



Green marketing horizon: Industry sustainability through marketing and innovation

Gonghang Chen^a, Aemon Sabir^b, Muhammad Faisal Rasheed^b, Lucian Belascu^c,
Chi-Wei Su^{d,e,*}

^a Business College, Qingdao University, Qingdao, Shandong, China

^b School of Management Sciences (SMGS), Ghulam Ishaq Khan Institute (GIKI) of Engineering Sciences and Technology, Topi 23640, District Swabi, Khyber Pakhtunkhwa, Pakistan

^c Lucian Blaga University of Sibiu, Sibiu, Romania

^d School of Finance, Yunnan University of Finance and Economics, Kunming, 650221, China

^e School of Economics, Qingdao University, Qingdao, Shandong, China

ARTICLE INFO

JEL classification:

M31
O30
Q55
Z33

Keywords:

Green marketing (GM)
Eco-innovation (EI)
Circular economy (CE)
Sustainable performance (SP)
Pakistan

ABSTRACT

The UN Sustainable Development Goals (SDGs) emphasize moving the manufacturing sector towards adopting environmentally friendly practices. Manufacturing industries play a critical role in the economic growth of a country; however, they are also associated with directly affecting the environment. Due to limited resources, shifting towards sustainable practices is difficult. The current study examines the effects of green marketing (GM) practices through eco-innovation (EI) to improve the sustainable performance of Pakistan's manufacturing industries. Furthermore, this study also intends to test the moderating effect of circular economy practices on the direct relationship between green market practices and eco-innovation. Responses from 201 professionals working in manufacturing industries were gathered and subjected to structural equation modeling (SEM) analysis to investigate the direct and indirect relationships between the variables in the conceptual model. The results indicate that the green market and eco-innovation have a noteworthy direct impact on SP. Nevertheless, green marketing practices favorably affect sustainable performance by mediating eco-innovation and the positive moderating role of circular economy practices. The current study is relevant for advising managers and policymakers about the potential advantages of supporting sustainable solutions.

Introduction

The global transition towards sustainability is undeniably happening at an unprecedented rate across diverse sectors worldwide. There is widespread agreement among scientists and society that there is an immediate and crucial requirement for a "Great Transformation" toward sustainability and ethical practices to preserve the living conditions of our planet (Alqaralleh, 2024; Makpotche et al., 2024; Zhong et al., 2024). The textile, apparel, and fashion industries are currently observing sustainability trends and gaps that point to a shift in adopting more environmentally friendly processes (Abbate et al., 2023). The UN 2030 Agenda for Sustainable Development has drawn much global concern from businesses (NU. CEPAL, 2019). This underscores the critical importance of safeguarding limited resources, preventing pollution, and ensuring no one experiences hunger or poverty. The UN's

sustainable agenda promotes the Triple Bottom Line idea (People, Plant, Profit) to achieve profitable growth (Alqaralleh, 2024; Singh & Srivastava, 2021). This characteristic has driven several multinational corporations to pursue sustainable development initiatives according to the UN agenda, including green practices, e.g., green investment, green energy, green innovation, and climate policies (Shan et al., 2023; Su et al., 2024; Umar et al., 2024). However, the industrial sector has only demonstrated a minimal level of global engagement in these kinds of initiatives. Businesses that place a high priority on sustainability have had to switch from conventional to innovative business models in order to conserve energy, lessen pollution and resource depletion, and achieve social, environmental, and financial advantages (Adnan et al., 2024; Rodríguez-Espíndola et al., 2022). To attain long-term well-being, sustainability encompasses economic, social, and environmental aspects, i. e., the triple bottom line. On the other hand, the circular economy is a

* Corresponding author.

E-mail address: cwsu7137@gmail.com (C.-W. Su).

<https://doi.org/10.1016/j.jik.2024.100606>

Received 24 July 2024; Accepted 21 October 2024

Available online 9 November 2024

2444-569X/© 2024 The Authors. Published by Elsevier España, S.L.U. on behalf of Journal of Innovation & Knowledge. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

subset of sustainability that aims to maximize resources and reduce waste through practices like recycling and reusing. It aims to optimize resource value and build closed-loop systems. Under sustainability, businesses increasingly emphasize green practices, innovation, and the circular economy to achieve sustainable development, competitive advantage, and environmental efficiencies (Rehman et al., 2022; Xu et al., 2024).

Green management techniques, like green marketing, are all-encompassing processes that entail recognizing, foreseeing, and meeting societal and consumer needs in a sustainable and lucrative manner. It is the promotion of goods that are considered safe for the environment. It arose in response to people's growing concern about the state of the environment and how it affects the well-being of society (Kaur et al., 2022). This evolution is a purposeful reaction to the shifting dynamics of consumer behavior, where environmental factors influence more purchases. The growing awareness of the Sustainable Development Goals (SDGs) has dissatisfied consumers with companies that declare themselves environmentally conscious (Manju & Latha, 2023). Green marketing significantly influences consumers' environmental knowledge and preferences. The critical components of green marketing, such as eco-labeling and creating eco-friendly products and solutions, significantly and favorably influence consumers' perceptions about the environment. Environmental concerns and beliefs substantially and favorably impact consumer attitudes toward the environment (Ho et al., 2021).

At its core, green marketing is a strategic communication method that effectively incorporates sustainability into all aspects of a brand's marketing. It goes beyond a simple green logo or a tag indicating recycled packaging, encompassing a thorough incorporation of environmentally friendly methods across the entire supply chain, product lifespan, and corporate values. Businesses implementing green marketing strategies integrate sustainability into their operations by sustainably procuring raw materials and using energy-efficient production processes (Kaur et al., 2022). Beyond environmental credentials, green marketing connects with consumers who want significance in their choices. It builds brand loyalty and environmental responsibility by turning transactions into positive stories. In today's age of social media and rapid globalization, green marketing helps businesses communicate their sustainability efforts. As businesses struggle with sustainability, green marketing emerges as a vital approach for survival and success, fostering trust and responsibility that ultimately fortify the brand-consumer connection. It turns sustainability from a corporate requirement to a strategic benefit, turning firms into agents of sound change and demonstrating a commitment to a sustainable future aligned with eco-conscious society (Singh & Pandey, 2012). This mutually beneficial relationship between enterprises and environmentally conscious consumers drives the narrative toward the domain of eco-innovation (EI).

Eco-innovation (EI), as per its definition, refers to an innovation that endeavors to achieve significant and measurable advancements towards sustainable development. We achieve this by either mitigating negative impacts on the natural environment or by achieving enhanced efficiency and responsible material utilization. Eco-innovation includes green technologies, operations, structures, and services and the foreseen and unexpected environmental implications of innovation (Jo et al., 2015). Eco-innovation is a solution to the societal challenge of balancing present demands while protecting the capacity of future generations to fulfill their fundamental requirements. Similarly, circular economy practices emphasize various approaches and objectives to achieve sustainable development. Additionally, it suggests ways to provide benefits for consumers, community members, and other stakeholders (Padilla-Rivera et al., 2020). Circular economy foundation research has increased in recent years, which has led national governments, academics, and enterprises worldwide to adopt it (Prieto-Sandoval et al., 2018). The circular economy has become a sustainable policy tool. Many businesses follow the "Take, Make, and Dispose" paradigm. This includes

raw material acquisition, product conversion, and end-user distribution. The product's lifecycle ends with consumer disposal, creating waste. Circular economy provides new business models to transform linear economies, characterized by the "take, make, dispose" paradigm, into circular economies with closed loops (Zhu et al., 2019). Circular materials can reduce energy and unprocessed material use while creating new economic opportunities (Korhonen et al., 2018). Researchers also assert that the relationship between sustainability and circular economy (CE) may be enhanced via environmental impact (Liu et al., 2019).

Pakistan's manufacturing industry faces significant challenges due to its negative environmental, economic, and social impacts. Excessive resource consumption, pollution, and waste generation negatively complement the industry's vital role in the country's economy, contributing to environmental degradation (Rasheed et al., 2023). Regarding the benefits the industry can yield in the economic field, its unsustainable practices lead to inefficiencies, high operational costs, and an inability to compete in global markets. Health hazards, unfair and poor working conditions, and low quality of life for locals are some of the effects of the industry on the social fabric. To address these issues, there is a pressing need to explore strategies that can enhance the sustainable performance of Pakistan's manufacturing sector. Green marketing (GM), circular economy (CE), and eco-innovation (EI) are emerging as crucial factors that could drive this transformation. Particularly, GM practices have the potential to directly influence sustainability practices by promoting environmentally friendly products and processes (Supaat et al., 2020). Circular economy and eco-innovation can intervene in this association by fostering resource efficiency, waste reduction, and innovative solutions that support long-term sustainability.

This research intends to empirically analyze GM's influence on Pakistan's manufacturing industry's environmental, economic, and social performance, considering the mediating roles of eco-innovation. The study aims to offer insights into integrating sustainable practices into the manufacturing industry, thereby enhancing Pakistan's socio-economic and environmental performance. In previous research, many authors have discussed the close correlation between eco-innovation, circular economy, and sustainable performance. However, there is not enough literature showing the influence of green marketing on sustainable performance through implementing eco-innovation and the moderating effect of circular economy practices between green marketing and circular economy. The study aims to fill the existing knowledge gap and advance both theoretical and practical aspects by investigating the following research questions:

RQ1. *Do green marketing practices have a significant direct impact on sustainable performance indicators?*

RQ2. *Does adopting eco-innovation mediate the relationship between green marketing practices and sustainable industrial performance?*

RQ3. *Does adopting circular economy practices moderate the direct relationship between green marketing practices and Eco-Innovation?*

To address the abovementioned questions, the study uses quantitative methods to fulfill its research objectives, deriving relevant conclusions from empirical data. The study aims to provide significant insights that extend beyond academic frameworks and have practical relevance for companies operating in Pakistan through surveys and statistical analysis. This examination acknowledges that commerce propels a nation's environmental, economic, and social stability. Next, we structure this research as follows: The following section describes the theoretical framework and the theoretical model's foundational principles. The following part encompasses research methodologies, survey architecture, and research metrics, followed by a discussion of the findings from this empirical investigation. We examine the theoretical and administrative constraints, as well as potential avenues for future study.

Literature review

In past years, research on green marketing (GM), eco-innovation (EI), circular economy (CE), and sustainability has focused more on developed nations. Different studies have indicated that the strategies included in implementing green marketing positively influence consumer behavior and corporate sustainability, contributing to environmental awareness and creating a robust framework (Jia et al., 2023; Shabbir et al., 2020). Literature also suggested that green products and placement, which are green marketing practices, significantly enhance the environmental performance within the food industries (Braik et al., 2023). Research has widely explored the role of eco-innovation in enhancing industrial sustainable performance by creating new products and processes that reduce environmental impacts (Afshari et al., 2020; Hermawan et al., 2023). Similarly, another study has emphasized the need for technological innovation in facilitating the adoption of circular economy practices (Liu et al., 2019).

Recent studies indicate that while green marketing is gaining attention globally, its specific impact in the context of developing countries remains underexplored. A study on the pharmaceutical industry in Pakistan revealed that sustainable competitive advantage through green marketing orientation (GMO), significantly influences business performance. This suggests that green marketing can significantly enhance business outcomes in developing economies, but further comprehensive studies are necessary to comprehend its broader implications, particularly concerning eco-innovation and circular economy practices (Shaukat & Ming, 2022). Another study in the Pakistani context examined the effects of green packaging and branding, pricing, green product premiums, eco-labeling, environmental concerns, and beliefs on consumer behavior (Nazir et al., 2024). Similarly, another effort has been made to unveil the sustainable path by exploring green marketing in Pakistan's electronic, apparel, and cosmetic industries (Shafiq et al., 2023). This emphasizes the potential for green marketing to influence sustainable practices, although the studies did not specifically address eco-innovation or circular economy.

Most existing studies focus on developed countries, leaving a gap in understanding how green marketing, eco-innovation, and circular economy interact in developing economies where the challenges and opportunities may differ significantly. Pakistan's socioeconomic conditions, including its industrial landscape and consumer behavior, necessitate tailored research to assess how green marketing can effectively drive sustainable practices through eco-innovation and circular economy. Understanding these dynamics could inform policymakers and business leaders in Pakistan to create frameworks that support sustainable development through effective marketing strategies.

Role of green marketing

Green marketing promotes environmentally responsible products and practices, which has become critical in shaping consumer perceptions and driving corporate strategies. Scholars (e.g., Ismail, 2022; Nguyen-Viet, 2022) have explored its impact on consumer behavior, green brand equity dimensions, and the overall integration of sustainability into business models. At the same time, eco-innovation (EI) involves generating novel concepts, practices, products, and processes to address ecological concerns and achieve sustainability goals. Eco-innovation (EI) products aim to create improved goods and services that utilize less depleting resources, avoid harmful materials, and limit the use of renewable resources that the planet cannot naturally replenish (Albino et al., 2009). Eco-innovation in products is a crucial and viable form of market innovation. Green marketing establishes a link, while eco-innovation is the practical expression of dedication, compelling industries to adopt transformative, environmentally responsible solutions. In a context where sustainability is not only a trendy term but a crucial strategic necessity, businesses that promote both green marketing and eco-innovation go beyond being mere suppliers—they become leaders of

beneficial transformation, charting a path towards a sustainable future that aligns with the changing values of our socially responsible society (Nyagadza, 2021).

Several studies and articles support the interconnectedness of green marketing and eco-innovation. For instance, a study on green supply chain management highlights the connection between green products, green marketing, and the concept of Green Supply Chain Management (GSCM), which aims to promote green products in the market with significant future potential, considering the increasing customer awareness of eco-friendly products and evolving lifestyles. Sarkar (2012) conducted an assessment of the factors that influence consumer behavior towards green marketing and eco-friendly products. It highlights the rise of green marketing and the emphasis on eco-friendly items for consumers and manufacturers, which leads to product innovation. Ahmed and Prabhakar (2023) delved into the adoption process of low-involvement EI, emphasizing the impact of green consumption on EI adoption, influenced by the perception of its technological and symbolic dimensions, social pressure, and social conspicuousness (Chavez et al., 2023). These findings underscore the importance of green marketing in driving EI and the need for effective marketing strategies to promote low-involvement EI. A study on green marketing strategies for the sustainability development of firms' performance in Malaysia, emphasizes the connection between green marketing strategies and environmental culture, eco-orientation, green promotion, green innovation, and corporate social responsibility towards the green economy (Supaat et al., 2020). In conclusion, research points to a close relationship between eco-innovation and green marketing, with the former driving significant modifications to manufacturing procedures, product designs, and general company operations. At the same time, the latter promotes sustainability across industries. As a result, the following hypotheses are generated:

H1. Green Marketing Practices have a positive influence on Ecological Innovation

Role of eco-innovation

Studies have found that Eco-innovation (EI) positively influences a company's long-term performance across social, economic, and environmental dimensions. Costantini et al. (2017) demonstrated that eco-innovation generates both direct and indirect benefits that contribute to minimizing environmental stress. Direct benefits include reduced resource consumption and waste, leading to cost savings and improved efficiency. Indirectly, eco-innovation enhances a company's reputation and compliance with environmental regulations, which can attract environmentally conscious customers and investors. Research on European Union states further supports the positive impact of eco-innovation on economic and environmental performance (Mačiulytė-Šniukienė & Sekhniashvili, 2021). The study suggests that countries embracing eco-innovation practices tend to experience sustainable economic growth while mitigating adverse environmental impacts. This dual outcome underscores the role of eco-innovation in fostering a balanced approach to development where economic progress does not come at the expense of environmental health. Yurdakul and Kazan (2020) further investigated the impact of eco-innovation on businesses' financial and environmental performance, revealing that eco-innovative practices can drive profitability by reducing costs and improving market competitiveness. However, not all studies found uniformly positive results. Sezen and Çankaya (2013) explored the relationship between eco-innovation, green manufacturing, and corporate sustainability performance, discovering that eco-product innovation had no significant effect on economic, environmental, or social performance. This suggests that eco-innovation effectiveness may depend on factors such as industry type, implementation strategy, and the specific nature of the innovations. While eco-innovation generally enhances long-term corporate performance, its impact may vary based

on contextual factors. As a result, hypotheses are generated:

Eco-innovation positively impacts the environmental performance of firms.

H3. Eco-innovation positively impacts the economic performance of firms.

H4. Eco-innovation positively impacts the social performance of firms.

Eco-Innovation, green marketing and sustainable performances

Muntean and Stremtan (2008) recognized green marketing as integrating environmental considerations into product development and marketing strategies as a key driver in improving both environmental performance and corporate reputation. Building on this concept, subsequent studies have explored the structural dynamics of corporate green strategies, highlighting the critical role of innovative green marketing techniques in conjunction with supply chain management to enhance environmental performance (Roh et al., 2022). This synergy suggests that companies adopting creative green practices can achieve more efficient and sustainable outcomes across their operations. Empirical research has further identified the mediating role of eco-innovation (EI) in promoting sustainable performance within manufacturing enterprises. Sarfraz et al. (2022) provided evidence of a significant association between innovative capacities, green process innovation, and sustainable performance. Notably, green product innovation emerged as a critical intermediary within this complex interaction, emphasizing its role in bridging innovative efforts and tangible, sustainable outcomes.

Additionally, studies examining the mediating influence of eco-innovation have revealed its transformative impact on the corporate sector. Ali et al. (2023) demonstrated that green innovation serves as a positive mediator in the relationship between CEO tournament incentives and environmental performance. This mediation effect is closely linked with environmental reporting practices and CEO incentives, underscoring the importance of integrating eco-innovation into corporate governance. Collectively, these findings enrich the understanding of the interconnectedness between eco-innovation, green marketing, and sustainable corporate performance (Wang et al., 2024). They offer valuable insights for firms navigating the sustainability landscape, highlighting both theoretical implications and practical strategies for achieving long-term sustainability goals. We can, therefore, propose the following hypotheses:

H5. Eco-innovation mediates the relationship between GM and the environmental performance of firms.

H6. Eco-innovation mediates the relationship between GM and the economic performance of firms.

H7. Eco-innovation mediates the relationship between GM and the social performance of firms.

Moderating role of circular economy

Circular economy practices are crucial to the success of manufacturing organizations because of their importance in the use-phase of resources and energy, production of byproducts, impact on employment, and GDP (Lieder & Rashid, 2016). The fundamental tenet of the circular economy is to recover the value of physical products through restoration and reuse. This strategy may enhance energy recovery and recycling systems in an environmentally and financially beneficial way (Ashby, 2018). According to a new study, adopting circular practices can be a practical strategy for reducing the damaging effects of globalization and industrialization on the environment (Khan et al., 2021). Circular Economy (CE) knowledge is fundamental to reviving eco-innovative processes since it promotes reuse, sharing, repair, refurbishment, remanufacturing, and recycling. This method

seeks to minimize resource input by creating a closed-loop system while lowering waste, pollution, and emissions (Ghisellini & Ulgiati, 2020). According to Tsai and Liao (2017), an organization's strategic knowledge base significantly impacts how much eco-innovation it adopts. Employees who are well-versed in the circular economy (CE) are more likely to perceive the company as committed to producing sustainable results. Several studies have employed circular economy practices as a moderator, including one by Erdiaw-Kwasie et al. (2023), which investigates organizational-level institutional contextual and strategic aspects (IF, CF, and SF). It then assesses how these factors affect the adoption of circular economy (CE) practices and the supply of sustainable services. Additionally, the study explores how organizational characteristics, moderated by knowledge of the circular economy, influence the adoption of circular economy practices, providing crucial insights into the intricacies of sustainable service delivery in Ghana's service sector. Another study investigates the impact of big data-driven supply chain management (BDSCM) on sustainable supply chain management (SSCM) and its role in enhancing the sustainable corporate performance (SCP) of small and medium-sized businesses (SMEs) in developing nations such as Vietnam. Furthermore, the study investigates if Circular Economy Thinking Application (CETA) can moderate the association between BDSCM and SSCM (Le, 2022). Similar to this, researchers have used moderation analysis to examine the effects of several factors on sustainable service provision within the circular economy (Erdiaw-Kwasie et al., 2023), organizational competitiveness (Răzvan & Corboș, 2022), and cost performance (Chavez et al., 2023). The following hypotheses are generated:

H8. The positive relationship between GM and EI will be stronger when CE practices are implemented in organizations.

Fig. 1 below displays the study's framework drawn from previous academic research. The assessment of the literature and the scope of future work specifically for developing economies led to the discovery of these four major factors: green marketing, eco-innovation, circular economy practices, and sustainable performance. These four significant factors stood out from the rest as influencers for manufacturing firms in developing nations. By emphasizing the social benefits and the influence of others on adopting green behaviors, marketers can target consumers and facilitate the transition toward more sustainable consumption patterns.

Methodology

Survey design and data collection

In terms of data collection, the focus of this study was Pakistani Industries, which are primarily involved in the manufacturing and service sectors. The working professionals of selected large manufacturing industries were recruited to give responses on perceptions of chosen variables. The questionnaire was initially tested with a sample size of 15 participants: 12 working in the manufacturing sector and three from academic backgrounds. Essential adjustments were made before the survey was made accessible online, ensuring the instrument's accuracy and effectiveness for data collection. The final survey contained 28 questions, including demographic questions. The survey consisted of 5 sections: demographics, green marketing practices, ecological innovation, circular economy practices, and the manufacturing industry's sustainable performances based on the triple bottom line. Every one of the questions needed a response on the Likert Scale, meaning that respondents had to indicate how much they agreed or disagreed with the statement on a scale ranging from 1 to 7, with 1 indicating "Strongly Disagree" and 7 indicating "Strongly Agree". Data collection was conducted in five distinct sections to mitigate standard method bias, following the approach (Podsakoff et al., 2003). Respondents were asked random questions interspersed between sections to further control for common method bias, which was not included in the subsequent

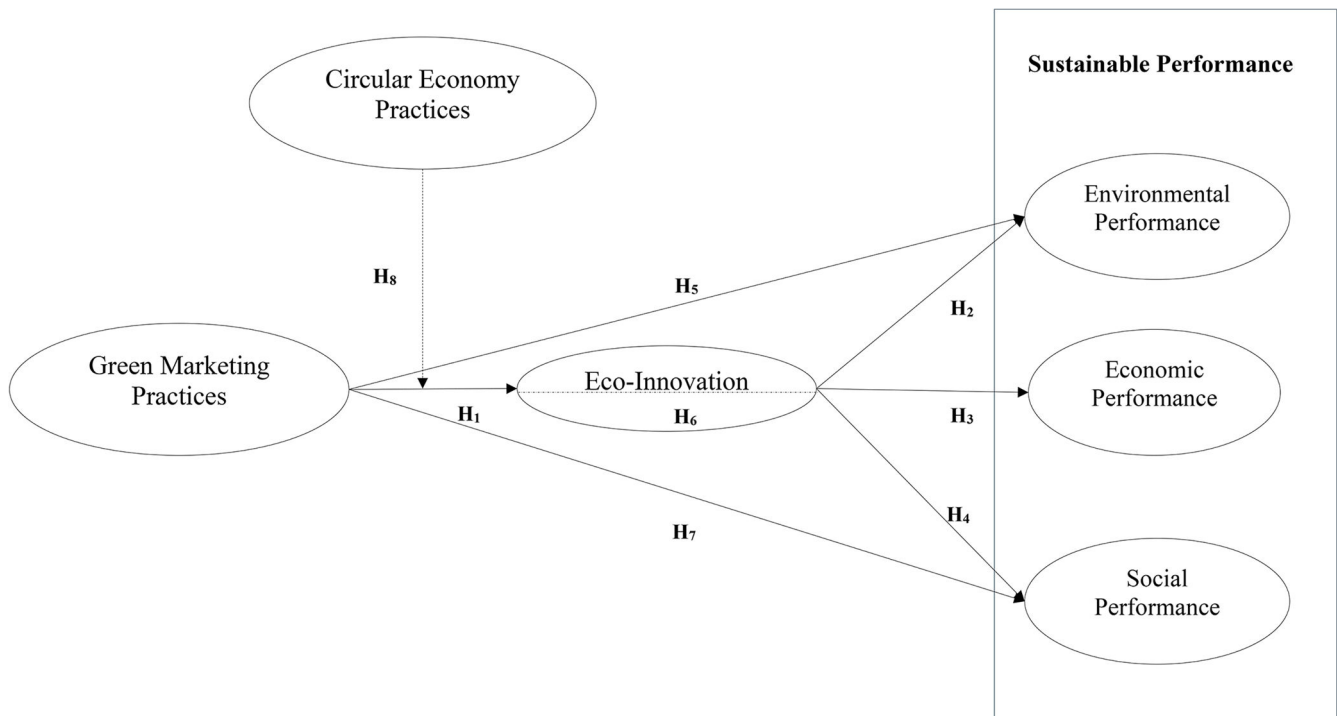


Fig. 1. Conceptual framework.

analysis (Junaid et al., 2024; MacKenzie & Podsakoff, 2012).

Contacting manufacturing and services sector employees was mainly achieved through the LinkedIn professional platform and professional references. The survey was initially distributed to 400 professionals involved in lean and industry 4.0 production processes in Pakistani manufacturing industries. To validate the sample size computation, Soper's insights were incorporated into the study (Soper, 2023). Accordingly, the optimal sample size was recommended to be 150, with an effect size of 0.3, statistical power of 0.80, 6 total latent variables with a total of 28 observed variables, and lastly, 0.05 as Type-I error. From the data analysis perspective, the 200-sample size was sufficient for this study. Out of the 400 distributed surveys, 252 full-time professionals from diverse manufacturing organizations across various regions of Pakistan participated in our study, yielding a response rate of 62%. After undertaking necessary data cleaning procedures, including addressing missing data and conducting reliability checks, 51 responses were discarded. Consequently, 201 responses were deemed suitable and finalized for data analysis. The employee profile was assessed based on their hierarchical level and experience over the years. The working industry was assessed based on the firm's size of employees. The respondent data can be seen in Table 1:

Measures

Variable measurements were derived from previous research. The demographics part aimed to identify the qualifications, experience, and expertise of the survey participants, along with industry type, whether the industry is sustainable, and whether the employees get incentives for adopting Circular Economy Practices in their daily tasks. Then, the 8 Green Marketing questions, which consisted of green marketing practices, i.e., collaborating with eco-friendly partners, utilizing eco-labels on packaging, promoting environmental awareness across operations, strategically cultivating a green image through marketing, implementing a paperless procurement policy, and applying a paperless approach in personnel management when feasible (Vilkaite-Vaitone et al., 2022). Furthermore, four questions addressed eco-innovation, such as prioritizing product development with minimized material usage, easy

Table 1
Demographic data.

Characteristics	Percentage	Frequency
<i>Qualification</i>		
Bachelors	56.7%	114
Masters	35.3%	71
PhD	8%	16
<i>Job Position</i>		
Entry Level	45.8%	92
Mid-Level	38.3%	77
Senior Level	15.9%	32
<i>Experience in years</i>		
0–3	53.7%	108
4–6	18.9%	38
7–9	16.4%	33
10+	10.9%	22
<i>Industry Type</i>		
Technology/Electronics	26.4%	53
Fashion/Textiles	18.4%	37
Food and Beverage	10%	20
Energy	13.4%	27
Automotive	15.9%	32
Others	15.9%	32

recyclability, eco-friendly production processes, and the integration of energy-saving technologies (Yurdakul & Kazan, 2020). The following section consists of four circular economy questions, i.e., adopting sustainable practices, replacing non-recyclable materials with renewable or recyclable inputs, reusing leftover raw materials, implementing product and material collection/recycling programs, and discovering new revenue streams for post-use products/services (Rodríguez-Espíndola et al., 2022). Finally, for measuring of sustainable performances of industries, ten questions were added comprising the environmental, economic and social impact items (Ghaithan et al., 2023).

Results

The structural equation modeling technique, as outlined by Hair et al., (2019) Moreover, SEM implemented through Smart PLS 4.0 was

utilized for model assessment. This technique, allowing for the simultaneous testing of multiple regressions, proves advantageous over simple regression methods. It is sensitive to sample size, and although the study's sample size is sufficient, smaller samples can lead to overfitting or underfitting of the model. This might affect the generalizability of the findings. Smart PLS-SEM is known for achieving greater statistical power with smaller sample sizes, which aligns with the study's sample of 201 responses. This makes it an ideal choice for exploratory research in contexts with limited data availability (Ali et al., 2018). The method allows for the inclusion of formative constructs, which can be beneficial in developing new theories or models where the relationships among variables are not fully understood. While Smart PLS does not necessitate average data, potential challenges may arise with non-normal data. To make sure that the data is standard for bootstrapping (Hair et al., 2019). The values of skewness and kurtosis were examined. As both parameters fall between -2 and $+2$, it can be inferred that the data distribution is normal (Hair et al., 2019). The analysis's findings are shown in the sections that follow.

Common method bias

Although the questionnaire included validity tests to reduce typical technique bias, respondents were additionally informed of the study's goals and given explicit instructions to improve accuracy, as suggested by Jordan and Troth (2020). A comprehensive statistical analysis of bias was performed. Smart PLS 4 was used to compute further the entire factor values for VIF to verify the lack of bias from standard techniques. Table 2 presents the results, showing that all values fall below the 3.3 threshold, confirming that the common approach did not introduce bias. Collinearity between exogenous variables was guaranteed before the structural model was executed. All variables had variance inflation factor (VIF) values of less than three, indicating no collinearity problems.

Measurement model

Factor loading was used to test the items' reliability, and any loadings less than 0.5 had to be eliminated. Composite reliability (CR) was used to evaluate the internal consistency reliability, and all latent variables showed $CR > 0.70$ (Hair et al., 2019). Furthermore, internal consistency dependability was validated by Cronbach's alpha, which showed values greater than 0.7 for all latent variables. All variables' average variance extracted (AVE) was deemed satisfactory, meeting the requirements ($AVE > 0.5$) stated by Hair et al. (2019). Table 3 contains specific values for items loading, CR, Cronbach's alpha, and AVE.

For discriminate validity, heterotrait-monotrait ratio matrix (HTMT) criteria have been used to check the validity. The HTMT is the square root of AVE; all these values are less than 0.85, as shown in Table 4, which confirms the discriminate validity of the model (Hair et al., 2019).

Structural model

In this study, Smart PLS 4 was employed to assess the structural model and investigate the hypotheses. Because of the small sample size compared to the complexity of the model, partial least square structural equation modeling (PLS-SEM) has taken the role of covariance-based structural equation modeling (SEM). PLS-SEM was also utilized since

Table 3

Measurement model results.

S.	Variables	Items	FL	CR	CA	AVE
1	Green Marketing			0.933	0.931	0.675
	"Our company feels morally obligated to help the environment."	GM1	0.781			
	"Our Company cooperates with environmentally friendly partners."	GM2	0.850			
	"Our Company uses eco-labels on packaging."	GM3	0.767			
	"Our Company has a clear statement urging environmental awareness in all areas of operations."	GM4	0.860			
	"Daily marketing operations of our Company purposefully intended to the green image."	GM5	0.873			
	"Our Company applies a paperless policy in our procurement where possible."	GM6	0.837			
	"Our Company organizes presentations for our employees to inform them about the green marketing strategy."	GM7	0.825			
2.	Eco-innovation			0.915	0.875	0.728
	"Our Company develops products using less material."	EI1	0.855			
	"Our Company develops products that can be recycled easily."	EI2	0.811			
	"Our Company develops less polluting production processes."	EI3	0.909			
	"Our Company uses new technologies to save energy in production processes."	EI4	0.836			
3.	Circular Economy			0.924	0.890	0.751
	"In our company, we have replaced non-recyclable raw materials with renewable, recyclable, or biodegradable inputs."	CE1	0.860			
	"In our company, we have replaced non-recyclable raw materials with renewable, recyclable, or biodegradable inputs."	CE2	0.898			
	"Our company has a program for the collection and recycling of products and materials."	CE3	0.864			
4.	Environmental Performances			0.954	0.936	0.839
	"Our Industry has reduced its carbon footprints and GHG emissions."	ENV1	0.904			
	"Our organization established the reduction of solid, liquid, and energy wastes."	ENV2	0.934			
	"Our Industry has reduced the use of hazardous, noxious, or toxic materials in our operations."	ENV3	0.906			
	"Our company has reduced waste across our process."	ENV4	0.919			
	Economic Performance					

(continued on next page)

Table 2

Common method bias (factor level VIF).

Variables	El	Env	Eco	So
Green Marketing	1.463			
Eco-Innovation		1.000		
Circular Economy	1.599		1.000	
GM x CE	1.150			1.000

Table 3 (continued)

S.	Variables	Items	FL	CR	CA	AVE
	"Our organization reduced costs of production."	Eco1	0.828			
	"Our organization improved profits."	Eco2	0.816			
	"Our organization reduced rejection and rework costs."	Eco3	0.885			
	"Our organization reduced product development costs and energy consumption cost."	Eco4	0.878			
	Social Performances			0.923	0.875	0.800
	"Our organization improved the working environment and people's morale."	S1	0.894			
	"Our organization prioritizes the health and safety of employees."	S2	0.833			
	"Our organization improved labor relations."	S3	0.906			

FL = Factor Loading CA = Cronbach Alpha CR = Composite Reliability AVE = Average Variance Extract.

Table 4

Discriminant validity statistics (HTMT) values.

	CE	EI	Env	Eco	GM	So
Circular Economy						
Eco-innovation	0.715					
Environment	0.781	0.717				
Economic	0.774	0.735	0.841			
Green Marketing	0.616	0.742	0.577	0.549		
Social	0.652	0.716	0.798	0.848	0.602	
CE x GM	0.382	0.093	0.222	0.207	0.232	0.276

it provides greater statistical power (Hair et al., 2019). The structural model's results were computed using the bootstrapping method, employing a sample size of 5000 (see Fig. 2). The results in the Table 5 show each hypothesis's beta coefficient values and p-values. The first Hypothesis (H1) examined the relationship between Green Marketing (GM) and Ecological Innovation (EI). For H1, the results ($\beta = 0.466$, $p < 0.000$) showed a significant positive relationship between Green

Table 5

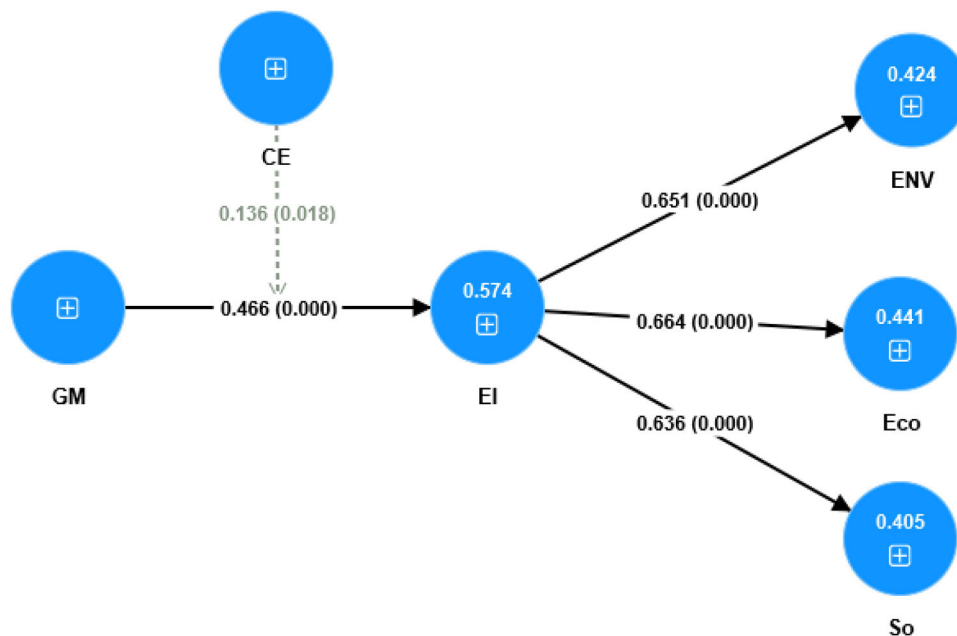
Structural model results.

Path	O	p-value	Hypothesis	Accepted/Rejected
<i>Direct Effect</i>				
GM→EI	0.466	0.000	H1	Accepted
EI→Env	0.651	0.000	H2	Accepted
EI→Eco	0.664	0.000	H3	Accepted
EI→So	0.636	0.000	H4	Accepted
<i>Moderating Effect</i>				
CE x GM→EI	0.136	0.018	H5	Accepted
<i>Mediation Effect</i>				
GM→EI→Env	0.303	0.000	H6	Accepted
GM→EI→Eco	0.309	0.000	H7	Accepted
GM→EI→So	0.296	0.000	H8	Accepted

P-value optimal at $\alpha=0.05$; significance level chosen by the researcher. O = Original Sample.

Marketing and Eco-Innovation. Thus, the hypothesis H1 is considered valid. Next, hypothesis H2 proposed a positive relationship between EI and the Environmental Performance of the firms. The path between them was statistically significant, with the result depicting ($\beta = 0.651$, $p < 0.000$), so H2 is validated. The third and fourth Hypotheses suggested a positive relationship between EI and firms' economic performance (Eco). The findings confirm the association between EI and Eco ($\beta = 0.664$, $p < 0.001$). Additionally, the relationship between EI and Social Performances ($\beta = 0.636$, $p < 0.000$) was also found to be statistically significant. The indirect relation between Green Marketing and the Triple Bottom Line of Sustainability (Env, Eco, So) mediated through Eco-Innovation was proposed in H5, H6, and H7. They were also validated because of the results ($\beta = 0.303$, $p < 0.000$), ($\beta = 0.309$, $p < 0.000$), ($\beta = 0.269$, $p < 0.000$). The last hypothesis was also accepted, which claimed that the Circular Economy moderates the relationship between Green Marketing and Eco-Innovation ($\beta = 0.136$, $p < 0.018$). Fig. 3 shows that each unit increase in CE practices strengthens the Green Marketing and Eco-Innovation relationship.

The R^2 of eco-innovation (EI) is 44%, whereas Environmental Performance (Env) is 42%, economic performance is 40%, and social performance (SP) is 57%. As per the findings of Hair et al. (2019), cap R squared values of 0.75, 0.50, and 0.25 are categorized as large, medium, and small, respectively. Henceforth, the cap R squared values exhibit a medium degree, as shown in Table 6 below.

**Fig. 2.** Structural model.

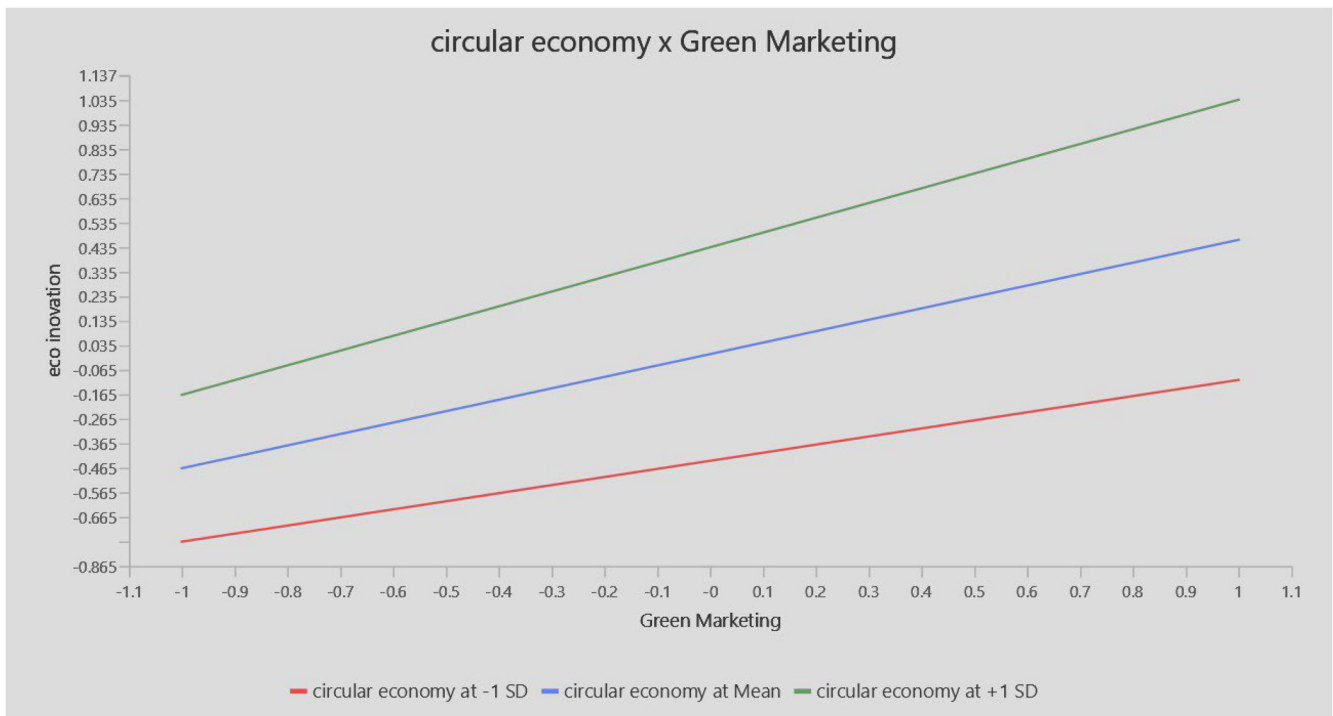


Fig. 3. The moderating effect of CE in relationship between GM and EI.

Table 6
Predictive accuracy.

Constructs	R-square
EI	0.441
Environmental Performance	0.424
Economic Performance	0.405
Social Performance	0.574

Discussion and conclusion

This study successfully achieved its primary research objective by analyzing the direct effects of green marketing on eco-innovation and eco-innovation on all three components of sustainable performance (economic, environmental, and social). Interestingly, the findings of this study succeeded in supporting the hypothesis proposed in the study. The first hypothesis, "that green marketing has a direct and significant positive impact on eco-innovation (H1)," analysis suggests that the findings are in accordance with prior studies (Ahmed & Prabhakar, 2023; Cubillas-Para et al., 2023; Sarkar, 2012) that also indicated that green marketing had a positive effect on Eco-innovation (EI) implementation. Furthermore, according to the findings of this study, EI is positively connected with all three sustainable performances of the firm (H2), (H3), and (H4), and there is an abundance of prior research (Costantini et al., 2017; Yurdakul & Kazan, 2020) to support this conclusion. These findings align with the practical examples of global businesses such as Tesla that use green Marketing to achieve sustainable goals. The green marketing of Tesla focuses on promoting electric vehicles as an eco-friendly alternative to traditional gasoline-powered cars. By successfully positioning electric vehicles as high-performance and environmentally responsible, Tesla has played a crucial role in the broader adoption of electric vehicles globally. Tesla's electric vehicles promote circular economy practices by reducing dependence on traditional fossil fuels. While the automotive industry is inherently resource-intensive, Tesla's focus on electric and sustainable transportation aligns with circular economy principles. Additionally, Tesla's continuous advancements in electric vehicle technology give a sense of eco-innovation

(Levin, 2023). Another example is IKEA, the international furniture retailer that has adopted green marketing strategies by emphasizing energy-efficient goods, recycling, trash reduction, and sustainable material sourcing. IKEA's "People & Planet Positive" strategy has helped the company achieve significant progress in sustainability. The company prioritizes recycling, energy-efficient goods, and using sustainable materials. IKEA's marketing strongly emphasizes sustainability, which affects consumer opinions and decision-making. It has pledged to transform into a climate-positive and circular enterprise (Hesham, 2023). The company aims to use more sustainable and renewable materials, reduce waste, and design products that can be easily repaired, reused, and recycled. The furniture take-back program and using recycled materials in product manufacturing are two examples of IKEA's circular economy activities (Moore, 2023). The broader implication of these findings is that companies should integrate green marketing (GM), eco-innovation (EI), and circular economy (CE) into a unified sustainability strategy. Instead of adopting GM superficially, firms should innovate in product design and process optimization to align with eco-friendly practices, such as enhancing recyclability and energy efficiency. For industries in Pakistan, embracing a circular economy involves rethinking product life cycles with a focus on reuse, recycling, and remanufacturing. This approach can reduce waste, create new business opportunities, and improve supply chain resilience.

The secondary objective of the current study was to evaluate the indirect influence of both green marketing and sustainable performance (SP). According to the research findings, green marketing has a strong, positive relationship with SP through eco-innovation implementation (EI) (H5) (H6) (H7). This hypothesis's findings are consistent with earlier studies (Rodríguez-Espíndola et al., 2022b). The specific impact of green marketing on sustainable performance, besides eco-innovation acting as a mediator, is also demonstrated. Literature is scarce on the specific relation. According to the analysis, it has been determined that eco-innovations play a full mediation role in the interaction between green marketing and sustainable performance (environmental, social, and economic). Moreover, the circular economy moderates the relationships between green marketing and eco-innovation.

Policy implications

Empirical evidence suggests that adopting green marketing practices in industries contributes to the transition towards eco-innovation, which includes both product and process innovation and contributes to firm sustainability. Furthermore, industries with circular economy practices are more likely to adopt environmental practices. These results have notable implications for managers and policymakers. First, the research fills a gap by showing how green marketing practices can contribute to achieving sustainability goals rather than only incorporating green production practices. Managers should move beyond basic eco-labeling by embedding sustainability into product design and manufacturing processes. For instance, adopting modular designs that facilitate recycling or using sustainable materials can align with green marketing principles. Implementing eco-friendly packaging by companies like Unilever has reduced packaging waste and enhanced brand reputation, demonstrating effective green marketing integration (*Rethinking Plastic Packaging*, 2024). The findings can aid policymakers in comprehending the ramifications of existing initiatives to encourage eco-innovation and circular economy to foster a sustainable future. The present research findings can be utilized by manufacturing industry managers to capitalize on their knowledge and comprehension of circular activities, thus promoting a sustainable future. Managers should reevaluate product life cycles, focusing on strategies like product take-back programs, recycling initiatives, and designing for disassembly. Implement closed-loop systems to minimize waste and resource use. For example, Philips' circular lighting services, which offer lighting as a service rather than a product sale, exemplify a successful circular economy model that reduces waste and extends product life (Pincus, 2024). It has been discovered that implementing eco-innovative practices in product, process, or management can significantly support the widespread implementation of circular economy practices. The present study has demonstrated the practical validation of the correlation between eco-innovation (EI) of products, operations, administration, and the circular economy (CE) within the manufacturing sector. Empirical data has been utilized to provide evidence of a noteworthy positive association between circular economy and environmental initiatives. It allows managers to enhance their eco-innovative methodologies, thereby fostering the qualitative advancement of their eco-products. The final implication is that the circular economy effectively influences the relationship between green marketing and eco-innovation, significantly impacting the company's sustainable performance (SP). Empirical evidence suggests that firms that adopt circular practices experience enhancements in economic, social, and environmental performance. By implementing the principles of reusing, recycling, and reducing, the organization can successfully mitigate adverse environmental effects, enhance operational efficiency, and prioritize the well-being of its workforce and neighboring community. The outcome underscores the significance of a shift from a linear to a circular paradigm in facilitating the manufacturing industry's transition towards sustainability, thereby providing valuable insights to organizational managers. The implementation of a circular economy (CE) model has the potential to yield significant economic, social, and environmental advantages for various industries operating within the Pakistani context.

The present study is essential for stakeholders in Pakistan's service and manufacturing organizations. It can serve as a basis for rationalizing investments in equipment, training, and process enhancements to facilitate the adoption of environmental and circular economy practices for accomplishing sustainability objectives. Policymakers moreover may support this transition by creating regulations and incentives that promote green marketing, eco-innovation, and circular economy practices, such as tax benefits for green investments and penalties for wasteful practices. Encouraging collaboration between industry, academia, and government can also help develop standards and certifications for sustainability. To implement these strategies effectively, companies should invest in training their workforce on circular economy principles and

green technologies. Building a culture of sustainability will ensure that these practices are adopted and continually enhanced.

Limitation and future work

Given the limitations of this study, it is crucial to assess the research findings critically. This study focused on a relatively small sample of industrial enterprises in Pakistan, which may limit the generalizability of the results. To enhance the applicability of these findings across different contexts, further research is recommended in comparable developing nations. The limited body of literature on this topic has necessitated a focus on the industrial sectors of emerging economies, specifically Pakistan. This approach allows for in-depth insights into the interrelationships among the various components within a particular industry. A comprehensive literature review and a careful examination of the theoretical framework were conducted to identify both external and internal factors relevant to this context. Future research could extend this analysis to examine investment initiatives and other variables influencing success within these sectors.

A significant limitation of this study is its inability to account for potential moderating factors that may impact the relationships between the constructs under investigation. Moreover, the research primarily concentrated on exploring the impact of eco-innovation (EI) on the development of the circular economy (CE). The three tiers of EI—process, product, and organization—each contribute distinct inputs that merit further exploration. An understanding of these elements can provide a more nuanced view of how EI influences CE initiatives within the industrial sector. The study also suggests employing a case-study methodology in future research to identify additional factors that may affect the implementation of a circular economy in the manufacturing sector. This method could help uncover supplementary aspects influencing sustainable performance. By doing so, future studies could offer more comprehensive insights into the dynamics of eco-innovation and circular economy, thereby contributing to the broader discourse on sustainability and industrial innovation in developing economies.

CRedit authorship contribution statement

Gonghang Chen: Writing – original draft, Investigation, Conceptualization. **Aemon Sabir:** Writing – original draft, Software, Formal analysis, Data curation, Conceptualization. **Muhammad Faisal Rasheed:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Lucian Belascu:** Writing – original draft, Conceptualization. **Chi-Wei Su:** Writing – original draft, Supervision, Conceptualization.

References

- Abbate, S., Centobelli, P., Cerchione, R., Nadeem, S. P., & Riccio, E. (2023). Sustainability trends and gaps in the textile, apparel and fashion industries. *Environment, Development and Sustainability*, 1–28. <https://doi.org/10.1007/s10668-022-02887-2>
- Adnan, N., Rasheed, M. F., & Ali, W. (2024). Embracing the metaverse: Cultivating sustainable tourism growth on a global scale. *Current Issues in Tourism*, 1–20. <https://doi.org/10.1080/13683500.2024.2390678>
- Afshari, H., Searcy, C., & Jaber, M. Y. (2020). The role of eco-innovation drivers in promoting additive manufacturing in supply chains. *International Journal of Production Economics*, 223, Article 107538. <https://doi.org/10.1016/j.ijpe.2019.107538>
- Ahmed, S., & Prabhakar, M. E. (2023). Assessing the factors impacting consumer behaviour towards green marketing and eco-friendly products in Nagaland. *International Journal For Multidisciplinary Research*, 5(6), 9209. <https://doi.org/10.36948/ijfmr.2023.v05i06.9209>
- Albino, V., Balice, A., & Dangelico, R. M. (2009). Environmental strategies and green product development: An overview on sustainability-driven companies. *Business Strategy and the Environment*, 18(2), 83–96. <https://doi.org/10.1002/bse.638>
- Ali, F., Kim, W. G., Li, J., (Justin), & Cobanoglu, C. (2018). A comparative study of covariance and partial least squares based structural equation modelling in hospitality and tourism research. *International Journal of Contemporary Hospitality Management*, 30(1), 416–435. <https://doi.org/10.1108/IJCHM-08-2016-0409>

- Ali, S., Jiang, J., Rehman, R. U., & Khan, M. K. (2023). Tournament incentives and environmental performance: The role of green innovation. *Environmental Science and Pollution Research International*, 30(7), 17670–17680. <https://doi.org/10.1007/s11356-022-23406-w>
- Alqaralleh, H. (2024). Dynamic connectedness amongst green bonds, pollution allowance policy, social responsibility and uncertainty. *The Journal of Risk Finance*, 25(1), 80–114. <https://doi.org/10.1108/JRF-01-2023-0015>
- Ashby, A. (2018). Developing closed loop supply chains for environmental sustainability: Insights from a UK clothing case study. *Journal of Manufacturing Technology Management*, 29(4), 699–722. <https://doi.org/10.1108/JMTM-12-2016-0175>
- Braik, A., Saleh, Y., & Jaaron, A. A. M. (2023). Green marketing practices and organizational sustainable performance in developing countries context: An empirical study. *Journal of Foodservice Business Research*, 1–41. <https://doi.org/10.1080/15378020.2023.2205337>
- Chavez, R., Malik, M., Ghaderi, H., & Yu, W. (2023). Environmental collaboration with suppliers and cost performance: Exploring the contingency role of digital orientation from a circular economy perspective. *International Journal of Operations & Production Management*, 43(4), 651–675. <https://doi.org/10.1108/IJOPM-01-2022-0072>
- Costantini, V., Crespi, F., Marin, G., & Pagliarlunga, E. (2017). Eco-innovation, sustainable supply chains and environmental performance in European industries. *Journal of Cleaner Production*, 155, 141–154. <https://doi.org/10.1016/j.jclepro.2016.09.038>
- Cubillas-Para, C., Tomaseti-Solano, E., & Madrid-Guijarro, A. (2023). How do the perception of the technological and symbolic dimensions and the social context affect the green consumer adoption process of eco-innovations? *Business Strategy and the Environment*, bse.3614. <https://doi.org/10.1002/bse.3614>
- Erdiaw-Kwasie, M. O., Abunyawah, M., Yusif, S., & Erdiaw-Kwasie, A. (2023). Does circular economy knowledge matter in sustainable service provision? A moderation analysis. *Journal of Cleaner Production*, 383, Article 135429. <https://doi.org/10.1016/j.jclepro.2022.135429>
- Ghathani, A. M., Alshammakhi, Y., Mohammed, A., & Mazher, K. M. (2023). Integrated impact of circular economy, industry 4.0, and lean manufacturing on sustainability performance of manufacturing firms. *International Journal of Environmental Research and Public Health*, 20(6). <https://doi.org/10.3390/ijerph20065119>. Article 6.
- Ghisellini, P., & Ulgiati, S. (2020). Circular economy transition in Italy. Achievements, perspectives and constraints. *Journal of Cleaner Production*, 243, Article 118360. <https://doi.org/10.1016/j.jclepro.2019.118360>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hermawan, A. N., Masudin, I., Zulfikarjah, F., Restuputri, D. P., & Shariff, S. S. R. (2023). The effect of sustainable manufacturing on environmental performance through government regulation and eco-innovation. *International Journal of Industrial Engineering and Operations Management*, 6(4), 299–325. <https://doi.org/10.1108/IJIEOM-04-2023-0039>
- Hesham, H. (2023). Sustainable Marketing: A Case Study of IKEA. <https://www.linkedin.com/pulse/sustainable-marketing-case-study-ikea-hussein-hesham>
- Ho, C. Y., Tsai, B. H., Chen, C. S., & Lu, M. T. (2021). Exploring green marketing orientations toward sustainability the hospitality industry in the COVID-19 pandemic. *Sustainability*, 13(8), 4348. <https://doi.org/10.3390/su13084348>
- Ismail, I. J. (2022). The role of technological absorption capacity, entrepreneurial orientation, and green marketing in enhancing business' sustainability: Evidence from fast-moving consumer goods in Tanzania. *Technological Sustainability*, 2(2), 121–141. <https://doi.org/10.1108/TECHS-04-2022-0018>
- Jia, T., Iqbal, S., Ayub, A., Fatima, T., & Rasool, Z. (2023). Promoting responsible sustainable consumer behavior through sustainability marketing: The boundary effects of corporate social responsibility and brand image. *Sustainability*, 15(7). <https://doi.org/10.3390/su15076092>. Article 7.
- Jo, J. H., Roh, T. W., Kim, S., Youn, Y. C., Park, M. S., Han, K. J., et al. (2015). Eco-innovation for sustainability: Evidence from 49 countries in Asia and Europe. *Sustainability*, 7(12). <https://doi.org/10.3390/su71215849>. Article 12.
- Jordan, P. J., & Troth, A. C. (2020). Common method bias in applied settings: The dilemma of researching in organizations. *Australian Journal of Management*, 45(1), 3–14. <https://doi.org/10.1177/0312896219871976>
- Junaid, M., Rasheed, M. F., Goudarzi, K., & Tariq, A. (2024). Advancing customer experience through service design in mega shopping malls. *International Journal of Retail & Distribution Management*, 52(1), 89–106. <https://doi.org/10.1108/IJRDM-03-2023-0187>
- Kaur, B., Gangwar, V. P., & Dash, G. (2022). Green marketing strategies, environmental attitude, and green buying intention: A multi-group analysis in an emerging economy context. *Sustainability*, 14(10). <https://doi.org/10.3390/su14106107>. Article 10.
- Khan, S. A. R., Ponce, P., Thomas, G., Yu, Z., Al-Ahmadi, M. S., & Tanveer, M. (2021). Digital technologies, circular economy practices and environmental policies in the era of COVID-19. *Sustainability*, 13(22). <https://doi.org/10.3390/su132212790>. Article 22.
- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
- Le, T. T. (2022). Linking big data, sustainable supply chain management and corporate performance: The moderating role of circular economy thinking. *The International Journal of Logistics Management*, 34(3), 744–771. <https://doi.org/10.1108/IJLM-01-2022-0011>
- Levin. (2023). Unleashing Green Power: Tesla's Sustainable Marketing Strategy – Woodward Avenue. <https://woodwardavenue.org/unleashing-green-power-teslas-sustainable-marketing-strategy/>
- Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: A comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*, 115, 36–51. <https://doi.org/10.1016/j.jclepro.2015.12.042>
- Liu, X., Guo, P., & Guo, S. (2019). Assessing the eco-efficiency of a circular economy system in China's coal mining areas: Emergy and data envelopment analysis. *Journal of Cleaner Production*, 206, 1101–1109. <https://doi.org/10.1016/j.jclepro.2018.09.218>
- Mačiulytė-Sniukienė, A., & Sekhniashvili, D. (2021). The eco-innovation impact on economic and environmental performance of EU Member States. *Business, Management and Economics Engineering*, 19(2), 212–228.
- MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing*, 88(4), 542–555.
- Makpotoche, M., Bouslah, K., & M'Zali, B. (2024). Corporate governance and green innovation: International evidence. *Review of Accounting and Finance*, 23(2), 280–309. <https://doi.org/10.1108/RAF-04-2023-0137>
- Manju, R., & Latha, Dr. A. (2023). The evolution of green marketing: Strategies for a sustainable future. *International Journal for Research in Applied Science and Engineering Technology*, 11(11), 980–984. <https://doi.org/10.22214/ijraset.2023.56653>
- Moore, K. (2023). How Patagonia, LEGO & IKEA grow with green marketing [Blog]. <https://www.sourceful.com/blog/green-marketing-patagonia-ikea-lego>
- Muntean, A., & Stremtan, F. (2008). Green marketing: A new challenge for romanian organizations. *Tourism and Hospitality Management*, 14(2), 343–348. <https://doi.org/10.20867/thm.14.2.13>
- Nazir, M. W., Haq, D. F., Naeem, Z., Suarez, V. O., Asghar, F., & Marwat, A. (2024). Understanding green marketing strategies effects on consumers' purchase behavior: Insights from Pakistan. *Remittances Review*, 9(S2 (May 2024)). Article S2 (May 2024).
- Nguyen-Viet, B. (2022). The impact of green marketing mix elements on green customer based brand equity in an emerging market. *Asia-Pacific Journal of Business Administration*, 15(1), 96–116. <https://doi.org/10.1108/APJBA-08-2021-0398>
- Nu, C. (2019). The 2030 Agenda and the Sustainable Development Goals: An opportunity for Latin America and the Caribbean. Goals, Targets and Global Indicators. <https://hdl.handle.net/11362/40156>
- Nyagadza, B. (2021). Fostering green economies in Africa through green marketing strategies for environmental sustainability: An overview. *Journal of Environmental Media*, 2(1), 17–22. https://doi.org/10.1386/jem.00037_1
- Padilla-Rivera, A., Russo-Garrido, S., & Merveille, N. (2020). Addressing the social aspects of a circular economy: A systematic literature review. *Sustainability*, (19), 12. <https://doi.org/10.3390/su12197912>. Article 19.
- Pincus, C. (2024, July 24). Philips Lighting, WM transition to the circular economy. Trellis. <https://trellis.net/article/philips-lighting-wm-transition-circular-economy/>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Prieto-Sandoval, V., Jaca, C., & Ormazabal, M. (2018). Towards a consensus on the circular economy. *Journal of Cleaner Production*, 179, 605–615. <https://doi.org/10.1016/j.jclepro.2017.12.224>
- Răzvan, & Corboș, A. (2022). organizational readiness for procurement 4.0 in circular economy: The moderating role on competitiveness. <https://www.semanticscholar.org/paper/ORGANIZATIONAL-READINESS-FOR-PROCUREMENT-4.0-IN-THE-R%20C4%83zvan-Corboș%20C8%99/1b9acceb452a4618e15be6e3f864870fd04c18f1>
- Rehman, F. U., Al-Ghazali, B. M., & Farook, M. R. M. (2022). Interplay in circular economy innovation, business model innovation, SDGs, and government incentives: A comparative analysis of Pakistani, Malaysian, and Chinese SMEs. *Sustainability*, 14(23). <https://doi.org/10.3390/su142315586>. Article 23.
- Rasheed, M. F., Zaheer, N., Hassan, W., Junaid, M., & Majeed, A. (2023). Role of sustainable supply chain management practices in boosting environmental performance: Empirical evidence from the textile sector of developing economies. *Geological Journal*, 58(9), 3577–3593. <https://doi.org/10.1002/gj.4810>
- Rethinking Plastic Packaging. (2024). Unilever. <https://www.unilever.com/sustainability/plastics/rethinking-plastic-packaging/>
- Rodríguez-Espíndola, O., Cuevas-Romo, A., Chowdhury, S., Díaz-Acevedo, N., Albores, P., Despoudi, S., et al. (2022). The role of circular economy principles and sustainable-oriented innovation to enhance social, economic and environmental performance: Evidence from Mexican SMEs. *International Journal of Production Economics*, 248, Article 108495. <https://doi.org/10.1016/j.ijpe.2022.108495>
- Roh, T., Noh, J., Oh, Y., & Park, K. S. (2022). Structural relationships of a firm's green strategies for environmental performance: The roles of green supply chain management and green marketing innovation. *Journal of Cleaner Production*, 356, Article 131877. <https://doi.org/10.1016/j.jclepro.2022.131877>
- Sarfraz, M., Ivascu, L., Abdullah, M. I., Ozturk, I., & Tariq, J. (2022). Exploring a pathway to sustainable performance in manufacturing firms: The interplay between innovation capabilities, green process, product innovations and digital leadership. *Sustainability*, 14(10), 5945. <https://doi.org/10.3390/su14105945>
- Sarkar, A. N. (2012). Green supply chain management: A potent tool for sustainable green marketing. *Asia-Pacific Journal of Management Research and Innovation*, 8(4), 491–507. <https://doi.org/10.1177/2319510X13481911>
- Sezen, B., & Çankaya, S. Y. (2013). Effects of green manufacturing and eco-innovation on sustainability performance. *Procedia - Social and Behavioral Sciences*, 99, 154–163. <https://doi.org/10.1016/j.sbspro.2013.10.481>
- Shabbir, M. S., Bait Ali Sulaiman, M. A., Hasan Al-Kumaim, N., Mahmood, A., & Abbas, M. (2020). Green marketing approaches and their impact on consumer behavior towards the environment—a study from the UAE. *Sustainability*, 12(21). <https://doi.org/10.3390/su12218977>. Article 21.

- Shafiq, M. A., Ziaullah, M., Siddique, M., Bilal, A., & Ramzan, M. (2023). Unveiling the sustainable path: Exploring the nexus of green marketing, service quality, brand reputation, and their impact on brand trust and purchase decisions. *International Journal of Social Science & Entrepreneurship*, 3(2), 654–676.
- Shan, S., Mirza, N., Umar, M., & Hasnaoui, A. (2023). The nexus of sustainable development, blue financing, digitalization, and financial intermediation. *Technological Forecasting and Social Change*, 195. <https://doi.org/10.1016/j.techfore.2023.122772>. Scopus.
- Shaukat, F., & Ming, J. (2022). Green marketing orientation impact on business performance: Case of pharmaceutical industry of Pakistan. *Frontiers in Psychology*, 13, Article 940278. <https://doi.org/10.3389/fpsyg.2022.940278>
- Singh, P., & Pandey, K. (2012). green marketing: Policies and practices for sustainable development. *10.13140/RG.2.2.23593.34403*.
- Singh, S., & Srivastava, S. K. (2021). Decision support framework for integrating triple bottom line (TBL) sustainability in agriculture supply chain. *Sustainability Accounting, Management and Policy Journal*, 13(2), 387–413. <https://doi.org/10.1108/SAMPJ-07-2021-0264>
- Soper. (2023). A-priori sample size calculator for structural equation models—free statistics calculators. <https://www.danielosoper.com/statcalc/calculator.aspx?id=89>.
- Su, C., Li, K., Tao, R., Qin, M., & Umar, M. (2024). Can green bonds diversify economic and climate policy uncertainty?. *Singapore economic review*. Scopus. <https://doi.org/10.1142/S0217590824470039>
- Supaat, S. H., Ahamat, A., & Nizam, N. Z. (2020). Green marketing strategies for sustainability development of firm's performance in Malaysia: For green economy. *International Journal of Business Competition and Growth*, 7(1), 41. <https://doi.org/10.1504/IJBCG.2020.108437>
- Tsai, K. H., & Liao, Y. C. (2017). Sustainability strategy and eco-innovation: A moderation model. *Business Strategy and the Environment*, 26(4), 426–437. <https://doi.org/10.1002/bse.1926>
- Umar, Z., Hadhri, S., Abakah, E. J. A., Usman, M., & Umar, M. (2024). Return and volatility spillovers among oil price shocks and international green bond markets. *Research in International Business and Finance*, 69. <https://doi.org/10.1016/j.ribaf.2024.102254>. Scopus.
- Vilkaite-Vaitone, N., Skackauskiene, I., & Díaz-Meneses, G. (2022). Measuring green marketing: Scale development and validation. *Energies*, 15(3). <https://doi.org/10.3390/en15030718>. Article 3.
- Wang, T., Li, M., & Rasheed, M. F. (2024). The nexus between resource depletion, price fluctuations, and sustainable development in expenditure on resources. *Resources Policy*, 89, Article 104629. <https://doi.org/10.1016/j.resourpol.2023.104629>
- Xu, L., Luo, Y., Wu, C., Umar, M., Li, H., & Muhammad, S. (2024). Environmental regulation and green innovation efficiency: A revisit of the porter hypothesis based on Chinese cities. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-023-04384-6>. Scopus.
- Yurdakul, M., & Kazan, H. (2020). Effects of eco-innovation on economic and environmental performance: Evidence from Turkey's manufacturing companies. *Sustainability*, 12(8). <https://doi.org/10.3390/su12083167>. Article 8.
- Zhong, M., Umar, M., Mirza, N., & Safi, A. (2024). Mineral resource optimization: The nexus of sustainability, digital transformation, and green finance in OECD economies. *Resources Policy*, 90. <https://doi.org/10.1016/j.resourpol.2024.104829>. Scopus.
- Zhu, J., Fan, C., Shi, H., & Shi, L. (2019). Efforts for a circular economy in China: A comprehensive review of policies. *Journal of Industrial Ecology*, 23(1), 110–118. <https://doi.org/10.1111/jiec.12754>