

Enhancing firms' environmental performance and financial performance through green supply chain management practices and institutional pressures

Supply chain management

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Abstract

Purpose – The purpose of this study is to examine how individual dimensions of green supply chain management (GSCM) practices affect firms' financial performance directly and through environmental performance. Furthermore, the authors investigate the contingent role of institutional pressures on the direct link between GSCM practices and environmental performance and GSCM practices and financial performance.

Design/methodology/approach – Using a convenience sampling technique, data were collected from 238 textile firms in the province of Punjab, Pakistan. Hayes' PROCESS macro was used to analyze the hypotheses.

Findings – The findings demonstrate that GSCM practices (green manufacturing, green purchasing, eco-design, cooperation with customers and green information systems) have a significant direct impact on firms' financial performance directly and through environmental performance. Additionally, institutional pressures significantly moderate the nexus of GSCM practices-environmental performance and environmental performance-financial performance.

Practical implications – Textile firms should implement GSCM practices not just because of the pressure from regulatory bodies but also to elevate their environmental and financial performance. Government should also play its role in influencing the organizations for the adoption of GSCM practices, as its role is a significant one in preserving the environment.

Social implications – Because of less emission, energy usage and wastage, environmental performance will be increased, which affect the society positively.

Originality/value – Along with studying the GSCM practices in the textile industry of Pakistan, drawing upon the institutional theory, the contingent role of institutional pressures on two stages (first, between GSCM practices and environmental performance, and secondly, between GSCM practices and financial performance) is the novelty of this study.

Keywords Financial performance, Institutional pressures, Environmental performance, GSCM practices

Paper type Research paper

Introduction

Because the awareness of the importance of protecting the environment is growing globally, the green drift to conserve the resources of the Earth is gaining momentum, thus putting pressure on



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organizations to comply with environment-friendly business practices (Chuang and Huang, 2018). In response, for the past two decades, organizations have been demonstrating increasing concern to preserve the environment (Sheu *et al.*, 2005). Globalization, in contrast to localization, increases the burden of organizations for improving environmental performance (Sarkis and Tamarkin, 2005). Therefore, growing concern for the environment has gradually become embedded into organizations' corporate thinking, which consequently helps them to formulate and align their strategies accordingly (Madu *et al.*, 2002). The growing pressure from government and environmental regulatory institutions means that organizations are under intense pressure regarding environmental protection.

The traditional view of environmental protection emphasizes trade-off between investment in productive and non-productive anti-pollution equipment and overall an expensive approach characterized by high cost and lower economic productivity (Chuang and Huang, 2018). Past studies also suggest that complying with environmental regulations by using the traditional approaches does not increase competitiveness (Reinhardt, 1998) and slows down productivity (Christansen and Haveman, 1981). In addition, past studies also suggest that environmental performance has an insignificant relationship with firm performance (Rockness *et al.*, 1986). However, the contemporary view suggests that firms' environmental performance effectively eliminates waste and reduces energy use, thus enabling firms to save costs and achieve increased performance (Sánchez-Medina *et al.*, 2015). Although compliance with environmental regulations results in an increase in costs, the implementation also reduces the occurrence of subsequent costs (Chuang and Huang, 2018). For instance, investment in energy, waste recovery and paper saving would increase a firm's overall operational efficiency, hence minimizing the likelihood of further corresponding costs (Saxena and Khandelwal, 2012). Among contemporary approaches to environmental protection, green supply chain management (GSCM) is one of the main emergent practices adopted by firms to comply with environmental regulations and norms (Zhu *et al.*, 2012). Therefore, organizations in Pakistan also see GSCM practices as potential solutions for environmental regulation compliance. GSCM, also recognized as sustainable SCM (SSCM) and environmental SCM (ESCM) (Seuring, 2004), integrates green manufacturing, green distribution, green marketing, green purchasing, reverse logistics and green information systems (Chien and Shih, 2007). Besides environmental compliance, organizations also seek to elevate environmental performance (Saeed *et al.*, 2018) as well as financial performance (Zhang and Yang, 2016), through successful implementation of GSCM practices.

While there is extensive literature providing empirical support on positive linkage between GSCM practices and firm performance, little is known about contingent factors that might influence the nature and intensity of the relationship between GSCM practices and performance (Dubey *et al.*, 2015; Li and Huang, 2017). Although a few recent studies in the field of operations management and SCM have attempted to examine firm performance through the lenses of institutional theory, these studies are not enough to infer and generalize the application of institutional theory in the GSCM context. For example, Dubey *et al.* (2015) investigated the contingent role of institutional pressure on the effect of operational practices (total quality management (TQM) and customer relationship management) on environmental performance. However, GSCM mainstream literature does not provide specific insight into the contingent effect of institutional pressures in explaining the potential role of GSCM practices in determining environmental and financial performance. Further, most of the past studies analyzed the direct effect of GSCM practices on firm performance (Chuang and Huang, 2018; Saeed *et al.*, 2018), which limits the understanding of *how* GSCM practices affect financial performance, because such research models do not test the underlying mechanisms (Chan *et al.*, 2016). Zhu *et al.* (2017) suggest considering the underlying mechanism to obtain a complete picture of how GSCM practices

foster financial performance. Finally, GSCM is a multidimensional construct which encompasses various aspects of internal and external practices. Thus, ignoring either the internal or external aspect would fail to truly represent the GSCM practices (Kim *et al.*, 2016). Some studies also used GSCM as a second-order construct (Vanalle *et al.*, 2017), while others used it as a single accumulated construct (Yang, 2018), depending upon the perspective and objectives of the study. However, the operationalization of GSCM practices either as a single corresponding construct or as a second-order construct ignores the multidimensionality, thus limiting our understanding regarding the role of each dimension as well as restricting the generalizability of empirical findings.

The present study aims to fill the above-mentioned research gaps, to present a comprehensive and concrete understanding of *how* and *when* GSCM practices are more effective in increasing firms' financial performance. The study contributes to the literature in four main ways. First, this study operationalizes GSCM practices as firm activities encompassing green manufacturing (Liu *et al.*, 2010), green purchasing, eco design, cooperation with customers (Zhu *et al.*, 2013) and green information systems (Esty and Winston, 2009) and attempts to establish the relationships at the dimension level, thus developing a concrete and comprehensive understanding of the role of each GSCM practice in relation to environmental and financial performance. Therefore, this research highlights the necessity for a GSCM framework to address firms' sustainability concerns. Second, this study posits environmental performance as a mediating mechanism that might help academicians and practitioners to understand *how* GSCM practices improve firms' financial performance. Although a few recent studies have investigated the relationship between GSCM and environmental performance and found positive linkages (Chuang and Huang, 2018; Saeed *et al.*, 2018), we believe that environmental performance is associated with enhanced operational efficiency of the firms, and hence is expected to explain the missing link between GSCM practices and financial performance.

Third, it draws upon the institutional theory to propose and empirically test the moderating effect of institutional pressure so as to elucidate the effect of GSCM practices. Past studies in GSCM have overlooked this important aspect (Dubey *et al.*, 2015). It is, therefore, rational to hypothesize that GSCM practices under the moderating effect of institutional pressure will have an important impact on environmental and financial performance, and this will then be effective in enabling the textile sector to adopt GSCM practices. However, we suggest that a theoretical elucidation of the adoption stage is yet to be established. Finally, this study widens the previous research work to adopt environmentally friendly practices in the manufacturing industry via a sector-focused investigation of the textile sector. The reason for analyzing the hypothesized framework in the context of the textile sector is that scholars have carried out several research studies on such industries as automotive, chemicals, electronic and electrical and oil and gas. However, to the best of the authors' knowledge, very few such studies have been conducted in the perspective of the textile sector and have been limited to specific aspects of it, yet it is one of the major sectors of industry and one of the foremost sources of carbon emissions.

Study context

Leaving aside its significant contribution to world trade, textile and clothing is one of the most polluting industries in the world and is now receiving growing attention from the public regarding sustainability issues (Boström and Micheletti, 2016). The production process of textile and its related products is a highly complex one which involves technological fixes, geographically long networks and working behaviors associated with ever-changing values of production and consumption (Perry and Towers, 2013). Therefore, the production and

consumption practices of the textile industry are raising serious concerns regarding their impact on economic, social and environmental aspects. Due to the intense pressure to meet cost and cycle time performance, the transformation of raw materials into finished products has a negative impact on the environment (through emitting air and water pollutants), economy (idle capacity and non-productive energy consumption) and social beings (exploitation of human resources specifically when production is outsourced to low-cost labor states). As a result of the increasing awareness, societal and governmental pressures and expectations of stakeholders for a low impact of environmental and societal risks, textile and related firms are also attempting to address sustainability challenges. Global firms such as fast fashion brand H&M, outdoor wear brand Patagonia and luxury brand Louis Vuitton have implemented several practices across their supply chains (SCs) to meet stakeholders' expectations regarding sustainability (Shen *et al.*, 2017). Firms who adopt operations and SC approaches add value to their business offerings and access to several resources while non-compliance leads to legal restrictions.

The rest of the study is organized as follows: "Literature and hypotheses development" presents a brief review of past studies and develops the hypotheses, while the "Methodology" section presents the details about data collection and the selected method. The "Results" section reveals the findings of the study, and "Discussion" includes the theoretical and practical implications. This is followed by the conclusion and future recommendations, as well as the limitations of the study.

Literature and hypothesis development

The idea of an environmental-friendly SC is based upon the triple-bottom line (3PL) theory, which contains environmental performance, economic performance and social performance (Green *et al.*, 2012). This theory states that *people* who run organizations need to improve *profit* for organizations' economic performance, and not destroy the *planet* through waste, but take care of environmental performance. From the sustainability perspective, this study takes on the environmental dimension of sustainability and emphasizes that GSCM practices could be important for environmental performance and subsequent financial performance. Jääskeläinen and Heikkilä (2019) state that firms, for the past few years, have been competing and providing value to the customers on the basis of their SCs. SC operations affect the environment directly and indirectly. A direct effect occurs during when a firm uses practices and/or materials which result in huge wastage during storage, transportation, processing, use and/or disposal. As mentioned earlier, textile firms' operations involve the use of several chemicals which increase the amount of water and air pollution. For indirect impact, the actions and operations of upstream suppliers are responsible for harm. However, the implications of GSCM practices increase the ability of firms to address sustainability issues arising from both direct and indirect impacts. For example, eco-design and green manufacturing could be valuable to enhance environmental sustainability by minimizing production activities, lowering cost and reducing waste. Green purchasing would be useful qualifying criteria in making (out)sourcing decisions, thus pressuring both direct and indirect suppliers to provide environment-friendly parts and products. Hence, GSCM practices increase the likelihood of environmental benefits by increasing the green impact at every stage of a product, from production to consumption and disposal.

The growing concern for sustainability has resulted in practices which have shifted from organizational level to firms' SCs (Green *et al.*, 2012). For manufacturers, GSCM is the managerial approach to assimilating material flow and information during the SC, meeting customers' demands with environmental-friendly products manufactured by environmentally friendly processes. Using self-correcting initiatives, firms are attempting to develop socially and environmentally responsible practices to enhance their public image and comply with legislation. Firms that are making their SCs more aware of and fulfilling customer demands with the

minimum possible harm (or even no harm at all) to the environment need close ties with both upstream and downstream partners. For instance, manufacturers sometimes call their suppliers for innovative products, to redesign and (re)develop products to reduce costs and to exploit new technologies. In some circumstances, manufacturers also rely on their suppliers to provide services which they cannot develop internally. Thus, firms' desire to reduce their environmental impact is largely based upon their ability to manage complex SC relationships. These relationships are established through strategic integration and collaboration at each level of SC. In the absence of integration and collaboration, firms are unlikely to achieve the *green multiplier effect*, thus failing to maintain internal well-being and environmental sustainability. Firms emphasizing green also expect their suppliers to embed sustainable practices. For example, firms with green purchasing intentions would include sustainability parameters during supplier selection and certification (Zhu *et al.*, 2015). Similarly, some foreign firms also evaluate their suppliers' suppliers (second-tier) when making procurement and outsourcing contracts. Therefore, the SC strategies and objectives of responsible organizations reflect sustainability, which helps them to develop sustained competitive advantages (Green *et al.*, 2012). Likewise, combining the green practices in SCM allows an organization not just to provide a competitive advantage via cost leadership and differentiation that is hard for rivals to imitate, but also to ascertain novel market options (Rao, 2002; Hazen *et al.*, 2011; Narasimhan and Schoenherr, 2012).

Furthermore, government regulations regarding environment have been recognized as antecedents to implementing GSCM practices (Qi *et al.*, 2010), well-developed nexus of influence of green regulation on organizational competitiveness (Laosirihongthong *et al.*, 2013). It is not essential, by implementing GSCM practices, to establish a competitive edge and augment financial performance. Several scholars argue that to implement green product design and GSCM practices may lead to reducing waste, which will decrease the consumption of water, energy and byproducts (Gupta *et al.*, 2015), and competitive advantages can be achieved and productivity increased by using the green systems and technologies.

Institutional pressures

The institutional theory states that firms are social entities, besides being profit-making entities, and recognize intense pressure to meet institutional expectations to obtain social legitimacy and gain access to various important resources (DiMaggio and Powell, 1983), because nonconformity with institutional expectations might endanger firm performance and long-term development (Scott, 2008). The institutional theory also argues that external forces persuade organizations to take analogous strategic initiatives (Scott, 2008). The theory discusses firms from two aspects: social and economic (Ketokivi and Schroeder, 2004). The economic aspect focuses on firms' endeavors to engage in economic activities to maximize shareholders' wealth. The social aspect highlights the institutionalization of "best practices," preparing the way for the formation of institutions on the basis of isomorphism (DiMaggio and Powell, 1983). Institutional isomorphism submits that firms attempt to adopt similar structures, processes and strategies in corresponding to constraint, uncertainty and institutional expectations (DiMaggio and Powell, 1983; Yang, 2018). There are three types of isomorphism: normative, coercive and mimetic (DiMaggio and Powell, 1983). Normative isomorphism originates from professionalism and industry-specific norms of doing business. Industries and occupations have founded various organizations which set professional norms and affect the professions, thus controlling firms' entry and business continuity through enforcement of these norms (DiMaggio and Powell, 1983). Normative pressure forces firms to go beyond legal requirements, considering the requirements of professional/occupational bodies and complying with the standards of leading firms, by being compelled by competitions (Tempel and Walgenbach, 2007). The concerns of

stakeholders and professional organizations regarding environment are expected to compel textile firms adopt green practices and, once adopted, these would also influence the effectiveness of outcomes of GSCM practices.

Coercive isomorphism comes from “both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function” (DiMaggio and Powell, 1983). Coercive pressures can be exerted on focal firms by their business partners, suppliers, distributors, social groups and clients to protect the environment (Sarkis *et al.*, 2010). Not complying with the expectations of partners, social and pressure groups, the focal textile firms might face restrictions from these organizations to access various resources such as raw materials, labor, information, distribution and transportation. Under such pressure, textiles firms would struggle to maximize the effectiveness of GSCM practices to achieve an enhanced environmental performance (Lai and Wong, 2012). Hence, coercive pressure will influence the effect of GSCM practices on environmental performance.

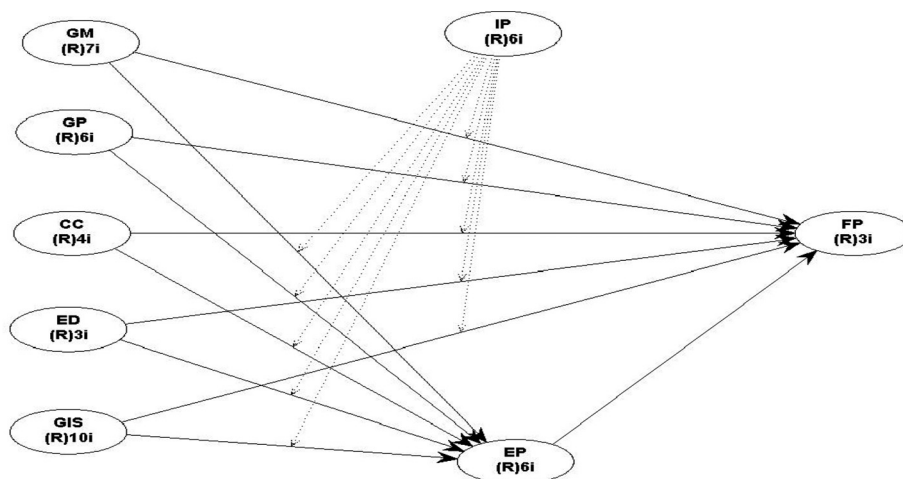
The third type is mimetic isomorphism, which states that firms try to imitate other organizations in a situation of uncertainty (DiMaggio and Powell, 1983). There could be several reasons for uncertainty (such as ambiguous goals, poor knowledge of technology, complex structures), where organizations are not confident about formulating effective business practices, and prefer to model themselves on best-in-industry organizations (Christmann and Taylor, 2001), because imitating best-in-industry organizations is relatively easy and practices of modeled organizations are well recognized. In sum, institutional pressures compel firms to comply with regulations, standards and norms necessitated by regulatory, market, environmental and competitive forces.

The study context

The textile sector in Pakistan plays a key role in the socio-economic development of the country. Making a significant contribution to the gross domestic product (GDP), it is also one of the major labor markets of the country. Like other emerging economies, Pakistan is also an important country to which several multinational corporations, such as Zara, Nike and Polo, outsource their production. Consumers around the globe are conscious of the ethical and social responsibilities of the firms producing these products. The production process is accomplished in several phases, involves multiple SC partners and focuses on intense use of chemicals and toxics along with natural resources (water and air), and hence, it has detrimental effects on the environment. The environmental impacts further contaminate working conditions, thus affecting social well-being. These serious environmental and social concerns, besides regulatory pressures, demand that textile firms ensure they have social and environment-friendly business practices. As discussed earlier, the textile industry has long and geographically spread SCs which significantly affect social and environmental well-being; therefore, we considered it important to investigate whether in this sector the implementation of GSCM practices could be useful for environmental sustainability. In addition, Pakistan is among those countries which are damaging their environments badly. Hence, the findings of the study are likely to help managers and policy makers, both local and global, to see how to bring sustainability through managing their SCs.

Conceptual framework

Figure 1 depicts the hypothesized link among the variables. Each of the dimensions of GSCM practices has a positive link with an organization’s environmental performance and financial performance with the moderating effect of institutional pressure. The five dimensions of GSCM practices were chosen after a critical review of the literature. Overall, GSCM practices are a central latent construct in the conceptual framework with green



Notes: GM = green manufacturing, GP = green purchasing, CC = cooperation with customers, ED = eco-design, GIS = green information system, IP = institutional pressures, EP = environmental performance, FP = financial performance

Figure 1.
Conceptual
framework

manufacturing, green purchasing, eco-design, cooperation with customers and green information systems.

Hypotheses development

Green manufacturing and organizations' environmental and financial performance. Green manufacturing is the production of good-quality products at the lowest cost by using optimal resources which over a long period may lead toward competitive benefit (Narasimhan and Schoenherr, 2012). Likewise, some organizations have eradicated their waste and minimized their cost from the system through green manufacturing and lean production initiatives (Zhu and Sarkis, 2004). Both lean manufacturing and green manufacturing are already operating to minimize waste, reduce production phases and enhance manufacturing efficiency (Prajogo *et al.*, 2012), accompanied by an improved organizational image and reputation (Porter and Van der Linde, 1995). Developed countries have integrated lean manufacturing practices accompanied by eco-friendly production to achieve an improved environmental and financial performance. Environment performance is the effect of organizational activities on the natural atmosphere (Sharma *et al.*, 1999), while financial performance relates to reducing cost and increasing share value. The findings of the studies conducted in the automobile sector reveal that green manufacturing has considerably augmented the worldwide rivalry position of manufacturing organizations and supplies (Subramanian and Gunasekaran, 2015; Tseng and Chiu, 2013). Baines *et al.* (2012) assert that green manufacturing plays an imperative role in the adoption of GSCM practices to minimize the dangerous consequences of production processes and also in supporting organizations to promote efficiency in their systems, thus enhancing their environmental performance and financial performance. This is supported by a wide range of literature (Chien and Shih, 2007; Mangla *et al.*, 2014; Murovec *et al.*, 2012). The GSCM practices involve collaboration with suppliers to eliminate cost by promoting reutilization of raw materials

and also the manufacturing of products with less harmful waste, together with increased efficient use of resources. In line with the above discussions, it is expected that green manufacturing adds value to both environmental performance and financial performance. Therefore, we hypothesize that:

- H1a.* Green manufacturing is positively associated with organizations' environmental performance.
- H1b.* Green manufacturing is positively associated with organizations' financial performance.

Green purchasing and firms' environmental and financial performance. Green purchasing involves the activities of sourcing-reduction and recycling in the SC (Carter *et al.*, 2000). Similarly, Min and Galle (2001) describe green purchasing as minimizing the sources of waste and supporting the recycling of products. The findings of Carter *et al.* (2000) reveal that implementing green purchasing activities not only minimizes pollution control cost, along with organizational reputation in the market (financial performance), but also increase organizations' environmental performance. Kleindorfer *et al.* (2005) assert that large organizations practice more green purchasing than small ones, and that these practices become the drift of organizational progress together with the support of eco-friendly protection awareness. Green purchasing establishes a competitive edge, and for the time being, it protects resources and increases firm performance (Zhu and Geng, 2001). Zailani *et al.* (2015) found that eco-friendly (green) purchasing has a positive influence, both direct and indirect, on firm performance. It saves the environment from dangerous and poisonous material which, in turn, positively influences environmental performance. Green purchasing is a dependable instrument for controlling pollution and thus plays a vital role in an organization's environmental and financial performance (Chen, 2005). It also establishes a firm's positive reputation and image in the market (Carter *et al.*, 2000). Keeping in view the above discussions, therefore, we hypothesize that:

- H2a.* Green purchasing is positively increase organizations' environmental performance.
- H2b.* Green purchasing is positively increase organizations' financial performance.

Eco-design and organizations' financial and environmental performance. Eco-design refers to designing products which require less energy, are easy to recycle, recovery of component parts is also easy and there is no harmful process in the manufacturing of such products (Zhu *et al.*, 2008). Product stewardship integrates the perspective of external stakeholders into the eco-design development phases via a lifecycle analysis: the influence of an environmentally friendly product can be estimated to the end of its life (Fiksel, 1993). The competitive benefit is where an organization initiates an eco-friendly novelty in product design and enhances advantages comprising inimitable production capabilities and obtaining royalties to license green technology and establishes proprietary knowledge which results in sustainable competitive advantage (Kleindorfer *et al.*, 2005). Likewise, Grønhaug and Kaufmann (1988) highlight that eco-friendly product design has a significant effect on an organization's survival and plays the role of a weapon to establish a sustainable competitive advantage in the market. Several organizations are using an eco-friendly element into their product design to achieve a competitive benefit and distinguish themselves from their rivals (Reinhardt, 1998). Undoubtedly, eco-design largely depends on customer management, supplier management and internal management (Lin *et al.*, 2013). Organizations may decrease 80 per cent of dangerous

consequences for the environment from their processes and products because of effectively adopting green design practices (Büyükoçkan and Çifçi, 2012). Zhu *et al.* (2007) found that environment-friendly design practices considerably minimized the negative impact on the environment and also enhanced those organizations' contribution toward sustainability. By emphasizing eco-design, organizations may minimize the use of dangerous material in products and also decrease resource usage in producing the products. Moreover, green design also helps in the reuse, reproduction, recycling and disassembly of products. Eco-design has a significant and positive influence on organizational performance, and likewise, customers are ready to purchase environment-friendly products to obtain the environmental cost saving and safety (Lin *et al.*, 2013). The findings reveal that eco-design products have a positive association with an organization's environmental and financial performance (Lin *et al.*, 2013) and provide a competitive edge, and the adoption of eco-design practices enhances an organization's image and repute in the market (Hanim Mohamad Zailani *et al.*, 2012). Additionally, eco-design products decrease the cost of products and considerably foster product value (Porter and Van der Linde, 1995). Hence, we hypothesize the subsequent hypotheses:

H3a. Eco-design is positively associated with organizations' environmental performance.

H3b. Eco-design is positively associated with organizations' financial performance.

Cooperation with customers and organizations' financial and environmental performance. Customers are the significant stakeholders in the SC, and they possibly compel organizations to decrease dangerous and negative influence in their practices (Freeman, 2010). Put simply, customers may affect organizational practices. Overall, customers' pressure plays a positive role in the adoption of GSCM practices (Harms *et al.*, 2013). A dynamic customer relationship increases organizations' financial performance (Green and Inman, 2005), and competitive pressure considerably fosters financial performance through adoption of the GSCM practices. Geffen and Rothenberg (2000) found that close collaboration with customers and suppliers resulted in a better environment performance, in the context of the manufacturing sector. Vaccaro and Echeverri (2010) recommend that corporate transparency regarding the eco-friendly sustainability steps taken by the organization may certainly encourage customers to contribute toward environment-friendly initiatives and additionally to collaborate with the organization. Producers cannot recognize the eco-friendly needs of their customers when deprived of collaboration with them, despite the participation of their useful feedback (Vachon and Klassen, 2008). Thus, we hypothesize:

H4a. Cooperation with customers is positively associated with organizations' environmental performance.

H4a. Cooperation with customers is positively associated with organizations' financial performance.

Green information system and firms' financial and environmental performance. A green information system (GIS) denotes the utilization of an information system that may elevate sustainable development and environment-friendly processes. It is the best use of organizational activities regarding green practices and green innovation (Corbett, 2013). The implementation of GIS helps information-sharing regarding environmentally friendly steps, throughout an entire SC, in the form of coordination (Chandra *et al.*, 2007). Likewise, GIS refers as the cornerstone green management attempts and completes the reporting and coordination necessity for various SC players (Khan and Qianli, 2017). The findings of Zhu and Cote (2004) demonstrate that

organizations that implement GIS promote environmental performance in terms of quality, efficiency and reduction in cost, which results in a competitive edge over rivals. Moreover, organizations gain strategic and operations advantages when they identify and utilize relational opportunities through green technology (Lin, 2013). It is hard to compare environmental performance with an organization's financial performance if the excellence of environmental data obtained is unreliable (Nunnally, 1978). However, the GIS does not just positively influence environmental and financial performance; it also considerably augments organizational financial and environmental performance (Schneiderjans and Hales, 2016). The latest studies focus considerably on the significance of green information technology in manufacturing organizations (Dao *et al.*, 2011). The utilization of green information technology provides a competitive benefit and augments performance which is not easy for rivals to imitate (Klassen and Whybark, 1999). Likewise, the competitiveness and infrastructure competences elevate the firm but implement the green practices (Ajamieh *et al.*, 2016). The effective adoption of GIS throughout the SC can augment organizational efficiency in the form of operational performance and financial performance through the best allocation of resources (Daugherty *et al.*, 2005). Furthermore, successful implementation of GIS increases organizational sustainable development competences (Dao *et al.*, 2011), and therefore, GIS has an imperative role in the whole of an organization's performance (Yang *et al.*, 2018). We assert that effective implementation of GIS enhances an organization's environmental and financial performance. Thus, keeping the above discussion in mind, we propose that:

H5a. A GIS is positively associated with organizational environmental performance.

H5b. A GIS is positively associated with organizational firm performance.

Mediating role of environmental performance. The positive nexus between GSCM practices and environmental performance has been proved in prior studies (Jacobs *et al.*, 2010). Nevertheless, whether GSCM practices play an indirect role to increase financial performance through environmental performance is still under question (Zhang and Yang, 2016).

The effective adoption of GSCM practices are expected to improve environmental performance (Lee *et al.*, 2012). By implementing GSCM practices effectively, firms inhibit the contamination and significantly decrease wastage. This in turn allows firms to manufacture the final product at a lower cost (Zhang and Yang, 2016). Green purchasing reduces purchasing cost, green manufacturing and eco-design decrease waste and require less energy and cooperation with customers and a GIS help firms to avoid the risk of environmental accidents and consequent fines.

Various scholars assert that environmental performance will enhance firms' financial performance (Lee *et al.*, 2012). Firms that provide distinct products with green characteristics can assist organizations to be accepted as having environment-oriented status, and this, therefore, provides benefits to the firms in terms of increased market share and higher profit margins. However, improved environmental performance can decrease costs linked with buying materials, energy usage, waste expulsion and penalties for environmental accidents. Therefore, it is hypothesized that:

H6. Environmental performance mediates the positive effect of a) green manufacturing, b) green purchasing, c) eco-design, d) cooperation with customer and e) GIS on financial performance.

The moderation role of institutional pressures. GSCM might be used as an environmental instrument to promote an organization's environmental reputation and enable it to achieve competitiveness in the domain of international business (Zhu *et al.*, 2008). GSCM integrates

environmental regulations in the SC operation and design (Zhu *et al.*, 2012). Environmental principles have an important role in achieving eco-efficiency so as to gain the image of an environmentally friendly organization and to incorporate these principles into the product lifecycle (Tsoufas and Pappis, 2006). It is necessary for a manager to comprehend the relationships between GSCM practices and an organization's environmental performance to implement GSCM successfully. Besides environmental pressures, regulatory and market pressures foster an organization's performance because these pressures motivate it to initiate green purchasing and eco-design. The manufacturers who face high regulatory pressures use green purchasing policies (Dubey *et al.*, 2015). Competitive pressure considerably enhances the financial advantages presented as a result of implementing GSCM practices (Zhu *et al.*, 2012). Wong *et al.* (2012) analyzed the moderating influence of green operations and environmental management on the performance of manufacturing organizations. Nevertheless, we additionally expand this study from an institutional theory viewpoint. Institutional pressures compel organizations to implement environmental management practices. Wu *et al.* (2012) examined the effect of GSCM drivers on GSCM practices with the moderation impact of institutional pressures regarding Taiwan's textile sector. Therefore, we propose that institutional pressures have a moderating influence on the effect of GSCM practices on organizational environmental performance and financial performance. Hence, someone may assert that there are reasons why institutional pressures are not considered as mediators. Generally, scholars appear to blur the distinctions between moderator, mediator (intervening) and control variables, although a critical literature review and appropriate comprehension support more to resolve the problem. Likewise, in this case, we have sufficient literature which strengthens the moderating effect of institutional pressure. Kennedy and Fiss (2009) found that institutional pressures were the motivation for adopting TQM in an organization. Liu *et al.* (2010) examined the moderating impact of institutional pressures on an organization's intention to adopt internet-based SC. Rogers *et al.* (2007) analyzed that institutional pressures force an organization to initiate supplier development programs. Dubey *et al.* (2015) also found that institutional pressures moderate the effects of total quality and supplier relationship management on the environmental performance of firms in the Indian rubber industry. Based on the above discussion and with support from the literature, it is reasonable to hypothesize that institutional pressures will also play a moderating role in GSCM context. Therefore, it is proposed that institutional pressures will moderate the effects of GSCM practices on the environmental and financial performance of textile firms. The moderation will occur in such a way that under high institutional pressures, the relationship between GSCM practices and environmental performance will be more positive, while under low institutional pressures, the relationship between GSCM practices and financial performance will be less positive. Hence,

H7a. Institutional pressures moderate the relationship between the dimension of GSCM practices and organizational environmental performance.

H7b. Institutional pressures moderate the relationship between the dimensions of GSCM practices and organizational financial performance.

Moderated mediation. Taking the linkages hypothesized by *H6* and *H7* into consideration, it is reasonable to state that the mediating role of environmental performance in the nexus between GSCM practices and firms' financial performance depends on the moderating impact of institutional pressures. For example, the path of environmental performance to firms' financial performance hypothesized in this study is moderated by institutional pressures. In other words, the environmental performance (moderator) makes the mediating impact of environmental

performance between GSCM practices and firms' financial performance conditional upon the significance of the institutional pressures. Therefore, we hypothesize that:

- H8. Environmental performance mediates the interactive effect of institutional pressures and dimensions of GSCM practices on financial performance.

Methodology

Sample and procedure

To investigate further hypotheses, pre-developed and validated scales were adapted to measure the GSCM practices, environmental performance, financial performance and institutional pressures. Data were collected from the textile industry of the province of Punjab in Pakistan because of its substantial role in the environment, implementation of green practices and contribution toward GDP. We contacted and consulted the All Pakistan Textile Mills Association (APTMA) and the Chamber of Commerce and Industries in different cities in the Punjab to prepare the list of textile organizations as a sample. Initially, a list of 3,227 textile firms was obtained. We further refined the list using two qualifying criteria: firm age and size. Firms less than five years old and with fewer than 100 employees were excluded. The reason for using such criteria was that newly established firms have several legal and financial exemptions which they receive as business promotion initiatives. Therefore, it was less likely that newly established firms would have implemented GSCM practices either fully or partially. For small-scale firms, the small and medium enterprises development authority (SMEDA) is the regulatory body which has designed relatively lenient and different governing policies to promote business activities at small and medium scale. Hence, large-scale manufacturing firms are those which are operating globally as well as nationally and their operations are more influential in terms of economic, environmental and social well-being. After excluding firms on the basis of age and size, a list of 773 textile firms was obtained. We then targeted 387 (50 per cent) of the firms, which, according to Krejcie and Morgan (1970), would be enough to represent the population.

This study is cross-sectional in nature, using primary data collected through a survey questionnaire. Five graduate students voluntarily helped in the data collection process. A total of 387 questionnaires were distributed to selected firms located in Faisalabad, Lahore, Multan, Gujranwala, Gujarat and Sialkot, as these cities represent a major portion of textile organizations. Because we have firm-level variables, the unit of analysis was "firm" and respondents were the senior managers (SC/procurement) who filled in the questionnaires. Out of 387 questionnaires, 247 were received, a response rate of 63.82 per cent. Of these 247, nine questionnaires were incomplete, and therefore excluded. Finally, the responses of 238 firms, which were complete in all aspects, were used for analysis. Figure 2 explains about research procedure.

Measures

The questionnaire design. The survey questionnaire consisted of three major parts involving items related to GSCM practices, institutional pressures, environmental performance and financial performance. The details are as follows.

GSCM practices. A total of 30 items was used to assess the five GSCM practices: green manufacturing, green purchasing, eco-design, cooperation with customers and GISs. Practices and items were chosen on the basis of scholars' general agreement on these practices and items in the GSCM domain (Dubey *et al.*, 2015; Kalyar *et al.*, 2019). The respondents were asked to rate the extent to which their firm has adopted each practice in at least the past three years. A five-point Likert scale was used, where 1 denoted "very low" and 5 denoted "very high".

Green manufacturing was measured using seven items adapted from Shang *et al.* (2010). The sample items included: "Production planning and control focuses on reducing waste and optimizing materials exploitation," "Process design focuses on reducing energy and natural resources consumption in operations." Green purchasing was measured using a six-item scale adapted from Zhu *et al.* (2008). The sample items included: "Eco-labeling of products," "Environmental audit for suppliers' internal management" and "Second-tier supplier environmentally friendly practice evaluation." Cooperation with customers was assessed using a four-item scale also adapted from Zhu *et al.* (2008). The sample items included: "Cooperation with customers for eco design" and "Cooperation with customers for green packaging." Eco-design was measured through a three-item scale, again adapted from Zhu *et al.* (2008). The sample items included: "Design of products for reduced consumption of material/energy" and "Design of products to avoid or reduce use of hazardous products and/or their manufacturing process." A ten-item scale was adapted from Esty and Winston (2009) to measure GIS. The sample items included: "Information system reduces transportation costs," "Information system tracks environmental information (such as toxicity, energy used, water used, air pollution)," "Information system provides information to encourage green choices by consumers".

Institutional pressures. A 16-item scale was adapted to measure institutional pressures – coercive, normative and mimetic (Zhu *et al.*, 2013). The respondents were requested to rate the importance of each pressure/driver on a five-point Likert scale, where 1 denotes "unimportant" and 5 denotes "very important." Coercive pressure contained six items, including: "National environmental regulations (such as waste emission, cleaner production, etc.," and "National resource saving and conservation regulations." Normative pressure consisted of seven items, including: "Establishing company's green image" and "Public environmental awareness (community, NGO, etc.)." Mimetic pressure contained three items:

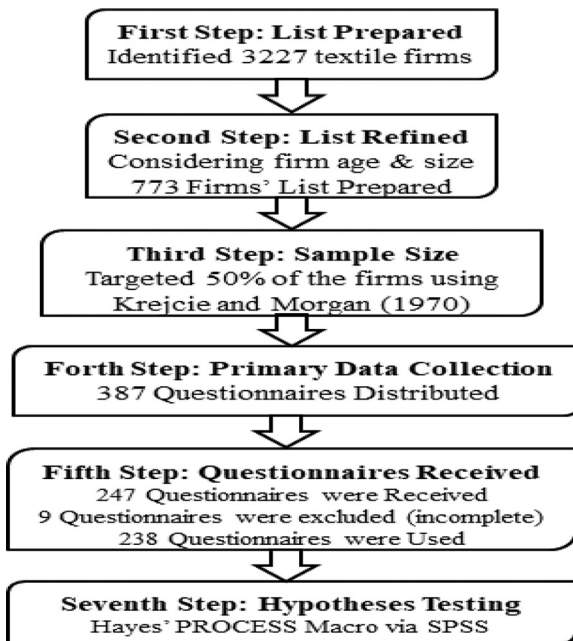


Figure 2.
Research procedure

“Green strategy of same product producers,” “Green strategy of substitute product producers” and “Industrial professional group activities”.

Environmental performance. Environmental performance was measured using a six-item scale adapted from [Zhu et al. \(2008\)](#). The respondents were requested to rate their perceptions regarding their firm’s environmental performance as compared to its foremost rivals, by showing its extent of performance on a five-point scale, where 1 indicated “much worse” and 5 indicated “much better.” The sample items included: “Reduction of air emission,” “Reduction of solid wastes,” “Decrease of frequency for environmental accidents” and “Improvement of an enterprise’s environmental situation”.

Financial performance. A three-item scale was adapted from [Narasimhan and Schoenherr \(2012\)](#) to measure financial performance. The respondents were requested to rate their perceptions regarding their firm’s environmental performance as compared to its foremost rivals, by showing its extent of performance on a five-point scale, where 1 indicated “much worse” and 5 indicated “much better.” The sample items included: “Decrease of cost for materials purchasing,” “Decrease of fee for waste treatment” and “Decrease of fine for environmental accidents”.

Analysis and results

Respondents’ description. [Table I](#) presents comprehensive details regarding the respondents’ demographics, the firms’ profiles, such as the city, and designations of the representatives of the participant firms. The maximum number of participants came from Lahore (69), followed by Faisalabad (61), as both are the big cities of the Punjab. Most of the representatives were SC managers (141), followed by procurement managers (97).

Hypotheses testing. [Table II](#) presents descriptive results, coefficients of correlation among variables of interest and values of Cronbach’s α as anchor of construct reliability. All dimensions of GSCM practices were positively and significantly correlated with firm environmental performance. For firm financial performance, only the association of green manufacturing with financial performance was insignificant.

We used [Hayes \(2017\)](#) software to test the study hypotheses. As institutional pressures moderate the direct effects of GSCM practices and environmental practices as well as the indirect moderated effects of GSCM practices on financial performance, Model 8 – with 5,000 bootstrap resamples – of [Hayes \(2017\)](#) was used because of its appropriateness in relation to the study. We ran five models (one for each dimension of GSCM practices as the software allowed one independent variable at a time) each with financial performance as dependent variable, environmental performance as mediator, institutional pressures as moderator and dimensions of GSCM practices as predictor. [Table III](#) displays the direct and moderating effects of each dimension of GSCM practices and environmental performance. The results supported the positive effect of green manufacturing on environmental performance ($\beta = 0.423$, $SE = 0.066$, $p < 0.01$);

| Cities | (%) | Designation | |
|------------|-----|-------------|---------------------|
| | | SC manager | Procurement manager |
| Lahore | 29 | 40 | 29 |
| Faisalabad | 26 | 34 | 27 |
| Multan | 19 | 30 | 16 |
| Gujranwala | 11 | 17 | 9 |
| Sialkot | 8 | 8 | 11 |
| Gujarat | 7 | 12 | 5 |

Table I.
Respondents’ profile

however, the data did not support *H1b*, stating the direct positive effect of green manufacturing on financial performance ($\beta = 0.004$, $SE = 0.078$, n.s.). The possible reason could be the involvement of the huge cost associated with the installation of a new system and/or upgrading of the existing manufacturing facility. The results fully supported *H2a* and *H2b* and suggested positive effects of green purchasing on environmental performance ($\beta = 0.290$, $SE = 0.063$, $p < 0.01$) and financial performance ($\beta = 0.186$, $SE = 0.068$, $p < 0.01$). The results supported *H3a*, i.e. eco-design affects environmental performance positively ($\beta = 0.204$, $SE = 0.055$, $p < 0.01$). Likewise, they showed that cooperation with customers and GIS positively influences environmental performance ($\beta = 0.413$, $SE = 0.071$, $p < 0.01$) and ($\beta = 0.454$, $SE = 0.078$, $p < 0.01$), and financial performance ($\beta = 0.318$, $SE = 0.079$, $p < 0.01$) and ($\beta = 0.230$, $SE = 0.087$, $p < 0.01$).

Table IV provides the results of the moderating effects (only significant at mean and one standard deviation above and below the mean) of institutional pressures. For environmental performance, institutional pressures moderated the effects of green manufacturing ($\beta = 0.209$, $SE = 0.096$, $p < 0.01$), green purchasing ($\beta = 0.290$, $SE = 0.063$, $p < 0.01$) and GISs ($\beta = 0.327$, $SE = 0.128$, $p < 0.05$) such that these three GSCM practices result in increased (vs poor) environmental performance when institutional pressures are high (vs low). For firm financial performance, institutional pressures moderated the effects of only eco-design ($\beta = -0.248$, $SE = 0.079$, $p < 0.01$) and GISs ($\beta = -0.348$, $SE = 0.135$, $p < 0.05$) such that these three GSCM practices result in poor (vs increased) financial performance when institutional pressures are high (vs low).

Table IV presents the results of mediation and moderated mediation. The results provide support for direct effect of environmental performance on financial performance. Because the coefficients of all dimensions of GSCM practices were significant at zero standard deviation of the moderator, this supports the existence of significant mediation. Thus, the results provide empirical support for *H6* (*a*, *b*, *c*, *d*, *e*). *H8* stated that environmental performance mediates the interactive effect of institutional pressures and dimensions of GSCM practices on financial performance such that the indirect interactive effect will be stronger for high (vs low) institutional pressures. **Table V** shows that environmental performance mediates the moderated effects of green manufacturing, green purchasing and GIS on financial performance. When institutional pressures were low, the indirect effect of green manufacturing, green purchasing, cooperation with customers, eco-design and GIS on

| Construct | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------------------|-------|-------|---------|---------|---------|---------|---------|---------|--------|--------|
| 1. Green manufacturing | 3.675 | 0.876 | (0.91) | | | | | | | |
| 2. Green purchasing | 3.287 | 1.001 | 0.209** | (0.92) | | | | | | |
| 3. Cooperation with customers | 4.070 | 0.842 | 0.242** | 0.189** | (0.84) | | | | | |
| 4. Eco-design | 3.255 | 1.118 | 0.209** | -0.058 | 0.157* | (0.85) | | | | |
| 5. GIS | 3.804 | 0.776 | 0.497** | 0.073 | 0.301** | 0.172** | (0.91) | | | |
| 6. Environmental performance | 3.572 | 0.966 | 0.385** | 0.290** | 0.361** | 0.230** | 0.334** | (0.90) | | |
| 7. Financial performance | 3.515 | 1.013 | 0.125 | 0.223** | 0.320** | 0.191** | 0.299** | 0.301** | (0.79) | |
| 8. Institutional pressures | 3.375 | 3.375 | 0.057 | 0.286** | 0.092 | -0.053 | 0.115 | 0.128* | 0.005 | (0.81) |

Notes: $N = 238$; ** $p < 0.01$; * $p < 0.05$, values of Cronbach's α (construct reliability) are presented on diagonal

Table II.
Values of mean, standard deviation, correlation and reliability

| Model detail | Mediator Environmental performance | | Outcome Financial performance | |
|--|---------------------------------------|-------|----------------------------------|-------|
| | β | SE | B | SE |
| <i>Model 1</i> | | | | |
| Green manufacturing (GM) | 0.423** | 0.066 | 0.004 | 0.078 |
| Institutional pressure (IP) | 0.131 | 0.087 | -0.036 | 0.096 |
| Environmental performance (EP) | | | 0.331** | 0.072 |
| GM \times IP | 0.209** | 0.096 | -0.156 | 0.106 |
| R^2 | 0.176** | | 0.10** | |
| ΔR^2 associated with interaction | 0.017* | | 0.008 | |
| <i>Model 2</i> | | | | |
| GP | 0.290** | 0.063 | 0.186** | 0.068 |
| IP | 0.084 | 0.094 | -0.109 | 0.098 |
| EP | | | 0.262** | 0.068 |
| GP \times IP | 0.198* | 0.084 | 0.105 | 0.088 |
| R^2 | 0.108** | | 0.121** | |
| ΔR^2 associated with interaction | 0.021* | | 0.005 | |
| <i>Model 3</i> | | | | |
| Cooperation with customers (CC) | 0.413** | 0.071 | 0.318** | 0.079 |
| IP | 0.150a | 0.089 | -0.045 | 0.094 |
| EP | | | 0.224** | 0.068 |
| CC \times IP | -0.082 | 0.116 | -0.185 | 0.121 |
| R^2 | 0.142** | | 0.153** | |
| ΔR^2 associated with interaction | 0.002 | | 0.009 | |
| <i>Model 4</i> | | | | |
| Eco-design (ED) | 0.204** | 0.055 | 0.098a | 0.057 |
| IP | 0.209* | 0.093 | 0.020 | 0.095 |
| EP | | | 0.285** | 0.066 |
| ED \times IP | -0.018 | 0.078 | -0.248** | 0.079 |
| R^2 | 0.073** | | 0.143** | |
| ΔR^2 associated with interaction | 0.0001 | | 0.037** | |
| <i>Model 5</i> | | | | |
| GIS | 0.454** | 0.078 | 0.230** | 0.087 |
| IP | 0.076 | 0.09 | -0.020 | 0.095 |
| EP | | | 0.272** | 0.068 |
| GIS \times IP | 0.327* | 0.128 | -0.348* | 0.135 |
| R^2 | 0.143** | | 0.161** | |
| ΔR^2 associated with interaction | 0.024* | | 0.024* | |

Table III.
Direct and moderating effects of dimensions of GSCM practices

Notes: ** $p < 0.01$; * $p < 0.05$; ^a $p < 0.10$

financial performance was coefficient = 0.094, SE = 0.043, 95 per cent CI = 0.014 to 0.184; coefficient = 0.042, SE = 0.030, 95 per cent CI = -0.010 to 0.108; coefficient = 0.105, SE = 0.049, 95 per cent CI = 0.028 to 0.217; coefficient = 0.062, SE = 0.027, 95 per cent CI = 0.020 to 0.122; and coefficient = 0.068, SE = 0.038, 95 per cent CI = -0.001 to 0.147, respectively.

When institutional pressures were high, the indirect effect of green manufacturing, green purchasing, cooperation with customers, eco-design and GIS on financial performance was coefficient = 0.186, SE = 0.049, 95 per cent CI = 0.099 to 0.294; coefficient = 0.111, SE = 0.042, 95 per cent CI = 0.042 to 0.205; coefficient = 0.080, SE = 0.036, 95 per cent CI = 0.021 to 0.165; coefficient = 0.055, SE = 0.024, 95 per cent CI = 0.010 to 0.106; and coefficient = 0.182, SE = 0.054, 95 per cent CI = 0.084 to 0.294, respectively. The index of moderated mediation was

Table IV.
Conditional direct effects of dimensions of GSCM practices (for significant interactions only)

| Moderator (IPs) | Estimate (SE) | EP | | Financial performance | |
|-------------------------|---------------|---------------|----------------|-----------------------|-----------------|
| | | Estimate (SE) | 95% CI | Estimate (SE) | 95% CI |
| <i>GM</i> | | | | | |
| -1 SD IP | 0.284 (0.09) | | [0.106, 0.461] | | |
| 0 SD IP | 0.423 (0.066) | | [0.293, 0.552] | | |
| +1 SD IP | 0.561 (0.093) | | [0.379, 0.744] | | |
| <i>Green purchasing</i> | | | | | |
| -1 SD IP | 0.159 (0.076) | | [0.008, 0.309] | | |
| 0 SD IP | 0.290 (0.063) | | [0.167, 0.414] | | |
| +1 SD IP | 0.422 (0.091) | | [0.243, 0.601] | | |
| <i>ED</i> | | | | | |
| -1 SD IP | | | | 0.264 (0.074) | [0.118, 0.409] |
| 0 SD IP | | | | 0.098 (0.057) | [-0.014, 0.210] |
| +1 SD IP | | | | -0.067 (0.081) | [-0.226, 0.092] |
| <i>GIS</i> | | | | | |
| -1 SD IP | 0.236 (0.099) | | [0.039, 0.433] | 0.462 (0.105) | [0.254, 0.669] |
| 0 SD IP | 0.454 (0.078) | | [0.299, 0.608] | 0.230 (0.087) | [0.058, 0.402] |
| +1 SD IP | 0.671 (0.130) | | [0.415, 0.927] | -0.002 (0.143) | [-0.283, 0.280] |

calculated to see if the difference between the above two coefficients was significantly different from zero. The results revealed that the index of moderated mediation was significant for green manufacturing (coefficient = 0.069, SE = 0.042, 95 per cent CI = 0.002 to 0.167), green purchasing (coefficient = 0.052, SE = 0.030, 95 per cent CI = 0.004 to 0.123) and GIS (coefficient = 0.089, SE = 0.041, 95 per cent CI = 0.016 to 0.176), thus suggesting that environmental performance mediates the moderated effects of these three dimensions of GSCM practices. The index of moderated mediation for eco-design (coefficient = -0.005, SE = 0.023, 95 per cent CI = -0.057 to 0.036) and cooperation with customers (coefficient = -0.018, SE = 0.029, 95 per cent CI = -0.084 to 0.036) revealed that the difference between the two coefficients was not different from zero, thus implying that environmental performance did not mediate the moderated effects of these two dimensions of GSCM practices on financial performance.

Discussion

There are two main objectives of this study. First, it investigates the impact of adoption of GSCM practices across textile industry. Second, it examines if such impact gets strengthened or weakened under institutional pressures. The results show that all the dimensions of GSCM practices have a significant positive direct impact on an organization's environmental performance. However, green manufacturing and eco-design have no direct impacts on financial performance but rather have fully mediated impacts through increased environmental performance. A possible reason for the fully indirect effect could be the high costs associated with installation of new manufacturing facilities or upgrading of existing ones, as well as huge investments in redesigning products and processes to make them eco-friendly. Such initiatives impose a financial burden which lessens a firm's profitability; however, it increases the environmental performance of the firm which in turn improves its financial health. Firms endeavor to establish collaborative relationships with customers, focusing on green purchasing, and implementation of GIS enhances firm environmental performance as well as financial well-being. The results support past findings such as those by Green *et al.* (1998), who asserted that green manufacturing enhances the environmental performance, and Rao and Holt (2005), who argued that green manufacturing augments

Table V.
Conditional indirect
effect of dimensions
of GSCM practices

| Moderator (IPs) | Financial performance | |
|-------------------------------------|-------------------------|------------------|
| Conditional indirect effect via EP | Estimate (bootstrap SE) | 95% bootstrap CI |
| <i>GM</i> | | |
| -1 SD IP | 0.094 (0.043) | [0.014, 0.184] |
| 0 SD IP | 0.140 (0.037) | [0.073, 0.220] |
| +1 SD IP | 0.186 (0.049) | [0.099, 0.294] |
| <i>Index of moderated mediation</i> | 0.069 (0.042) | [0.002, 0.167] |
| <i>Green purchasing</i> | | |
| -1 SD IP | 0.042 (0.030) | [-0.010, 0.108] |
| 0 SD IP | 0.076 (0.031) | [0.026, 0.146] |
| +1 SD IP | 0.111 (0.042) | [0.042, 0.205] |
| <i>Index of moderated mediation</i> | 0.052 (0.030) | [0.004, 0.123] |
| <i>CC</i> | | |
| -1 SD IP | 0.105 (0.049) | [0.028, 0.217] |
| 0 SD IP | 0.093 (0.038) | [0.029, 0.179] |
| +1 SD IP | 0.080 (0.036) | [0.021, 0.165] |
| <i>Index of moderated mediation</i> | -0.018 (0.029) | [-0.084, 0.036] |
| <i>ED</i> | | |
| -1 SD IP | 0.062 (0.027) | [0.020, 0.122] |
| 0 SD IP | 0.058 (0.021) | [0.024, 0.105] |
| +1 SD IP | 0.055 (0.024) | [0.010, 0.106] |
| <i>Index of moderated mediation</i> | -0.005 (0.023) | [-0.057, 0.036] |
| <i>GIS</i> | | |
| -1 SD IP | 0.064 (0.038) | [-0.001, 0.147] |
| 0 SD IP | 0.123 (0.038) | [0.055, 0.202] |
| +1 SD IP | 0.182 (0.054) | [0.084, 0.294] |
| <i>Index of moderated mediation</i> | 0.089 (0.041) | [0.016, 0.176] |

organizations' economic performance. According to [Gholami et al. \(2013\)](#), organizations' environmental performance increases with the implementation of GIS, and according to [Chien and Shih \(2007\)](#), GIS promotes organizations' financial performance. [Choi and Hwang \(2015\)](#) found that eco-design was an important determinant of both environmental and financial performance. It is a reality that by applying GSCM practices in an effective way, organizational performance can be increased. Scholars such as [Longoni and Cagliano \(2018\)](#) are of the view that if top management is committed to implementing GSCM practices, organizations can achieve financial and environmental success. Eco-design protects the environment of a company by recycling and reproducing the products after the end of the product lifecycle. Eco-design not only increases firms' environmental performance but also increases their financial performance in the long run.

More importantly, the findings revealed the important role of institutional pressures, which boost firms' endeavors for the implementation and outcomes of GSCM practices. It is evident from empirical findings that under high institutional pressures, firm tend to embed green practices so as to comply with environmental regulations and the expectations of occupational, industrial and legislative institutions. Firms facing a high amount of institutional pressures for environment protection and sustainability are embedding practices of GSCM into their operations such that the embeddedness and impacts of these practices on environmental performance are at a peak. However, firms reported no significant contingent impact of GSCM practices on financial performance. In particular, the implementation of GIS and eco-design imposed a high cost and influenced financial performance negatively when firms were forced to prioritize environmental performance.

We further submit that manufacturing companies are also compelled by customers to implement GSCM practices. Nowadays, customers are well informed about the dangerous effects, including pollution, by manufacturing companies; therefore, organizations use green purchasing to buy green materials which increase customers' trust to buy their products, which elevates their sales, and in turn, increases firms' financial performance and of course their environmental performance also. Additionally, according to the stakeholder theory, stakeholders also influence companies to follow those practices which are beneficial for their business success and survival (Freeman, 2010). Thus, firms that had already established strong ties with customers to understand and satisfy their needs adopted green purchasing practices to cut costs on materials and inventories and made investments into lean production facilities. This is why, high pressures from occupational and legal institutions did not influence the impact of these three practices on financial performance. So far as the moderated indirect effect is concerned, the findings revealed that environmental performance serves as significant mechanism for green manufacturing, green purchasing and GIS to increase firms' financial performance under high institutional pressures.

Theoretical implications and contributions

The present study provides several important theoretical implications and contributes to the literature in the following ways. First, this study tries to focus on post-implementation of GSCM practices in the textile context. Therefore, the study attempts to extend the work of Dubey *et al.* (2015) and Wu *et al.* (2012). Second, this study uses a multidimensional perspective and uses past literature to operationalize GSCM practices as green manufacturing, green purchasing, cooperation with customers, eco-design and GIS. Using GSCM practices either as a single- or second-order construct hinders a clear understanding of the role of internal and external practices. It is possible that the effect of one practice is more obvious in certain contexts, while the outcomes of other practices are either consistent or less obvious. Therefore, our study contributes to the SCM literature by explaining the potential role of each dimension of GSCM practices in attaining better environmental and financial performance in the textile manufacturing context. Third, besides an outcome, the study provides important insights into the mediating role of environmental performance. Parallel to the traditional literature on operations and SC management, this study empirically examined whether environmental performance serves as a mechanism for GSCM practices to foster firm financial performance. The results are encouraging and provide substantial support that firms can reap financial benefits by improving environmental performance.

Fourth, this study draws upon the institutional theory, specifically integrating institutional pressures and GSCM practices to enhance environmental performance in one model, and synthesizing the effects that the literature had previously recognized to be independent. In the present literature, GSCM practices and firm performance are rarely studied through the lens of institutional pressures. The findings of the study imply that organizations are social entities and have to respond to institutional pressures (i.e. normative, coercive and mimetic pressures) for their own survival and competitiveness. Therefore, organizations' decisions, actions and orientations are not free from regulatory and occupational bodies, and their actions must be studied from an institutional perspective. Finally, this study responds to recent calls to recognize the role of institutional pressures, for example, Li and Huang (2017), and suggests institutional pressures are an important contingent factor.

Managerial implications

The findings of the study also provide important implications for firms, particularly their SC professionals. Managers of textile firms should embed environmental-friendly practices across

the SCs. Firms' management is advised to develop expertise in crafting and executing GSCM besides other management skills, because SCs are the ultimate source of firm performance outcomes. By testing empirically, the study established evidence that, once implemented, each dimension of GSCM practices is imperative in eliciting environmental as well as financial performance. In particular, the impacts of GSCM practices on environmental performance are high under high institutional pressures; hence, the implementation of GSCM practices not only helps firms to enhance their performance outcomes but also helps meet institutional expectations, thus not endangering firm performance and long-term development. This study, therefore, provides insights for managers and SC professionals that GSCM practices offer economic and environmental compliance and have the probability to increase social well-being. Firms should integrate and collaborate all SC partners – upstream and downstream – to successfully meet the needs of their ultimate customers. In addition, the findings further strengthen the perception of managers who believe in the implementation of GSCM practices to maximize environmental performance outcomes as well as to comply with institutional expectations. The results also resolve the debate on the post-implementation financial benefits of GSCM practices and clearly provide empirical evidence that investment in the implementation of such practices repays in terms of environmental and subsequently financial performance.

Because the past literature suggests that institutional pressures alone are likely to be insufficient in bringing successful change to organizations (Delmas and Toffel, 2010), the findings of this study could sound strange: namely, that firms perform better under the contingent effect of institutional pressures. The findings related to institutional pressures suggest that obeying regulatory and occupational agencies and compliance with environmental legislation would help to not only ensure the “legitimacy” of firm but also increase firms' ability to prevent environmental costs and reduce operating ones. It is important to note that the present study focused on those textile manufacturing firms of a developing country which had already adopted green practices in some form. Therefore, the findings should be understood in a post-implementation context. Further, the institutional pressures for environmental regulation should be crafted to promote environmental performance outcomes of the firms rather than merely comply with such legislation.

Limitations and future directions

Despite its important contributions, however, the study is not without limitations. First, the study focused on the textile industry only, and therefore, the generalizability of its empirical findings and their application across other manufacturing sectors should be done carefully. Second, institutional pressures were taken as whole to explore the moderating effect, which limits our understanding regarding the moderating effect of each dimension of institutional pressures. There is a possibility that a specific form/context of pressure could play a strong moderating role as compared to the other form/context. For example, this study does not explain whether the normative pressure moderates the proposed relationship as the mimetic pressure does. Likewise, the normative pressures could moderate differently for textile manufacturing and rubber/chemical firms, for instance. Researchers are, therefore, invited to explore both the moderating role of each dimension of institutional pressures and across different industries.

Conclusion

The management of SCs is increasingly under pressure to gain environmental performance outcomes through implementation of green practices. This study examines the moderating and moderated-mediated effects of the dimensions of GSCM practices on the environmental and financial performance of textile firms (after having implemented GSCM practices). The findings reveal that green manufacturing, green purchasing and GIS yield increased environmental performance under high institutional pressures. On the other hand, eco-design and GIS reduces a

firm's financial performance because firms have to make their investments comply with environmental regulations, thus increasing cost and reducing profitability, most likely in the short term. In sum, the findings advocate the significant role of GSCM practices in eliciting environmental performance of textile firms. In addition to that, environmental performance mediates the interaction effects of institutional pressures and the three dimensions of GSCM practices (green manufacturing, green purchasing and GIS) such that the indirect effect on financial performance is more positive when institutional pressures are high. These findings suggest that implementation of GSCM practices helps firms to comply with environmental regulations imposed by regulatory, professional and/or societal institutions as well as assist such firms to improve their environmental and financial performance outcomes.

References

- Ajamieh, A., Benitez, J., Braojos, J. and Gelhard, C. (2016), "IT infrastructure and competitive aggressiveness in explaining and predicting performance", *Journal of Business Research*, Vol. 69 No. 10, pp. 4667-4674.
- Baines, T.S., Brown, S., Benedettini, O. and Ball, P.D. (2012), "Examining green production and its role within the competitive strategy of manufacturers", *Journal of Industrial Engineering and Management*, Vol. 5 No. 1, pp. 53-87.
- Boström, M. and Micheletti, M. (2016), "Introducing the sustainability challenge of textiles and clothing", *Journal of Consumer Policy*, Vol. 39 No. 4, pp. 367-375.
- Büyükoçkan, G. and Çifçi, G. (2012), "Evaluation of the green supply chain management practices: a fuzzy ANP approach", *Production Planning and Control*, Vol. 23 No. 6, pp. 405-418.
- Carter, C.R., Kale, R. and Grimm, C.M. (2000), "Environmental purchasing and firm performance: an empirical investigation", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 36 No. 3, pp. 219-228.
- Chan, H.K., Yee, R.W., Dai, J. and Lim, M.K. (2016), "The moderating effect of environmental dynamism on green product innovation and performance", *International Journal of Production Economics*, Vol. 181, pp. 384-391.
- Chandra, C., Grabis, J. and Tumanyan, A. (2007), "Problem taxonomy: a step towards effective information sharing in supply chain management", *International Journal of Production Research*, Vol. 45 No. 11, pp. 2507-2544.
- Chen, C.-C. (2005), "Incorporating green purchasing into the frame of ISO 14000", *Journal of Cleaner Production*, Vol. 13 No. 9, pp. 927-933.
- Chien, M. and Shih, L.-H. (2007), "An empirical study of the implementation of green supply chain management practices in the electrical and electronic industry and their relation to organizational performances", *International Journal of Environmental Science and Technology*, Vol. 4 No. 3, pp. 383-394.
- Choi, D. and Hwang, T. (2015), "The impact of green supply chain management practices on firm performance: the role of collaborative capability", *Operations Management Research*, Vol. 8 Nos 3/4, pp. 69-83.
- Christainsen, G.B. and Haveman, R.H. (1981), "The contribution of environmental regulations to the slowdown in productivity growth", *Journal of Environmental Economics and Management*, Vol. 8 No. 4, pp. 381-390.
- Christmann, P. and Taylor, G. (2001), "Globalization and the environment: determinants of firm self-regulation in China", *Journal of International Business Studies*, Vol. 32 No. 3, pp. 439-458.
- Chuang, S.-P. and Huang, S.-J. (2018), "The effect of environmental corporate social responsibility on environmental performance and business competitiveness: the mediation of green information technology capital", *Journal of Business Ethics*, Vol. 150 No. 4, pp. 991-1009.

- Corbett, J. (2013), "Using information systems to improve energy efficiency: do smart meters make a difference?", *Information Systems Frontiers*, Vol. 15 No. 5, pp. 747-760.
- Dao, V., Langella, I. and Carbo, J. (2011), "From green to sustainability: information technology and an integrated sustainability framework", *The Journal of Strategic Information Systems*, Vol. 20 No. 1, pp. 63-79.
- Daugherty, P.J., Richey, R.G., Genchev, S.E. and Chen, H. (2005), "Reverse logistics: superior performance through focused resource commitments to information technology", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 41 No. 2, pp. 77-92.
- Delmas, M.A. and Toffel, M.W. (2010), "Institutional pressures and organizational characteristics: implications for environmental strategy", Harvard Business School Technology and Operations Mgt, Unit Working Paper (11-050).
- DiMaggio, P.J. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147-160.
- Dubey, R., Gunasekaran, A. and Ali, S.S. (2015), "Exploring the relationship between leadership, operational practices, institutional pressures and environmental performance: a framework for green supply chain", *International Journal of Production Economics*, Vol. 160, pp. 120-132.
- Esty, D. and Winston, A. (2009), *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*, John Wiley and Sons.
- Fiksel, J. (1993), "Design for environment: the new quality imperative", *Corporate Environmental Strategy*, Vol. 1 No. 3, pp. 49-55.
- Freeman, R.E. (2010), *Strategic Management: A Stakeholder Approach*, Cambridge University Press.
- Geffen, C.A. and Rothenberg, S. (2000), "Suppliers and environmental innovation: the automotive paint process", *International Journal of Operations and Production Management*, Vol. 20 No. 2, pp. 166-186.
- Gholami, R., Sulaiman, A.B., Ramayah, T. and Molla, A. (2013), "Senior managers' perception on green information systems (IS) adoption and environmental performance: results from a field survey", *Information and Management*, Vol. 50 No. 7, pp. 431-438.
- Green, K. and Inman, R. (2005), "Using a just-in-time selling strategy to strengthen supply chain linkages", *International Journal of Production Research*, Vol. 43 No. 16, pp. 3437-3453.
- Green, K., Morton, B. and New, S. (1998), "Green purchasing and supply policies: do they improve companies' environmental performance?", *Supply Chain Management: An International Journal*, Vol. 3 No. 2, pp. 89-95.
- Green, K.W., Jr, Zelbst, P.J., Bhadauria, V.S. and Meacham, J. (2012), "Do environmental collaboration and monitoring enhance organizational performance?", *Industrial Management and Data Systems*, Vol. 112 No. 2, pp. 186-205.
- Grønhaug, K. and Kaufmann, G. (1988), *Innovation: A Cross-Disciplinary Perspective*, Oxford University Press.
- Gupta, R.K., Purohit, R.R., Rana, S.D. and Mishra, A. (2015), "A review on green and sustainable manufacturing and their impact on social, economical, environmental prospects", *International Journal on Applications in Science, Engineering and Technology*, Vol. 1 No. 1, pp. 8-12.
- Hanim Mohamad Zailani, S., Eltayeb, T.K., Hsu, C.-C. and Choon Tan, K. (2012), "The impact of external institutional drivers and internal strategy on environmental performance", *International Journal of Operations and Production Management*, Vol. 32 No. 6, pp. 721-745.
- Harms, D., Hansen, E.G. and Schaltegger, S. (2013), "Strategies in sustainable supply chain management: an empirical investigation of large German companies", *Corporate Social Responsibility and Environmental Management*, Vol. 20 No. 4, pp. 205-218.
- Hayes, A.F. (2017), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, Guilford Publications.

- Hazen, B.T., Cegielski, C. and Hanna, J.B. (2011), "Diffusion of green supply chain management: examining perceived quality of green reverse logistics", *The International Journal of Logistics Management*, Vol. 22 No. 3, pp. 373-389.
- Jääskeläinen, A. and Heikkilä, J. (2019), "Purchasing and supply management practices in customer value creation", *Supply Chain Management: An International Journal*.
- Jacobs, B.W., Singhal, V.R. and Subramanian, R. (2010), "An empirical investigation of environmental performance and the market value of the firm", *Journal of Operations Management*, Vol. 28 No. 5, pp. 430-441.
- Kalyar, M.N., Shafique, I. and Abid, A. (2019), "Role of lean manufacturing and environmental management practices in eliciting environmental and financial performance: the contingent effect of institutional pressures", *Environmental Science and Pollution Research*, Vol. 26 No. 24, pp. 24967-24978.
- Kennedy, M.T. and Fiss, P.C. (2009), "Institutionalization, framing, and diffusion: the logic of TQM adoption and implementation decisions among US hospitals", *Academy of Management Journal*, Vol. 52 No. 5, pp. 897-918.
- Ketokivi, M.A. and Schroeder, R.G. (2004), "Strategic, structural contingency and institutional explanations in the adoption of innovative manufacturing practices", *Journal of Operations Management*, Vol. 22 No. 1, pp. 63-89.
- Khan, S.A.R. and Qianli, D. (2017), "Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan", *Environmental Science and Pollution Research*, Vol. 24 No. 20, pp. 16829-16844.
- Kim, M., Woo, C., Rho, J. and Chung, Y. (2016), "Environmental capabilities of suppliers for green supply chain management in construction projects: a case study in Korea", *Sustainability*, Vol. 8 No. 1, p. 82.
- Klassen, R.D. and Whybark, D.C. (1999), "Environmental management in operations: the selection of environmental technologies", *Decision Sciences*, Vol. 30 No. 3, pp. 601-631.
- Kleindorfer, P.R., Singhal, K. and Van Wassenhove, L.N. (2005), "Sustainable operations management", *Production and Operations Management*, Vol. 14 No. 4, pp. 482-492.
- Lai, K-h. and Wong, C.W. (2012), "Green logistics management and performance: some empirical evidence from Chinese manufacturing exporters", *Omega*, Vol. 40 No. 3, pp. 267-282.
- Laosirihongthong, T., Adebajo, D. and Choon Tan, K. (2013), "Green supply chain management practices and performance", *Industrial Management and Data Systems*, Vol. 113 No. 8, pp. 1088-1109.
- Lee, S.M., Tae Kim, S. and Choi, D. (2012), "Green supply chain management and organizational performance", *Industrial Management and Data Systems*, Vol. 112 No. 8, pp. 1148-1180.
- Li, Y.-H. and Huang, J.-W. (2017), "The moderating role of relational bonding in green supply chain practices and performance", *Journal of Purchasing and Supply Management*, Vol. 23 No. 4, pp. 290-299.
- Lin, R.-J. (2013), "Using fuzzy DEMATEL to evaluate the green supply chain management practices", *Journal of Cleaner Production*, Vol. 40, pp. 32-39.
- Lin, R.-J., Tan, K.-H. and Geng, Y. (2013), "Market demand, green product innovation, and firm performance: evidence from Vietnam motorcycle industry", *Journal of Cleaner Production*, Vol. 40, pp. 101-107.
- Liu, H., Ke, W., Wei, K.K., Gu, J. and Chen, H. (2010), "The role of institutional pressures and organizational culture in the firm's intention to adopt internet-enabled supply chain management systems", *Journal of Operations Management*, Vol. 28 No. 5, pp. 372-384.
- Longoni, A. and Cagliano, R. (2018), "Sustainable innovativeness and the triple bottom line: the role of organizational time perspective", *Journal of Business Ethics*, Vol. 151 No. 4, pp. 1097-1120.
- Madu, C.N., Kuei, C. and Madu, I.E. (2002), "A hierarchic metric approach for integration of green issues in manufacturing: a paper recycling application", *Journal of Environmental Management*, Vol. 64 No. 3, pp. 261-272.

- Mangla, S., Madaan, J., Sarma, P. and Gupta, M. (2014), "Multi-objective decision modelling using interpretive structural modelling for green supply chains", *International Journal of Logistics Systems and Management*, Vol. 17 No. 2, pp. 125-142.
- Min, H. and Galle, W.P. (2001), "Green purchasing practices of US firms", *International Journal of Operations and Production Management*, Vol. 21 No. 9, pp. 1222-1238.
- Murovec, N., Erker, R.S. and Prodan, I. (2012), "Determinants of environmental investments: testing the structural model", *Journal of Cleaner Production*, Vol. 37, pp. 265-277.
- Narasimhan, R. and Schoenherr, T. (2012), "The effects of integrated supply management practices and environmental management practices on relative competitive quality advantage", *International Journal of Production Research*, Vol. 50 No. 4, pp. 1185-1201.
- Nunnally, J. (1978), *Psychometric Theory*, McGraw-Hill, New York, NY.
- Perry, P. and Towers, N. (2013), "Conceptual framework development: CSR implementation in fashion supply chains", *International Journal of Physical Distribution & Logistics Management*, Vol. 43 Nos 5/6, pp. 478-501.
- Porter, M. and Van der Linde, C. (1995), "Green and competitive: ending the stalemate", *The Dynamics of the Eco-Efficient Economy: Environmental Regulation and Competitive Advantage*, Vol. 33.
- Prajogo, D., Chowdhury, M., Yeung, A.C. and Cheng, T. (2012), "The relationship between supplier management and firm's operational performance: a multi-dimensional perspective", *International Journal of Production Economics*, Vol. 136 No. 1, pp. 123-130.
- Qi, G., Shen, L., Zeng, S. and Jorge, O.J. (2010), "The drivers for contractors' green innovation: an industry perspective", *Journal of Cleaner Production*, Vol. 18 No. 14, pp. 1358-1365.
- Rao, P. (2002), "Greening the supply chain: a new initiative in South East Asia", *International Journal of Operations and Production Management*, Vol. 22 No. 6, pp. 632-655.
- Rao, P. and Holt, D. (2005), "Do green supply chains lead to competitiveness and economic performance?", *International Journal of Operations and Production Management*, Vol. 25 No. 9, pp. 898-916.
- Reinhardt, F.L. (1998), "Environmental product differentiation: implications for corporate strategy", *California Management Review*, Vol. 40 No. 4, pp. 43-73.
- Rockness, J., Schlachter, P. and Rockness, H.O. (1986), "Hazardous waste disposal, corporate disclosure, and financial performance in the chemical industry", *Advances in Public Interest Accounting*, Vol. 1 No. 1, pp. 167-191.
- Rogers, K.W., Purdy, L., Safayeni, F. and Duimering, P.R. (2007), "A supplier development program: rational process or institutional image construction?", *Journal of Operations Management*, Vol. 25 No. 2, pp. 556-572.
- Saeed, A., Jun, Y., Nubuor, S., Priyankara, H. and Jayasuriya, M. (2018), "Institutional pressures, green supply chain management practices on environmental and economic performance: a two theory view", *Sustainability*, Vol. 10 No. 5, p. 1517.
- Sánchez-Medina, P.S., Díaz-Pichardo, R., Bautista-Cruz, A. and Toledo-López, A. (2015), "Environmental compliance and economic and environmental performance: evidence from handicrafts small businesses in Mexico", *Journal of Business Ethics*, Vol. 126 No. 3, pp. 381-393.
- Sarkis, J. and Tamarkin, M. (2005), "Real options analysis for 'green trading': the case of greenhouse gases", *The Engineering Economist*, Vol. 50 No. 3, pp. 273-294.
- Sarkis, J., Gonzalez-Torre, P. and Adenso-Diaz, B. (2010), "Stakeholder pressure and the adoption of environmental practices: the mediating effect of training", *Journal of Operations Management*, Vol. 28 No. 2, pp. 163-176.
- Saxena, R.P. and Khandelwal, P.K. (2012), "Greening of industries for sustainable growth: an exploratory study on durable, non-durable and services industries", *International Journal of Social Economics*, Vol. 39 No. 8, pp. 551-586.

- Schniederjans, D.G. and Hales, D.N. (2016), "Cloud computing and its impact on economic and environmental performance: a transaction cost economics perspective", *Decision Support Systems*, Vol. 86, pp. 73-82.
- Scott, W.R. (2008), *Institutions and Organizations: Ideas and Interests*, 3rd ed., Sage Publications, Los Angeles.
- Seuring, S. (2004), "Integrated chain management and supply chain management comparative analysis and illustrative cases", *Journal of Cleaner Production*, Vol. 12 Nos 8/10, pp. 1059-1071.
- Shang, K.-C., Lu, C.-S. and Li, S. (2010), "A taxonomy of green supply chain management capability among electronics-related manufacturing firms in Taiwan", *Journal of Environmental Management*, Vol. 91 No. 5, pp. 1218-1226.
- Sharma, S., Pablo, A.L. and Vredenburg, H. (1999), "Corporate environmental responsiveness strategies: the importance of issue interpretation and organizational context", *The Journal of Applied Behavioral Science*, Vol. 35 No. 1, pp. 87-108.
- Shen, B., Li, Q., Dong, C. and Perry, P. (2017), "Sustainability issues in textile and apparel supply chains", *Sustainability*, Vol. 9 No. 9, p. 1592.
- Sheu, J.-B., Chou, Y.-H. and Hu, C.-C. (2005), "An integrated logistics operational model for green-supply chain management", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 41 No. 4, pp. 287-313.
- Subramanian, N. and Gunasekaran, A. (2015), "Cleaner supply-chain management practices for twenty-first-century organizational competitiveness: practice-performance framework and research propositions", *International Journal of Production Economics*, Vol. 164, pp. 216-233.
- Tempel, A. and Walgenbach, P. (2007), "Global standardization of organizational forms and management practices? what new institutionalism and the business-systems approach can learn from each other", *Journal of Management Studies*, Vol. 44 No. 1, pp. 1-24.
- Tseng, M.-L. and Chiu, A.S. (2013), "Evaluating firm's green supply chain management in linguistic preferences", *Journal of Cleaner Production*, Vol. 40, pp. 22-31.
- Tsoufias, G.T. and Pappis, C.P. (2006), "Environmental principles applicable to supply chains design and operation", *Journal of Cleaner Production*, Vol. 14 No. 18, pp. 1593-1602.
- Vaccaro, A. and Echeverri, D.P. (2010), "Corporate transparency and green management", *Journal of Business Ethics*, Vol. 95 No. 3, pp. 487-506.
- Vachon, S. and Klassen, R.D. (2008), "Environmental management and manufacturing performance: the role of collaboration in the supply chain", *International Journal of Production Economics*, Vol. 111 No. 2, pp. 299-315.
- Vanalle, R.M., Ganga, G.M.D., Godinho Filho, M. and Lucato, W.C. (2017), "Green supply chain management: an investigation of pressures, practices, and performance within the Brazilian automotive supply chain", *Journal of Cleaner Production*, Vol. 151, pp. 250-259.
- Wong, C.W., Lai, K.-h., Shang, K.-C., Lu, C.-S. and Leung, T. (2012), "Green operations and the moderating role of environmental management capability of suppliers on manufacturing firm performance", *International Journal of Production Economics*, Vol. 140 No. 1, pp. 283-294.
- Wu, G.-C., Ding, J.-H. and Chen, P.-S. (2012), "The effects of GSCM drivers and institutional pressures on GSCM practices in Taiwan's textile and apparel industry", *International Journal of Production Economics*, Vol. 135 No. 2, pp. 618-636.
- Yang, C.-S. (2018), "An analysis of institutional pressures, green supply chain management, and green performance in the container shipping context", *Transportation Research Part D: Transport and Environment*, Vol. 61, pp. 246-260.
- Yang, Z., Sun, J., Zhang, Y. and Wang, Y. (2018), "Peas and carrots just because they are green? Operational fit between green supply chain management and green information system", *Information Systems Frontiers*, Vol. 20 No. 3, pp. 627-645.

- Zailani, S., Govindan, K., Iranmanesh, M., Shaharudin, M.R. and Chong, Y.S. (2015), "Green innovation adoption in automotive supply chain: the Malaysian case", *Journal of Cleaner Production*, Vol. 108, pp. 1115-1122.
- Zhang, H. and Yang, F. (2016), "On the drivers and performance outcomes of green practices adoption: an empirical study in China", *Industrial Management and Data Systems*, Vol. 116 No. 9, pp. 2011-2034.
- Zhu, Q. and Cote, R.P. (2004), "Integrating green supply chain management into an embryonic eco-industrial development: a case study of the Guitang group", *Journal of Cleaner Production*, Vol. 12 Nos 8/10, pp. 1025-1035.
- Zhu, Q. and Geng, Y. (2001), "Integrating environmental issues into supplier selection and management", *Greener Management International*, Vol. 35 No. 35, pp. 27-40.
- Zhu, Q. and Sarkis, J. (2004), "Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises", *Journal of Operations Management*, Vol. 22 No. 3, pp. 265-289.
- Zhu, Q., Feng, Y. and Choi, S.B. (2017), "The role of customer relational governance in environmental and economic performance improvement through green supply chain management", *Journal of Cleaner Production*, Vol. 155, pp. 46-53.
- Zhu, Q., Sarkis, J. and Geng, Y. (2005), "Green supply chain management in China: pressures, practices and performance", *International Journal of Operations & Production Management*, Vol. 25 No. 5, pp. 449-468.
- Zhu, Q., Sarkis, J. and Lai, K-H. (2007), "Green supply chain management: pressures, practices and performance within the Chinese automobile industry", *Journal of Cleaner Production*, Vol. 15 Nos 11/12, pp. 1041-1052.
- Zhu, Q., Sarkis, J. and Lai, K-H. (2008), "Confirmation of a measurement model for green supply chain management practices implementation", *International Journal of Production Economics*, Vol. 111 No. 2, pp. 261-273.
- Zhu, Q., Sarkis, J. and Lai, K-h. (2012), "Green supply chain management innovation diffusion and its relationship to organizational improvement: an ecological modernization perspective", *Journal of Engineering and Technology Management*, Vol. 29 No. 1, pp. 168-185.
- Zhu, Q., Sarkis, J. and Lai, K.H. (2013), "Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices", *Journal of Purchasing and Supply Management*, Vol. 19 No. 2, pp. 106-117.

Further reading

- Zhu, Q., Sarkis, J. and Geng, Y. (2005), "Green supply chain management in China: pressures, practices and performance", *International Journal of Operations and Production Management*, Vol. 25 No. 5, pp. 449-468.

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