EFFECT OF CORPORATE ENVIRONMENT RESPONSIBILITY ON ENVIRONMENTAL AND FIRM PERFORMANCE OF NEPALESE BANKS AND FINANCIAL INSTITUTIONS

A Research Dissertation Submitted to

Kathmandu University School of Management

in partial fulfillment of the requirement for the

Degree of Master of Philosophy (MPhil) in Management

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July, 2024

DECLARATION

I, hereby, declare that this dissertation entitled *"Effect of Corporate Environment Responsibility on Environmental and Firm Performance of Nepalese Banks and Financial Institutions"* embodies the original research work that I carried out in partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management at Kathmandu University School of Management and that this dissertation has not been submitted for candidature for any other degree.
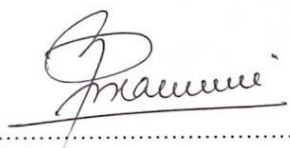
Puja Tamang

July, 2024

RECOMMENDATION

This is to certify that Ms. Puja Tamang has completed her research work on the *Effect of Corporate Environment Responsibility on Environmental and Firm Performance of Nepalese Banks and Financial Institutions* under my supervision and that her dissertation embodies the result of her investigation conducted during the period she worked as an MPhil candidate of the School of Management. The dissertation is of the standard expected of a candidate for the degree of MPhil in Management and has been prepared in the prescribed format of the School of Management. The dissertation is forwarded for evaluation.

July, 2024

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RESEARCH COMMITTEE APPROVAL

We have conducted the viva-voce examination of the dissertation *Effect of Corporate Environment Responsibility on Environmental and Firm Performance of Nepalese Banks and Financial Institutions* submitted by *Puja Tamang*. We found the dissertation to be original work of the candidate and written according to the prescribed format of the School of Management. We approve the dissertation as the partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management.

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ABSTRACT

The growing concerns about corporate responsibility for environmental sustainability have led the banking sector to adopt sustainable practices. In the context of Nepalese Banks and Financial Institutions (BFIs), it is vital to analyze the relationships among Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP) to achieve both environmental and financial sustainability. Therefore, this study aims to examine the effect of CER on EP and FP and also analyze the mediating effects of GF and GI.

A causal research design was adopted where the data were obtained from a sample of 426 participants using a multi-stage sampling technique. Data were collected from both online and printed forms. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed where EFA was the first step performed to determine the factor structures. CFA was the second step executed in a different dataset to validate the output provided by EFA. Then, Covariance-Based Structural Equation Modeling (CB-SEM) technique was applied to test the research hypotheses.

The findings revealed that CER has positive significant effects on GF and GI. Likewise, the effect of CER on EP and FP was also found to be positive and significant. Similarly, it was identified that GI has positive significant effects on both EP and FP. However, GF exhibited a negative insignificant effect on EP, FP, and GI as well. Additionally, GF did not mediate between the relationships of CER and both EP and FP while GI indirectly mediates these relationships. These results indicated that prioritizing environmental responsibility enhances GI and ultimately improves EP and FP of BFIs. Thus, banking and financial organizations could prioritize

investments in GI to boost their environmental and firm performance and this study also highlights the need for organizations to re-evaluate their green financial practices. Further, this study offers insights for policymakers to promote sustainability in the banking industry.

Keywords: corporate environment responsibility, environmental performance, firm performance, green finance, green innovation

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ABBREVIATIONS

AVE	Average Variance Extracted
BFIs	Banks and Financial Institutions
CA	Cronbach Alpha
CB-SEM	Covariance-Based Structural Equation Modeling
CER	Corporate Environment Responsibility
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMB	Common Method Bias
CMIN/DF	Chi-Square Divided by Degree of Freedom
CR	Composite Reliability
CSR	Corporate Social Responsibility
ECSR	Environmental Corporate Social Responsibility
EFA	Exploratory Factor Analysis
EP	Environmental Performance
ESRM	Environmental and Social Risk Management
FP	Firm Performance
FY	Fiscal Year
GBP	Green Banking Practices
GF	Green Finance

GFI	Goodness of Fit Index
GI	Green Innovation
GTI	Green Technology Innovation
HTMT	Heterotrait Monotrait
KMO	Kaiser Meyer Olkin
MSA	Measure of Sampling Adequacy
NRB	Nepal Rastra Bank
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index

CHAPTER I

INTRODUCTION

Nepal has experienced substantial growth in urbanization, motorization, industrialization, and overall development activities (Gautam & Herat, 2000). The urban population has increased by 0.4 percent in 2022 since last year indicating a peak point of 21.45 percent (Statista, 2023). The number of private vehicles is also increasing annually by 15 to 17 percent where its registration has reached 4 million approximately with around 2 million vehicles operating in Kathmandu Valley (Department of Transport Management, 2022). Similarly, the number of manufacturing enterprises is also in increasing trend as 116 new manufacturing enterprises were registered among the 309 new industries in 2022 (Department of Industry, 2022). Consequently, this unprecedented boom is causing enormous social and environmental costs.

It is reported that 38 out of 54 vehicles failed the emissions test (Ghimire, 2022) indicating that air pollution issue is also caused by harmful vehicle emissions. For the first time in human history, the atmosphere's carbon dioxide level has exceeded (Rijal, 2019). A study by Basnyat (2023) demonstrated that the temperature in Nepal's mountain has increased by 1.8 degrees Celsius exceeding the world average of 1 degree Celsius. Nepal has also faced various environmental issues like earthquakes, avalanches, rapid snow melt, floods, forest fires, and landslides (Basnyat, 2023). All of the major disasters it faces are associated with the environment. Environment-related disasters cost 1.5 percent approximately of the gross domestic product per year and this cost is expected to increase with frequent natural disasters occurring (United States Agency for International Development [USAID], n. d.). Industrial emissions, vehicle emissions, city waste, and garbage,

construction activities are tremendously degrading the environment (Simkhada, 2018). Thus, environmental degradation is expected to occur in the future too if such activities are not controlled.

To address environment-related risks effectively, companies must integrate social and environmental considerations into their operational strategies. In this regard, many countries have Corporate Social Responsibility (CSR) laws to make industries socially and environmentally responsible. In Nepal, Nepal Rastra Bank (NRB) implemented CSR regulations in Fiscal Year (FY) 2016/17, mandating Banks and Financial Institutions (BFIs) to establish a CSR fund with at least 1 percent of their net profit (Nepal Rastra Bank [NRB], 2021). NRB has also been partnering with international finance corporations to promote and manage environmental and social risks for BFIs (Nepal Rastra Bank [NRB], 2022a). Accordingly, BFIs were urged to incorporate green financing principles into their banking practices as per the Environmental and Social Risk Management (ESRM) guidelines (Nepal Rastra Bank [NRB], 2018).

Globally, there's a growing interest in CSR. Carroll's comprehensive CSR framework including economic, legal, ethical, and philanthropic has been widely recognized as advantageous for companies, society, and environment as well (Carroll, 2016). CSR is a multidimensional concept, with one of its dimensions being Corporate Environment Responsibility (CER) (Sindhi & Kumar, 2012). CER is considered as an integral part of CSR that helps businesses to achieve sustainable development (Chi et al., 2022). Responsibility towards the environment is becoming a major emerging issue and is accepted as a norm for organizations. To regulate this norm, BFIs as capital providers are well positioned to adapt to change in the economy which are linked to social and environmental sustainability (NRB, 2018).

BFIs allocate finances for the functioning of the economy, thereby playing a significant contribution in supporting environmentally responsible activities by financing eco-friendly sectors (Park & Kim, 2020). According to Chi et al. (2022), the banking sector needs to seriously consider environmental compliance as they indirectly contribute to reduce environmental harm by financing companies or projects that are eco-friendly. In the Nepalese context, several BFIs have shown their leadership in CSR and Green Banking Practices (GBP). In FY 2019/20, 132 out of 153 BFIs made contributions to their CSR fund. All "A" class banks complied with their CSR, while 90 percent of "B" class banks, 77.3 percent of "C" class, and 83.3 percent of "D" class contributed with CSR funds (NRB, 2021). Similarly, commercial banks have been providing 11 percent of their lending to Agriculture, and 6 percent to energy such as hydropower, solar energy, biomass, biogas, and wind energy whereas development banks are lending 16 percent to agriculture and energy, and finance companies are lending 11 percent to agriculture and energy sectors only (Nepal Rastra Bank [NRB], 2022b). Such initiatives help in achieving green economic growth and increasing resource efficiency. Moreover, BFIs have been providing their services through various GI technologies like mobile banking, internet banking, card services (Debit cards, credit cards, prepaid cards), cash and cheque deposit kiosks, automated teller machines, and branchless banking (NRB, 2022b). The application of these environment-friendly banking practices not only promotes sustainability but also strengthens financial performance (Wang et al., 2020; Guang-Wen & Siddik, 2022; Juliani et al., 2023).

The synergy of CER, GF, and GI yields dual benefits for both Firm Performance (FP) and Environmental Performance (EP) (Huang et al., 2023). Being environmentally responsible through sustainable financing and green technology

innovation can help BFIs enhance their legitimacy by meeting societal expectations and gaining acceptance (Olateju et al., 2021). These sustainable practices will contribute towards environmental and organizational performance (Guang-Wen & Siddik, 2022; Xiliang et al., 2023). Thus, this study aims to analyze how BFIs enhance EP and FP by incorporating environmental responsibilities. This study not only bridges a gap in the existing studies regarding how CER, GF, GI, EP, and FP relate with each other but also provides insightful information to banking executives and policymakers on enhancing environmental sustainability and firm performance by incorporating CER through GF and GI.

Statement of the Problem

In today's context, it is imperative for the banking industry to implement GBP due to the rising environmental challenges and stakeholder expectations for organizations to be environmentally responsible. As a result, organizations should engage in environmental-focused banking activities through green financing and innovation initiatives to gain, maintain, and restore their legitimacy which helps them achieve environmental sustainability (Dai et al., 2022). Banks and Financial Institutions (BFIs) play a vital role by supporting environmentally responsible initiatives like financing eco-friendly projects and deploying technology-driven services which benefit both the firm's financial and sustainability performance (Guang-Wen & Siddik, 2022).

According to NRB (2021), BFIs contributed 1.58 percent of their net profit to the CSR fund in FY 2019/20. This data indicates that the banking industry has surpassed the central bank's minimum requirement. Meanwhile, it is demonstrated that only 38.6 percent of commercial banks disclosed their CSR expense in their 2019/20 annual reports (NRB, 2021). This implies that the Nepalese banking industry

has not yet completely addressed the standard CSR reporting practices as directed by the central bank (NRB, 2021). CSR reporting is crucial for banking institutions as it enhances their legitimacy towards its stakeholders. BFIs can enhance their legitimacy by meeting reporting standards and committing to environmental issues (Chariri et al., 2018). Moreover, BFIs' CSR funding is more inclined towards building educational institutions, temples, dharmasaalas, and providing food and clothing during times of natural disasters etc. while the environmental impact sectors receive less attention (Upadhyay & Dhungel, 2013; NRB, 2021).

NRB issued ESRM guidelines for BFIs in 2018 which were revised in 2022 encouraging banks to manage environmental and social risks through their business activities and reduce their carbon footprint (NRB, 2022a). Despite the issuance of these environmental regulations in their banking operations, it remains uncertain how effectively BFIs have implemented CER to enhance both EP and FP. Aryal et al. (2022) stated that sustainable financing is in a budding stage in the Nepalese banking sector. Additionally, Mishra (2023) also argued that although some banks have demonstrated their leadership in financing green projects as per the ESRM policy, there is still more work to be done. Thus, the adoption of green products and services in Nepal is limited and bankers are less aware of the potential benefit of sustainable banking operations (Tandukar et al., 2021).

Corporate Environment Responsibility (CER) influences the adoption of Green Finance (GF) and Green Innovation (GI). Since, it encourages organizations to prioritize environmental sustainability (Kusku, 2007). This commitment to environmental responsibility naturally leads organizations to adopt GF and GI as they are essential tools to implement sustainability in the banking sector. GF provides financial resources for environmentally responsible initiatives (Lindenberg, 2014),

whereas GI involves creating technology advancement to improve CER (Dai et al., 2022). Together, these elements synergize to enhance environmental sustainability and organizational performance. Chi et al. (2022) also argued that organizations need to understand the significance of being environmentally responsible, as exceeding such activities will ultimately impact their profitability and reputation.

Consequently, further investigation is of utmost importance to gain a deeper insight into how environmentally responsible practices through GF and GI lead to firm success and environmental sustainability, thereby gaining and maintaining their legitimacy. Therefore, this study attempts to address the following research questions:

a) What is the effect of corporate environment responsibility on environmental and firm performance of Nepalese banks and financial institutions?

b) What are the relationships among corporate environment responsibility, green finance, green innovation, environmental performance, and firm performance?

c) Does green finance and green innovation mediate the relationships between corporate environment responsibility and both environmental and firm performance?

Objectives of the Study

The primary objective of this study is to analyze the effect of corporate environment responsibility on environmental and firm performance of Nepalese banks and financial institutions. Whereas, the specific objective includes:

a) To determine the factor structures for corporate environment responsibility, green finance, green innovation, environmental performance, and firm performance.

b) To examine the relationships among corporate environment responsibility, green finance, green innovation, environmental performance, and firm performance.

c) To analyze the mediating effect of green finance and green innovation in the relationships between corporate environment responsibility and both environmental performance and firm performance.

Significance of the Study

This study undertakes a comprehensive examination of the relationships among Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP) due to the recognition of the need for long-term sustainability. This research provides substantial significance for different stakeholders. The study's findings can help policy integrate environmental responsibility, GF, and GI policies for better environmental performance.

Similarly, this study can be helpful to BFIs in strengthening their internal activities like CER and improving green financing and green technological advancement in their banking practices. Since financial regulators prioritize sustainability, they can utilize the framework of this study to reduce industrial pollution and conserve resources, leading to better EP and thus boosting FP. This study can further serve as a valuable resource and reference for future researchers.

Organization of the Report

This study has been structured into five chapters as outlined below:

Chapter one introduces the background of the study, problem statement, research objectives, significance of the study, and organization of the report. Chapter two comprises a review of existing research and related theories, along with hypotheses development and theoretical framework. Chapter three highlights the research methodologies adopted in the study. It includes research designs, population,

and sampling, data collection procedures, reliability and validity, and data analysis methods. Chapter four presents the results derived from various statistical techniques like frequency analysis, descriptive statistics, correlation analysis, common method bias, exploratory factor analysis, confirmatory factor analysis and structural equation modeling. The final chapter summarizes the findings, provides a detailed discussion, conclusion, implications, and critique of the study.

CHAPTER II

LITERATURE REVIEW

This chapter highlights the theoretical reviews, empirical evidence from both international and national studies, the development of a study's framework, and the formulation of hypotheses based on the relationships between the variables elucidated in the previous studies.

Theoretical Review

Relevant theories are reviewed initially in this chapter to form a strong theoretical foundation for the study. As presented below, related theoretical perspectives are discussed and the most relevant one is chosen that aligns with the research objective.

Organizations are social creations and their survival depends on the society's willingness to permit their operation continuously (Reich, 1998). The concept of social contract between business organizations and society implies that while the businesses primarily aims to make profits, they also has a moral duties to operate in socially and environmentally responsible ways (Shocker & Sethi, 1973). Numerous social theories have been introduced in an attempt to explain different aspects of corporate social behaviour such as stakeholder theory, accountability theory, institutional theory, natural resource-based view theory, corporate social responsibility theory, triple helix model, legitimacy theory etc. (O'Donovan, 2002). Although some argue that these are not fully fledged theories and are still in its development stage, they nonetheless provide valuable frameworks for understanding corporate social behaviour (Gray et al., 1996). These theories often overlap with each other and it is difficult to distinguish between them. All of them focus on the interaction between corporations and their stakeholders as it is relies on the concept of

a social contract. The major distinction among them lies in the perspective from which they are being observed and tested.

Stakeholder theory asserts that business policies should incorporate the interest of all stakeholders (Olateju et al., 2021) but it does not delve deeply into the underlying motivation for environmentally responsible practices and the strategic implications to gain legitimacy. Institutional theory primarily focuses on how rules, norms, and structures of institutions influence the behaviour of individuals and organizations within a particular social and organizational context (Steinmo, 2001) and is less aligned with environmental responsibility. Accountability theory explains the predictable behaviour of the corporations towards its stakeholders however there seems to be a deficiency in views of accountability theory as it misses when and where accountability is required (Frink & Klimoski, 2004). From the viewpoint of the natural resource-based view theory, resources and capabilities that are environmental concern can generate sustainable competitive advantage (Hart, 1995), however, it does not consider the importance of aligning environmental regulations and maintaining legitimacy for firm success.

According to corporate social responsibility theory, resources devoted to CSR would be more wisely spent from a social perspective to increase firm efficiency (Mcwilliams & Siegel, 2001) and provide less attention from an environmental perspective. Further, as per the triple helix model, more the collaboration of universities, industry, and government more the likelihood of environmental innovation (Murillo-Luna & Hernandez-Trasobares, 2023). Although this theory addresses environmental innovation, which is relevant to this study, its applicability in this study may be limited since this study does not analyze between micro-meso and macro levels. Whereas, legitimacy theory, as proposed by O'Donovan (2002), states

that organizations must adhere to societal norms to sustain successful business operations. This theory aligns with the framework developed in this research which is further explained below regarding its relevance to this study. Therefore, among various theories, legitimacy is the theoretical perspective adopted in this study.

Legitimacy Theory

Legitimacy theory is developed based on the idea of organizational legitimacy which is described by Dowling and Pfeffer (1975) as a situation where an organization's value corresponds with the value of society. According to this theory, firms continuously try to operate within the norms and boundaries of societies (Guthrie et al., 2006). Legitimacy theory is appropriate to explain the concept of Corporate Environment Responsibility (CER) and its relationships with Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP) because it is not just about organizations fulfilling their social contract by having CER policy but also actively operationalizing and reporting to society (Olateju et al., 2021) as a way of maintaining legitimacy (Deegan, 2019). Implementing CER through the use of GF and GI helps organizations gain legitimate status which in turn will reduce organizational risks and increase profitability in the long run (Olateju et al., 2021).

This theory has also been criticized for its simplicity by focusing broadly on society without considering how different groups are influenced by corporate disclosures and the lack of development in addressing which type of disclosure is better (Deegan, 2014; Deegan, 2019). Despite these criticisms, recent research in explaining environmental and social disclosures has primarily relied on legitimacy theory. Several existing studies have well covered the nature and implications of social and environmental disclosures (Olateju et al., 2021; Dai et al., 2022; Guang-

Wen & Siddik, 2022). This theory focuses on the importance of social and environmental norms in shaping organizational behaviour (Deegan, 2019).

Several previous empirical studies further support this concept. For instance, Dai et al. (2022) highlight the importance of CSR, GF, and GI for better EP and the need to integrate sustainability into banking strategies to achieve, keep, or restore legitimacy of banking institutions. Similarly, numerous studies have found positive relationships between CSR and GF on EP in the context of banks (Guang-Wen & Siddik, 2022; Chen et al., 2022). Moreover, Xiliang et al. (2023) affirmed that CSR and GF positively and significantly impact financial performance. Additionally, Juliani et al. (2023) found a significant effect of CER on company value. Furthermore, Chariri et al. (2018) confirmed that green investment positively influences financial performance. Thus, based on these theoretical and empirical grounds, this study proposes to apply legitimacy theory to analyze the relationships among CER, GF, GI, EP, and FP in the context of Nepalese BFIs because organizations consistently strive to carry out activities like CER by adopting new sustainable technologies and green financial practices to gain societal recognition and acceptance, thereby ensuring both their survival and environmental sustainability.

Empirical Evidence

This section incorporates empirical evidence on the relationships among Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP) including the mediating effect of GF and GI that has been conducted in both international and national contexts.

Chang (2011) investigated the effect of Corporate Environmental Ethics (CEE) on competitive advantage of Taiwanese manufacturing companies through GI performance using SEM. The results indicated that CEE positively affects both types of GI i.e. green product innovation and green process innovation. Additionally, green product innovation mediates the relationship between CEE and competitive advantage while green process innovation does not mediate. Therefore, it is implied that Taiwanese manufacturing companies can improve their competitive advantage by enhancing both CEE and green product innovation.

Chuang and Huang (2018) examined how Environmental Corporate Social Responsibility (ECSR) influences green IT capital and subsequently its effect on EP and business competitiveness of Taiwanese manufacturing companies. The findings confirmed that ECSR significantly and positively affects on green IT human, structural, and relational capital. Green IT structural and relational capital have positive significant effects on EP and business competitiveness. Also, it is affirmed that there is a positive effect of EP on business competitiveness. Moreover, green IT structural and relational capital partially mediate ECSR, EP, and business competitiveness relationships.

Anser et al. (2020) explored the impact of CSR commitment on CSR participation, considering the mediating role of CSR participation in the relationship between CSR commitment and both social performance and EP of hotels and tourism. The results portray that CSR participation significantly predicts social performance and EP. Additionally, there is mediating effect of CSR participation in the relationship between CSR commitment and both social performance and EP. The authors highlight the crucial role of managers' CSR attitudes and commitment to the achievement of social and EP objectives.

Kraus et al. (2020) analyzed the effect of CSR on EP of large manufacturers situated in Malaysia, using PLS-SEM. The outcomes indicated that CSR doesnot have a direct significant influence on EP but significantly related to environmental strategy and GI. Further, environmental strategy and GI significantly mediate between CSR and EP. The research suggests these findings can guide large manufacturing managers by strengthening CSR, environment strategy, and GI.

Awawdeh et al. (2021) assessed the role of GF and CSR in enhancing technology innovation and corporate environment performance from the perspective of employees working in Egypt energy companies. The results from PLS-SEM showed that technological innovation and GF positively influence EP while CSR has an insignificant role in EP. These findings will help to form policies for sustainable energy and GF.

Dai et al. (2022) analyzed the effect of CSR and GF on EP of Bangladesh banking organizations with the mediating effect of GI. The results from CB-SEM revealed that CSR positively impacts both GI and EP with GI significantly enhancing EP. Similarly, GF significantly and positively influence GI and EP. And it is also mentioned that GI mediates the associations between CSR-EP and GF-EP. The study underscores the need for sustainable banking strategies for a country's long-term economic development.

Liu et al. (2022) selected large and medium-sized iron and steel enterprises of China from 2009 to 2017 to analyze the effect of CER on FP. The findings represent that CER has a significant effect on FP and GI acts as a mediator between them. Based on the study results, the authors recommended that managers should balance between FP and environmental preservation to obtain a win-win situation.

Novitasari and Tarigan (2022) examined the influence of CSR on FP of Indonesian companies with GI as a mediator. The result revealed that CSR increases GI and FP. In addition, GI positively affects FP and mediates CSR and FP relationships. The study concludes that CSR strengthens stakeholder relations and thus contributes to enhance GI and FP.

Xu et al. (2022) observed the relationships among CSR, EP, and financial performance of Shenzhen manufacturing organizations with the mediating role of green technology innovation (GTI). Using PLS-SEM, it was found that GTI mediates between CSR and both firms' financial and environmental performance. The authors emphasize the importance of investing in GI to enhance the performance of manufacturing firms.

Guang-Wen and Siddik (2022) investigated the effects of CSR and GF on the EP of Bangladesh's private commercial banking institutions. Applying the CB-SEM approach, it was found that CSR practices have a positive influence on EP. Furthermore, the results indicated that the social, economic and environmental aspects of GF significantly influence the bank's EP. The study concludes that CSR and GF practices improve banks' EP and ultimately promote sustainable development.

Wang et al. (2022) evaluated the EP, GF, and GI associations through panel covariate-augmented Dickey-Fuller unit root test and co-integration test. The results suggest that in the non-emerging countries and countries with better GI, EP has a positive long term effect on GI. Besides, in the emerging countries and countries with lower levels of GF, GF positively affects GI but in the countries with better GI or EP, GF have a negative effect on GI. These findings hold significant policy implications for developing countries to stimulate GI and EP.

Fang and Shao (2022) used spatial Durbin model to test whether GF moderates the effect of heterogeneous environmental regulation on GTI. The results indicate that GF and market incentive environmental regulations promote regional GTI whereas command and control environmental regulations inhibit regional GTI. Based on these findings, the authors recommend improving green financial system, green financial products increase GF which eventually promotes regional GTI.

Yan et al. (2022) examined the effect of fintech adoption on the sustainability performance of Bangladesh banks. With the use of two-staged structural equation modeling and an artificial neural network (SEM-ANN) method, it was observed that fintech adoption significantly influences GF, GI, and sustainability performance though it possesses challenges as documented by Karki et al. (2023). Similarly, GF and GI have a significant influence on sustainability performance. Furthermore, GF and GI mediates the relationship between fintech adoption and the bank's sustainability performance. The study underscores the need for green initiatives through GF and GI into banking strategies for sustainable economic development.

Zhang et al. (2022) determined the effect of green banking on EP of Bangladesh private commercial banks, employing GF as mediating variable. Results from SEM approach discovered that green banking activities significantly affect on GF and EP. In addition, GF significantly influences banks' EP. It was also observed that GF acts as a mediator between green banking practices and EP. Moreover, it was concluded that green banking activities helps to accomplish sustainable economic development of a country.

Chen et al. (2022) analyzed the impact of GBP on EP and GF of Bangladesh's private commercial banks. Results from SEM indicated that employee-related, daily

operations related and policy-related GBP have significant effects on GF. Particularly, GF shows a positive influence on EP. However, only daily operation and policy related GBP have a significant impact on banks' EP. While employee related and customer related GBP were not found significant.

Ye and Dela (2023) analyzed the effect of GF and environment friendly investment on sustainable performance of Indonesia's international chemical companies including mediating effect of CSR. With the use of PLS-SEM, the study exhibits that green investments and financing significantly effect CSR and sustainable performance. In addition, it was found that CSR significantly mediates green investment and sustainable business performance. This study highlighted that highly polluting chemical businesses should adopt GF, investment, and CSR to upgrade sustainable economic performance.

Juliani et al. (2023) examined the impact of CER on corporate value of manufacturing companies with good governance as a moderating variable, applying regression and moderated regression analysis. The research results showed that there is significant effect of CER on company value, inferring if the manufacturing companies enhances CER, it could increase its value. Similarly, the board of commissioners and the board of independent commissioners (proxies of corporate governance) moderated the relationship between CER and corporate value. However, managerial ownership, institutional ownership, and audit committees (proxies of corporate governance) did not moderate the relationship between CER and corporate value.

Nepalese Evidences

Some of the studies on Green Banking Practices (GBP), Corporate Social Responsiility (CSR), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP) that have been conducted in the Nepalese context are elucidated below:

Risal and Joshi (2018) analyzed the effect of GBP on EP of banks with simple and stepwise multiple regression. The study found that that energy efficient equipment and green policy have a significant impact on banks' EP but there is an indirect impact of green loans and projects. The authors suggested that bank's and government's roles are highly important in boosting eco-friendly technologies and increasing bank's reputations.

Tandukar et al. (2021) investigated the performance of Nepalese commercial banks towards green banking from both qualitative and quantitative methods. Findings revealed that there's less awareness about GBP among bankers whereas probit regression analysis showed that education, green banking preparation, fixed expenses, client fascination, regulatory guidelines, and environment security have significantly influenced GBP. The study recommended that banks should provide employee training and enhance online services to improve green banking initiatives.

Aryal et al. (2022) assessed the current status of Nepalese commercial banks to integrate GF in their financial planning, banking operations and decision-making from semi-structured interviews with bankers. The study concluded that GF is still a relatively new concept and is often understood to be practised only for fulfilling compliance with NRB. So, there is a need for revised policies to achieve desired outcomes.

Mishra and Aithal (2022) emphasized the significance of GF for attaining a global green economy in Nepal by conducting focus group discussions with professionals and other key informants. From the grounded theory and eco-tourism case analysis, it was found that BFIs and other international institutions provide better financial ways through GF and it was argued that GF will drive for industry's green growth worldwide. Further, the authors added that such initiations help for positive shift in the global economy by supporting funding for green investments and promoting green public policies.

Research Gap

Numerous international studies have provided valuable insights into the relationships among Corporate Environment Responsibility (CER), mainly Corporate Social Responsibility (CSR) focused, Green Finance (GF), Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP). The majority of existing studies have examined the relationships between these constructs primarily in manufacturing industries (Chang, 2011; Kraus et al., 2020; Ruan et al., 2022; Liu et al., 2022; Xu et al., 2022; Xiliang et al., 2023; Sarfraz et al., 2023; Ye & Dela, 2023). Some studies have also been conducted in banking sectors (Dai et al., 2022; Guang-Wen & Siddik, 2022; Wang et al., 2022; Yan et al, 2022; Zhang et al., 2022; Chen et al., 2022). However, several research gaps exist that this study could bridge.

The parallel mediation effects of GF and GI in the relationship between CER and EP or FP have received limited attention in both international and national contexts. Prior research either have taken GI (Chang, 2011; El-Kassar & Singh, 2017; Chuang & Huang, 2018; Dai et al., 2022; Novitasari & Tarigan, 2022; Xu et al., 2022; Liu et al., 2022) or only GF as the mediating variable (Chen et al., 2022; Zhang et al., 2022). Further, there is a limited study that examined CER and its dual impact on EP

and FP while also considering the mediating effect of GF and GI predominantly focusing on the banking sector. The previous studies have mostly observed the relationships separately. Meanwhile, the study of Yan et al. (2022) has compiled both GF and GI as the mediating variables in the relationship between fintech adoption and sustainability performance. Hence, as per researcher knowledge, there is a dearth of research where GF and GI have been addressed in the relationships between CER and both EP and FP in a single research model in the context of BFIs.

In the context of Nepal, a couple of studies have been conducted on CSR and GBP. For instance, Risal and Joshi (2018) measured the EP through GBP whereas the green banking perspective and green financing practices in Nepalese commercial banks have been evaluated by prior studies (Tandukar et al., 2021; Mishra & Aithal, 2022; Aryal et al., 2022). Moreover, relationship between CSR and FP has also been studied by some Nepalese researchers (Wagle, 2020; Adhikari, 2021). These studies mainly focus on assessing the awareness and perception of GBP and also provide valuable contributions to understand GF through a qualitative approach and its impact on EP. However, there is handful of comprehensive research that integrate CER, GF, GI, EP, and FP of BFIs.

In previous research, contrasting results have been observed in some relationships among CER, mainly CSR, GF, GI, EP, and FP. Such as Kraus et al. (2020) and Awawdeh et al. (2021) show an insignificant relationship between CSR and EP whereas Dai et al. (2022) and Xu et al. (2022) demonstrated a positive significant effect of CSR on EP. Similarly, Wang et al. (2022) reported a negative impact of GF on GI in countries with better GI or EP while Huang et al. (2022) and Irfan et al. (2022) found a significant influence of GF towards GI. Moreover, Risal and Joshi (2018) indicated that green loan has an indirect impact on EP but Chen et al.

(2022) revealed that green financing has a significant effect on EP of banks. Such inconclusive findings in earlier studies necessities for further studies to clarify these relationships.

Nepal, like many other countries, faces intense environmental challenges like pollution, climate change, natural calamities, and resource depletion (Gautam & Herat, 2000). This urges the need for effective environment-oriented banking practices to balance business profitability with long-term sustainability. As the banking and financial sector is a significant contributor to enhance CER, GF, and GI that ultimately affect FP and EP (Park & Kim, 2020), examining the relationships between these constructs is crucial for addressing environmental challenges and thus ensuring organization's existence. Therefore, this study aims to analyze on whether Nepalese BFIs being environmentally responsible plays a positive or negative role in environmental sustainability and their performance.

Theoretical Framework

The theoretical framework below portrays the relationships among Corporate

Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI),

Environmental Performance (EP), and Firm Performance (FP). Here, the independent

variable is CER, the mediating variables are GF and GI, and, EP and FP are the

dependent variables. The framework below is developed based on the concept of

legitimacy theory and prior studies (Xu et al., 2022; Yan et al., 2022).
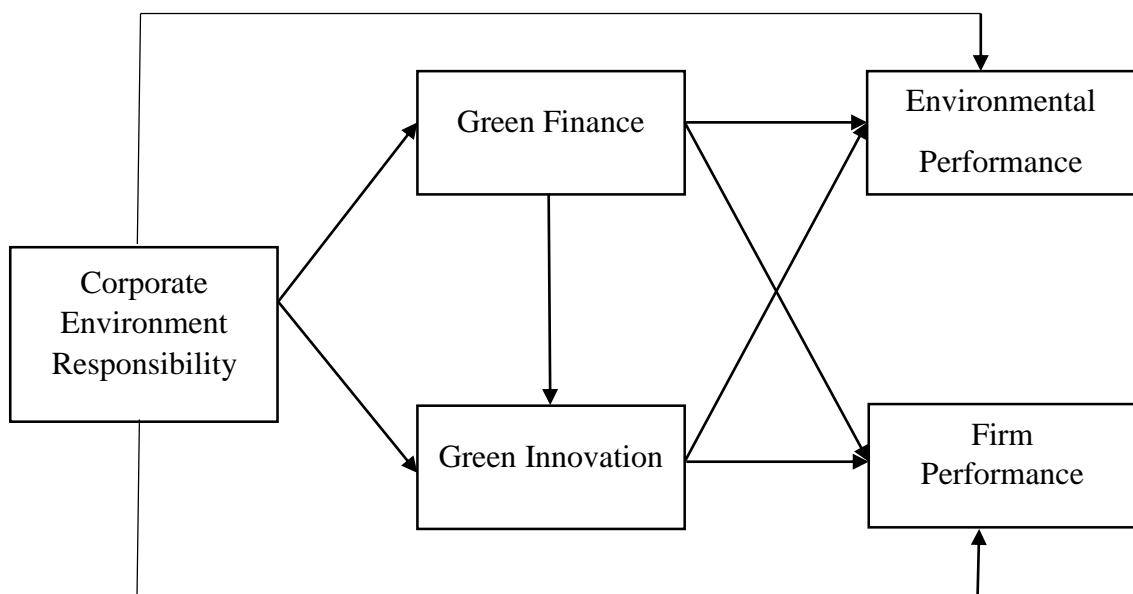
Figure 2. 1

Theoretical Framework

Table 2. 1

A Priori Expected Relationships between the Variables

Variables	Expected Relationships
CER → EP	Positive
CER → FP	Positive
CER → GF	Positive
CER → GI	Positive
GF → EP	Positive
GF → FP	Positive
GI → EP	Positive
GI → FP	Positive
GF → GI	Positive
Mediating Role of GF between CER and EP	Positive
Mediating Role GF between CER and FP	Positive
Mediating Role of GI between CER and EP	Positive
Mediating Role of GI between CER and FP	Positive

Note: CER: Corporate Environment Responsibility; GF: Green Finance; GI: Green Innovation; EP: Environmental Performance; FP: Firm Performance

Relationships between Variables and Hypotheses Formulation

Corporate Environment Responsibility (CER), Environmental Performance (EP) and Firm Performance (FP)

As the environmental component of CSR, CER includes the idea of environmental commitment where the company is actively dedicated to practising and promoting sustainability (Jamison et al., 2005, as cited in Sindhi & Kumar, 2012). Generally, CER is defined as measures and strategies that organization adopts to mitigate environmental risks (Kusku, 2007). The study of Crifo and Sinclair-Desgagne (2013) highlighted that firms involved in CER due to the presence of externalities and aim to

eliminate negative externalities (e.g., pollution abatement) or obtain positive externalities.

Also, CER helps organizations to decrease expenses, increase profits, and improve reputation which ultimately leads to gain better FP and EP (Makhdoom et al., 2023; Sarfraz et al., 2023). It is confirmed by Huynh (2020) that environmental responsibility has a positive influence on both EP and FP. In the same way, the study of Chi et al. (2022) documented that CER has a positive effect on net interest margin and return on equity. However, Kraus et al. (2020) and Awawdeh et al. (2021) argued that CSR does not directly influence EP but rather has an indirect significant influence. Meanwhile, Xu et al. (2022) showed that CSR positively affects EP and FP. Accordingly, this study develops the following hypothesis:

H1: CER has significant effects on EP and FP.

Corporate Environment Responsibility (CER), Green Finance (GF) and Green Innovation (GI)

CER naturally leads organizations to adopt GF and GI as they are essential tools to fund and implement eco-friendly practices. GF is all forms of investment or lending which is provided based on environmental screening and risk assessment to adhere environmental sustainability standards (Lindenberg, 2014; Karki, 2024). It signifies the financial products and services that facilitate environmentally conscious actions. (Ye & Dela, 2023). It could be in different forms like loans, bonds, or equity investments and is provided by diverse BFIs (United Nations Development Programme [UNDP], 2021). GF is considered a solution to environmental issues (Awawdeh et al., 2021). To alleviate the adverse impacts of climate change, GI is also essential (Dai et al., 2022). GI refers to technological advancement that lessens waste,

environmental degradation, energy consumption, and the usage of fossil fuels (Kraus et al. 2020). For BFIs, GI contains internet banking, mobile banking, automated teller machines, online customer services etc. that aid banks in upgrading their environmental sustainability performance (Dai et al., 2022).

Researchers have claimed that a firm's CSR enrollment is more likely to finance eco-friendly projects (Ye & Dela, 2023) and also contribute to GI (Liu et al., 2022). It is supported by the finding of Wang et al. (2020) that argued companies with robust CSR practices are more socially and environmentally legitimate as well as more inclined to invest in sustainable projects like green bonds. As per Crifo and Sinclair-Desgagne (2013), CER also facilitates GI to preserve valuable natural resources. Hence, it is hypothesized that:

H2: CER has significant effects on GF and GI.

Green Finance (GF), Environmental Performance (EP), and Firm Performance (FP)

If a corporate engages in eco-friendly financing practices then it will increase firm value for the long term (Wang et al., 2020) and also positively influences the bank's EP (Guang-Wen & Siddik, 2022; Yan et al., 2022; Zhang et al., 2022; Chen et al., 2022). EP infers to the ability of organization to eliminate its detrimental impact on the environment through its operations (Klassen & Whybark, 1999, as cited in Dai et al., 2022). According to Shan and Wang (2019), EP can be evaluated as an organization's efforts to reduce pollution, protection of natural resources, and ecological rebuilding. Hence, EP of BFIs can be measured based on strategies and activities that reduce usage of papers, energy consumption, improve environmental

compliance, lower carbon emissions and provide environmental conservation training to employees (Zhang et al., 2022).

Studies have asserted that GF, one of the GBPs, has a significant influence on EP (Xu et al., 2020; Awawdeh et al., 2021) and FP (Xiliang et al., 2023). A study by Chariri et al. (2018) and Ye and Dela (2023) argued that investing in environmentally sustainable activities improves financial outcomes like return on assets. Likewise, the study of Zhou and Cui (2019) indicated that green bond issuance announcements positively impact stock prices, financial, and operational performance of firms. Thus, it is proposed that:

H3: GF has significant effects on EP and FP.

Green Innovation (GI), Environmental Performance (EP), and Firm Performance (FP)

Firm's participation in sustainable business practices like GI helps to enhance its both environment, organization's performance and gain a competitive advantage (El-Kassar & Singh, 2017; Chuang & Huang, 2018). There are two different kinds of criteria to measure FP namely financial criteria and market criteria. Return on investment, sales profit margin, and return on assets etc. are included in the financial criteria whereas market performance is related to sales growth, market share growth, reputation, image and overall competitiveness concerns (Ince et al., 2013). FP is often described in terms of a business's performance and associated measures such as return on investment, share market performance, and other associated intangibles (Xu et al., 2022).

It was further asserted that both EP and FP are affected by GI as claimed by Awawdeh et al. (2021) and Xu et al. (2022). Whereas in the banking sector, it is also

found that GI significantly and positively influences environmental performance (Yan et al., 2022; Dai et al., 2022). Hence, it is proposed that:

H4: GI has significant effects on EP and FP.

Green Finance (GF) and Green Innovation (GI)

Underlining the key role of GF in enhancing environment-driven innovation, researchers have analyze the connection between GF and GI as well. According to Dai et al. (2022), GF significantly influences GI of an organization. The results of Huang et al. (2022) and Irfan et al. (2022) found that GF significantly contributes to GI. Further, it was verified by the study of Wang et al. (2022) that GF positively influences GI in emerging states and those with low levels of GF. Moreover, Huang et al. (2023) suggested that GF encourages companies to develop new environmentally friendly ideas and technologies. Based on these outcomes, it is proposed that:

H5: GF has a significant effect on GI.

Mediating Role of Green Finance (GF)

Some recent studies have explored the mediation role of GF between the relationship of CER and EP in the context of the banking sector. For instance, Zhang et al. (2022) observed that GF mediates the relationship between GBP and the bank's EP. Likewise, Yan et al. (2022) revealed that GF fully mediates the interaction between FinTech adoption and EP of BFIs. While Wang et al. (2023) examined that CSR mediates the GF and EP relationships. Based on these observations, it is proposed that,

H6: GF mediates the relationship between CER and EP.

However, it seems that existing studies have yet to explore GF as a mediator in the relationship between CER and FP. Instead, Ye and Dela (2023) demonstrated

that CSR act as a mediator between GF and sustainable performance of business organizations. Therefore, it is hypothesized that,

H7: GF mediates the relationship between CER and FP.

Mediating Role of Green Innovation (GI)

Studies have gradually highlighted the role of GI as a mediating variable. Numerous present studies have explored the connection of CSR and EP as well as CSR and FP through the mediating effect of GI. Dai et al. (2022) observed that Bank's CSR and EP greatly advantage from GI which implies CSR has a significant impact on EP through GI. Studies in the manufacturing industry also concluded that GI mediates the relationship between CSR and EP (Kraus et al., 2020; Xu et al., 2022; Sarfraz et al., 2023). From these output from prior studies, it is assumed that,

H8: GI mediates the relationship between CER and EP.

Numerous research has also supported the positive significant influence of GI between CER and FP relationship. It is evident by the study of Chang (2011) which shows green product innovation has a mediating effect between corporate environmental ethics and competitive advantage. Furthermore, Liu et al. (2022) validate that GI has a significant mediating effect between CER and corporate performance relationship. Additionally, Novitasari and Tarigan (2022) represent the indirect effect of GI between CSR and FP. In alignment with this finding, it was again claimed that GI acts as a significant mediator between CSR and financial performance (Xu et al., 2022; Sarfraz et al., 2023). Based on these results, it is proposed that:

H9: GI mediates the relationship between CER and FP.

CHAPTER III

RESEARCH METHODOLOGY

This chapter outlines the research methodologies that have been adopted to meet research objectives. It discusses the research design, population and sampling, data collection procedure, measures and instruments, reliability and validity, and data analysis method. The details are explicated below:

Research Design

This study adopted a quantitative methodology. Grounded in the philosophical stance of soft positivism and positivist epistemology, it employed a deductive approach. Cross sectional survey was adopted wherein data was collected at the single point of time in a non-contrived setting. The causal research design was implemented to examine the extent and nature of cause-and-effect relationships between independent, mediating and dependent variables. The research design adopted is in line with prior similar studies (Chang, 2011; Dai et al., 2022; Bhattarai et al., 2024).

Population and Sampling

According to Nepal Rastra Bank (2023), there are 20 commercial banks categorized as "A" class, 17 development banks categorized as "B" class, 17 finance companies categorized as "C" class and 1 Nepal infrastructural bank. So, the unit of analysis for this study was 55 Nepalese Banks and Financial Institutions (BFIs) and the data was obtained from the employees working in these institutions. The BFIs were selected based on their implementation of CSR and ESRM policy as directed by NRB. Both CSR and ESRM policy have been mandated to commercial banks, development banks, finance companies and Nepal Infrastructure Bank (NRB, 2021: 2022a).

For sample selection, a multi-stage sampling technique was used where initially stratified sampling technique was applied. In this stage, 20 'A' class, 8 'B' class, 9 'C' class, and Nepal infrastructure bank were grouped into distinct strata representing the various classes of Nepalese BFIs. Here, only 38 out of 55 BFIs were chosen while the remaining 17 were not selected due to the inconvenience of reaching those banks. Subsequently, purposive sampling was employed within each stratum. In this phase, top and middle-level employees from 38 BFIs were chosen since it is believed that they possess the required knowledge and experience related to Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP) and Firm Performance (FP) within their respective banks.

After that, 255 respondents from A class, 89 from B class, 75 from C class and 7 from Nepal Infrastructure Bank were selected randomly, making a total of 426 participants as a final usable sample for this study. Krejcie and Morgan (1970) proposed a sample size of 384. In addition, Memon et al. (2020) stated that an optimum sample size of 384 is regarded as the magic number in research and thus represents the population under study.

Data Collection Procedure

This study was based on the primary survey and the primary source of information was the top and middle-level employees of A, B, and C class of Nepalese BFIs including Nepal Infrastructure Bank. Structured questionnaire was designed to gather the data from both online and offline mediums. Kobo toolbox was used to collect the data from an online platform. But only 24 responses were received from online of which 20 samples were usable while the remaining 4 with invalid submissions were excluded. Regarding data collection from personal visits to respective banks, 15

questionnaires were distributed to each of the 20 commercial banks, 8 development banks, 9 finance companies and Nepal Infrastructure Bank. Krejcie and Morgan (1970) suggested that a sample of 384 is sufficient to represent the population of the study. Hence, with those presumptions and considering the non-response error, 570 (15*38) questionnaires were distributed in total among the employees of selected BFIs.

From the 570 hard copies distributed, only 473 returned, representing an effective response rate of 82.98 percent. Among these returned questionnaires, inappropriate responses were 43 and data were missing in 24 samples. The total valid sample from hard copies was 406 (473-43-24). Thus, 426 samples, comprising 406 from offline and 20 from online sources were used for further data analysis.

The data was collected through a self-administered approach, where participants independently filled out the questionnaire. Prior to distributing the questionnaire, informed consent was achieved from each respondent, outlining the research purpose clearly and assuring confidentiality. Therefore, this study adheres the ethical considerations throughout the data collection process.

Measures or Instruments

The questionnaire was grouped into two sections. The first section of the questionnaire consisted of the respondent's demographic profile while the other section included the items to measure variables of the study i.e. CER, GF, GI, EP, and FP. The variables were measured in a 5-point Likert scale ranging from, 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The items to measure the study variables were adapted from the existing literature.

Measurement items for CER were adapted from previous studies (El-Kassar & Singh, 2017; Dai et al., 2022; Guang-Wen & Siddik, 2022; Xiliang et al., 2023; Ye & Dela, 2023). It was operationalized using seven items. The coefficient alpha was reported ranging from 0.711 to 0.835. GF was assessed using five items formulated from the past studies (Dai et al., 2022; Chen et al., 2022; Ye & Dela, 2023). The cronbach alpha of was from 0.753 to 0.902. GI was measured from the seven items adapted from prior studies (El-Kassar & Singh, 2017; Awawdeh et al., 2021). Cronbach alpha was reported to be from 0.839 to 0.876. Similarly, six items to measure EP was adapted from Dai et al. (2022). The cronbach alpha was reported to be 0.854. FP was assessed from five items extracted from the previous research studies (El-Kassar & Singh, 2017; Ye & Dela, 2023). The cronbach alpha value was measured as 0.874. Details of the questionnaire are provided in the appendix section at the end of the report.

Reliability and Validity

This study conducted reliability and validity to test the robustness of the instrument used. For reliability, Cronbach Alpha (CA) and Composite Reliability (CR) were used to examine internal consistency. CA and CR values exceeding 0.7 were considered acceptable by Hair et al. (2010). Similarly, to confirm the convergent validity of the study variables, the Average Variance Extracted (AVE) values were employed. AVE above 0.5 was considered acceptable (Hair et al., 2014). Besides, Heterotrait-Monotrait Ratio (HTMT) method was used to examine discriminant validity. The HTMT values less than 0.9 confirm the absence of discriminant validity concerns (Henseler et al., 2015). If the concern cut off values are met, the instrument that has been used in the study was considered as reliable, valid and thus acceptable for further analysis.

Moreover, Inter-Rater Reliability (IRR) was used to ensure the employees working in same bank are interpreting and applying the same criteria consistently (James et al., 1984). The same technique was used in the study of Simsek and Heavey (2011). The analysis revealed satisfactory IRR values above 0.7 for all sample BFIs, indicating consistent interpretation and application of measurement items except for Agricultural Development Bank. The result demonstrated an IRR value of only 0.131, falling below the acceptable threshold of 0.7. As a result, 15 responses from Agriculture Development Bank were considered inappropriate responses and eliminated from the study to maintain reliability of the data.

Since this study employed questionnaire in the data collection on independent, mediating, and dependent variables from a single source, Common Method Bias (CMB) might have occurred and led to biased result. According to Podsakoff and Organ (1986), CMB is a serious issue that is associated with self-reported surveys. So, CMB was computed using Harman's single-factor approach in this study.

Data Analysis Method

Covariance Based Structural Equation Modeling (CB-SEM) method was employed using Analysis of Moment Structures (AMOS) 23. As per Hair et al. (2017), the SEM approach is highly appropriate for complex models. In addition, CB-SEM is a direct and precise method to measure theoretical concepts empirically. Hair et al. (2017), further documented that CB-SEM is used to examine the existing theory. Since the research framework for this study was formulated based on the prior empirical studies and legitimacy theory, CB-SEM was utilized to examine the relationships between the variables.

According to Green et al. (2016) and Lorenzo-Seva (2021), analysis should begin with an Exploratory Factor Analysis (EFA) that explores the data and then

analysis process should be continued with a Confirmatory Factor Analysis (CFA) using another dataset to confirm the factor structure verified in the exploratory step. So, 426 samples were randomly split into two subsamples. One subsample was used for EFA (EFA Sample = 150, 92 males, 58 females) and the remaining was used for CFA (CFA sample = 276, 155 males, 121 females). Sampling adequacy for EFA was calculated through the Kaiser-Meyer-Olkin (KMO) measure. The obtained KMO value of 0.914 implies the sufficiency of the data for factor analysis. A sample size for EFA was further justified in accordance with the guidelines specified by Memon et al. (2020) suggesting the minimum of 5 respondents for each variables in the study. According to this rule of thumb, the sample size was estimated to be 150 (30*5) respondents for EFA. Similarly, For CFA, Garver and Mentzer (1999) recommended that any sample above 200 is considered to provide adequate statistical power for Structural Equation Modeling.

Therefore, EFA was conducted as an initial step to examine relationships among variables and group them into latent constructs. This analysis involved several key steps including Kaiser-Meyer-Olkin (KMO) to evaluate sampling adequacy, Bartlett's test of sphericity to examine whether correlations between variables are significant, eigenvalue to assess the magnitude of each factor's contribution, factor loading and communalities was also examined to check the correlation between variables (Hair et al., 2014). The cut-off values required were implemented as suggested by Hair et al. (2014) which is shown in Table 3.1:

Table 3. 1

Measurement Index for EFA

Measurement Index	Recommended Value
Kaiser-Meyer-Olkin (KMO)	0.8 or Above
Bartlett's Test of Sphericity	Sig. < 0.05
Eigen Value	Above 1
Factor Loading	0.5 or Above
Communalities	Above 0.5

Then, a two-stage SEM technique as done by Dai et al. (2022) was used to analyze data. Initially, CFA was conducted to assess the reliability and validity of the measurement model. In this stage, model fit was assessed using various fit indices, including the chi-square divided by degree of freedom (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR) (Iacobucci, 2010). The model was proven fit according to the following references which are represented in Table 3.2:

Table 3. 2

Cut-off Values for Fit Indices

Model Fit Index	Authors	Threshold Values
Chi-square divided by Degree of Freedom (CMIN/DF)	Garver and Mentzer (1999)	Less than 3
Root Mean Square Error of Approximation (RMSEA)	Browne and Cudeck (1992)	Less than 0.05
Goodness of Fit Index (GFI)	Hooper et al. (2008)	More than 0.90
Tucker-Lewis Index (TLI)	Bentler (1990)	More than 0.90
Comparative Fit Index (CFI)	Bentler (1990)	More than 0.90
Standardized Root Mean Square Residual (SRMR)	Hu and Bentler (1999)	Less than 0.08

After confirming the proposed model, the structural model was estimated through SEM technique in the second phase to examine the relationships between the latent constructs.

CHAPTER IV

RESULTS

This chapter provides an overview of the respondent's demographic profile at first.

Then, results from descriptive and correlation analysis are demonstrated. Following

this, the exploratory factor analysis and confirmatory factor analysis are performed to

estimate the measurement model. After that, reliability and validity tests are

performed based on the factor loadings. Thereafter, hypotheses are tested from the

results of a structural model.

Frequency Analysis

Frequency analysis was executed to examine the diverse demographic profiles of the

participants like gender, age group, education level, job position, and work

experience. Also, the analysis encompassed the respondents' perspective on their

organization's engagement on environmentally responsible activities.

Table 4. 1

Demographic Profile of Respondents

Gender	Frequency	Percent
Male	247	58.0
Female	179	42.0
Total	426	100.0
Age Group	Frequency	Percent
20-30 Years	168	39.4
31-40 Years	206	48.4
41 Years and Above	52	12.2
Education Level	Frequency	Percent
High School	4	0.9
Bachelors	117	27.5
Masters and Above	305	71.6
Total	426	100.0

Job Position	Frequency	Percent
Assistant	176	41.3
Officer	179	42.0
Manager	64	15.0
Executive	7	1.6
Total	426	100.0
Work Experience	Frequency	Percent
2 to less than 4 Years	107	25.1
4 to less than 6 Years	99	23.2
6 Years and Above	220	51.6
Total	426	100.0

Note: From Survey 2024

Table 4.1 represents the demographic characteristics of respondents. It can be observed from the table that majority of the participants were male comprising 58 percent of total respondents, where 42 percent were female. Similarly, nearly half of the respondents fell into the 31-40 age group with 48.4 percent, while the lowest was from 41 years and above, at only 12.2 percent. Likewise, more than half of the participants held Master's degree and above followed by bachelors and high school degrees.

Regarding job position, 42 percent of participants belonged to officer level. With slight difference, 41.3 percent were from assistant level, while, 15 and 1.6 percent belonged to manager and executive levels repectively. The highest portion of respondents i.e. 51.6 percent had 6 years and above working experience in Nepalese banks and financial institutions.

Table 4. 2

Level of Involvement in CER

Level of Involvement in CER	Frequency	Percent
Highly Involved	253	59.4
Partially Involved	166	39.0
Not Involved	7	1.6
Total	426	100.0

Note: From Survey 2024

Table 4.2 illustrates the involvement level of Banks and Financial Institutions (BFIs) in Corporate Environment Responsibility (CER). Out of 426 respondents, 253 believed that they had been highly involved in CER activities, 166 opined that they had partial involvement in CER, while only 7 expressed no involvement at all. The results indicated that the majority of BFIs are highly engaged in environmentally responsible activities.

Descriptive and Correlation Analysis

Table 4.3 presents mean values, standard deviations and correlation coefficients for each variable. Here, descriptive analysis was conducted to analyze the nature of data and correlation analysis was employed to examine the relationships among the Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP) and Firm Performance (FP).

Table 4. 3

Descriptive Statistics and Correlation Analysis

Variables	Mean	SD	CER	GF	GI	EP	FP
CER	3.4108	.8956	1				
GF	3.3269	.8847	.754[**]	1			
GI	3.1948	.8578	.663[**]	.658[**]	1		
EP	3.3263	.8834	.619[**]	.621[**]	.747[**]	1	
FP	2.9765	.9414	.574[**]	.561[**]	.653[**]	.588[**]	1

Note: **p<0.01; CER: Corporate Environment Responsibility; GF: Green Finance; GI: Green Innovation; EP: Environmental Performance; FP: Firm Performance.

The results from Table 4.3 portray the mean values ranged from 2.9765 to 3.4108, indicating an average level of perception regarding CER, GF, GI, EP and FP of Nepalese BFIs. The standard deviation values ranged from 0.8578 to 0.9414, implies relatively lower variability among the responses for each variable. Similarly, the correlation matrix revealed that CER and GI (r = 0.663), CER and EP (r = 0.619), CER and FP (r = 0.574), GF and GI (r = 0.658), GF and EP (r = 0.621), GF and FP (r = 0.561), GI and FP (r = 0.653), EP and FP (r = 0.588) were moderately correlated, while strong positive correlations were observed between CER and GF (r = 0.754) and GI and EP (r = 0.747).

Common Method Bias

Common Method Bias (CMB) was computed using Harman's single factor method, a widely used technique in detecting CMB in research (Podsakoff et al., 2003; Fuller et al., 2016). CMB is defined as to the systematic variance error which is resulted from a common measurement method used to examine the study's constructs (Podsakoff et al., 2003). The biases arise when both independent and dependent variables are measured in a single survey employing same scaling approach (Kock et al., 2021).

According to Mackenzie and Podsakoff (2012), reliability of study's measurement items and validity of findings may be impacted due to its presence.

Further, Podsakoff and Organ (1986) stated that if the total variance extracted by one factor exceeds 50 percent, it indicates the existence of common method bias. In this study, there was no issue of CMB since the total variance extracted by one factor was 48.23 percent which is less than the recommended value of 50 percent. This implies that variability in the data caused by CMB is not present, which enhances reliability and validity of the research results.

Exploratory Factor Analysis

An Exploratory Factor Analysis (EFA) was applied to the first split sample of study i.e. 150 to determine the factor structures. EFA was conducted by implementing a principal component analysis and varimax rotation. The criteria for factor loading value was set to a minimum of 0.50 (Hair et al., 2014). The communality of the scale i.e. the extent of variance in each dimension, was also measured to ensure acceptable explanatory levels. In the initial step of EFA, the results indicated that all communality values were above 0.50 and the Eigen values were greater than 1 which were over the cut off values.

In the same way, significance of the correlation matrix was analyzed through Bartlett's test of sphericity. The results were statistically significant (χ^2 = 3111.158, p = 0.000) which indicated its suitability for factor analysis. The KMO measure of sampling adequacy (MSA) was 0.914 which considers the appropriateness of sample for factor analysis. And, the factor solution acquired from 5 factors for the items explained 65.05 percent of the variation in the data.

Nonetheless, in this initial EFA, one item from GI (GI6) and two items from EP (EP4, EP5) failed to load on any factor. Whereas, three items from CER (CER4, CER5, CER6), one item from GF (GF5), two items from GI (GI3, GI7) cross loaded onto a factor different from its original factor. However, EP5 tends to fall in its own place when removing items with lower factor loadings. Hence, the eight items were removed for further analysis i.e. CER4, CER5, CER6, GF5, GI3, GI6, GI7 and EP4.

EFA was again conducted excluding these items. The results of new analysis confirmed the five factor structure which is presented below:

Table 4. 4

KMO and Bartlett Test

KMO and Bartlett Test	Result
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.908
Bartlett's Test of Sphericity	
Approx. Chi-Square	2144.90
Df	231
Sig.	0.000
Variance Explained	70.57

Note: From Survey 2024

Table 4.4 shows KMO value of 0.908 which indicated that the criteria of sampling adequacy was met. The five dimensions explained a total of 70.57 percent of the variance among the items in the study. The Bartlett's test of sphericity was statistically significant ($\chi^2 = 2131.592$, p = 0.000), showing that the correlation matrixes were appropriate for a factor analysis.

Table 4. 5

EFA Results

Items	1	2	3	4	5	Communality
Corporate Environment Responsibility						
CER1					0.818	0.743
CER2					0.821	0.774
CER3					0.612	0.617
CER7					0.558	0.663
Green Finance						
GF1			0.761			0.742
GF2			0.761			0.803
GF3			0.680			0.726
GF4			0.637			0.786
Green Innovation						
GI1		0.700				0.685
GI2		0.576				0.653
GI4		0.801				0.754
GI5		0.758				0.702
Environment Performance						
EP1				0.771		0.772
EP2				0.695		0.682
EP3				0.616		0.579
EP5				0.503		0.564
EP6				0.634		0.621
Firm Performance						
FP1	0.779					0.721
FP2	0.827					0.762
FP3	0.825					0.767
FP4	0.669					0.593
FP5	0.718					0.816
Eigen Value	9.965	1.883	1.448	1.182	1.047	-

Note: CER: Corporate Environment Responsibility; GF: Green Finance; GI: Green

Innovation; EP: Environmental Performance; FP: Firm Performance.

Table 4.5 depicts the factor loading structure of the EFA model, indicating that all items were ideally convergent on their corresponding latent constructs. Here, Factor 1 included items CER1, CER2, CER3, CER7; factor 2 included GF1, GF2, GF3, GF4; factor 3 included GI1, GI2, GI4, GI5; factor 4 included EP1, EP2, EP3, EP5, EP6 and factor 5 included FP1, FP2, FP3, FP4, FP5. All communality values were also above the minimum threshold of 0.5 and the Eigen values were greater than 1. Hence, the results of EFA showed that the factors had a good level of validity, suggesting better fit for the data. For further validation, CFA was assessed.

Confirmatory Factor Analysis

This study employed Covariance based Structural Equation Modelling (CB-SEM) for analyzing relationships between constructs using maximum likelihood estimation method. Confirmatory Factor Analysis (CFA) is useful for validating the factor structure of observed variables (Hair et al., 2012; Brown, 2015). In this study, CFA was carried out from the factor structure driven by the EFA on the different data set i.e. from 276 samples.

Further, the different model-fit indices like chi-square divided by degree of freedom (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR) were examined to check the goodness-of-fit of the model (Iacobucci, 2010). After estimating the measurement model of the study, composite reliability, convergent and discriminant validity were estimated based on the factor loadings derived from the measurement model (Cheung et al., 2023). Before examining the measurement and structural model, various alternative models were tested to identify the one with best fit for the study.

Alternative Model Testing

According to Bollen and Long (1992), estimating several alternative models helps to explore plausible structures rather than examining only a single research model. Further, Werner and Schermelleh-Engel (2010) argued that these comparisons enable to ascertain if a specific model fits significantly better or worse compared to competing models. For this reason, the hypothesized model i.e. CER effecting EP and FP through GF and GI was compared with other rival models presented in Tables 4.6 and 4.7

To compare the measurement models, one-factor, four-factor with higher order construct and five-factor models were considered. The one-factor model aggregates all the items into a single latent construct assuming a unified concept. On the other hand, four-factor model considers GF and GI as a component of a second-order factor representing green components. Here, GF and GI were considered for higher-order construct since they are both sustainability initiatives that organizations adopt. Similarly, five-factor model represents each variable separately which was also a base model of this study. This model helps to examine the individual effects and analyze the relationships in detail.

Table 4. 6

Comparison of Alternative Measurement Models

Model	Details	χ^2	Df	$\Delta\chi^2$	χ^2/df	RMSEA	GFI
1	One factor	685.91	152		4.513	0.113	0.764
2	Four factor	413.90	144	272.01	2.874	0.083	0.855
3	Five factor	391.45	142	22.45	2.757	0.080	0.862

Note: From Survey 2024

Table 4.6 demonstrates the comparison of alternative measurement models. It can be observed that the χ^2/df value of five-factor model (2.757) was lower than that of the

one-factor (4.513) and four-factor (2.874) models, which also fell below the accepted

threshold (CMIN/DF<3). Whereas, the RMSEA value i.e. 0.08 in Model 3 was

slightly better than Model 1 (0.113) and Model 2 (0.083). Further, GFI of Model 3

(0.862) was higher than that of Model 1 (0.764) and Model 2 (0.855), indicating a

better fit for the study. When comparing the five-factor model with one and four-

factor models, the difference in chi-square values ($\Delta \chi^2 = 22.45$, df = 142) as well as

smaller RMSEA and GFI values suggested that the five-factor was a better fit for the

data. Hence, Model 3 was adopted for further analysis.

Table 4. 7

Comparison of Alternative Structural Models

Model	Details	χ^2	Df	$\Delta \chi^2$	χ^2/df	RMSEA	GFI
1	CER -> GF -> GI -> EP -> FP	447.27	148		3.022	0.086	0.846
2	CER <-> GF <-> GI <-> EP <-> FP	403.29	145	43.98	2.781	0.080	0.858
3	CER -> GF+GI -> EP+FP	394.01	143	9.29	2.755	0.080	0.862
4	Serial Mediation with EP as DV	288.92	98	105.09	2.948	0.084	0.881
5	Serial Mediation with FP as DV	261.04	84	27.88	3.108	0.088	0.883

Note: CER: Corporate Environment Responsibility; GF: Green Finance; GI: Green

Innovation; EP: Environmental Performance; FP: Firm Performance; DV:

Dependent Variable; RMSEA: Root Mean Square Error of Approximation; GFI:

Goodness of Fit.

Table 4.7 illustrates the comparison of alternative structural models. Model 5

exhibited the lowest chi-square value (261.04), degree of freedom (84) and higher

GFI (0.883), implying a relatively good model fit. However, with a slight difference,

Model 3, which was a base model of this study, also demonstrated parsimonious

representation with a CMIN/DF value of 2.755, RMSEA of 0.080 and GFI of 0.862.

Meanwhile, Models 1, 2 and 4 had comparatively worse fits. The mediating role of

GF and GI between CER and both EP and FP in model 3 aligned with legitimacy

theory. Thus, Model 3 was selected as the preferred structural model for hypotheses testing.

Measurement Model

The measurement model is pivotal for assessing the validity and reliability of the instrument used in the study (Hair et al., 2017). This phase is crucial in ensuring structural models' robustness and accuracy (Iacobucci, 2010). Before estimating the measurement model, EFA was conducted as a preliminary step. This initial assessment ensured the internal consistency of observed variables representing its latent constructs. Therefore, this study estimated the measurement model based on the results of EFA.
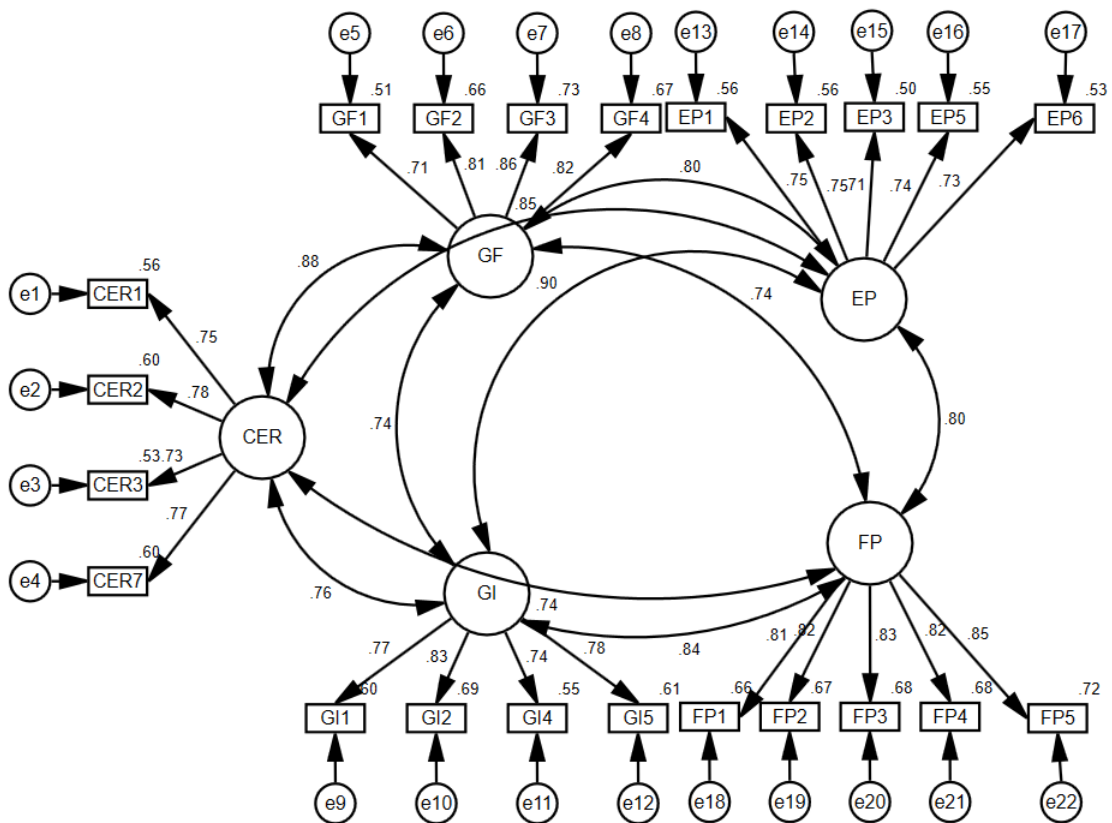
Figure 4. 1

Original Measurement Model

Final Measurement Model

The result of the initial CFA revealed that all items had outer factor loadings above

the acceptable threshold of 0.5 (Hair et al., 2017). Various model fit indices also need

to be considered to evaluate the model fit of CFA. Several model fit indicators, such

as CMIN/DF, RMSEA, GFI, TLI, CFI and SRMR needed to meet certain criteria for

estimation of structural model. However, the values of CMIN/DF and RMSEA were

notably higher where GFI and TLI were less than the acceptable thresholds, resulting

in the development of a new measurement model.
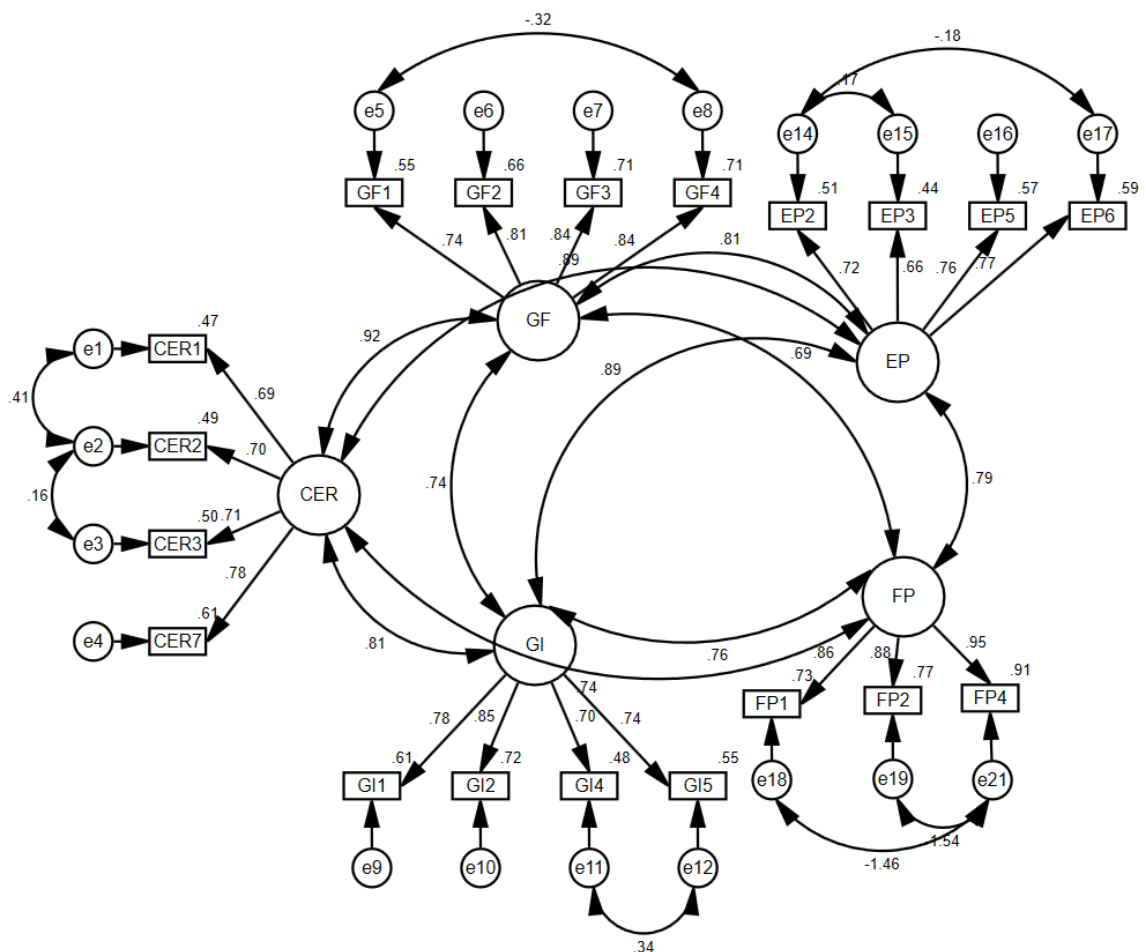
Figure 4. 2

Final Measurement Model

In the revised model, adjustments were made by removing certain items and co-

varying error terms, leading for the development of a new measurement model. To

achieve a good model fit, highly correlated items were deleted: one item from EP (EP1), and two items from FP (FP3 & FP5). Additionally, error terms of CER1, CER2, CER3, GF1, GF4, GI4, GI5, EP2, EP3, EP6, FP1, FP2 and FP4 were co-varied to estimate the final model, as shown in Figure 4.2. Therefore, considerable improvements in model fit indices were observed. Table 4.8 provides the results of before and after modification indices of the proposed final measurement model of the study.

Table 4. 8

Comparison between Fit Indices

| Model Fit Index	Authors	Threshold Values	Before Modifications	After Modifications
CMIN/DF	Garver and Mentzer (1999)	Less than 3	3.092	1.911
RMSEA	Browne and Cudeck (1992)	Less than 0.06	0.087	0.058
GFI	Hooper et al. (2008)	More than 0.90	0.814	0.909
TLI	Bentler (1990)	More than 0.90	0.888	0.954
CFI	Bentler (1990)	More than 0.90	0.904	0.964
SRMR	Hu and Bentler (1999)	Less than 0.08	0.053	0.038

Note: CMIN/DF: Chi-Square divided by Degree of Freedom; RMSEA: Root Mean Square Error of Approximation; GFI: Goodness of Fit Index; TLI: Tucker-Lewis Index; CFI: Comparative Fit Index; SRMR: Standardized Root Mean Square Residual.

After using modification indices of the measurement model, there was a significant improvement in CMIN/DF from 3.092 to 1.911, RMSEA from 0.087 to 0.058, GFI from 0.814 to 0.909, TLI from 0.888 to 0.954, CFI from 0.904 to 0.964 and SRMR from 0.053 to 0.038. The measurement model exhibited a good model fit. Thus, this study applied a modified model for estimating structural model of the study.

Reliability and Validity Analysis

The measurement model evaluation included testing internal consistency, convergent validity, and discriminant validity. As per Hair et al. (2014), factor loading values of 0.5 and above are considered significantly deemed appropriate. Composite reliability and Cronbach alpha values were calculated to examine the internal consistency. According to Cheung et al. (2023), variables had to have CR and CA values greater than 0.7 to be considered reliable.

Similarly, convergent and discriminant validity were assessed to test the validity of the measurement model. Convergent validity refers to the correlations among highly related constructs. As suggested by Hair et al. (2014), AVE values should be greater than 0.5 to ensure adequate convergent validity. Discriminant validity states that a construct being measured should be distinct from other variables in the study (Hair et al., 2010). This study applied the HTMT ratio for testing discriminant validity. A HTMT ratio below 0.9 is generally considered acceptable for discriminant validity between two reflective constructs (Henseler et al., 2015). Results of the study are depicted below:

Table 4. 9

Reliability and Validity Analysis

Constructs	Indicators	Loadings	AVE	CR	CA
Corporate Environment Responsibility	CER1	0.689	0.520	0.812	0.841
	CER2	0.700			
	CER3	0.709			
	CER7	0.782			
Green Finance	GF1	0.744	0.659	0.885	0.875
	GF2	0.811			
	GF3	0.845			
	GF4	0.842			
Green Innovation	GI1	0.782	0.593	0.853	0.862
	GI2	0.849			
	GI4	0.696			
	GI5	0.745			
Environment Performance	EP2	0.716	0.523	0.817	0.723
	EP3	0.662			
	EP5	0.755			
	EP6	0.771			
Firm Performance	FP1	0.856	0.804	0.925	0.848
	FP2	0.877			
	FP4	0.954			

Note: From Survey 2024

Table 4.9 portrays the reliability and convergent validity of the instruments adopted.

The CR and CA of each construct surpassed the threshold of 0.7 which denoted that

the instrument used for this study was considered reliable. AVE exceeded 0.50

confirming that items of same constructs were highly inter-correlated.

Table 4. 10

Discriminant Validity

Variables	CER	GF	GI	EP
CER	1			
GF	0.891	1		
GI	0.761	0.728	1	
EP	0.842	0.822	0.868	1
FP	0.788	0.775	0.824	0.872

Note: CER: Corporate Environment Responsibility; GF: Green Finance; GI: Green Innovation; EP: Environmental Performance; FP: Firm Performance.

Table 4.10 displays the results of discriminant validity test using HTMT method. Here, all the correlation coefficient values were less than 0.9, implying variables were distinct from each other. Hence, the measurement model indicated a good model fit.

Structural Model

The structural model was estimated after the confirmation of validity and reliability of the instrument. Figure 4.3 and table 4.11 represent path analysis and test the hypotheses of the study.

Figure 4. 3

Structural Model

Table 4. 11

Summary of Hypotheses Testing

S.N.	Hypotheses	Estimate	S.E.	C.R.	P-Value	Remarks
H1a	CER->EP	0.785	0.313	2.504	0.012	Supported
H1b	CER->FP	0.793	0.344	2.304	0.021	Supported
H2a	CER->GF	0.908	0.079	11.511	0.000	Supported
H2b	CER->GI	0.947	0.339	2.799	0.005	Supported
H3a	GF->EP	-0.279	0.245	-1.139	0.255	Not Supported
H3b	GF->FP	-0.232	0.272	-0.856	0.392	Not Supported
H4a	GI->EP	0.393	0.125	3.151	0.002	Supported
H4b	GI->FP	0.555	0.149	3.720	0.000	Supported
H5	GF->GI	-0.165	0.331	-0.500	0.617	Not Supported

Note: S.E: Standard Error; C.R: Critical Ratio

Table 4.11 presents the relationships between the constructs. Here, H1a examines whether CER is significantly related to EP. The result revealed that CER has a positive significant effect on EP (β = 0.785, t = 2.508, p = 0.012). Hence, H1a was supported. In the same way, H1b examines whether CER significantly affects FP. The result showed that CER has also a positive significant effect on FP (β = 0.793, t = 2.304, p = 0.021). Therefore, H1b was also supported. Whereas, H2a examines whether CER significantly effect GF. It was found that CER has a positive significant effect on GF (β = 0.908, t = 11.511, p = 0.000). Thus, H2a was supported. Similarly, H2b examines whether CER is significantly related to GI. The finding depicted that CER has a positive significant effect on GI (β = 0.947, t = 2.799, p = 0.005). Consequently, H2b was supported.

Likewise, H3a examines whether GF is significantly related to EP. The result exhibited that GF has a negative insignificant effect on EP (β = -0.279, t = -1.139, p = 0.255). Hence, H3a was not supported. Moreover, H3b examines whether GF is significantly related to FP. It was discovered that GF has also a negative insignificant effect on FP (β = -0.232, t = -0.856, p = 0.392). Consequently, H3b was also not supported. Furthermore, H4a examines whether GI is significantly related to EP. The result showed that GI has a positive significant effect on EP (β = 0.393, t = 3.151, p = 0.002). So, H4a was supported. In addition, H4b examines whether GI is significantly related to FP. It was observed that GI has a positive significant effect on FP (β = 0.555, t = 3.720, p = 0.000). Hence, H4b was supported. Finally, H5 examines whether GF is significantly related to GI. It is revealed that GF has a negative insignificant effect on GI (β = -0.165, t = -0.500, p = 0.617). Thus, H5 was not supported.

Mediation Analysis

This section presents the mediating role of Green Finance (GF) and Green Innovation (GI) in the relationship between Corporate Environment Responsibility (CER) and both Environmental Performance (EP) and Firm Performance (FP).

Table 4. 12

Mediation Analysis

Hypothesis	Direct Effect	Indirect Effect	Confidence Interval		P-value	Conclusion
			Lower Bound	Upper Bound		
CER->GF->EP	0.785 (0.012)	-0.253	-3.116	0.294	0.522	No Mediation
CER->GF->FP	0.793 (0.021)	-0.211	-2.476	0.434	0.665	No Mediation
CER->GI->EP	0.785 (0.012)	0.372	0.179	4.501	0.015	Partial Mediation
CER->GI->FP	0.793 (0.021)	0.526	0.142	6.604	0.028	Partial Mediation

Note: From Survey 2024

Table 4.12 represents the mediating role of GF and GI on the relationships between CER and EP, CER and FP. The results revealed a positive significant direct effect of CER on EP in the presence of mediator GF ($\beta = 0.785$, $p = 0.012$). However, the indirect effect of CER on EP passing through GF as a mediator was negative and insignificant ($\beta = -0.253$, $p = 0.522$). Hence, there was no mediation effect of GF in the relationship between CER and EP, not supporting H6.

Similarly, the direct effect of CER on FP was found significant in the presence of mediator GF ($\beta = 0.793$, $p = 0.021$). The indirect effect of CER on FP passing through GF was also negatively insignificant ($\beta = -0.211$, $p = 0.665$), indicating that GF does not mediate the relationship between CER and FP, not supporting H7.

While analyzing the mediating role of GI, the study found a positive significant mediating effect of GI on the relationship between CER and EP (β = 0.372, p = 0.015), confirming GI indirectly mediates the relationship between CER and EP, supporting H8. In the same manner, GI has a positive significant indirect effect between CER and FP (β = 0.526, p = 0.028) which indicated that GI also indirectly mediates the relationship between CER and FP, supporting H9.

CHAPTER V

SUMMARY, DISCUSSIONS AND IMPLICATIONS

This chapter encompasses the summary of findings elaborated in chapter four and an in-depth discussions of research results with previous relevant studies and theory. Moreover, conclusions and implications are pointed out based on the findings. At the end of this chapter, the critique of this study is presented.

Summary of Findings

The main objective of this study is to analyze the effect of corporate environment responsibility on environmental and firm performance of Nepalese banks and financial institutions. To meet this objective, CB-SEM was applied. In this section, a summary of those findings has been presented.

From the demographic profile analysis of the respondents, it was found that most respondents were male, with a high representation from 31-40 age group. The majority of participants held Master's and above degrees with officer-level positions in their respected BFIs, and the highest number of participants had 6 or more years of working experience in the banking sector. Regarding CER involvement, the majority of employees working in BFIs expressed that they were actively involved in CER activities. This implies a strong commitment to environmental responsibility among BFIs. However, some participants also opined that their organizations were partially involved or not involved at all in CER activities.

Similarly, mean values from descriptive analysis indicated average perception levels on Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP) and Firm Performance (FP) of BFIs whereas standard deviation showed relatively low variation among the responses

for each indicator. Likewise, the correlation matrix demonstrated that CER and GI, CER and EP, CER and FP, GF and GI, GF and EP, GF and FP, GI and FP, EP and FP were moderately correlated while strong positive correlations were observed between CER and GF and GI and EP.

Furthermore, EFA and CFA were conducted using separate datasets to analyze the relationships between the variables. EFA was the first step performed to determine factor structures whereas CFA was the second step used to validate the output provided by EFA. From the EFA results, it was found that all items loaded onto their own factors except for eight items having cross and lower factor loadings (CER4, CER5, CER6, GF5, GI3, GI6, GI7 and EP4). After dropping these eight items, CER included four items with factor loadings ranging from 0.558 to 0.821, GF comprised four items with factor loadings ranging from 0.637 to 0.761, GI contained four items with factor loadings ranging from 0.576 to 0.801, EP included five items with factor loadings ranging from 0.503 to 0.771 and FP comprised five items with factor loadings ranging from 0.669 to 0.827. In addition, KMO MSA value (0.908), Bartlett's test of sphericity (χ^2 = 2144.90, p = 0.000), Communalities (ranging from 0.564 to 0.816) and Eigenvalues (ranging from 1.047 to 9.965) met their recommended values denoting good fit for further analysis.

Then, a two-stage SEM technique was applied to analyze data. Initially, CFA was conducted to assess the reliability and validity of the measurement model. Adjustments were made to the outcomes gained from EFA by deleting some items (EP1, FP3, & FP5) and co-varying error terms. Afterwards, the measurement model demonstrated a parsimonious fit since CMIN/DF (1.911), RMSEA (0.058), GFI (0.909), TLI (0.954), CFI (0.964), SRMR (0.038), AVE (ranging from 0.520 to 0.804), CR (ranging from 0.812 to 0.925), CA (ranging from 0.723 to 0.875), HTMT

Ratio (ranging from 0.728 to 0.891) reported within their respective criteria. Following the confirmation of measurement model, the structural model was estimated in the second stage to examine the relationships between the variables.

When analyzing the relationships between the constructs, it was found that CER has a positive significant effect on GF and GI. Likewise, its effect on EP and FP was also positive and significant. Conversely, GF had a negative insignificant effects on EP and FP whereas GI demonstrated positive significant effects between these relations. Also, GF had a negative significant effect on GI. Regarding mediation analysis, GF did not mediate the relationships between CER and both EP and FP. On the other hand, GI had an indirect mediating effects on the relationships between CER and both EP and FP.

Discussions

This study examined the relationships among Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP) and Firm Performance (FP). These relationships are vital in examining how corporate environmental initiatives like green financial practices and sustainable innovation effects environmental and firm performance. The study's findings supported as well as contradicted previous studies. Here, the empirical findings of this study are discussed based on prior research and theory.

Firstly, this study confirms that CER significantly effects GF and GI, implying that involving in environmentally responsible activities encourages BFIs to adopt sustainable financing and green technological innovation. This result aligns with previous research which highlights that CSR leads to finance eco-friendly projects (Wang et al., 2020; Ye & Dela, 2023) and technological advancements for

sustainability (Crifo & Sinclair-Desgagne, 2013; Liu et al., 2022). This finding could be due to increasing environment regulatory pressures and societal expectations which drive Nepalese BFIs to integrate CER to maintain their legitimacy through financing environment-friendly projects and implementing technology-driven banking activities. Therefore, banks should prioritize and invest more in CER initiatives to achieve long-term financial stability and environmental sustainability.

Similar to this, the results reveal significant effects of CER on EP and FP. It can be inferred that implementing environmentally responsible activities helps banks in increasing revenue, improving reputation as well as reducing energy consumption, and adhering to environmental regulations. These findings are related to earlier studies (Huynh, 2020) that discovered a positive influence of CER on EP and FP. Nevertheless, Kraus et al. (2020) and Awawdeh et al. (2021) claimed that CSR does not directly influence EP. These contradicting results might be because of differences in the population adopted for the studies. Kraus et al. (2020) and Awawdeh et al. (2021) focused on the manufacturing and energy sectors while this study has been conducted in BFIs. Also, this study specifically emphasizes on CER, rather than the broader concept of CSR.

Despite previous research argued that eco-friendly practices, such as green bonds issuance positively impact firm value (Chariri et al., 2018; Zhou & Cui, 2019; Wang et al., 2020; Xiliang et al., 2023) and environmental performance (Xu et al., 2020; Guang-Wen & Siddik, 2022; Yan et al., 2022; Zhang et al., 2022; Chen et al., 2022), this study's findings differ from these claims. It is found that GF has a negative insignificant effects on EP and FP which means that financing different eco-friendly projects like renewable energy, and green development projects might not immediately improve organizational and environmental sustainability. This result

could be because environmental regulations for Nepalese BFIs were introduced only in 2018 (NRB, 2018), so the effect of GF on EP and FP may not yet be visible. In support of this argument, Aryal et al. (2022) stated that GF is still in a nascent stage in the Nepalese banking sector and is primarily practised to fulfill policies directed by the central bank. Huang et al. (2023) also documented that overall performance of organization might suffer due to the higher costs associated with implementing green initiatives. This suggests that policymakers and BFIs need to focus on enhancing the implementation and integration of GF practices to achieve significant effects on EP and FP.

On the other hand, this study states that GI positively effects EP and FP, signifying GI activities like online banking, mobile banking, online customer services help BFIs achieve sustainable environmental and financial outcomes. This finding is consistent with prior research (El-Kassar & Singh, 2017; Chuang & Huang, 2018) which confirms that participation in sustainable business practices, such as GI, improves environmental and financial performance. This recommends that the banking industry gain a competitive advantage by adopting innovative environmental strategies.

Additionally, the result identifies that GF has a negative insignificant effect on GI, indicating that GF does not contribute to promote GI. This could be because Nepalese banking institutions may not have fully integrated sustainability goals into their financing activities. This finding contradicts the study of Huang et al. (2022) and Irfan et al. (2022) who found that GF significantly influences to firm's GI. The inconsistent results might be due to the application of different methodological approaches. The study of Huang et al. (2022) and Irfan et al. (2022) was conducted on secondary data while this study is based on a primary survey.

Moreover, this research found that GI acts as a mediator between CER and EP and CER and FP which supports the outcomes of earlier studies (Xu et al., 2022; Sarfraz et al., 2023) that demonstrate GI significantly explains the relationships between CER and both EP or FP. This indicates that focusing on environmental responsibility leads to more green technological innovation and tends to an improvement in EP and FP of BFIs. In other words, sustainable activities like online banking, mobile banking and online customer service are crucial in enhancing the relationship between CER and both EP and FP. Meanwhile, this study revealed that GF does not mediate the relationship between CER and both EP and FP. It means that, although GF is regarded as an important tool of environment sustainability, it does not significantly effect the relationships of CER and both EP and FP of the BFIs. It infers that though environmental regulation and related laws have been regulated, Nepalese BFIs are still in the early stages of implementing sustainable financing regulations (Aryal et al., 2022; Mishra, 2023). This finding contrasts with Zhang et al. (2022) and Yan et al. (2022), who assert the existence of a mediating effect of GF on the relationship between CER and EP in the banking sector. However, existing studies have yet to explore GF as a mediator in the relationship between CER and FP. Therefore, GI is perceived as the primary organizational resource for achieving corporate environmental sustainability and boosting their performance. The results of this study can be utilized by BFIs to focus on developing green technology and supporting environmentally friendly actions.

In addition, the diverse perspective on the involvement of BFIs in CER implies that survey participants might have limited awareness and knowledge regarding an organization's engagement in environmentally responsible activities. This finding aligns with Tandukar et al. (2021) who stated that there is a lack of

awareness about sustainable banking practices among bankers. So, banking institutions could provide training and proper communication to employees to foster green banking practices.

Furthermore, the study's findings are congruent with the legitimacy theory (Dowling & Pfeffer, 1975; Deegan, 2019) which illustrates that implementing CER activities, as a social and regulatory pressure engage banking organizations in sustainable technological advancement to promote social acceptance and environmental sustainability. This study revealed that GI mediates the relationships between CER and both EP and FP which indicates that BFIs strategically adopt environment responsible activities through implementing sustainable technologies to boost their legitimacy. Thus, the study's findings validated legitimacy theory by representing how BFIs that incorporate CER through GI initiatives into their banking operations help them gain, maintain and restore legitimacy while also aiding them to obtain overall environmental and financial sustainability. This also corroborates with prior similar studies that have applied legitimacy theory (Dai et al., 2022; Guang-Wen & Siddik, 2022; Chen et al., 2022; Xiliang et al., 2023). Therefore, this study adds insights into the relationships among CER, GF, GI, EP and FP highlighting both consistencies and differences with prior studies and theory.

Conclusion

In light of the research findings, it is evident that CER plays a significant role in affecting environmental and firm performance. The results also revealed that CER significantly effects GF and GI which highlights the importance of prioritizing environmental responsibility through sustainable financing and technological advancements in banking practices. Further, the findings illustrate that GF does not have significant effects on GI, EP, and FP, however, GI exhibits significant effects on

these relationships. This suggests that fostering innovation as a green practice could be more conducive to enhance environmental and firm performance.

Furthermore, it is observed that GF did not serve as a mediator in the relationships among CER and both EP and FP. On the contrary, GI emerged as an indirect mediator, suggesting that prioritizing environmental responsibility activities leads banks to commit in green innovative activities which in turn contribute to firm success and benefit the environment.

Moreover, majority of respondents expressed that their BFIs are highly involved in environment responsible activities which signifies a commitment to environmental sustainability. However, it is noteworthy that some participants perceive partial or no engagement in CER activities within their organizations. This reflects varying levels of understanding and engagement in environmental responsibility within BFIs. This also indicates that participants of this survey may have limited awareness of their institution's sustainability activities.

In a nutshell, this study underscores the crucial role of CER in driving environmental and firm performance. As there's a growing concern about sustainability, integrating CER practices into corporate strategies can lead to achieve long-term success and contribute to a sustainable future.

Implications

The empirical findings of this study serve existing literature in several theoretical and practical aspects which are illustrated below:

Theoretical Implications

From the theoretical perspective, this study contributes to the existing research on Corporate Environment Responsibility (CER), Green Finance (GF), Green Innovation (GI), Environmental Performance (EP) and Firm Performance (FP) in several ways. The major theoretical contribution is this study is one of the earliest studies to examine the relationships among CER, GF, GI, EP and FP into a single research model in the context of BFIs. In previous research, mostly GI or GF has been examined separately as the mediating variable while this study examines the parallel mediation effect of GF and GI in the relationships between CER and both EP and FP.

Similarly, this study contributes to the CSR literature by specifically focusing on CER, a dimension that has received limited attention in research. By focusing on CER, this study deepens the understanding of how organizations integrate environmental sustainability practices in the broader context of CSR. Also, the perception of employees working in different classes of BFIs has been undertaken in this study while other research mainly focus on the bankers from commercial banks. Finally, this study demonstrates how banking institutions in developing countries like Nepal could adopt CER, GF and GI to improve firm's environmental sustainability.

Practical Implications

The findings of this research have some practical managerial implications for the banking industry and policymakers aiming to enhance their environmental responsibility and financial performance.

Prioritizing Investments in GI

The study highlights the importance of prioritizing investments in GI as a
commitment to CER that leads to environmental and financial benefits. Consequently,
BFIs could prioritize investments in research and development of green technologies,
collaborate with green suppliers for innovative initiatives and integrate GI practices
into banking operations.

Evaluating Sustainable Financial Practices and their Environmental Impact

Empirical evidence of this study showed that GF does not have direct as well as
indirect effects on EP and FP which suggests the need for organizations to re-evaluate
their green financial practices. Examining how their financial practices affect the
environment can help organizations align their financial strategies with environmental
goals and improve overall firm performance. Hence, BFIs could conduct
comprehensive assessments of their financial practices to identify areas where
improvements can be made to reduce environmental impact and promote the firm's
success.

Proper Communication and Training to Employees

Employees from the same banking institutions have diverse perspectives on
involvement of their banks in CER activities. Such different viewpoints could be due
to limited awareness, involvement, or understanding of their institution's eco-friendly
activities. Therefore, this emphasizes the need for proper communication regarding
environmental regulations and practices within BFIs, training to promote
sustainability in banking activities and actively engaging employees on CER
initiatives.

Enhancing CER in Banking Industry

The findings indicate different levels of CER involvement within banking institutions, suggesting a potential need for stricter implementation of ESRM policies or any other environmental regulations. Policymakers like the central bank could focus on promoting CER to improve environmental and financial performance in the banking sector. Strengthening regulations and compliance can compel banking institutions to prioritize environmental sustainability initiatives and incorporate them more robustly into their operations.

Critique of the Study

This study has also some limitations availing future researchers of a potential research idea. Firstly, this study may not adequately address contextual factors that could influence the relationships among CER, GF, GI, EP and FP. Future researchers could incorporate a moderated mediation model to gain a more nuanced understanding of these relationships. Some moderating variables could be the organization's characteristics, employees' green behaviour, environmental regulations or risk, perceived organizational support etc. Secondly, conducting multi-group analysis based on respondents' demographic profiles and across various classes of BFIs could help to investigate differences across subpopulations.

Thirdly, this study applied a cross-sectional research design, and it is uncertain whether the relationships among CER, GF, GI, EP and FP of banking organization provides the same results over time. As a result, future researchers could pursue a longitudinal research approach to examine whether outcomes change or remain constant over time. Fourthly, data for this study was obtained from only 38 BFIs out of 55, while future researchers may also collect data from remaining banks and financial organizations or include other non-banking institutions to observe the

changes in results. Lastly, while the study provides valuable insights into the

relationships among CER, GF, GI, EP and FP, there might be methodological

limitations and areas for improvement that can be addressed in future research to

strengthen the validity and generalizability of the findings.

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APPENDICES

Questionnaire

Dear Respondents,

I am an MPhil Student at Kathmandu University School of Management (KUSOM) carrying out research entitled **"Effect of Corporate Environment Responsibility on Environmental and Firm Performance of Nepalese Banks and Financial Institutions"** for the partial fulfillment of my MPhil Degree. I would like to request a few moments of your time, approximately 4-5 minutes to complete the questionnaire. Please be assured that all the information provided will be kept confidential and used solely for my academic purposes. Your thoughtful and sincere response holds great significance in completing my study.

Thank you for your participation.

Section A

1. Do you work in Nepalese banks and financial institutions?

a. Yes

b. No

2. Which Nepalese banks and financial institutions are you currently working for?

a. Commercial Bank

b. Development Bank

c. Finance Company

d. Nepal Infrastructure Bank

e. None

3. Name of Your Workplace…………………………….

4. Job Position………………………………….

5. Work Experience a. 2 to Less than 4 Years   b. 4 to Less than 6 Years

c. 6 years and Above

6. Gender

a. Male

b. Female

c. Others

7. Age

a. 20-30 Years

b. 31-40 Years

c. 41 Years and Above

8. Education Level

a. High School

b. Bachelors Level

c. Masters and Above

9. What is the level of involvement of your organization in environmental responsibility initiatives?

a. Actively involved

b. Partially Involved

c. Not Involved

Section B

Please read each statement carefully and tick (√) on the most appropriate answer that indicates your level of agreement or disagreement with each of the following statements.

(1 indicates "Strongly Disagree" and 5 indicates "Strongly Agree")

S.N.	Corporate Environment Responsibility	1	2	3	4	5
CER1	My bank emphasizes activities relevant to nature and environmental protection.					
CER2	My bank engages in green initiatives to fulfill its obligation to the environment and society.					
CER3	My bank adopts renewable energy sources for banking operations.					
CER4	My bank minimizes energy usage from daily operations.					
CER5	My bank has clear and concrete environmental policies.					
CER6	The bank's budget planning includes the concerns of environmental investment or procurement.					
CER7	My bank has integrated its environmental plan, vision, or mission to its marketing events.					
	Green Finance					
GF1	My bank invests more in renewable energy sectors.					
GF2	My bank prioritizes to finance in green sector development projects.					
GF3	My bank allocates specific budget for green projects and initiatives.					
GF4	My bank increases the amount to invest on ecofriendly projects.					
GF5	My bank invests more resources in recycling and recyclable products.					
	Green Innovation					
GI1	My bank reuses and recycles used materials.					
GI2	My bank adopts cleaner or renewable technology to make savings such as energy, water, waste.					
GI3	My bank redesigns and improves products or services to meet new environmental criteria or directives.					
GI4	My bank uses less or non-polluting/toxic materials that are environmentally friendly.					

GI5	My bank uses materials that are easy to recycle, reuses, and decompose.					
GI6	My bank invests in R&D to produce quality green products.					
GI7	My bank uses digitalized methods/procedures for service delivery.					
	Environmental Performance					
EP1	My bank is lowering the carbon footprint from banking activities.					
EP2	My bank is reducing energy consumption from banking activities.					
EP3	My bank is meeting its adherence to environmental regulations.					
EP4	My bank is delivering the employees' training on energy conservation and environmental preservation.					
EP5	My bank is collaborating with green suppliers and organizations.					
EP6	My bank is promoting environmentally friendly technologies.					
	Firm Performance					
FP1	The implementation of environmental initiatives has contributed to notable increase in my bank's net profit margin.					
FP2	Return on investment of my bank has increased after environmental initiatives.					
FP3	My bank's profitability has surpassed that of our competitors due to eco-friendly activities.					
FP4	Reputation of my bank has significantly improved through sustainable operation.					
FP5	My bank's market position has strengthened by our commitment to eco-friendly practices.					