

CAN RESPONSIBLE LEADERSHIP SPUR CORPORATE GREEN PRACTICES? INVESTIGATING THE CHAIN MEDIATION ROLE OF TOTAL QUALITY MANAGEMENT AND CORPORATE SUSTAINABILITY

Muhammad Kashif Aslam

School of Business, Management and Administrative Sciences,
Institute of Business, Management, and Administrative Sciences,
The Islamia University of Bahawalpur
Pakistan

kaslam4405@gmail.com

Dr. Muhammad Salman Azhar

(Corresponding Author)

Assistant Professor

Department of Marketing & International Business, IBM & AS,
The Islamia University of Bahawalpur
Pakistan

salman.azhar@iub.edu.pk

Abstract

Despite the influential role of leader responsible behavior in framing organizational behavior, research still remains deficient in studying its impact to mitigate environmental management practices. This investigation frames the critical role of responsible leadership in institutionalizing corporate green practices. Moreover, the study also tests the mediating roles of total quality management and corporate sustainability in this relationship. Additionally, chain mediation effect of total quality management and corporate sustainability is also tested in this study. Through collecting data in three waves from managers and workers employed in the manufacturing units in Southern Punjab, Pakistan, we investigated how responsible leadership boosts the adoption of corporate green practices. Data was analyzed by employing PROCESS MACRO developed by Hayes. The results yielded from analysis demonstrate that responsible leadership drives corporate green practices. The proposed mediating roles of total quality management and corporate sustainability were confirmed. The findings of the study elaborate that manufacturing firms should develop responsible leadership behavior in future leaders to implement corporate green practices. Furthermore, the results also persuade that these firms must also apply the total quality management and corporate matrices for ensuring environmental stewardship.

Keywords: responsible leadership; total quality management, corporate sustainability, corporate green practices.

1. Introduction

Contemporary businesses are confronting the dual pressure of both making profits for the shareholders as well as to tackle the environmental degradation related problems like greenhouse gas emission, climate change, waste elimination, and global warming as these issues have posed a serious challenge for the firms to produce products and services but also protect the environment and strive for environmental stewardship (Pham, Vo-Thanh, Shahbaz, Huynh, & Usman, 2020; Robertson & Barling, 2013). In this context, businesses are continually committed to undertake various actions towards environmental responsibility through the implementation and institutionalization of different green strategies and practices. Management scholarship have labelled these measures related to augmenting environmental safety as "green organizational practices" (J. Zhang, Ul-Durar, Akhtar, Zhang, & Lu, 2021) (Zhang, Ul-Durar, Akhtar, Zhang, & Lu, 2021)

Corporate green practices (Green innovation, green marketing, green supply chain management and green information system) are the robust tools to tackle and reduce the

impact of anti-environmental processes and production, thus addressing stakeholders' concerns associated with deteriorating natural environment. The concept of CGP focuses green products and processes with breakthrough new technology or enhancing the efficiency for the existing (Mukonza & Swarts, 2020), new marketing techniques based on green thinking (Mukonza & Swarts, 2020), green supply chain to ensure procurement and green delivery & green information system to reduce waste and ensure greening (Shah & Soomro, 2021; Yang, Sun, Zhang, & Wang, 2018), thus maintaining an equilibria between customers' quality demands fulfilment and continual development in environmental performance (Wu, Huo, Yu, & Zhang, 2022; Yu & Huo, 2019). Green innovation has been segregated into three dimensions, i.e. green process innovation, green product innovation (Qu, Khan, Yahya, Zafar, & Shahzad, 2022; Xie, Huo, & Zou, 2019) and green management innovation (Li, Zhao, Zhang, Chen, & Cao, 2018). Organizations fall in love with green innovation as a whole to improve upon their production processes to address the resultant environmental challenges. Green innovation forms part of a more significant schema of CGP adopted by the businesses to yield double dividends: curtailing ecological degradation caused by the production activities through energy efficiency, pollution prevention and ensuring optimum utilization of natural resources through recycling & reproducing viz-a-viz adopting new and breakthrough technologies for new product assimilation or modification in existing products with better quality, safety and reduced environmental impact during product life, opting for improved production process and management activities aiming to address environmental issues. Currently, research on green practices is in its nascent days (Arici & Uysal, 2022; Centobelli, Cerchione, & Esposito, 2020; Wang, 2019; D. Zhang, Rong, & Ji, 2019) and academicians have called for researchers' abrupt attention to address this area (Abbas, 2020; Jum'a, Zimon, Ikram, & Madzík, 2022). Understanding the drivers of corporate green practices is critically important and necessitates targeted interventions for achieving environmental sustainability. Global warming is one of the most severe problems we face currently (Javed, Ali, Asrar-ul-Haq, Ali, & Kirmani, 2020; Tanimura & Okamoto, 2013). Researchers intricate that in order to achieve strong organizational growth and success, responsibility lies with the leaders for producing and distributing the knowledge to view environment as a crucial stakeholder (Inam, Ho, Ng, & Mohamed, 2021). Saying this, businesses have the responsibility to give back to the community. Maak and Pless (2006) understand that businesses need to give due consideration to the surrounding challenges due to their imminent role in tackling these issues (M. Abbas, Sajid, & Mumtaz, 2018; Ahmad, Donia, Khan, & Waris, 2018; L. Chen, Wadei, Bai, & Liu, 2020). To achieve this, this study proposes responsible leadership (RL) as the critical driver of corporate green practices.

RL is defined as "the art and ability involved in building, cultivating and sustaining trustful relationships to different stakeholders, both inside and outside the organization, and in coordinating responsible action to achieve a meaningful, commonly shared business vision" (Maak & Pless, 2006). RL is critical for an organization's ability to develop an atmosphere that fosters implementation of corporate green practices such as green innovation, green marketing, green supply chain, and green information system to reduce waste, global warming, water consumption, air pollution, coal, oil, use of electricity and energy conservation. Responsible leadership is considered to be an ethical phenomenon and social relationship that occurs when a leader interacts with a wide range of external and internal stakeholder (Akoroda, David, & Karanasios, 2019; He, Morrison, & Zhang, 2021; Miska, Hilbe, & Mayer, 2014). In accordance with (Akoroda et al., 2019; Scherer & Voegtlin, 2020), perception regarding responsible leader is to create an authentic and valuable platform for stakeholders which allows them to partake discussion on relevant issues and act as an agent while balancing the interest of distinct outside and inside stakeholders of organization.

Furthermore, in addition to the association among generic leadership and generic results (e.g., leadership and innovation), an increasing number of research have begun to look into the impact of distinct leadership types on specific outcomes. (Afsar, Cheema, & Javed, 2018; Robertson & Barling, 2013; Wesselink, Blok, & Ringersma, 2017) discovered that customer-oriented OCB is motivated by service-oriented leadership, which leads to superior unit performance, while (Sun, Liu, & Ding, 2020) investigated how innovation leadership enhances business innovation. Furthermore, according to a recent study on environmental innovation, research on environmental innovation is rather limited when compared to general innovation (Cheng, Wei, & Lin, 2019). As a first attempt to understand why and how environmentally responsible leadership generates environmental innovation and corporate green practices, we present a first attempt to further this line of research. Firm executives have realized that green practices are a critical component of long-term development and can provide a competitive edge. In order to understand the phenomenon that release an output regarding green practices, a well-framed and clear understanding is mandatory. According to the literature, a way to explain green practices that lower negative environmental impacts is still elusive and lacks a consistent conceptualization within academia (Chen & Chang, 2013; Oduro, Maccario, & De Nisco, 2021).

Moreover, we also propose that leadership, through the implementation of total quality management principles, and by embedding corporate sustainability imperatives in their business strategies can be the critical demonstrator of environmental stewardship for diverse societal players valuing environmental sustainability as the prime responsibility concern (He et al. 2021; Liao and Zhang 2020). Firms can gain dividends from this proactive engagement as it enhances their market reputation through trust-building, thereby conferring them with the competitive advantages in sustainability-sensitive markets (Ooi and Memon 2025a).

Total quality management refers to the management system with the capacity to trigger performance excellence at individual and organizational level. According to Zwain, Lim, and Othman (2017), TQM is the enabler for competitive advantage for the firm. It facilitates the production of superior quality goods and services coupled with cost and time reduction (Qasrawi, Almahamid, & Qasrawi, 2017). TQM is considered as the environmental-friendly mechanism grounded in waste elimination through efficient use of resources (Yusr, Mokhtar, Othman, & Sulaiman, 2017a). Contemporary businesses are permeated with business excellence through TQM implementation in their systems to make continuous improvements through optimized utilization of resources while reducing waste to the bare-minimum level (Qasrawi et al., 2017). Since TQM is a process principle (C. C. Chang, Chiu, & Chen, 2010), it requires some push factors to for implementation.

No serious rigorous effort has been made to address the managerial processes related to TQM. This multi-faceted phenomenon requires new perspectives and leadership ideology with multiple doctrines or theories to address it. The importance of leadership in TQM implementation has been repeatedly emphasized by the quality gurus (Juran, 2003) , and lateral researchers (Jabnoun & Khalifah, 2015). Numerous studies have unequivocally stressed how much TQM successful implementation necessitates leadership (C. C. Chang et al., 2010; Lim, Ciasullo, Douglas, & Kumar, 2022; Salahat et al., 2023). As an important precursor of TQM (Weckenmann, Akkasoglu, & Werner, 2015), quality leadership promotes TQM (Oakland, 2011). However, despite this, leadership studies in the context of TQM have been very scarce (Lakshman, 2006). TQM has been studied in the relationship with Transformational leadership (Ma, Waqas, & Malik, 2025), Ethical leadership (Perles, 2002), however, no study to date has been made on the relationship between responsible leadership and TQM.

This investigation makes some significant contributions to the scholarly discourse on environmental sustainability and leadership domain. First, it takes initiative in studying the serially mediated relationship between RL, TQ, CS and CGP, thereby by expanding research on TQM and CS. Through the transfusion of leadership literature into CGP (involving various practices like green marketing, green innovation, green information system & green supply chain) through TQM and CS, theoretical research on CGP antecedents and mechanisms gains novel insights. Second, this study examines CGP as a set of practices, while previous research has only studied one method, thus leaving a gap to study the set of CGP as a whole. Third, deviating from the accepted notion of stakeholder pressure as the main driver of green initiatives (Kammerer, 2009; Liao, 2018), we propose RL as the true champion which considers environmental sustainability beyond the confines of stakeholder pressure. Based on Social learning theory (Bandura, 1977, 1986), this work takes its theoretical clues from the theory and embraces the logic of “leadership-Process-Practices,” logic to make inquiry into the emphatic role of responsible leadership on corporate green practices via TQM, & CS.

2. Literature Review

Theoretical background and hypotheses development

Several studies have attempted to attempt various theoretical lens for elaborating various organizational aspects like leadership, employee behavior, organizational behavior and outcomes related to rewards and performance. Grounded in the Natural Resource-Based View (NRBV) by Hart (1995) and its integration with Stakeholder theory by (Freeman, Wicks, & Parmar, 2004) Freeman (1994), this investigation elaborates the overarching role of responsible leadership on corporate green practices while also investigating the mediating roles of total quality management (TQM), and corporate sustainability (CS) through the serial-mediational pathway. RBV is grounded in the assumptions that organizational resources which are unique, rare, inimitable, and non-substitutable render the competitive advantage to the firm (Barney, 1991; Habib & Dalwai, 2024). Furthermore, this theory further posits that firms secure their competitive advantage through the efficient deployment and utilization of their resources (Dalwai, Habib, Mohammadi, & Hussainey, 2023; Nuta, Habib, Neslihanoglu, Dalwai, & Rangu, 2025). When the firms make effective utilization of these resources, they develop their internal strengths as well as boost their structures and process to tackle external environmental risks and precariousness (Zimon, Habib, & Haluza, 2024). In the business environment, various environmental vulnerabilities including environmental degradation and depletion pose imperil their resources and capabilities. Considering these, NRBV suggests different initiatives for sustainable development, pollution control, and environmental balance as the ways for the businesses to confirm market competitiveness (Habib, 2024). Such indications support the institutionalization of corporate green practices as the premier strategic asset which is hard to imitate and advances the performance excellence and success (Choi & Hwang, 2015). Furthermore, with the focus of leaders and organizations on increasing the shareholders' wealth, market competition has intensified to boost economic incentives, thereby giving rise to the predicament for the organization leaders for developing viable solutions (Habib & Mourad, 2022; Parmar et al., 2010). In this regard, stakeholder theory emerges as the critical mechanism to take care of all stakeholders' interests (Freeman et al., 2004). Stakeholder theory declares that there must exist a mutually agreed association based on trust among the stakeholder constituencies for achieving communal goals.

2.1. Responsible Leadership and CGP

Past literature elaborates that Responsible business leaders drive the adoption of desired environmental protocols and management strategies that focus on environmental protection and specify the (in)appropriate behaviour (Haque, Fernando, & Caputi, 2019). Leaders in this era of economic globalization are storming the weather of a dynamic, volatile, complicated, expeditious and tremendously competitive business world changing their focus from mere financial performance of the firm to adoption of CSR-based practices and procedures (Maak & Pless, 2006; Voegtlin, Patzer, & Scherer, 2012). In response of these business requirements and fluctuations Maak and Pless (2006) integrated the leadership and corporate social responsibility literature to hypothesize and propose the idea of responsible leadership. Responsible leadership, unlike the other types of merely employee or organization focused leadership styles such as servant, transformational and ethical leadership (Akoroda et al., 2019; Miska & Mendenhall, 2018; Pless & Maak, 2011), diverts the focus from these congenital objects towards establishing sustainable, unquestionable and credible interrelationship among diversified stakeholders linked to the organization, consisting of organizational workforce, suppliers, buyers, investors, and above all the ecological setup. Employees and organizations benefit from responsible leadership. For example, responsible leadership improves performance relating to business (Coldwell, Joosub, & Papageorgiou, 2012; Doh & Quigley, 2014), social (Maak, 2007), financial (Wang, Huang, Gao, Ansett, & Xu, 2015) as well reduced employees turnovers associated with their work-life satisfaction (Doh, Stumpf, & Tymon, 2011; Maak, 2007). Responsible leaders conduct ethically by providing an example for their followers by doing things the right way (Freeman & Auster, 2011). Responsible leadership, according to (Voegtlin, Frisch, Walther, & Schwab, 2020), limits followers' unethical actions.

Prior studies are interlinked with distinct various external factors that aids in fostering green innovation specifically in service industries such as innovation climate, leadership and management support (Chen & Chang, 2013; Fei, Wang, Yang, Chen, & Zhi, 2016; Gomezelj, 2016; Gürlek & Tuna, 2018; Joshi & Dhar, 2020; Sharma, Chen, & Liu, 2020; Zhang, Kang, et al., 2020). Mittal and Dhar (2016), for example, used employee-supervisor dyadic surveys to investigate the role of transformational leadership in encouraging green creativity in the Indian business. Green innovation strategy influenced both green organizational identities along with green creativity in China's service industries, according to (Song & Yu, 2018). In the business, Gürlek and Tuna (2018) looked at the links between green organizational culture, competitive advantage and green innovation, while Usman, Javed, and Yin (2020) discovered that green transformational leadership had a substantial impact on employee green creativity in the IT industry. The awareness regarding green innovation arises from traditional market limitations, such as customer needs and environmental and societal pressure (Tang, Walsh, Lerner, Fitza, & Li, 2018). Green innovation, which can be divided into two categories: green product innovation and green process innovation, refers to actions aimed at generating new products and processes that are less harmful to the environment (Gomezelj, 2016; Zhang, Sun, Yang, & Wang, 2020). Green product innovation, in particular, is the process of modifying an existing product design to safeguard the environment during its manufacture, usage, and disposal. Green process innovation refers to any change to the manufacturing process that reduces the environmental impact of material acquisition, harm cause by production, and through delivery (Sharma et al., 2021).

Traditionally, organizations have seen to invest to environment- friendly behavior and activity as an additional investment, but now in this modern and today's era where ecological rules are strict and the environment prevalence are altering competitive patterns, strategies and policies. The label "green" is quite an incentive for continuous innovation while

developing new market opportunities for businesses to satisfy the demands of their customer and moreover by creating value while improving performance and quality. According to the view of (Schiederig, Tietze, & Herstatt, 2012), green innovation comprises green products or green processes as well as involve innovation regarding technology for saving energy, preventing pollution, recycling of waste, green product signing and management of corporate environment (Zhou, Govindan, Xie, & Yan, 2021).

Green innovation entails the creation of green products as well as green processes that alter and modify an already existing product design in order to eliminate any negative environmental impact at any point in the product's life cycle (Castellacci & Lie, 2017; Gürlek & Tuna, 2018). Green product innovation refers to product development that incorporates ecologically friendly materials, environmentally friendly packaging, product recovery and recycling, and eco-labeling (García-Granero, Piedra-Muñoz, & Galdeano-Gómez, 2018; Wong, 2013). Green process innovation refers to a company's ability to improve existing processes while also developing new ones that save money and reduce pollution. In innovation processes, green process innovation refers to energy savings, pollution prevention, waste recycling, or lower toxicity (Chen & Chang, 2013; Gomezelj, 2016; Wang & Zhang, 2020). Because of the growing relevance of green innovation, several research have been conducted to investigate the elements that influence green innovation (C.-H. Chang, 2011; Friedman & Miles, 2002; Lin, Chen, & Huang, 2014; Tseng, Wang, Chiu, Geng, & Lin, 2013). Some of these studies investigated how external context influences an organization's ability to innovate in a green way.

Arici and Uysal (2022) discovered that in the motorcycle sector, market demand influenced green product innovation. Y. Wang, Shen, Chen, and Carmeli (2021) demonstrated that environmental restrictions can have a positive impact on the amount of green innovation in their study. Other researches have looked into the internal aspects that contribute to an organization's green innovation capability. Gürlek and Tuna (2018) and Kuo and Smith (2018), for example, examined the link between corporate environmental ethics and competitive benefits. According to the findings of that study, corporate environmental ethics favorably inspire green product and green process innovation, which can significantly boost organizational benefits (Chen, Cheng, & Dai, 2017).

Green innovation strategy involving leadership has been identified as a critical aspect for enabling green innovation in products and processes by a few academics that examined the internal organizational factors that affect green innovation (Arici & Uysal, 2022; Bocken, Strupeit, Whalen, & Nußholz, 2019). However, few researchers or empirical studies have looked into how a green innovation strategy encourages green innovation. Green innovation involves the originality of green products in order to protect environment by making it a safer place to survive for humans (Usman et al., 2020). Customers today are well aware of the importance of safe environment and in accordance with this concern they prefer eco- friendly products that can ensure them environmental safety over other products that are no good for environment. Prior studies on green innovation emphasizes on generating the core competencies, attach the suppliers with greening, and attaining the sustainability of environment by means of increasing green innovation (Hagedoorn, 1993; Joshi & Dhar, 2020). However there exist few studies and researches focus on different strategies to exert the outputs regarding green innovation but study in the context of leadership specifically leadership which associated with corporate social responsibility is rare. However current study is an effort to investigate the impact of responsible leadership on green innovation outcomes of an organization. According to the study of Singh, Del Giudice, Chierici, and Graziano (2020), in order to achieve the goals of a firm regarding green innovation or green products, an organization should fully utilize its human capabilities and should focus on

factors affecting those capabilities. When a firm focuses on the leadership style and human resource factors while formulating green innovation strategies, it enhances the efficiency of green product development which is ultimately a source of tremendous green innovation results (Fei et al., 2016). These factors also act as stimulation for green innovation that helps firms in developing new opportunities in national and international markets while increasing competitive advantages. Consumers are more likely to purchase green products and even pay greater money for ecologically friendly products as environmentalist sentiments grow (García-Granero et al., 2018; Gürlek & Tuna, 2018; Hagedoorn, 1993).

Environmental protection goals motivate firms to embrace green innovations. Green innovation helps to protect environment by solving the problems in the following areas; such as waste recycling, pollution prevention, energy-saving and green product designs (Ali, Ashfaq, Begum, & Ali, 2020). Responsible leader is a person who can implement these ideas of green innovation toward betterment of its organization's procedure, practices and products. When responsible leader take part in environment protect while promoting green innovation, it is his extra-role which he is playing voluntary for nature (Awan, Sroufe, & Kraslawski, 2019). So, Leadership and social responsibility go hand in hand in RL take into account the interest of wide range of its stakeholders and endeavors to incorporate economic, social, and environmental-benefits behavior that is consistent with the concept of green innovation (Inam et al., 2021; Miska & Mendenhall, 2018). Therefore, by fostering green innovation through management skills, it is assumed that RL is concerned with the environment, strives to achieve a balance between society and nature, and guides its subordinates toward the achievement of that balance.

Furthermore, another aspect of corporate green practices is green marketing as green innovation does not exist in vacuum. In this context, Zafar, Aziz, and Hainf (2020) defined green marketing as the marketing strategy planned by the firm while underscoring environmental concerns. Another study by Dangelico and Vocalelli (2017) proposed green marketing as the mix of practices which promise the least adverse effects on the environment during the products interchange. Firm use the green marketing strategy as the tool to bring their operations in alignment with the environmental safety which they use through the marketing trends like production process, packaging of the finished goods, and advertising tactics.

Responsible leaders conduct ethically by providing an example for their followers by doing things the right way s Responsible leadership, according to (Voegtlin, 2011) limits unethical behavior of employees. By emphasizing economic, environmental and social performance, responsible leaders can help firms achieve long-term success (Inam et al., 2021; Miska & Mendenhall, 2018). Although prior studies in relevant literature have narrated responsible leadership in close association with performance of organizations and satisfaction of workforce (Miska et al., 2014), nevertheless its potential impact towards environmental concern still remains empirically almost unattended. Responsible leadership is considered to be the chief determinant of environmentally friendly behavior of organizations, as duties and concern of responsible leader also centered on environmental issues (Tsui, 2021). Hence, these leaders influence the consumer's perceptions about the firm as environmentally responsible and thus can shape their purchase decisions which in turn improves the firm's economic performance and sustained competitive advantage. Furthermore, responsible leaders, through their stakeholder approach, understand the needs and demands of all stakeholders, hence, when they stimulate the green innovation for the environmentally-conscious markets, they also strive to convey the adoption of green processes and practices to their customers effectively to gain social acceptability for their products. This results in not only customer engagement and loyalty, but also promotes firm's corporate green practices for

ensuring environmental management (Hwang & Lyu, 2020). Hence, responsible leaders engage in sustainability behaviors including recycling, selecting environment-friendly products and process and support environmentally-responsible business (Waris, Suki, Ahmed, & Barkat, 2024), thereby signaling their commitment to produce and market green products.

Another aspect of CGP is green supply-chain management (GSCM). Paliszkiewicz, Gołuchowski, and Koochang (2015) narrated GSCM as the business cycle from raw material procurement to finished goods delivery with the customer at the beginning and the end as well. It comprises all the materials flow, information exchange, and finished goods delivery through this channel for creating value for the customers and for the firm through improved services and products (Qinghua Zhu, Sarkis, & Geng, 2005). It blends the principles of science and arts for improved firm performance and competitiveness through the management of materials, both raw and finished, to the customers at both ends (Yildiz Çankaya & Sezen, 2019).

Bessant, Kaplinsky, and Lamming (2003) identified leadership as the key driver of GSCM practices, either through their mere presence, or they direct participation with the other stakeholders in the GSCM. Moreover, Gosling, Jia, Gong, and Brown (2016) also tested a theoretical framework and investigated the leadership role in GSCM frameworks for assessing its impact on sustainable practice learning. Academic scholarship has already determined the role of leadership in driving GSCM which further supports the businesses in achieving environmental performance (Sharif & Irani, 2012).

GSCM has both internal and external dimensions for collaborating both within and outside the organizational boundaries (Bon, Zaid, & Jaaron, 2018). Sarkis, Zhu, and Lai (2011) identified that green supply chain management possesses the integration of environmental conscious with the inter-organizational processes. Academic discourse confirms that the leaders' mindset, characteristics, and initiatives rooted in sustainability are effective tools for implementing novel ideas and methods into green supply chain initiatives and also support in elevated levels of sustainability awareness (Feng, Li, Shi, & Jiang, 2022; Micheli, Cagno, Mustillo, & Trianni, 2020).

Hence, we contend that:

H1: RL is positively related to CGP

2.2. Mediating role of TQM between RL and Corporate Green Practices

TQM is an approach to influence individual and organizational performance through employee development, customer focus, innovative product and process development and waste reduction (Iqbal & Asrar-ul-Haq, 2018; Yusr, Mokhtar, Othman, & Sulaiman, 2017b). With its emphasis on waste elimination and minimum utilization of natural resources, TQM serves as environment-friendly approach (Yusr et al., 2017b). Leadership plays a pivotal role in the execution of TQM practices (Baig et al., 2021; Malik & Dhar, 2017) to address the concerns of multiple stakeholders.

With responsible leadership (stakeholder perspective), organizations are more customer-centric, improve upon their processes, train & develop their employees, make voluntary disclosures regarding their efforts to safeguard the environment. To achieve this, organizations indulge in incorporating green practices via TQM. Moreover, through responsible leadership (Aladwan & Forrester, 2016; Bolatan et al., 2022), TQM works on boosting employees development and polishing their talent to satisfy customers' expectations through incremental or radical innovations (Shafiq, Lasrado, & Hafeez, 2019), makes the firms engage in GSCM, which are environment and green-oriented.

Past studies stated that RL is positively related to environmental performance via innovation (Javed, Rashid, Hussain, & Ali, 2020). RL promotes an active stakeholder dialogue such as

employee's training and development, customer-orientated products, waste reducing processes and taking care of the environment. This requires one-in-all practices for synchronization, and no better choice can be apart from TQM implementation. According to Siva et al. (2016), CGP has elimination of waste and minimal and efficient exploitation of natural resources, and TQM complements it as it works on the same dimensions.

Responsible leadership is stakeholder centric with stakeholder consideration and concerns at its core (Voegtlin, Frisch, Walther, & Schwab, 2019). It works as custodian to the environment and natural resources and focusses maximum environmental protection (Maak & Pless, 2006). Its stewardship dimension is directed to inaudible voiceless stakeholders, e.g., future human species and natural landscape (Maak & Pless, 2006). Maak (2007) opined that RL, as a weaver of relationships, emphasizes dialogue among all stakeholders, i.e., society, employees, customers, which enhances green practices implementation via TQM.

H2: TQM mediates the relationship between RL and CGP

2.4. The mediating role of CS

Corporate sustainability requires a proactive approach from leaders to build a trustful relationship with the stakeholders through improved organizational learning, bringing innovation to the products and processes (Epstein, 2018), leaving this world a better place for the future stakeholders. According to Lozano (2013), CS constitutes a set of organizational activities aimed to address the triple-bottom-line of today as well as future stakeholders, thus contributing to sustainability equilibria.

Responsible leadership ensures CS achievement in the business environment. Through walking the talk, responsible leaders are role models for the employees and populace through which they inspire people, shares their vision, make people think out of the box, standardize values and make them work for sustainable value creation both for the business and society (Kohlrieser & Székely, 2013). Through their role model approach, responsible leaders promote CS by transmitting the right signals to their followers and disseminate guidelines as to how to follow sustainable principles (Székely & Knirsch, 2005). The leaders should clearly define CS values, and these must be echoed in the business system through strong follow-up (Stoughton & Ludema, 2012) for a refresher. Study of Bonn and Fisher (2011) concludes that leaders, while making strategic decisions and afterwards deployment of this decision, must give due weight to sustainability dimension both at a strategic level as well as operational level in corporate settings. This will, leave the organizations more sustainable as RL focusses on the firm's vision and mission (Maak, 2007).

To maintain sustainable business operations in today's dynamic and competitive business markets, responsible firms should follow the normative approach to stakeholders which is directed on creating the sustainable equilibria between the economic performance and environmental protection and corporate sustainability (Waldman, 2011). Additionally, RL creates a favorable and collaborative environment for corporate sustainability with the help of investment in human capital. With the ever-increasing pressure from the stakeholders, firms have now started making corporate sustainability an integral part of their strategic decision-making (Moore & Manring, 2009). Azapagic (2003), in his research on corporate sustainability, posited that to cultivate the culture and environment to make businesses and enterprises more competitive, flourishing, efficacious and sustainable, leadership has the key role to play to project long-term vision. Going with the same notion, enterprises and business leaders must showcase their promise to ensure sustainability and how their vision balances economic, social, and environmental performance. Of note, incessant innovation is what CS strives to ensure and this key business process must be at the center-stage of any enterprise (Tidd & Bessant, 2018), ensuring enterprises to meet success in long run.

H3: CS mediates the relationship between RL and CGP

2.5. Serial Mediation

Prior research has established that leadership styles can impact corporate greening substantially (Afsar et al., 2020; Mittal & Dhar, 2016; X. Wang, Zhou, & Liu, 2018). Taking the stakeholder approach of responsible leadership (Stakeholders are equally important as shareholders, and the environment is also a stakeholder) (Maak & Pless, 2006), responsible leaders tend to nurture green performance by adopting corporate green practices. These practices take pathways of pathways of TQM, & CS. Responsible leaders utilize the available resources (both tangible and intangible), nurture and polish them, re-engineer them to bring innovation in the processes, products, and practices, thus securing the environment and depleting natural resources.

Beneficence and non-maleficence are the hallmarks of responsible leaders. Beneficence is concerned with a leader's normative morality by focusing on employees' well-being, environmental protection, caring for the community, and being charitable. Non-maleficence manifests a leader's prohibitive morality warranted through waste elimination, maintaining food and product safety, and evading ecological damages (Stahl & Sully de Luque, 2014). According to Han, Wang, and Yan (2019), responsible leadership aspires to maintain the perfect balance between man and mother nature and in this pursuit, strives to protect it from human-created hazards, which is consistent with the concept of the firm's adopting CGP.

Pless, Maak, and Stahl (2011) contend that engages in a dialogue to cater societal issues, achieve sustainable value creation, protect the environment and bring about positive change through coordinated development among the triple bottom line. Responsible leadership strives to balance the claims of one critical stakeholder i.e nature (Maak & Pless, 2009), which corresponds to the underlying assumptions of CGP. While the main premise of theories on classic is the superiors-subordinates correlation within the enterprises, the scope of responsible leadership expands to both internal and external stakeholders. It spreads its wings to protect the society, ecological environment and current and future stakeholders.

Responsible leadership has its fundamental grounding in stakeholder theory (Maak, 2007) with leadership ethics and CS being its conceptual connotations (Han et al., 2019). RL, as the weaver of networks and stakeholder relationships, engages in the mapping of interests of humans (within and outside the organization) and the mother nature (Han et al., 2019). Responsible leadership strives to serve the triple-bottom-line (Social, Economic, and environment) simultaneously and single-handedly, and it leads responsible leaders to adopt to corporate green practices. Previous studies have yielded results in explaining the CSR role played by the responsible leaders as they engage in dialogue with multiple stakeholders to produce consensual and legitimate decisions acceptable to disparate stakeholders (Voegtlin, 2011).

Responsible leaders are not only the agents of shareholders for participating in the economy, but they also act as agents of other stakeholders, i.e. the society and the ecological environment. According to Miska and Mendenhall (2018), responsible leaders are equally concerned about environmental degradation and actively engage in balancing these claims. Naumann and Bennett (2000) claim that leaders are "climate engineers." RL is concerned for all stakeholder (Maak & Pless, 2009); thus with the help of implementation of TQM responsible leaders utilize resources effectively and efficiently (Shafiq et al., 2019). Efficient utilization of resources leads to continuous improvement and durability which are the assumptions of CS (Abbas, 2020). Subsequently, modern responsible organizations have re-invented their operations through environment-friendly practices to ensure corporate sustainability (Cancino, La Paz, Ramaprasad, & Syn, 2018) with TQM as the fore-runner of these practices. Responsible leader as the weaver of relationships brings about the responsible change (Maak & Pless, 2009). Such change towards corporate sustainability takes place when

leader introduces and communicates the sustainability principles of efficient utilization of resources. This is achieved through re-design, re-alignment and re-engineering the product, operations and management through the continuous engagement of all stakeholders (Quinn & Dalton, 2009).

Sustainability is directed to optimum utilization of resources and waste reduction, which is also the hallmark of TQM. Sustainability lays the foundations of corporate green practices which can significantly curtail environmental pollution and adverse effects of resource and fossils fuels utilization (Kemp & Pearson, 2007). With corporate sustainability in their core agenda, 21st-century businesses have gone through a significant shift in innovating their business operations, products and processes from ecological environment view-point. These green practices mainly aim at reducing the carbon footprints of the production processes, recycling and re-processing and waste management, such as nutrient recycling and a business's commitment to the environmental cause (Delai & Takahashi, 2011; Galdeano-Gómez, Aznar-Sánchez, & Pérez-Mesa, 2013). To achieve this, responsible leaders need to devise a strategy by integrating all stakeholder for investment into green practices and maximum exploitation of resources through waste reduction to ensure improved ecological activities and products (Galdeano-Gómez et al., 2013; Khan, Hussain, & Saber, 2016) meeting needs of the consumers and stakeholders.

Responsible leadership is based in principle-driven relationships with all stakeholders; and in attempt to satisfy the claims of all stakeholders tries to improve upon their products, process and practices to ensure maximum productivity and utilization of resources through TQM– the basic element through which organizations continuously renew their processes and products, adapting them to the new context like corporate green practices to protect the environment and natural resources by abiding by the principles of corporate sustainability.

H4: the relationship between RL and CGP is serially mediated by TQM and CS.

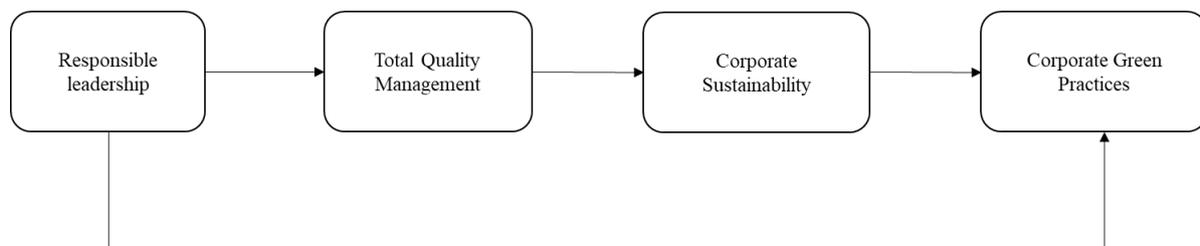


Figure1 shows the theoretical framework

3. Research Methodology

3.1. Research design

Same as the past literature states that time lagged study should be conducted to examine the relationship between variables in pursuance of filling gap in extant literature, this study also used time-lagged data collection method (Rothausen et al., 2015). The current investigation attempts, through serial-mediation model, to look into the direct and indirect effects of RL on CGP (through TQM, and CS). Respective constructs were measured using instruments validated in previous studies for data collection through the survey. They represented a particularly useful context in which to investigate CGP because the evidence indicates they many organizations have implemented, ISO 14001 EMS Certification (Pereira-Moliner et al., 2015), environmental management processes (Pereira-Moliner et al., 2015) and in Pakistan SMEs account for 5.9% of GDP 2019 and they employ 6.2 percent of the country's current workforce, (WTTA, 2020).

In this study, research design comprised data collection in three-waves with each interval separated by 1 month which allows us the measurement of our predictor separately (T1: responsible leadership), mediator (T2: TQM, and CS), and outcome variables (T3: CGP). Four weeks' time-lag was applied for data collection. In the current study, the population comprises of industrial workers. The study follows the purposive sampling technique. We distributed questionnaires to 547 respondents in the manufacturing units as 500 samples are considered sufficient in business research (Comrey & Lee, 1992; Wright & Crimp, 1995). After the scrutiny and elimination of inattentive and discrepant responses, 467 valid responses were retained. After four weeks, the questionnaire related to TQM & CS were shared with those remaining respondents. Follow up calls were made and 356 respondents turn out with their responses. Again after scrapping the invalid responses, 309 valid responses were contacted at time 3 after 4 week's break which yielded 239 responses which were scrutinized for completeness. Finally, we were able to have 222 valid responses. The theoretically proposed model is validated by IBM SPSS 23, and Macro-PROCESS (Preacher & Hayes, 2004). Data collection in three waves reduced the chances of common method bias ((Podsakoff, MacKenzie, Lee, & Podsakoff, 2003)

3.2 Instrumentation/ Measures

For measuring RL, we adopt a self-reported five-item scale at time 1 developed by Voegtlin (2011) with a reliability score of 0.82. Recently, researchers used it (Akhtar, Javed, Syed, Aslam, & Hussain, 2020; Javed, Akhtar, Hussain, Junaid, & Syed, 2021) with sample question, "My direct supervisor/leader/manager tries to achieve a consensus among the affected stakeholders". TQM practices was measured by adopting the scale from the work of Iqbal and Asrar-ul-Haq (2018). For the measurement of CS, we used 14-Items mainly taken from (Kaynak, 2003). For the measurement of *corporate green practices*, we studied four different dimensions (a) green innovation, (b) green supply chain management (c) green marketing (d) green management information system. Green innovation measured by 10-items scales developed by (Y. S. Chen, Lai, & Wen, 2006; Chiou, Chan, Lettice, & Chung, 2011), green supply chain management operationalization was made through 21-items scale adopted from Q. Zhu and Sarkis (2004), green marketing was assessed with 24-items scale following Leonidou, Katsikeas, and Morgan (2013), and green Information System measured with 9- items scale adopted from Gholami et al. (2013).

4. Results

Table 4.1: Summary statistics and correlations

	Mean	SD	1	2	3	4
RL	4.21	.86				
TQM	3.80	.74	.52**			
CS	3.85	.75	.49**	.64**		
CGP	3.84	.66	.46**	.69**	.67**	

Notes. n = 222 *p < 0.05. **p < 0.01.

Table 1 presents the descriptive statistics and bivariate correlations among the study variables. It revealed that RL was positively and significantly related to TQM ($r = .52, p < .01$), CS ($r = .49, p < .01$), and CGP ($r = .46, p < .01$). In addition, TQM exhibited strong positive associations with CS ($r = .64, p < .01$) and CGP ($r = .69, p < .01$), while CS was also strongly correlated with CGP ($r = .67, p < .01$).

Table 4.2. Test of hypotheses

	B	SE	95% CI LL	UL
<i>Direct path</i>				
RL → CSG	0.10*	0.04	0.02	0.18
<i>Indirect paths</i>				
RL → TQM → CSG	0.25*	0.06	0.15	0.36
RL → CS → CSG	0.21**	0.05	0.12	0.32
RL → TQM → CS → CSG	.04	.05	-.05	.14

Notes: B = Unstandardized coefficient. SE = Standard error. CI = Confidence interval. LL = Lower limit. UL = Upper limit. $p < 0.01$

Table 2 reports the results of the hypothesis testing, including direct and indirect effects estimated using mediation analysis. The direct effect of responsible leadership on CSG was positive and statistically significant ($\beta = 0.10$, $SE = 0.04$, 95% CI [0.02, 0.18]), providing support for the hypothesized direct relationship. Furthermore, responsible leadership demonstrated significant indirect effects on CSG through total quality management ($\beta = 0.25$, $SE = 0.06$, 95% CI [0.15, 0.36]) and CS ($\beta = 0.21$, $SE = 0.05$, 95% CI [0.12, 0.32]), as the confidence intervals did not include zero supported H2 and H3. However, the sequential mediation path through total quality management and customer stewardship (RL → TQM → CS → CGP) was not supported ($\beta = 0.04$, $SE = 0.05$, 95% CI [-0.05, 0.14]), indicating the absence of a significant serial mediation effect, so H4 is not supported.

5. Discussion:

This study considers the chain mediation effect of TQM and CS in the link between RL and corporate green practices while gaining insights from the extant scholarship to investigate the degree of effect of RL on CGP. We seek support from NRBVV and stakeholder theory as the anchor theoretical frameworks to test our assumptions. The analysis reveals the favourable association between RL and CGP while both TQM and CS mediate this link through separate mediation mechanisms. However, the chain mediation effect is insignificant. Considering these findings, this investigation contributes some notable implications towards theory and practical utility.

5.1. Theoretical implications

Current theoretical model describes the relationship between RL and CGP. The underlying process explains the role of responsible leadership in achieving environmental safety objectives through institutionalizing TQM and embedding corporate sustainability philosophy in the organizational settings. Furthermore, it explains the process of TQM in the organization due to RL and how this intervening role of TQM carries impact of RL-CGP link. Therefore, investigation of these intervening processes adds new dimension to the current body of literature.

This study explored tested the framework for the effect of RL on CGP through the sequential mediation of TQM and CS. The results from data analysis revealed that RL positively advances corporate green practices with $r = .46$, and $p < .01$ which confirms that H1 is accepted. These results endorse the findings by (Dong & Zhong, 2022; Huo, Safdar, Akhtar, & Ahmed, 2022; Y. Wang et al., 2021) who highlighted the responsible leader's role in boosting environmental practices and employee behaviour. Going forward, the study adds

valuable contribution to the literature with the integration of NRBV and stakeholder theory which is relevant in the context of environmental degradation. Prior discourse has mainly used the theoretical lens of SCT, SIP, and Upper echelon theory individually. Furthermore, this study also tested the mediating role of TQM between RL and CGP with the results ($\beta = 0.25$, $SE = 0.06$, 95% CI [0.15, 0.36]) which testifies H2. These results correspond with the prior studies (J. Abbas, 2024; Ma et al., 2025). In addition, this investigation contributes significantly to identify the mediating role of TQM between RL and corporate sustainability as responsible leadership takes its socio-relational approach to bring along all stakeholders through responsibility dimension which aligns with the principles of TQM and sustainability. Besides this, the results also confirm the mediating role of corporate sustainability in the RL-CGP link ($\beta = 0.21$, $SE = 0.05$, 95% CI [0.12, 0.32]), thereby confirming the acceptance of H3. Researchers have suggested the positive association between RL and CS and environmental practices (Ur Rehman, Shafique, Khawaja, Saeed, & Kalyar, 2023).

5.1. Practical implications

The theoretical framework of the study makes three significant contributions to the manufacturing industry. First, the findings uncover that RL has environmental sustainability imperatives at its core and it considers environment as the valuable stakeholder. This way, RL prompts initiatives which are beneficial for the ecological safety. Second, it encourages other members in the supply chain to adhere to environmental objectives voluntarily which is valuable for the firm and community. Third, the businesses can rely on TQM principles for ensuring environmental stewardship among organizational members and supply-chain partners as well as in their marketing tactics. Considering this, manufacturing concerns should develop the responsibility perspective in future leaders through training and development at all levels.

5.3 Limitations and future direction

Similar to the past research, this study also faces certain limitations. First, data collected from manufacturing sector makes the results concentrated to this sector only. Future research must be made in service industry as services sector also makes considerable contribution to environmental deterioration and resource loss. Second, though we gathered in three waves to avoid common method variance, however, single-source data collection is yet another limitation. Future studies should collect responses from different sources for more generalized results. Third, this study is quantitative in nature which limits its scope. Lateral researchers should consider conducting their studies through experimentation or involving both qualitative and quantitative methods. Fourth, this study used TQM, and CS as serial mediator and serial mediational effect was not insignificant despite the significant mediational effect individually. Future investigations should consider some other variables like green culture, and CSR to check the RL-CGP relationship.

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