	Supported	*P* value .001 < .05
H7: Green banking has significant positive relation and impacts on economy of commercial banks of Nepal.	Supported	*P* value .001 < .05
H8: Green banking has significant positive relation and impacts on performances of commercial banks of Nepal.	Supported	*P* value .001 < .05

3.9. Major Findings

1) The research found that majority of green banking practitioners were aged between 25 and 30 (32.7%) and possessed diverse educational backgrounds, from bachelor's degrees to intermediate levels. Additionally, a significant number of employees had 0 to 5 years of work experience (54.4%) in the banking sector.

2) The descriptive analysis shows that the aggregate mean of green products and services (GPS) is 2.316, which is below the average mean. This suggests that Nepalese commercial banks offer products and services that promote sustainable development and environmental protection. The findings also indicate a positive current practice of green banking within the banks.

3) The descriptive analysis reveals that the aggregate mean of green investment (GI) is 2.354, which is below the average mean value. This implies that commercial banks in Nepal are actively investing in green banking initiatives and other sectors that contribute to the advancement of green banking development.

4) The descriptive analysis shows that the aggregate mean of green banking strategy (GBS) is 2.338, which is below the average mean value. This suggests that commercial banks in Nepal are prioritizing green business strategies that support green banking initiatives and contribute to the overall development of sustainable practices in the banking sector. These strategies likely focus on environmentally friendly operations and investments that align with the banks' commitment to sustainable development.

5) The descriptive analysis indicates that the aggregate mean of green human resources management (GHRM) is 2.388. This suggests that commercial banks in Nepal are adopting a technology-based system for managing human resources. The banks are likely using technology to streamline hiring, training, and development processes, emphasizing efficiency and effectiveness in their green banking practices.

6) The Pearson correlation coefficient between Green Banking Strategy (GBS) and Efficiency (EF) is .621, indicating a significant positive relationship between strategic green initiatives and operational efficiency.

7) Green Human Resource Management (GHRM) exhibits a moderate positive correlation with Efficiency (EF) and Effectiveness (EFF), with correlation coefficients of .518 and .529 respectively, highlighting its importance in driving operational and organizational performance.

8) The regression analysis reveals that Green Banking Strategy (GBS) has the highest influence on the efficiency of commercial banks in Nepal, with a β coefficient of .419, indicating its critical role in improving operational efficiency.

9) Green Investment (GI) has a significant positive impact on the effectiveness of commercial banks, with a β coefficient of .268, suggesting that investments in green initiatives contribute to enhancing overall effectiveness.

10) The ANOVA results for the regression model analyzing the relationship

between green banking and effectiveness indicate a strong fit, with an F-statistic value of 268.405, supporting the hypothesis of a positive relationship between green banking practices and effectiveness.

11) Green Human Resource Management (GHRM) has the highest influence on the economy of commercial banks in Nepal, with a β coefficient of .425, indicating its crucial role in driving economic performance.

12) The regression analysis confirms the significance of Green Human Resource Management (GHRM) in improving bank performance on the economic aspect, with a t-value of 17.267, indicating statistical significance.

13) The correlation coefficient between Green Business Strategy (GBS) and Economy (EO) is .405, suggesting that strategic green initiatives contribute positively to the economic performance of commercial banks.

14) The multiple regression equation for the economy of commercial banks in Nepal includes Green Human Resource Management (GHRM), Green Investment (GI), Green Banking Strategy (GBS), and Green Products and Services (GPS) as significant predictors, emphasizing the holistic approach needed for sustainable banking practices.

15) The tolerance values for independent variables range from .871 to .959, indicating no significant multicollinearity issues in the regression model, which enhances the reliability of the findings regarding the impact of green banking practices on financial performance.

16) According to the analysis of correlation coefficients, Green Human Resource Management (GHRM) has a slightly stronger positive correlation (.549) with the economy portion of financial performance than it does with efficiency (.518). This shows that efficiency has less of an impact on the bank's economic performance than GHRM procedures do. Green Investment (GI), on the other hand, has a weaker positive correlation with each dependent variable, indicating a less direct effect on the banks' total financial success.

17) The association between Green Business Strategy (GBS) and Effectiveness (EFF) is strongly correlated, with a correlation coefficient of .631. This implies that putting green business practices into practice in the banking industry makes a major contribution to the efficiency of banking operations and aligns them with planned environmental goals. In order to advance the bank's overall performance initiatives, GBS is essential in promoting the use of environmentally friendly financial products and services.

18) The results of the correlation coefficient between GPS and the components of the dependent variable show a moderately favorable correlation, with the coefficients being greater at EO and lower at EF (.527 and .474 respectively). A higher correlation value indicates that a rise in green project, product, and service investments will have a positive impact on banking operations' profitability and vice versa.

19) The overall performance of commercial banks, represented by Efficiency (2.4225), Effectiveness (2.30), and Economy (2.375), is above the average mean.

This implies that Nepalese commercial banks have successfully reduced operational hurdles through the implementation of green banking practices. They have improved their operations and achieved smoothness in green banking practices, resulting in reduced operational costs and better financial benefits for the banks.

20) The strong positive correlation (correlation coefficient = .876) between green banking initiatives and the financial performance of commercial banks in Nepal, indicating that as green banking increases, financial performance improves. The adjusted R-square value of .765 indicates that around 76.5% of the variation in banks' performance can be explained by the effectiveness of green banking practices. Additionally, the ANOVA results, with a significance *p*-value < .05, confirm that all hypotheses are accepted, further supporting the idea that green banking practices positively influence and contribute to the banks' financial performance.

4. Summary, Discussion, Conclusion and Limitations

This chapter is structured into four segments. Firstly, it discusses the main findings of the study and compares them to previous research conducted in the same domain. Subsequently, the second part delves into the conclusions drawn from the analysis of the results. Lastly, the chapter wraps up by highlighting the implications arising from the study's findings.

4.1. Discussions

The Green banking practices are gaining attention as a way to promote sustainability and reduce environmental impact for financial institutions. Research shows a positive correlation between green banking practices and the financial performance of commercial banks in Nepal. By adopting environmentally responsible measures, these banks have seen improved overall performance compared to conventional ones. This finding supports previous research by Biswakarma (2017) and affirms that green banking has a beneficial impact on financial outcomes.

The research suggests that the adoption of green banking initiatives, including green investments, green human resource management (HRM), green business strategies, and green products/services, collectively has a significant positive effect on the overall financial performance of the banks. These practices lead to improved financial results, contributing to the banks' sustainable growth and success. This finding is in line with the studies conducted by Deka (2015), Mehta & Sharma (2016), and Shaumya & Arulrajah (2017), which also reported positive impacts of green banking on financial performance.

Furthermore, the study reveals a strong correlation between green investments, green HRM practices, green business strategies, and green products/services with economy and efficiency by implementing environmentally friendly projects, adopting eco-conscious HRM practices, formulating green

strategies, and offering green products/services have all contributed to improved operational efficiency. These findings align with previous research by Mozib Lalon (2015), Mehta & Sharma (2016), and Shaumya & Arulrajah (2017), reinforcing the positive influence of green banking practices on the financial and operational aspects of commercial banks.

Moreover, the research demonstrates a significant positive relationship and impact between green banking practices and the effectiveness of commercial banks in Nepal. The adoption of green banking initiatives has resulted in improved banking operations, reduced costs, and enhanced efficiency in the banking sector. These results are consistent with the studies conducted by Mozib Lalon (2015), Mehta & Sharma (2016), and Shaumya & Arulrajah (2017), further validating the positive impact of green banking practices on the operational and financial aspects of commercial banks. Embracing environmentally conscious strategies not only contributes to environmental sustainability but also fosters better performance and competitiveness within the banking industry.

4.2. Conclusion

The study effectively tackled all the research questions outlined by accomplishing its research objectives. The findings have resulted in recommendations for green banking practices and their impact on the perceived financial performance of Nepalese commercial banks. The study also recognizes its limitations and proposes avenues for future research. In conclusion, the study's key insights provide comprehensive responses to the research questions, summarizing the main discoveries and enhancing the overall comprehension of green banking within the context of commercial banks in Nepal.

The first objective of the research was to identify the green banking practices implemented by commercial banks in Nepal. According to the study's findings, green banking encourages eco-friendly behavior and helps to lessen the carbon footprints associated with financial activities. These behaviors take on many different forms, including the use of mobile banking, internet banking, ATM cards, credit cards, and online fund transfers. Other examples include switching from branch banking to online banking and making bill payments online rather than by mail. Green financing also helps programs that promote environmental protection. By implementing green banking, banks are able to solve environmental challenges including climate change, deforestation, air pollution, and biodiversity loss while also offering efficient, time-saving, and user-friendly banking services. Additionally, green banking aids in spotting and seizing chances that profit banking clients and advance sustainable solutions.

The second goal was to investigate the connection between green banking practices and how Nepalese commercial banks evaluate their financial success and to know which factors affect for their financial performance. The study's findings revealed a strong and positive correlation between efficiency (EF) and key elements of green banking, namely Green Innovation (GI), Green Human

Resource Management (GHRM), and Green Product and Service (GPS). Notably, the most prominent correlation occurs between EF and Green Banking Strategy (GBS) (r = .621), underscoring its significance. Furthermore, effectiveness (EFF) exhibits robust positive correlations with GI, GHRM, and GPS, with a particularly noteworthy connection among GBS, EF, and overall effectiveness (EO), which displays a highly positive association (r = .962). Crucially, all correlations maintain statistical significance at the .01 level. This underscores the vital role of green investments and strategic approaches in shaping perceived financial success and enhancing efficiency within Nepalese commercial banking.

The third research objective aimed to analyze how green banking practices influence the perceived financial performance of commercial banks in Nepal. In conclusion, our research confirms a robust positive correlation (correlation coefficient = .876) between green banking practices and financial performance of Nepalese commercial banks. The adjusted R-square (.765) highlights that 76.5% of performance variance links to effective green banking. ANOVA results ($p < .05$) endorse all hypotheses, reinforcing the constructive impact of green banking. Notably, green investments and strategic approaches emerge as pivotal drivers, elevating perceived financial success. Embracing green investments and strategic green banking enhances commercial banks' financial performance, emphasizing sustainability's crucial role.

4.3. Implications

All commercial banks should implement initiatives that will encourage other banks to work harder and more productively. The organizational philosophies and green banking policies should reflect the elements that support going green.

4.3.1. Managerial Implications

The study emphasizes the importance of integrating green banking practices with perceived financial performance in the Nepalese banking industry. To achieve a sustainable and environmentally conscious financial performance, commercial banks should prioritize green strategies, policies, and products/services.

1) Banks can develop green banking policies and initiatives, integrating environmentally friendly products and services to foster a sustainable and socially responsible banking approach, driven by the positive impact on financial performance.

2) Regulatory authorities can base laws and regulations on green banking, using the study's evidence to incentivize and promote environmentally conscious practices within the banking industry.

3) NRB can spearhead the launch of new green banking products, catering to the rising demand for sustainable financial services, by encouraging and facilitating innovative offerings like eco-friendly loans and green investment options.

4) Banks can enhance green banking services and products by aligning them

with customer preferences and the positive impact on financial performance, thereby attracting more environmentally conscious customers.

5) NRB can incorporate green banking's impact on financial performance into its monetary policy decisions, supporting sustainable economic growth by considering environmental considerations.

6) Banks can plan for long-term sustainability and make informed decisions by understanding the positive correlation between green banking practices and financial performance, ensuring environmentally responsible and financially successful operations.

By focusing on these implications, policymakers and bank managers can work collaboratively to strengthen green banking initiatives, leading to a more sustainable and environmentally conscious banking sector in Nepal. Moreover, continued research in this area can contribute valuable knowledge to the field of sustainable banking practices and their impact on the financial performance of commercial banks.

4.3.2. Research Implication

Based on primary data gathered from the middle level staff of these banks, the research is conducted on a case study of Nepalese commercial banks. The following is a list of the research implications:

1) Future research should include diverse banks and economic sectors to better understand the impact of green banking on financial performance.

2) Future research will focus on increasing the sample size beyond five Nepali commercial banks and include additional factors for a comprehensive analysis.

3) Additional research can evaluate green banking practices over time, considering demographic changes, financial sustainability perceptions, and the impact on investors and CSR.

4) Future research should investigate the positive social effects of green banking, such as risk reduction, cost savings, reputation improvement, and enhanced corporate social responsibility efforts, motivating greater adoption of green banking practices.

5) This study solely focuses on quantitative data; however, future researchers may incorporate qualitative information and conduct qualitative analysis to enrich the research findings.

4.4. Limitations of the Study

In general, both the researcher and the respondents in any research must deal with some restrictions. The study has following limitations:

1) This study was conducted only in Nepal, its findings cannot be extrapolated to other nations.

2) Middle level employees of Nepales ecommercial banks served as the study's respondents.

3) The study used data from a specific time span.

4) Central tendency error may emerge because the responses pertaining to digital banking practices are scored on a five-point Likert scale.

5) Only 5 of the 21 commercial banks that operated in the Nepal have been selected for the study, which may not accurately reflect their features.

6) There aren't many theories on the subject because the research is being done on a new concept. In its theoretical review, the study only employs one theory.

7) It excludes bank clients who do not utilize the present green banking, which allowed researchers to compare the attitudes of users and non-users of green banking about these practices.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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