

Integrating Green Finance, Corporate Social Responsibility, and Green Logistics for Improved Net Zero Emission and Firm Performance

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Abstract

As global pressure intensifies for the industries to reduce carbon emissions, businesses are increasingly adopting green practices to achieve their environmental goals. This study examines the interrelationship of green finance, corporate social responsibility (CSR) activities, and green logistics towards achieving net zero emissions and their effects on financial performance in the light of growing international concerns for climate change. This study intends to answer how these three strategic pillars of green finance, CSR, and green logistics synergistically work towards environmental sustainability while increasing the organizations integrated bottom line. As part of CSR, there is a growing concern for the ethical treatment and social reputation which must be bestowed by businesses which improve stakeholder relations. Ethically responsible companies reduce their carbon emissions and spend less on energy due to increased investments in green practices. The findings of this study elucidate that green finance has a substantial role in implementation of CSR activities linked with community, employees, and customers. The findings also illustrated that green logistics have positive links with net zero emission and CSR activities. This research underscores that the integration of these practices makes it possible not only to achieve the global goal of net zero emissions but also increasing operational efficiency. The current study provides novel perspective by examining aforementioned variables relationships and providing sound implications for practitioners and governmental bodies.

Keywords: Green finance, Green logistics, Corporate Social Responsibility, Net zero emissions, financial performance

1. Introduction

Green financing has taken an important role in the sustainable development of the global world and the financial institutions since most of them have aligned their activities with the concept of environment sustainability (Arnone & Crovella, 2023; Hunjra et al., 2024). In order to facilitate the shift to a lower carbon economy, many countries have developed policies or frameworks to promote green financing (Di Vaio et al., 2024). The developing economies appear to be gaining from green finance as it contributes in a major way towards sustainable development and achieving net zero emissions. The same goes with green logistics, facilitating the optimization of the supply chain by minimizing the environmental impacts associated with transportation, packaging, and waste disposal (Du et al., 2023).

Recent increases in international trade and other economic activities have increased the focus towards sustainable logistics. The case of emerging economy is interesting since the country is trying to sustain industrial growth to fuel the economy and at the same time, there is a need to implement green logistic strategies to control the impacts of supply chain on environment. (Khan & Yu, 2021). As it stands, green logistics is still in its infancy stage in the country, and it requires more infrastructure funding and legislative assistance to synchronize logistics with the net zero emissions objectives of the state.

As companies start to recognize the importance of sustainability in addressing issues related to employees, customers, and the community, the idea of Corporate Social Responsibility (CSR) is receiving attraction in Pakistan. Businesses can meet international sustainability standards, particularly net zero emissions targets, by implementing green finance and logistics in their operations. Energy conservation, waste reduction, and community development are examples of environmentally conscious practices that improve ecological performance and improve stakeholder relations and corporate image (Deb et al., 2024; Moktadir & Pen, 2024; Rahman & Islam, 2023).

Today, businesses worldwide are under pressure to mitigate climate change by adopting more carbon-friendly operating models, moving towards technological advancement (Rafi & Sulman, 2025) and implementing sustainable practices. Given the large carbon footprint of the manufacturing and logistics industries, these sectors are required to further escalate the efforts toward sustainability in order to meet the net zero targets (Mu et al., 2022; Nazir et al., 2023

Ahmed, 2023). This study examines the role of green finance and green logistics, accentuating the emerging focus on Corporate Social Responsibility (CSR) as an imperative element of strategic planning towards achieving sustainable development.

Although CSR's role in sustainability is widely acknowledged in developed economies, there remains a research gap regarding its integration with green finance and green logistics in the context of developing countries (Arnone & Crovella, 2023; Di Vaio et al., 2024; Du et al., 2023; Govindan et al., 2021; Abbas et al., 2023; Khan, Yu & Umar, 2021). Specifically, limited studies have examined how these three components interact to drive net zero emissions. Prior research, such as that conducted by Abbas et al. (2023a, 2023b), has explored CSR and sustainability reporting in emerging economies like Malaysia, revealing the favorable outcome of sustainability initiatives on business performance and image. However, these research studies primarily emphasize environmental reporting rather than analyzing the direct influence of green financing and logistics on CSR-driven environmental outcomes. In Pakistan, this gap is even more evident, as the manufacturing and logistics industries are still in initial implementation phase of sustainability-focused plans. Therefore, this study aims to bridge this gap by examining how green finance and green logistics contribute to net zero emissions in Pakistan's manufacturing and logistics industries, with CSR playing a mediating role.

The environment has been affected over the last decade due to the globalized economy and increase in industrial activities. This has resulted in increased pollution of air and water, incidents of global warming, and accidents linked to industries. With the change and rise in the awareness of these sustainable challenges, the concept of sustainable financial performance seeking might have gotten the attention of business practitioners and analysts alike. Sustainable financial performance relates more to a firm's capability in regard to achieving economic profits in relation to the ecological and social factors they have to shoulder (Bayraktaroglu et al., 2019). It improves the financial situation of a firm, restricts financial dangers, endorses enduring thinking, and improves efficacy in general (Alkhazali et al., 2020; Ibhagui & Olokoyo, 2018).

Firms able to attain financial ease are in a better position to meet their operational expenditures, maintain reserve provisions, and reinvest. Furthermore, these funds enable access to high quality, sophisticated technologies, and human capital which augment operational and decision-making effectiveness. However, profitability is not the sole aspect of true sustainable development.

Everything that a firm does must consider the extent of social impact alongside the scope of environmental impact. A moderate blend between profits and social responsibility alongside caring about the environment fosters stronger trust of stakeholders while creating value on Shahzad et al. (2019) and Bennouri et al. (2018).

Green finance is focused on directing financial capital to assist in eco-friendly activities. It enables organizations to manage their ecological impact more effectively and enhances their reputation and profitability in the future. CSR focusses on a company's social responsibility, stakeholders, and the societal issues it addresses. A company that engages in effective CSR can gain the public's trust, strengthen its position, and run more efficiently. This study examines how a company's sustainable financial performance is impacted by green finance, green logistics, and corporate social responsibility. CSR, on the other hand, is the voluntary effort made by a business to carry out its operations in a manner that is both socially and environmentally responsible. According to Ciftci et al. (2019) and Hameed Al-Ali et al. (2019), clearly defined CSR practices typically enhance stakeholder relations, brand loyalty, and business performance.

This research aims to explore the relationship between green finance, green logistics, and corporate social responsibility (CSR) in the pursuit of sustainable business practices. Understanding the importance of these components in achieving long term success of business enables organizations to develop strategies that are not only profitable but also promote social and environmental responsibility.

The primary objectives of this research are: (1) to examine the impact of green financing on achieving net-zero emissions through CSR initiatives, (2) to assess the role of green logistics in facilitating zero emissions via CSR, and (3) to formulate an integrated strategy that enhances CSR efforts towards achieving net-zero emissions, utilizing green finance and logistics.

2. Literature Review

2.1 Green Financing and CSR

Green financing, encompassing fundings aimed at addressing environmental issues such as deforestation and the reduction of carbon footprints, has emerged as a prominent strategy in tackling challenges associated with Corporate Social Responsibility (CSR) (Deb and Rahman, 2021; Zhang et al., 2019). This form of financing plays a crucial role in alleviating negative

environmental impacts by supporting initiatives related to clean energy, enhancements in energy conservation and sustainable transportation solutions. The significance of green financing is particularly evident in developing nations that are experiencing economic growth but face substantial environmental challenges (Moktadir and Ren, 2020). Through the allocation of capital for environmentally friendly projects, green financing contributes to mitigating these issues while also promoting the attainment of sustainable development goals.

In developing countries, CSR through green financing is advantageous to many groups of stakeholders. Regarding employees, CSR projects financed through green financing may improve their working conditions and job security, which subsequently increases overall satisfaction. For consumers, such practices foster trust and brand loyalty as many shoppers today seek to purchase from environmentally responsible corporates. Communities are economically and environmentally benefitted from green financing through creation of jobs, improvement of the local infrastructure, access to clean water, and reduction of the levels of pollution.

Regardless of the advantages, concerns such as the lack of resources and traditional practices that favor short-term achievements over sustainable long-term efforts still exist. Deb and Rahman (2021) positively note the impact of green financing on CSR, but highlight the need to understand its efficacy in different scenarios.

The association of green financing with CSR has complex interrelations that are not uniformly positive. On one end, various studies highlight the positive impact, while others suggest constraints or adverse effects under particular circumstances (Deb and Rahman, 2021; Moktadir and Ren, 2020; Liu, 2021; Zhang et al., 2019; Nikseresht et al., 2022). Liu (2021) for example noted that green financing resulted in improved outcome of sustainability. It also had some negative impacts on social aspects like labor rights. This illustrates the diverse impacts that green financing has on CSR, which require further contextual inquiry. To give a better comprehension of the situation in advanced setting, this study therefore proposes that green financing increases CSR through the customer, employee, and community lenses within the framework of developing economies like Bangladesh.

H1a: Green financing improves CSR through customers.

H1b: Green financing improves CSR through employees.

H1c: Green financing improves CSR through communities.

2.2 Green Logistics and CSR

As previously noted, green logistics refers to the eco-friendlier scope of management relating to the supply chain, distribution and logistics processes, and it is particularly important in the context of CSR (Moktadir and Ren, 2020; Cheng et al., 2021). Cheng et al. (2021) report that in China, the application of green logistics enhances CSR by improving employee wellbeing and customer loyalty while also fostering public participation. Also, Moktadir and Ren (2020) stated that the green logistics initiatives resulted in lower waste and emission levels, better energy use and improved relations with stakeholders. These findings illustrate how green logistics can bolster CSR by encouraging eco-friendly business practices on a broad scale.

Nonetheless, the impact of green logistics on CSR is mixed with some influence being unfavorable, depending on the industry or sector, company size, and geographical location (Ali et al., 2019; Liu, 2021). Zhang et al. (2019) reported that the small and medium-sized enterprises (SMEs) in emerging nations were unable to reap the benefits of green logistics because of lack of resources, low government support, and weak institutional frameworks. Also, Nikseresht et al. (2022) unveiled that the impact of green logistics on customer-related and employee-related CSR actions in China was minimal. These studies address the dual aspects of green logistics and CSR and indicate that situational elements and requirements of community are important drivers of these changes.

In addition to these contradictory results, some research has attempted to analyze the particular effects of green logistics on CSR in different industries (Ali et al., 2019; Deb and Rahman, 2021; Zhang et al., 2020; Ikram et al., 2019). There seems to be a gap in the literature as to how green logistics affects CSR considering different stakeholder perspectives, especially in the developing and diverse settings.

While both green finance and green logistics are essential in achieving net zero emission targets, they contribute differently to this target. Green finance refers to allocating funds to ecofriendly initiatives such as renewable energy, efficient use of energy and carbon reducing technologies (Chege et al., 2020; DeStefano et al., 2018). These funds are important in reducing CO2 emissions and reaching the net-zero goal. Other studies highlight that green finance not only facilitates the

expansion of emission-reducing systems and facilities but also induces system-wide changes in business and policy (Zhang et al., 2019; Nikseresht et al., 2022).

In contrast to the previous analysis, the impact of green logistics on net zero emissions deals with the specific realization of an emission reduction plan through an optimized supply chain processes (cutting costs) (Yang et al., 2021; Lee and Lee, 2022). Transportation and resource management allocational practices under green logistics minimize a firm's emissions (Cheng et al., 2021; Nikseresht et al., 2022; Sadiq et al., 2021).

H2a: Green logistics increases CSR by customers.

H2b: Green logistics increases CSR through employees.

H2c: Green logistics increases CSR through communities.

2.3 Impact on Zero Net Emissions

Regardless of the positive impact, there is a subtle disparity on the effect of green finance and green logistics with respect to net zero emissions on targets (Chege et al., 2020; Ali et al., 2019; Liu, 2021). Green finance usually deals with the subject from a more comprehensive perspective of allocating capital resources to major emissions reducing projects and technologies (Cheng et al., 2021; Sadiq et al., 2021; Muganyi et al., 2021). In contrast, green logistics deals with supply chains and focuses at primary level performing activities that when summed lead to less emissions (Zhang et al., 2019; Anser et al., 2020). Green finance can trigger remarkable benefits and advancements in emission reducing technologies, whereas green logistics manages the emissions and is responsible for the daily business operations that involve emission reduction activities (Moktadir and Ren, 2020; Jia, 2020; Nikseresht et al., 2022). The relationship of these areas shows the gap of the complementary approaches outlines the need of an integrated one that combines operational expenditures with financial commitment strategically to reach net zero emissions effectively.

Although the impact of green finance alongside green logistics touches on net zero emissions is fairly recorded, the intersection with CSR still lacks depth. For example, CSR via customers, employees, and communities can help foster emission reduction goals. There is very little research that explicitly ties these dimensions of CSR to net zero outcomes, however. Deb and Rahman

(2021) and Nikseresht et al. (2022) argue that CSR practices can contribute towards overall sustainability but do not attach these methods to targeted net zero emission goals.

H3. Green finance is positively associated with net zero emissions.

H4. Green logistics is positively related to net zero emissions.

H5a. CSR via customers is positively linked to net zero emissions.

H5b. CSR via employees is positively associated with net zero emissions.

H5c. CSR via community is directly associated with net zero emissions.

2.4 Impact on Financial Performance

Firm performance is crucial for a company's future, because it underpins financial health, risk control, and market edge. Recent research confirms that ICT use, green finance, and CSR all improve firms' financial performance. For instance, DeStefano et al. (2018) and Anser et al. (2020) show that solid ICT infrastructure lifts profits by speeding data handling and smoothing day-to-day tasks. Chege et al. (2020) reached a similar conclusion, noting that cutting-edge tech boosts internal skills and workplace output, pushing firms ahead of rivals.

Greener funding, however, matters just as much. Muganyi et al. (2021) and Lee & Lee (2022) explain that spending on green measures—namely energy savings and smarter waste disposal—not only polishes a brand's image but also adds to the integrated bottom line of performance. During tough times such as the COVID-19 crisis, Sadiq et al. (2021) found businesses backed by green loans and sustainable policies kept profits rolling and operations steady, thanks in part to strong CSR projects. Corporate social responsibility is therefore another pillar of high performance. Ikram et al. (2019) and Jia (2020) report that giving back to society builds trust with stakeholders, lifts staff loyalty, and ultimately enhances a company's public standing.

H6a: CSR through customers is positively related with firm performance.

H6b: CSR through employees is directly associated with firm performance.

H6c: CSR through community improves firm performance.

H7: Green finance enhances firm performance.

H8: Green logistics improves firm performance.

3. Research Methodology

This research is quantitative in nature as cross-sectional data is collected from manufacturing firms in Pakistan. Manufacturing firms are selected in this study as they are more jeopardizing the sustainability of the country. Out of 236 questionnaires returned, 223 complete surveys were used to analyze the data and 12 incomplete surveys are excluded as they are not properly filled. 7-point likert scale is used as it has the capability to capture more detailed response as compared to 5-point likert scale. The questionnaire was filled by middle and senior level managers who have pre-requisite information about green logistics, green finance, CSR, and net zero emission. PLS-SEM was utilized to analyze the data; this tool is used as it can handle intricate relationships among variables easily and provide more robust results. Figure 1 indicates the proposed framework of the study.

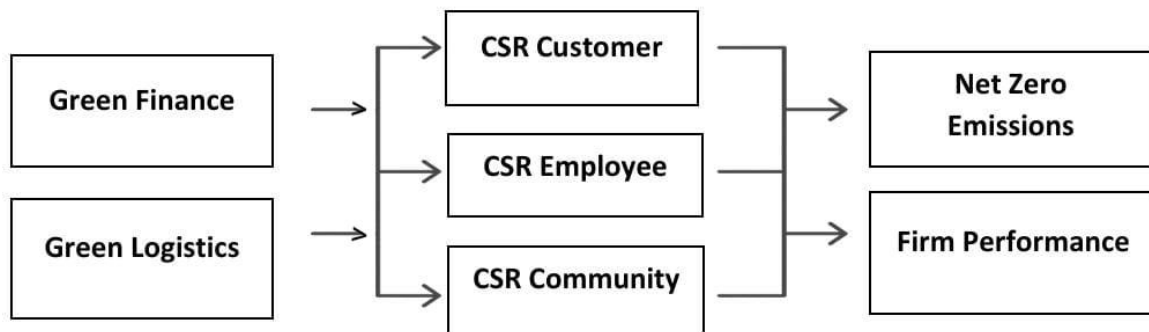


Figure 1: Proposed Framework

4. Results

The results in table 1 indicate that all the values meet the threshold criteria of AVE above 0.5 and CR more than 0.7 as suggested by Hair et al. (2009). Hence the model has well-established convergent validity. The results also indicated that all the values of HTMT in table 2 are less than 0.9 (Henseler et al. 2015) indicating that the model has established discriminant validity.

The result in table 3 indicates that green finance significantly improves CSR via customer ($\beta = 0.333, p < .01$), employees ($\beta = 0.267, p < .01$), and communities ($\beta = 0.204, p < .01$). Hence H1a, H1b, and H1c are accepted. The result also illustrated that green logistics enhance CSR customer ($\beta = 0.465, p < .01$), employees ($\beta = 0.450, p < .01$), and communities ($\beta = 0.458, p < .01$). Hence H2a, H2b, and H2c are accepted.

Table 1 Convergent validity

	Composite Reliability (CR)	Average Variance Extracted (AVE)
CSR through communities	0.848	0.654
CSR through customers	0.824	0.621
CSR through employees	0.870	0.630
Green financing	0.852	0.547
Green logistics	0.778	0.546
firm performance	0.834	0.566
net zero emission	0.799	0.503

Moreover, green finance ($\beta = 0.167, p < .01$) and green logistic ($\beta = 0.281, p < .01$) are positively associated with net zero emissions. The results of H3 and H4 are accepted. The result also elucidated that CSR via customers ($\beta = 0.290, p < .01$), CSR via employees ($\beta = 0.308, p < .01$), CSR via communities ($\beta = 0.278, p < .01$) is positively linked to net zero emissions. The result of H5a, H5b and H5c are accepted. The result also elucidated that CSR through customers ($\beta = 0.184, p < .01$), CSR through employees ($\beta = 0.277, p < .01$), CSR through communities ($\beta = 0.155, p < .01$). The results of H6a, H6b and H6c are accepted. The result also indicated that green finance ($\beta = 0.235, p < .01$), Green logistics ($\beta = 0.400, p < .01$) enhance firm performance. Hence H7 and H8 are accepted.

5. Discussion

This research identifies a particular pathway through which green finance and green logistics improve Corporate Social Responsibility (CSR) to enable net zero emission and better firm performance within the manufacturing and logistics industry in Pakistan. How green practices spur CSR (customer, employee, and community) actions and subsequently drives business value, are captured in the figure (proposed framework figure 1).

The findings indicated that green finance has a crucial role in increasing social responsibility. By establishing funds for the strategic implementation of business policies, practices and technologies that harness the power of clean production and renewable energy, green finance drastically curtails

the environmental impact, as well as enhances the social good impact, of a given firm’s operations. It advances these outcomes through not only making investments in sustainable economic development alongside responsible business practices, but also by fostering enhanced productivity and improved morale among employees that leads to reduced pollution and better working conditions in the community. Therefore, underscoring the role of green finance in increasing social responsibility shows a pivot in the debate on the effect of sustainable finance on customer welfare, employee service, and community aid engagement (Deb et al. 2020; Govindan et al., 2014; Li et al., 2018) and beyond but also in promotion of the business image as well as trust from investors and consumers keen on sustainability to strengthen market competitiveness.

Table 2 Discriminant validity

	CSR through community	CSR through customer	CSR through employee	Green financing	Green logistics	firm performance	net zero emission
CSR through communities							
CSR through customers	0.781						
CSR through employees	0.798	0.876					
Green financing	0.429	0.647	0.462				
Green logistics	0.777	0.852	0.786	0.469			
firm performance	0.757	0.885	0.864	0.829	0.885		
net zero emission	0.461	0.547	0.566	0.288	0.628	0.867	

Likewise, the findings also indicated green finance enhances business reputation and credibility, which are key to drawing sustainable oriented investors and consumers that strengthens stakeholder trust warranting competitive edge in the market. Similarly, green finance enhances firm’s reputation and credibility which becomes paramount in attracting sustainable oriented investors and consumers that Gardner (2018) stresses that firms must garner trustworthy green credentials.

Table 3 Hypotheses testing results

	Hypotheses	Original Sample (O)	T Statistics (O/STDEV)	P Values
H1a	Green financing -> CSR through customers	0.333	5.652	0.000
H1b	Green financing -> CSR through employees	0.267	4.199	0.000
H1c	Green financing -> CSR through communities	0.204	2.971	0.001
H2a	Green logistics -> CSR through customers	0.465	8.219	0.000
H2b	Green logistics -> CSR through employees	0.450	8.315	0.000
H2c	Green logistics -> CSR through communities	0.458	7.733	0.000
H3	Green financing -> net zero emission	0.167	4.396	0.000
H4	Green logistics -> net zero emission	0.281	6.630	0.000
H5a	CSR through customer -> firm performance	0.290	4.979	0.000
H5b	CSR through employee -> firm performance	0.308	4.981	0.000
H5c	CSR through community -> firm performance	0.278	4.488	0.000
H6a	CSR through customer -> net zero emission	0.184	2.558	0.005
H6b	CSR through employee -> net zero emission	0.277	3.731	0.000
H6c	CSR through community -> net zero emission	0.155	2.196	0.014
H7	Green financing -> firm performance	0.235	4.723	0.000
H8	Green logistics -> firm performance	0.400	9.259	0.000

The findings also affirmed that green logistics enhances CSR activities. This implies that green logistics tightens a company’s grasp on corporate social responsibility (CSR). Simple move-routing trucks are smarter, burning less fuel, switching to energy-saving vehicles, and packing with biodegradable or recyclable material-cut emissions guarding the planet. Cleaner operations lift local air quality, while happier, healthier employees work faster, so costs drop, and job satisfaction rises. Staying inside the law also earns goodwill from regulators and boosts a firm’s image with investors and neighbors (Deb et al., 2020; Wang et al., 2019; Yadav et al., 2022). By weaving these green practices into the delivery chain, a company can meet the environmental pledges in its own mission statement and prove it means what it says about tougher environmental, social, and governance (ESG) values.

These moves reach customers, staff, and nearby communities, all pulling together to push net-zero targets closer. CSR-led campaigns ask every stakeholder to cut bad habits, and that shared

challenge speeds progress. For instance, eco-minded messages aimed at shoppers can nudge them toward greener products. Employee Engagement Programs could also offer some training and provide incentives to employees who focus on sustainability as a matter of business strategy. There may also be campaigns aimed at raising awareness to restore the environment that strengthen the firm's footprint on sustainability as part of community-focused CSR efforts. These multi-level CSR approaches increase sustainability and reduce the total carbon output. These multi-level CSR policies lower carbon emissions and increase resource efficiency, thus aligning business operations with climate change initiatives (Singh, 2021).

Furthermore, the findings indicated that integration of CSR with environmental strategies creates a self-reinforcing cycle: stronger CSR leads to greater emission reduction activities which in turn enhances the firm's credibility as a socially responsible firm. Such realignment enables a firm to create deep-level change at a systemic level while achieving compliance with regulations for social responsibility.

All these efforts add up to healthier bottom lines. When companies move toward net-zero and back that goal with visible CSR work, stakeholder loyalty, brand reputation and investor interest tend to climb. More and more shoppers back brands they see as green, staff stick around at firms that act responsibly, and local groups are quicker to partner when a business proves it cares. By blending steady profits with those wins, a company earns its place in markets that reward sustainability. In short, green finance and green logistics-the twin engines of CSR and lower emissions-give financial performance a noticeable boost (Gözlügöl, 2022; Shekhar et al., 2021; Yadav et al., 2022).

6. Conclusion and Implications

This paper takes a close look at how green financing, eco-friendly moving and storing, social responsibility, net-zero goals, and profits interact in Pakistan manufacturing and logistics industry. The findings reveal that extra funding for green projects and smarter, cleaner logistics each push net-zero progress, and their direct influence is statistically solid and notably large. Green financing is available for environmentally sustainable work while green logistics deal with the reduced impact of the supply chain. These factors constitute an effective approach to diminishing environmental impact and increasing emission reduction efforts.

The study also discusses business responsibility policies directed toward customers and members of staff that have a community focus to help achieve net zero emission goals. CSR's engagement with stakeholders and operations helps achieve green financing and logistics boost environmental performance while increasing sustainability scope. The results add to the existing knowledge with positive connections strengthened with the need to shift towards a balanced investment approach to achieve an operational improvement. It goes further to say that such an approach would encourage compliance, environmental responsibility, reputation, and market competitiveness. In essence, the crux of the investigation is the alignment of green financing, green logistics, CSR with strategic planning towards achieving net zero emission, and adopting green practices.

The end result is enhanced financial performance. Stakeholder loyalty, brand reputation, and investor interest rise as firms progressing towards net zero emissions showcase strong CSR activities. Increasing numbers of customers support brands perceived as sustainable, employees become more loyal to socially responsible organizations, and communities are more willing to collaborate with firms when they demonstrate social responsibility. Through driving long-term profitability alongside these advantages, firms secure a market position in sustainability-focused markets. Thus, green finance and green logistics, in promoting CSR and enabling emission reductions, enhance financial performance significantly.

6.1 Theoretical Implications

The research captures stakeholder theory by demonstrating how green financing and green logistics improve CSR activities and fulfill stakeholder demands. Stakeholder theory argues that businesses need to consider the interests of multiple groups that include customers, employees, and even communities if those businesses want to be sustainably relevant in the long run. In this case, the key elements of green financing and logistics are utilized to help sustain the firm's obligations. It enhances the value of the firm and the value of the environment as well.

Furthermore, the manufacturing and logistics sectors in Pakistan can implement these practices based on sustainability. These foster the relationships of stakeholders and legitimacy, two significant elements within the context of stakeholder theory. The findings indicate that synergy from combining green initiatives within corporate strategy leads to achieving business goals while advancing societal and environmental benefits "win-win" proposition. The evidence reinforces

the claim that fulfilling the responsibility toward all other stakeholders is fundamental in achieving long-term business success.

6.2 Managerial and Practical Implications

From the viewpoint of management, this study regards green financing as one of the primary elements in the sponsoring activities aimed at carbon sustainability projects. Managers in the pharmaceutical and chemical industries should invest in green technology and renewable energy resources. These behaviors serve both purposes: complying with sustainability requirements and improving public relations regarding the business's activities in developing sustainable strategies. Financing green initiatives should instead be considered as investments of identity, reputation, and relations for strategically voided returns.

Green logistics is thought to operate within a particular paradigm of business processes which can be used by managers to achieve direct reductions in the carbon emissions produced during operations. This entails the carbon emission reductions that can be achieved through the optimization of fuel delivery systems, energy use in warehouses, and wasteful delivery adequacy. Adoption of such practices would portray the corporation as environmentally responsible and would manifest the commitment to sustainable operational excellence. Managers should pay attention to green logistics as a dimension of their emission reduction strategy.

With the incorporation of these two elements of green financing and green logistics together with CSR activities, a holistic approach towards emission mitigation and enhancement of environmental performance can be achieved. This model helps capture markets which are trending towards favoring environmentally friendly companies. Furthermore, it improves relations with stakeholders, helps comply with regulations, and enhances the reputation of the company as durable and trustworthy.

6.3 Limitations and Future Research Directions

The issues in the current study should have also been pointed out. Firstly, future studies can conduct empirical research, and more research is likely needed for other countries beyond Pakistan because the findings might not be applicable in other contexts. The linkage between green financing, green logistics, Corporate Social Responsibility (CSR) and financial performance might be different due to varying cultural, economic and social dynamics. Secondly, it was mentioned

that this research was a cross-sectional study. This requires longitudinal studies that search for more holistic answers regarding how the phenomena being studied change with time. Besides, the sole use of primary data gotten from surveys results in direct self-reporting biases and other measurement errors. Existing data, in the form of company and annual reports, would have provided clearer explanations of the relationships in this study. For example, impacts of climate change as an environmental factor. These are some of the gaps that can be found in the research, and using diverse data would help answer many complex and unexplored issues regarding these relationships. Moreover, future research can explore the integration of unsupervised and semi-supervised learning techniques used by Raffat & Ahmad (2025) in real time logistic data.

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