


Article

Institutional Pressures, Green Supply Chain Management Practices on Environmental and Economic Performance: A Two Theory View

Amer Saeed ^{1,2,*} , Yun Jun ^{1,*}, Saviour Ayertey Nubuor ^{1,3}, Hewawasam Puwakpitiyage Rasika Priyankara ^{1,4} and Mahabaduge Prasad Fernando Jayasuriya ¹

¹ School of Management, Wuhan University of Technology, Wuhan 430070, China; saviourayertey@whut.edu.cn (S.A.N.); rasikahp1979@gmail.com (H.P.R.P.); prasadjayasuriya12@gmail.com (M.P.F.J.)

² School of Business and Economics, University of Management and Technology, Lahore 54770, Pakistan

³ Department of Organization and Human Resource Management, University of Ghana Business School, P.O.Box LG 78, Legon, Accra, Ghana

⁴ Department of Business Management, Faculty of Management Studies, Sabaragamuwa University of Sri Lanka, Belihuloya 70140, Sri Lanka

* Correspondence: amersaeed@whut.edu.cn (A.S.); yunjunwh@whut.edu.cn (Y.J.)

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Abstract: The adoption of green practices within and outside organizational boundaries is imperative to ascertain environmental and economic performance goals. This article examined whether internal and external green supply chain management (GSCM) practices have the same or different kinds of regulatory, market, or competitive pressures. We employed institutional theory to identify different kinds of pressures, and resource dependence theory to explore the impact of internal and external GSCM practices on performance. An empirical study was conducted by collecting data through a structured questionnaire administered in Pakistan to the executives in the manufacturing industry. A total of 207 responses were used for data analysis by employing the partial least squares structural equation modeling (PLS-SEM) method. Normative pressures were found to be the most significant in both internal and external GSCM practices, while coercive and mimetic pressures positively affected internal and external GSCM practices, respectively. Internal GSCM practices proved to be more significant in improving environmental performance, and also had a substantial impact on external GSCM practices. In contrast, External GSCM practices had a significant positive effect on economic performance, while environmental performance also contributed to improving economic performance. The theoretical and managerial implications are discussed for academics, policymakers, and industry practitioners.

Keywords: green supply chain management; internal GSCM practices; external GSCM practices; environmental performance; economic performance

1. Introduction

Environmental issues such as global warming, depletion of natural resources, and ever-increasing air and water pollution have attracted the significant attention of governments, nongovernment organizations (NGOs), business communities, and masses across the globe [1–4]. These pressures led to the establishment of many climate change agreements among nations to act pro-environmentally [5]. In responding to heightened pressures to be more environmentally sustainable, manufacturing entities are moving away from a traditional profit-focused approach to a more balanced approach where both economic and ecological needs are pursued simultaneously as central business goals. Against this

backdrop, manufacturers have been forced to think beyond conventional production processes and organizational boundaries. More specifically, aligning leading suppliers and customers is essential in pursuing environmental sustainability, as no single organization in isolation can successfully achieve both economic and environmental goals [6–8]. This phenomenon has created the need to incorporate a green dimension to supply chain management (SCM) and give rise to green supply chain management (GSCM) [9], which refers to the strategic incorporation of environmental goals into organizational practices along the supply chain covering both collaborations and monitoring of ecological issues [10,11].

Although the GSCM research stream is burgeoning, there exists evident gaps to be filled including but not limited to identification of antecedents for GSCM, identification and classification of energy efficiency based environmental initiatives and their impact on supply chain performance [1,9,12–14]. In connection to the above general gaps, this study addresses the following specific gaps. First, GSCM practices are divided into two groups: internal and external, where internal environmental management (IEM) and eco-design (ECO) are internal GSCM practices while green purchasing (GP), cooperation with customers for the environment (CC), and investment recovery (IR) are external GSCM practices [14,15]. Literature presents no consistent adoption and application of these practices. Some studies have taken individual items of different dimensions to make a single construct and label as internal or external GSCM practices that cannot truly represent them [16] while some others have taken individual items to make a construct with the name of GSCM practices [17]. Another trend entails the combination of two or more individual practices to form GSCM in accordance with the objectives of respective studies [18]. Interestingly, one study has used weighted averages of the observed variables to form constructs of internal and external GSCM practices [19], while another has used them as second order constructs [20]. In the midst of these, this study was an attempt to thoroughly explore the impact of individual institutional pressures on different GSCM practices which are uniquely identifiable. Moreover, to get better insights into the relationships between institutional pressures and GSCM practices, this study used GSCM practices as second order constructs. Generally, higher order constructs are recommended to reduce model complexity and enhance theoretical utility, which is achieved by using focused dimensions for the creation of general constructs [21,22]. Although a combined second-order construct yields a better model fit than that of first-order individual practices [23], most of the prior studies only considered GSCM practices as first-order constructs, leaving a lacuna on what type of GSCM practices were more effective in enhancing environmental and economic performance. Similarly, the latest trend in the GSCM field advocates the use of practices at a higher level of abstraction to obtain accurate managerial insights and make better decisions [13,20,24]. Thus, there exists a need to investigate GSCM practices as higher-order constructs, which has been neglected in most of the previous research to date. Second, although an escalating interest in the field of GSCM has been observed since the last decade, there is still a dearth of theory focused research, leaving a substantial research gap to be filled [1,25,26]. A complex system such as GSCM might not be possible on occasions to understand and explain with the help of a single theoretical lens. Hence, it is necessary to adopt multi theory-focused research in GSCM [1,27]. A meta-analysis of the relationship between GSCM and performance by Geng et al. [9] revealed that institutional theory is the most used theoretical lens among all the reviewed studies. Institutional theory is one of the tools to understand different kinds of external factors that force any organization to adopt or discard any set of activities or processes, e.g., adoption of GSCM practices due to government, suppliers or customer pressures. Although the institutional theory is the prioritized choice of scholars to explain external pressures as an antecedent for GSCM practices adoption, it does not guide the execution of GSCM. Resource dependence theory (RDT) describes the strength of an organization to acquire vital resources necessary for its survival in the external environment [28] and recommends strategic collaborations with suppliers and customers to survive and gain sustained benefits [29]. Hence, RDT is relevant in understanding and explaining dynamics of GSCM since it proposes why organizations embark on GSCM and how organizations should execute GSCM to reach the expected performance targets. Thus, usage of both institutional

theory and RDT strengthens the base to understand the rationale, practices and outcomes of GSCM. The first theory covers pressures to adopt practices while the second theory elaborates adopted practices and their impact on performance. Third, the context is a critical aspect when discussing the relationship between GSCM practices and performance [20]. Every country has its own cultural, legal, ethical, political, and work behavior issues, which can add some new dimensions into the investigation of institutional pressures, practice implementation, and performance outcomes [9,20,30]. GSCM is in its evolving stage in developing countries, and there is a dearth of empirical research related to environmental practices and their relationship with performance [31,32]. To develop a generalized theory of GSCM and to provide more specific guiding principles for policymakers and executives, it is *sine qua non* to conduct GSCM research in developing countries and strengthen the contextual dimension [20,30,33].

Thus, overall, there is a need for a conceptually and theoretically rich contextual study that uncovers the rationale for GSCM practices and the impact of GSCM practices on economic and environmental performance. In fulfilling the above void, this research aimed to achieve two research objectives. First, to find out the impact of institutional pressures on sets of internal and external GSCM practices. Second, to investigate the effects of internal and external GSCM practices on the environmental and economic performance of manufacturing companies in Pakistan.

This paper contributes to the GSCM literature in four ways. First, it provides empirical evidence regarding the impact of specific institutional pressures on internal and external GSCM practices and the impacts of GSCM practices on environmental and economic performance. Second, it provides theoretically rigorous knowledge through the application of institutional theory and resource dependence theory to explain the adoption and application of GSCM practices to achieve environmental and economic performance goals. Third, it advances GSCM studies by following and extending the contemporary work of eminent scholars [13,23] and uses internal and external GSCM practices as constructs at a higher level of abstraction. Fourth, it addresses the research gap of a contextual factor (country) highlighted by Geng et al. [9] that there is a lack of research in some areas of Asia to explore the relationship between GSCM practices and performance, as no such study from Pakistan surfaced in peer-reviewed high impact English language journals.

The remainder of this paper is structured as follows. Section 2 presents the theories and literature review of GSCM practices along with environmental and economic performance leading towards a formulation of a conceptual model. Section 3 consists of the research methods followed by an empirical analysis of the data and the results are presented in Section 4. Section 5 elaborates the discussion of the results. Finally, Section 6 contains the conclusions, implications, limitations of the study, and future research directions.

2. Theoretical Background and Hypotheses

2.1. Institutional Theory

Organizations are part of a social system with their own specific culture and values other than having systems for production. Organizational decisions are based upon a set pattern of cultural values, norms, and behaviors under the influence of an external environment [34,35]. When all organizations within the same industry adopt a similar kind of institutionalized practices and decision-making approaches, it depicts an attempt by them to legitimize themselves [36]. Institutional theory is used to understand different types of external factors that force any organization to initiate or adopt any new practice [37,38]. Institutional theory highlights three kinds of isomorphic pressures, where coercive pressures are a set of formal or informal pressures from influential organizations on which the focal firm is dependent due to specific resources, abiding by the law, or even societal expectations [37]. These pressures can take the form of invitations by industrial bodies to join them to acquire benefits, or a source of fear to become banned/fined for non-compliance of specific government laws or regulations [19,39]. Normative pressures are a result of certain norms and standards formalized by the

environment from a cultural expectation of that environment [40]. Different groups can be the source of normative pressures including educational institutions inculcating cognitive behavior; professionals from industry groups and associations; nongovernment organizations (NGO) having an interest in a particular industry; and the general public [37]. Suppliers and customers are also one of the core components of these pressures [14,41]. Mimetic pressures play their role in driving organizations to avoid uncertainty and risk by copying or replicating the processes or structure of other successful institutions [37]. In the event of any significant change in the external environment that creates a threat to their existence, organizations look for role models that they believe were successful in facing those external challenges to try to modify themselves according to those model organizations [36].

The manufacturing sector around the globe is facing immense pressure from different quarters to adopt and implement GSCM practices [41]. Pressures being exerted by the above-mentioned stakeholders have made it compulsory for manufacturers to prove themselves as a legitimate company by adopting GSCM practices [34,42].

2.2. Resource Dependence Theory (RDT)

Resource dependence theory (RDT) is concerned with the resources available in the environment external to the focal firm and in the custody of other companies [28,43]. Companies holding those resources try to continue their grip to maintain their authority and dominance while the companies in need of them try to find alternate resources or new sources to minimize their dependence [44]. RDT can guide the management of companies on how to minimize their dependence concerning the most critical and scarce resources specifically related to greening of overall production process [29]. Customers and suppliers are identified as the most critical resources that should be managed in addition to the physical resources such as raw materials, labor, or capital [45,46]. RDT lens can be used to understand and explain GSCM practices and their adaptation [47] for dependence on external resources and the direct or indirect influence of the stakeholder on the focal organization [29]. For example, governments or regulatory bodies can enforce a ban on the use of certain raw materials to protect the environment, or suppliers can minimize the delivery of highly sought after materials or increase their prices. Customers with high demanding power can ask for strict compliance to environmental standards or compulsion to obtain certain certifications. Pressure groups, e.g., vibrant media or NGOs, can indirectly influence a focal firm to stop doing business with certain suppliers or customers when such clients are not complying with environmental standards as in the case of Greenpeace and Nestle [29,31]. Every company in a supply chain has a different level of power and dependence on each other. RDT can help companies balance their position in a power-dependence scenario with environmental contributions [47]. Under such circumstances, RDT is useful to plan and implement external GSCM practices by establishing links with customers and suppliers concerning green purchasing and the design of the products [47].

2.3. Green Supply Chain Management (GSCM) Practices

Supply chains during the last fifty years have evolved from dyadic customer–supplier relationships through information sharing to strategic collaborations among supply chain partners and, during the last decade, the focus is on the environmental issues not only for individual companies but also for the whole supply chains [12]. Green supply chain management refers to a set of practices that encompasses activities starting from the idea generation and evolving through green product design, purchasing, logistics, manufacturing, and managing all kinds of wastes [48]. GSCM can also be classified into collaboration and monitoring based set of practices to achieve environmental and economic goals [41]. To achieve these goals, the integrated effort of all departments within the organization along with all upstream and downstream supply chain partners is a must. In this study, we adopted the most commonly used and highly cited set of internal and external GSCM practices devised by Zhu et al. [14,15]. Other studies from different parts of the world have also used these sets of practices [7,13,20]. Internal practices comprise those that can be designed, planned, and implemented

within the firm while external practices depend on some cooperation from external parties such as suppliers and customers [14]. IEM and ECO combine to form internal GSCM practices, while GP, CC, and IR are part of the external GSCM practices.

- Internal Environmental Management (IEM): IEM is the practice of incorporating GSCM into an organization's strategy and showing their commitment through top management vision, middle management involvement, and spreading across all organizational members through the establishment of cross-functional teams [23]. Proactive companies focus on the IEM as a foundation for the whole GSCM change process.
- Eco-Design (ECO): Eco-design is a proactive approach to handle environmental degradation and ensures compliance with pollution prevention at an early stage in the product lifecycle. It also helps in saving the possible costs to be incurred in the future for controlling the damages [49]. This practice takes the environment into consideration from the idea generation to the design of products that use less energy and fewer materials, and minimize toxic emissions, which can positively impact both environmental and economic performance [39,50,51].
- Green Purchasing (GP): Green purchasing focuses on cooperating with suppliers to produce environmentally sustainable products [23]. GP is also defined as strategically planned purchasing with the awareness of environment-friendly requirements such as waste minimization and the possibility of reusing and recycling products [33].
- Cooperation with Customers (CC): In today's environment, businesses need to go beyond traditional thinking and acknowledge customers as strategic partners for collaborations on greening issues. CC is the process of involving them from eco-design to distribution, covering packaging as well as the practice of taking back the products [10,52,53]. A long-term trust-based relationship is required to share real-time information and efficiently perform all processes as mentioned above [54–56].
- Investment Recovery (IR): Investment recovery is a green practice that involves regaining benefits from existing investments which were previously considered as waste [50]. IR treats the sale of excess inventories, scrap and used materials, and excess capital equipment as a strategic decision to obtain the maximum benefits from its resources [23,52].

2.4. Institutional Pressures and Internal GSCM Practices

Organizations opt for different sets of action to minimize the negative environmental effects of production. Individual practices cannot achieve the desired results; hence, a coherent set of practices should be applied to serve the purpose [57]. The most widely used sets of practices were first introduced by Zhu et al. [15], which were divided into internal and external GSCM practices. In further research, they also tested a model of GSCM as first and second order constructs [23].

Institutional theory presents two reasons for organizations to follow green practices: (1) through enforcement of laws, taxes and fines, which are the prerogative of regulatory bodies under government of industrial bodies; and (2) by giving incentives to adopt best environmental and social practices [58]. Hence, institutional pressures play a significant role in the adoption of internal GSCM practices by organizations. For instance, the European Union issues a vast range of environmental regulations including but not limited to the Restriction of Hazardous Substances (RoHS), Waste Electrical and Electronic Equipment (WEEE), End of Life Vehicle (ELV), etc. to ensure the minimization of adverse environmental effects through manufacturing activities [59,60]. Such regulatory (coercive) pressures force organizations to improve their IEM and ECO practices, which should enhance environmental performance [61,62]. Another study by Zailani et al. [58] found a significant positive effect of coercive (regulation and incentive) and normative (customer) pressure on the adoption of ECO practice for GSCM, which led to the higher environmental performance of the organization. Normative pressures exerted from suppliers, customers, and the market proved significant for adopting internal practices of IEM and ECO for Chinese manufacturers [14]. Mimetic pressures are kind of isomorphic actions which

guide organizations to replicate processes or business models of successful industry organizations. Manufacturers in developing countries such as Pakistan can use these pressures as opportunities to learn from their international competitors or supply chain partners to upgrade their green capabilities [63,64]. Based on the above discussion, this study posited the following hypotheses:

Hypothesis 1a (H1a). *Coercive pressures positively impact manufacturing companies in Pakistan to adopt internal GSCM practices.*

Hypothesis 1b (H1b). *Normative pressures positively impact manufacturing companies in Pakistan to adopt internal GSCM practices.*

Hypothesis 1c (H1c). *Mimetic pressures positively impact manufacturing companies in Pakistan to adopt internal GSCM practices.*

2.5. Institutional Pressures and External GSCM Practices

As stated earlier, external GSCM practices are those that cannot be executed without the cooperation and support of other external parties such as suppliers and customers. One of the critical external practices is the selection of suppliers and communicating and cooperating with them to design green processes and products [65]. Coercive pressures play a crucial role in making decisions regarding the type of raw materials used and their providers in the developed world due to strict regulations [61,66]. Customers, civil society, and NGOs are external stakeholders and can be a source of significant pressure (normative) for organizations to adopt GSCM practices [65]. Normative pressures are the major antecedent for adopting green practices in developing countries because such pressures are usually from strategic customers and suppliers who have their roots mostly in developed countries. CC and IR were two central practices for adoption due to the regulatory and market pressures on the Indian automobile supply chain [7]. In specific cases, imitating the successful practices of competitors is the only significant pressure to adopt sustainable suppliers directly [65] or indirectly to adopt cooperative GSCM practices [67]. The above discussion led us to formulate the following hypotheses:

Hypothesis 2a (H2a). *Coercive pressures positively impact manufacturing companies in Pakistan to adopt external GSCM practices.*

Hypothesis 2b (H2b). *Normative pressures positively impact manufacturing companies in Pakistan to adopt external GSCM practices.*

Hypothesis 2c (H2c). *Mimetic pressures positively impact manufacturing companies in Pakistan to adopt external GSCM practices.*

2.6. Relationship of Internal and External GSCM Practices

Moving away from traditional manufacturing mechanisms to more green and sustainable manufacturing is a strategic change which might require colossal time and capital investment [7,57]. Proactive organizations first focus on their internal capabilities to improve and streamline all processes and practices to be ready for a green transformation of the organization [11,14]. Customers and suppliers may prefer to join hands for strategic collaborations with organizations that already have some green capability [14,68]. In different contexts, it has been empirically tested and proven that first implementing internal practices (IEM and ECO) was ideal to make a focal organization capable enough to collaborate with others to achieve green targets [7,11,20,69]. Therefore, we posited that:

Hypothesis 3 (H3). *Internal GSCM practices have a significant positive effect on the external GSCM practices of manufacturing companies in Pakistan.*

2.7. Green Supply Chain Management (GSCM) Performance

In general, supply chain management performance is measured through cost, time, quality, and flexibility dimensions with certain variations according to the needs of the industry and organizations [70–72]. For GSCM, the performance measurement needs some extra and specialized measures based on both environmental and economic dimensions [9,73]. Today, it has become a must for almost every manufacturing company to improve on and report its environmental performance. Manufacturing plants need to limit carbon emissions, minimize water and solid waste while decreasing the use of toxic and hazardous raw materials to prove their progress in environmental performance [23,50,74]. Achieving these targets will also help to minimize environment related incidents, which will improve the company's green image. Many studies support a healthy relationship between GSCM practices and the environmental performance of manufacturing companies [14,58,61,75].

Businesses do exist to improve their shareholders' wealth, and any strategy will be known as worthy and successful only if it can add economic value to its shareholders and improve benefits for its employees [76,77]. Economic performance relates to the manufacturing plant's capability to reduce costs associated with purchased materials, energy consumption, waste treatment, waste discharge, and fines for environmental incidents and accidents [74,78]. Thus far, there has been no consensus about the direct impact of GSCM practices on the economic performance of an organization. Some studies have reported a positive impact [9,10,20,52,76,79], while certain early research has witnessed a negative impact on economic performance [14,43,61]. There is also some research that could not find any significant direct relationship [57,80,81], while others found an indirect effect on economic performance through improvement in environmental performance [14,61,82]. Most of the studies do commit that, at the start, due to heavy capital investments, it might show negative impacts but that, in the longer run, green practices either directly or indirectly generate economic benefits to the manufacturer [80,83].

2.8. Impact of Internal and External GSCM Practices on Environmental and Economic Performance

An organization which is internally equipped and updated about the needs of green manufacturing makes a more efficient contribution to the transformation of SCM to GSCM [8]. To make products and their parts reusable and recyclable, a firm can evaluate its resource requirements including specific raw materials and part components to enhance its eco-design practices [46]. RDT accepts that no single company can survive in isolation and, for all kinds of resources, it needs to collaborate to be competitive [29]. A long term relationship for the contribution of critical resources to successfully implement eco-design practices is the core outcome in the view of RDT [47]. Similarly, a focus on the practice of IEM to minimize the dependence on outer world can be a source of balancing the power-dependence ratio under the RDT scenario. Many studies have examined the relationship between internal GSCM practices and their impact on performance outcomes [33,84]. Yang et al. [85] found a significant positive impact of internal practices on green performance and overall firm competitiveness. By employing a case study approach, Jabbour et al. [33] identified that the most relevant GSCM practices to improve environmental performance were IEM and ECO in Brazil. Eco-design, while proven to have a positive effect on environmental performance, was measured to have a negative effect on economic performance by Green Jr. et al. [50]. In the continuity, a meta-analysis of green practices and their impact on performance revealed that the highest impact on economic performance reported in previous studies was from intra-organizational environmental practices while the ECO practice was the most influential for environmental performance [9]. All of these results guided us to presuppose the following hypotheses:

Hypothesis 4a (H4a). *Internal GSCM practices have significant positive effect on the environmental performance of manufacturing companies in Pakistan.*

Hypothesis 4b (H4b). *Internal GSCM practices have significant positive effect on the economic performance of manufacturing companies in Pakistan.*

Enhancing the green image of the organizations through environmentally friendly supply chain management is becoming obligatory to attain a long-term competitive advantage [86]. Strategically aligning suppliers and customers based on the identification of environmental risks and associated responsibilities is the outline envisaged through RDT [13,85]. The roles of suppliers and customers are critical in achieving specific environmental friendly goals [29]. To improve environmental performance while keeping economic targets in check, information regarding design specifications, process enhancement techniques and specific raw material requirements need to be shared among suppliers and customers of a firm (supply chain partner). This can only be done through a collaborative process and RDT can play an instrumental role in the designing and implementing of such process [33,46]. CC is a practice that has improved the environmental and economic performance of organizations [14,31,50]. GP, or collaboration with suppliers for greening in all related activities, was found to have a positive effect on both dimensions of performance [49,50,61,87]. Despite certain hurdles, IR is also associated with improved environmental performance [50]. Therefore, we postulated the following hypotheses:

Hypothesis 5a (H5a). *External GSCM practices have a significant positive effect on the environmental performance of manufacturing companies in Pakistan.*

Hypothesis 5b (H5b). *External GSCM practices have a significant positive effect on the economic performance of manufacturing companies in Pakistan.*

Improvements in environmental performance not only reduce pollution, water waste, solid waste, and the use of hazardous materials, but also causes a reduction and the reuse of materials which positively affects cost reductions [50,61]. Improved environmental performance not only causes a reduction in environmental accidents and related fines, it further enhances the green image of the company, which can be helpful in increasing the market share and profits [8]. These results indicate that the enhancement of environmental performance can also improve economic performance, and, hence, the following hypothesis was defined:

Hypothesis 6 (H6). *Environmental performance has a significant positive effect on the economic performance of manufacturing companies in Pakistan.*

We developed a path analytical model of Figure 1, which consists of two second-order constructs, namely the internal and external GSCM practices, and five first-order constructs: coercive pressures, normative pressures, mimetic pressures, environmental performance, and economic performance. Both second-order constructs are reflective–reflective constructs in nature. Internal GSCM practices were comprised of IEM and ECO as first-order constructs, while GP, CC, and IR were included as first-order constructs for external GSCM practices. All three pressures that were drawn from institutional theory are the antecedents for focal internal and external GSCM practices constructs with environmental and economic performance as the consequences.

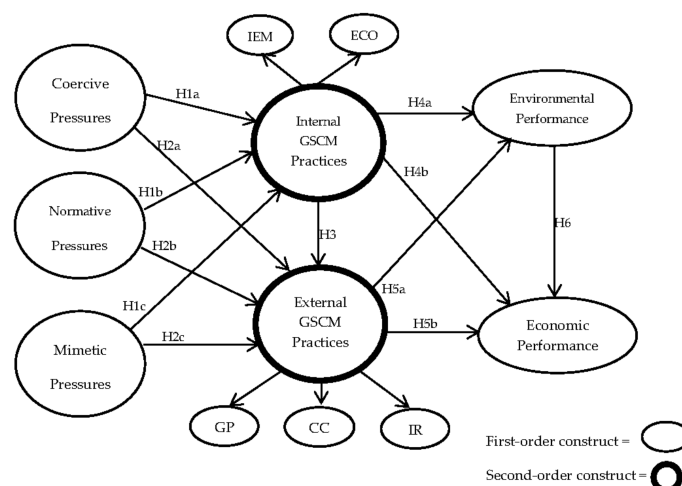


Figure 1. Proposed theoretical model.

3. Research Method

3.1. Measures

We adopted the instrument developed and updated by Zhu et al. [14,15] for all the constructs in this study. This instrument measures the institutional pressures coercive, normative, and mimetic using a 5-point Likert scale (1= Unimportant to 5= Important). GSCM practices were also measured through a 5-point Likert scale (1= No implementation consideration to 5 = Implemented fully). Finally, environmental and economic performance constructs were measured through a 5-point Likert scale (1 = Not at all (no improvement) to 5 = Very significant (highest level of improvement)).

To assess the face and content validity, a pretest workshop was conducted by using the initially drafted questionnaire. We purposefully selected the senior most professors and industry professionals based upon their experience in the area of supply chain and their willingness to participate in the workshop. Six professors of supply chain departments from three different universities in Lahore and 10 managers from the industry working in the departments of operations, supply chain, and quality participated in the workshop. Based on their feedback, the wording of few items was changed and some items were removed as they were not applicable in the local context.

3.2. Sample Design and Data Collection

We collected data from Lahore, Faisalabad, and Sialkot, the three largest industrial cities of the province of Punjab in Pakistan. Based on our research objectives, manufacturing companies in textiles, leather products, chemicals, sports, and pharmaceutical industries were our focus for the collection of data. These industries were selected due to their impact on environmental conditions, participation in green initiatives, the number of people associated with the industry, and their contribution to the economy of Pakistan. The email addresses and telephone numbers of 2242 manufacturers were recorded with unique identification numbers by visiting the members' directory on the websites of the Chamber of Commerce and industries of these three cities. Through stratified random sampling, 50% of companies from each city were randomly selected, totaling 1121.

An online questionnaire was designed using Google Forms and emails were sent to all 1121 randomly selected companies with the link to the online questionnaire form and a cover letter explaining the purpose of the research and a request to complete the form. One month after sending the emails to the respondents, as only 73 responses were recorded, reminder emails were sent to the non-respondents encouraging them to participate. After another month, 56 more responses were recorded. Finally, non-respondents were also contacted by telephone after the emails. From the three rounds of emails sent, 233 responses were received, of which 207 were useable. Twenty-six responses

were discarded due to their incompleteness or zero variation in the responses. A response rate of 18.47% is similar to most supply chain related studies [8]. The methodological flow of the study is presented in Figure 2.

3.3. Non-Response Bias

There is a widely accepted assumption that the behavior of non-respondents is similar to late respondents [61,88]. To assess any existence of non-response bias, a wave analysis was conducted by forming groups of early and late respondents after the follow-up emails [89]. A comparison of means of all summary variables for the two groups was conducted using the independent sample *t*-test. This test showed statistically non-significant differences at the 0.05 level [88], and the result suggested equality between organizations that responded to the first email and others that responded after the follow-up emails. This implies that there was no negative effect on the collected data and hence non-response bias did not exist.

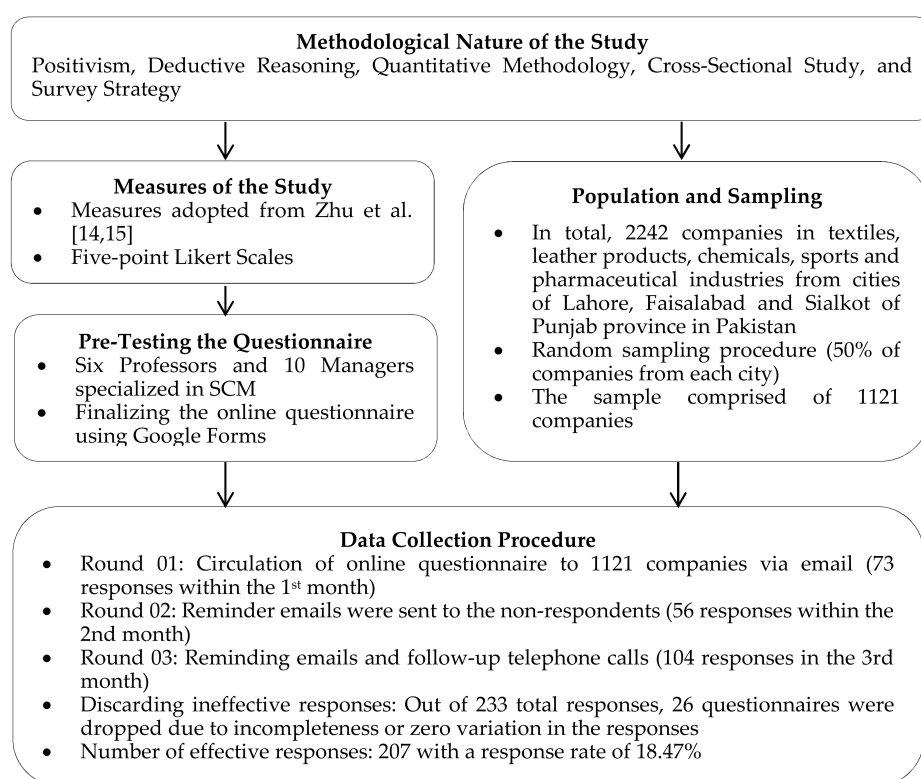


Figure 2. Research methodology flow chart.

4. Analysis and Results

4.1. Sample Profile

Table 1 gives a complete picture of the sample profile of this study and shows the sample concerning the city where factories are located, the type of industry, number of employees working, and designation of the representatives of the responded organizations. The majority of the respondents were from the city of Lahore, the biggest city in Punjab Province (37.68%). The textile sector is the largest industrial sector in Pakistan, and our sample also consisted of the maximum responses from this industry (27.54%). Furthermore, it represents a good blend of small-, medium-, and large-scale companies with a response rate of 23.67% from small companies, 20.29% from large corporations, and the rest from medium-sized entities. Finally, supply chain managers were the respondents with the maximum number (25.60%) in the designation section.

Table 1. Sample profile.

Cities	Lahore		Faisalabad		Sialkot	
	78 (37.68%)		58 (28.02%)		71 (34.30%)	
Industry	Textile	Chemicals	Leather	Pharmaceuticals	Sports Goods	Others
	57 (27.54%)	28 (13.53%)	51 (24.64%)	26 (12.56%)	27 (13.04%)	18 (8.70%)
Number of Employees	<200	200–500	501–750	751–1000	1001–2000	>2000
	49 (23.67%)	33 (15.94%)	19 (9.18%)	26 (12.56%)	38 (18.36%)	42 (20.29%)
Designation	CEO	Manager Supply Chain	Operations Manager	Quality Manager	Manager R&D	Finance Manager
	15 (7.25)	53 (25.60)	44 (21.26%)	38 (18.36%)	29 (14.01%)	28 (13.53%)

We used partial least square structural equation modeling (PLS-SEM) to test the model. PLS is a composite based approach and fits better for complex models even with small sample sizes [90,91]. PLS-SEM is considered an appropriate method of analysis when latent variable scores are needed to be used in subsequent analysis, and this method is also recommended if the model contains a higher order construct with only two first-order constructs [47,92]. SmartPLS 3 [93] software was used to examine the validity and reliability of the constructs and their linked manifest variables and test the hypotheses. Same software is used to calculate the descriptive statistics presented in Table 2. Although PLS-SEM can handle non-normal data, we tested the normality of the data to substantiate the results and allow them to be replicable [92]. Values of skewness and kurtosis were within the recommended range of from -2 to 2 , (see Table 2) [94]. Therefore, the data in this study were sufficiently normal to be used for structural equation modeling.

Table 2. Reliability, validity and descriptive statistics of first-order constructs.

Construct	Items	Loading	Mean	Standard Deviation	Skew-ness	Kurtosis	T Value
Coercive Pressures (CP): Alpha = 0.812; CR = 0.874; AVE = 0.634	CP1	0.791	4.282	0.879	−1.454	2.055	13.89
	CP2	0.75	4.057	0.84	−0.688	0.128	14.872
	CP3	0.793	4.139	0.944	−1.119	1.143	13.439
	CP4	0.847	3.788	0.939	−0.532	0.059	28.048
Normative Pressures (NP): Alpha = 0.682; CR = 0.805; AVE = 0.509	NP2	0.736	3.665	1.103	−0.699	−0.004	14.199
	NP3	0.743	3.525	1.154	−0.453	−0.622	11.742
	NP4	0.744	4.041	0.962	−0.961	0.613	15.198
Mimetic Pressures (MP): Alpha = 0.799; CR = 0.883; AVE = 0.715	MP1	0.865	3.687	1.079	−0.641	−0.142	22.354
	MP2	0.885	3.481	1.098	−0.492	−0.341	26.37
	MP3	0.785	3.744	1.004	−0.827	0.441	14.092
Eco-Design (ECO): Alpha = 0.618; CR = 0.839; AVE = 0.723	ECO1	0.837	3.873	0.976	−0.996	0.791	19.769
	ECO3	0.864	3.88	0.973	−0.915	0.775	24.765
Internal Environmental Management (IEM): Alpha = 0.894; CR = 0.916; AVE = 0.611	IEM1	0.729	3.984	0.963	−0.93	0.563	15.181
	IEM2	0.77	3.883	0.942	−0.516	−0.314	16.729
	IEM3	0.793	3.772	1.037	−0.577	−0.275	23.653
	IEM4	0.798	3.706	1.11	−0.569	−0.449	28.524
	IEM8	0.823	3.652	0.977	−0.81	0.615	17.943
	IEM9	0.819	3.665	1.083	−0.82	0.258	20.886
Green Purchase (GP): Alpha = 0.90; CR = 0.921; AVE = 0.626	GP2	0.727	3.668	1.047	−0.783	0.189	17.318
	GP3	0.788	3.301	1.148	−0.293	−0.607	15.325
	GP5	0.824	3.063	1.159	−0.148	−0.761	22.987
	GP6	0.749	3.402	1.175	−0.587	−0.5	16.969
	GP7	0.852	3.196	1.144	−0.314	−0.753	28.084
	GP8	0.760	3.32	1.134	−0.495	−0.426	15.594
	GP9	0.831	3.225	1.203	−0.528	−0.568	27.225
Investment Recovery (IR): Alpha = 0.777; CR = 0.899; AVE = 0.817	IR4	0.891	3.456	1.137	−0.416	−0.646	20.036
	IR5	0.917	3.348	1.125	−0.556	−0.406	20.474
Cooperation with Customers (CC): Alpha = 0.86; CR = 0.905; AVE = 0.705	CC1	0.871	3.342	1.118	−0.472	−0.382	24.215
	CC2	0.883	3.557	1.099	−0.591	−0.149	15.977
	CC3	0.8	3.481	1.083	−0.581	0.022	14.505
	CC4	0.801	3.38	1.126	−0.4	−0.447	15.038

Table 2. Cont.

Construct	Items	Loading	Mean	Standard Deviation	Skew-ness	Kurtosis	T Value
Environmental Performance: Alpha = 0.913; CR = 0.933; AVE = 0.698	Envtp1	0.828	3.623	1.111	−0.953	0.398	32.423
	Envtp2	0.843	3.737	1.027	−0.954	0.668	30.452
	Envtp3	0.866	3.655	1.101	−0.726	−0.151	39.767
	Envtp4	0.822	3.82	1.017	−0.957	0.751	31.11
	Envtp5	0.834	3.782	1.016	−0.917	0.801	34.956
	Envtp6	0.819	3.873	0.953	−1.001	1.161	21.038
Economic Performance: Alpha = 0.831; CR = 0.881; AVE = 0.599	EconP1	0.755	3.636	1.078	−0.576	−0.291	27.617
	EconP2	0.803	3.886	0.924	−0.811	0.696	28.011
	EconP3	0.829	3.585	0.929	−0.37	−0.016	28.951
	EconP4	0.815	3.443	1.031	−0.325	−0.274	23.943
	EconP5	0.655	3.658	0.96	−0.478	0.101	11.948

4.2. Measurement Model Assessment

The measurement model contained two second-order (Internal and External) and five first-order constructs (CP, NP, MP, ENVT, and ECON). Both second-order constructs were type 1 reflective–reflective constructs [21]. At the initial level of the measurement model, all ten first-order reflective constructs were evaluated together. The reliability and validity of the reflective constructs was assessed through the Cronbach alpha, composite reliability (CR), and average variance extracted (AVE) [90,92,95]. To confirm the reliability of reflective measurement model, the indicator and construct reliability were measured. All indicators that had values above the minimum threshold of 0.7 were retained while items with lower loadings were dropped. Internal reliability and consistency of the measurement model based on the ten reflective constructs are confirmed in Table 2 as all have alpha values > 0.6 and CR > 0.7 [18]. Construct validity was established by providing proof of the convergent and discriminant validity of all first-order reflective constructs. AVE values of all constructs were higher than the minimum required value of 0.5 as presented in Table 2. Hence, convergent validity was established.

How much a construct is different from other constructs in the model depends on the discriminant validity [90]. A traditional Fornell and Larcker method accepts the existence of discriminant validity if the square root of AVE for each construct is higher than its correlation coefficient with other constructs [91]. A more recent method of the heterotrait–monotrait (HTMT) ratio of correlations is also used to confirm the discriminant validity in PLS analysis [96]. An HTMT value less than 0.90 is recommended to prove the discriminant validity for conceptually very similar constructs [96]. Table 3 presents the bold values in diagonal as the square root of the AVE values of each construct, which are higher than all the values under them as correlation, while the values above the diagonal are HTMT values. All HTMT values were less than 0.90, which reinforced the discriminant validity of all first-order reflective constructs by satisfying the HTMT_{0.90} threshold value.

Table 3. Discriminant validity results of first order constructs.

	CC	CP	ECO	Econ	Envtp	GP	IEM	IR	MP	NP
CC	0.744	0.262	0.433	0.293	0.292	0.806	0.650	0.470	0.445	0.416
CP	0.246	0.801	0.446	0.267	0.306	0.358	0.460	0.185	0.637	0.686
ECO	0.360	0.369	0.756	0.382	0.506	0.416	0.501	0.364	0.326	0.283
Econ	0.255	0.223	0.307	0.787	0.681	0.368	0.297	0.446	0.201	0.252
Envtp	0.264	0.271	0.427	0.603	0.853	0.303	0.402	0.437	0.248	0.214
GP	0.710	0.337	0.350	0.313	0.285	0.754	0.839	0.531	0.474	0.583
IEM	0.571	0.406	0.412	0.262	0.368	0.753	0.763	0.484	0.440	0.571
IR	0.365	0.156	0.259	0.346	0.356	0.417	0.374	0.795	0.228	0.362
MP	0.365	0.507	0.250	0.132	0.204	0.409	0.363	0.176	0.819	0.774
NP	0.338	0.502	0.220	0.201	0.177	0.472	0.448	0.260	0.556	0.771

Note: Bold values on the diagonal are square root of AVE's. Correlations between construct values are below the diagonal. HTMT values are above the diagonal elements.

A two-stage approach needs to be used to create the second-order constructs when the first-order constructs have a different number of items, and less biased results are required [21]. For this purpose, a new model was created using SmartPLS 3 [93] with two second-order reflective constructs: Internal and External. IEM and ECO were used as the indicators of the Internal second-order construct while GP, CC, and IR were used as indicators of the External second-order construct. We assessed both the first-order and second-order constructs of the new model again at this stage, which was required, similar to the first-order constructs [21]. Table 4 presents the assessment results of the Internal and External as second-order constructs with the other five first-order reflective constructs, i.e., CP, NP, MP, Envnt, and Econ.

Table 4. Validity and reliability after generating second-order constructs.

	CP	NP	MP	Internal *	External *	Envnt	Econ
Alpha	0.812	0.682	0.799	0.637	0.748	0.913	0.831
CR	0.874	0.805	0.833	0.844	0.794	0.933	0.881
AVE	0.634	0.509	0.715	0.643	0.670	0.698	0.599

Note: CP, Coercive Pressures; NP, Normative Pressures; MP, Mimetic Pressures; Envnt, Environmental Performance; Econ, Economic Performance. Item loadings = Internal * = IEM = 0.678; ECO = 0.876 and External * = GP = 0.777; CC = 0.888; IR = 0.666.

Cronbach alpha, CR, and AVE values of the first and second order constructs were above 0.6, 0.7, and 0.5, respectively, and fulfilled the requirements of minimum threshold values [95]. Item loadings for the second-order internal and external GSCM practices constructs were also satisfactory. Table 5 shows the discriminant validity test results for the second stage after the generation of second-order constructs. Both the Fornell and Larcker and HTMT_{0.90} methods showed evidence for the discriminant validity of the constructs in the new measurement model. Hence, the measurement model was acceptable for second-order structural model assessment.

Table 5. Discriminant Validity after generating second-order constructs.

	CP	Econ	Envnt	External	Internal	MP	NP
CP	0.802	0.267	0.306	0.360	0.622	0.637	0.686
Econ	0.222	0.787	0.681	0.468	0.431	0.201	0.252
Envnt	0.271	0.605	0.853	0.442	0.583	0.248	0.214
External	0.310	0.363	0.357	0.818	0.887	0.511	0.597
Internal	0.461	0.314	0.442	0.644	0.855	0.529	0.560
MP	0.506	0.129	0.204	0.402	0.375	0.819	0.774
NP	0.501	0.203	0.182	0.451	0.402	0.557	0.769

Note: Coercive Pressures, CP; Normative Pressures, NP; Mimetic Pressures, MP; Environmental Performance, Envnt; Economic Performance, Econ; Internal GSCM Practices, Internal; External GSCM Practices, External.

4.3. Structural Model Assessment

We estimated the relationships between the endogenous and exogenous constructs during the structural model assessment through beta coefficients, their direction, and R-square values where significant paths with hypothesized direction led towards an acceptance of the hypotheses [97,98]. This study used SmartPLS 3 [93]; to evaluate the model, we ran a path weighting scheme with default software settings with a stop criterion of (1×10^{-7}) and a maximum of 300 iterations. The bootstrapping procedure was run with 5000 subsamples, and no sign changes option was chosen. Significance levels for one-tailed testing along with bias-corrected and accelerated bootstrap were the other options selected to run the procedure. The latest trends in research advocate the use of bias-corrected confidence intervals other than the *p*-value to confirm the significance and acceptance or rejection of any hypotheses [95,98]. To establish the significance of a path coefficient at an error level probability of 5%, the 95% confidence interval (bias-corrected and accelerated) should not

contain a zero value [95,98]. Figure 3 depicts the structural model with the results specified through SmartPLS 3. H2a was not accepted because of its opposite direction, while H1c was not significant. All other pressure related hypotheses, namely H1a, H1b, H2b, and H2c, were accepted to mark the existence of institutional pressures at different levels for two sets of GSCM practices. Internal GSCM practices were highly significant to adopt and improve external GSCM practices, and that proved H3. Internal and external GSCM practices were effective to improve a different kind of performance as H4a and H5b were accepted and thus showed a significant positive effect of internal GSCM practices on environmental performance, while external GSCM practices had a positive relationship with economic performance. H4b and H5a were not accepted. Furthermore, the acceptance of H6 confirmed that economic performance was also improved indirectly through the betterment of environmental performance in the context of Pakistan. Eight out of twelve hypotheses were accepted, which established the overall coherence of the proposed model. Table 6 shows the details of all the hypotheses where the results were confirmed through both bias-corrected confidence intervals and *p*-values.

Table 6. Hypotheses Results.

No.	Hypotheses	Beta	T Value	p-Value	Bias Corrected Confidence Interval	Decision
1	H1a: CP → Internal	0.306	4.491	0.000	[0.169, 0.432]	Supported
2	H1b: NP → Internal	0.198	2.448	0.014	[0.005, 0.330]	Supported
3	H1c: MP → Internal	0.105	1.140	0.254	[−0.053, 0.299]	Not Supported
4	H2a: CP → External	−0.128	2.026	0.043	[−0.253, −0.006]	Not Supported
5	H2b: NP → External	0.190	2.954	0.003	[0.082, 0.333]	Supported
6	H2c: MP → External	0.132	1.946	0.052	[0.007, 0.281]	Supported
7	H3: Internal → External	0.609	10.701	0.000	[0.451, 0.668]	Supported
8	H4a: Internal → Environment	0.428	4.955	0.000	[0.187, 0.516]	Supported
9	H4b: Internal → Economic	−0.091	1.059	0.290	[−0.221, 0.100]	Not Supported
10	H5a: External → Environment	0.071	0.820	0.412	[−0.034, 0.278]	Not Supported
11	H5b: External → Economic	0.222	2.941	0.003	[0.059, 0.345]	Supported
12	H6: Environment → Economic	0.568	6.255	0.000	[0.363, 0.725]	Supported

It is essential to substantiate the hypotheses test results by providing more evidence of model acceptance; therefore, to find a meaningful impact on the endogenous constructs by any exogenous constructs, its effect size f^2 should be calculated [95,97,98]. The values were treated as small, medium, and large for effect size f^2 of 0.02, 0.15, and 0.35, respectively [95]. Another important aspect was to measure predictive accuracy of the model denoted by Q^2 [47,95]. We performed the blindfolding process in SmartPLS 3 using a cross-validated redundancy approach. All the values were >0, which indicated the predictive accuracy of the model [47,95]. Table 7 presents the details of all f^2 and Q^2 values.

Table 7. Quality indicators of the model.

	f^2 in Relation to					
	R^2	Q^2	Internal	External	Envt	Econ
CP	-	-	0.086	0.021	-	-
NP	-	-	0.034	0.044	-	-
MP	-	-	0.009	0.024	-	-
Internal	0.259	0.164	-	0.578	0.131	0.006
External	0.517	0.289	-	-	-	-
Envt	0.229	0.137	-	-	-	0.409
Econ	0.394	0.224	-	-	-	-

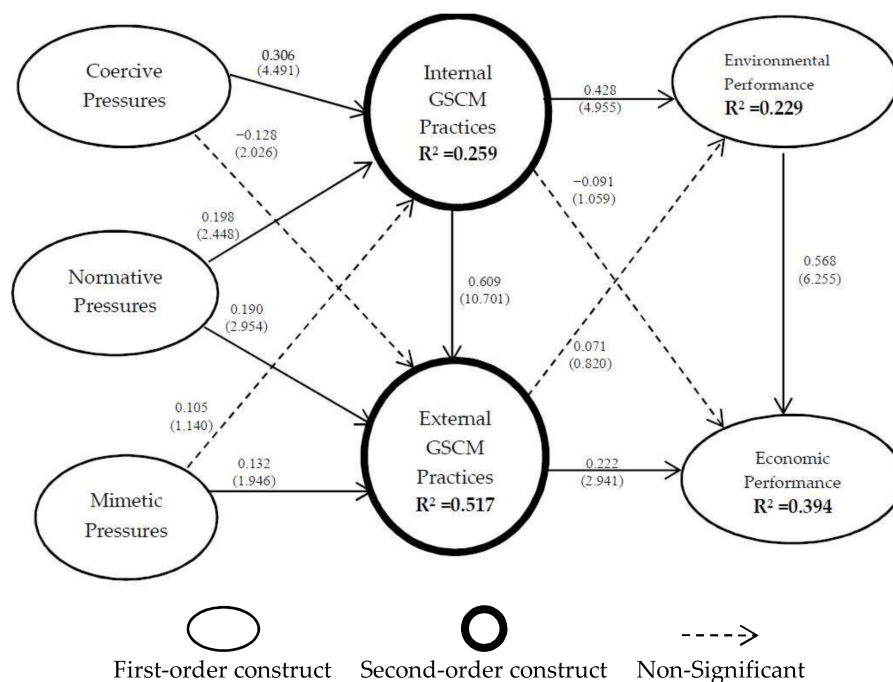


Figure 3. Results of assessment of structural model.

5. Discussion

This study was an extension of research on the role of institutional pressures [14,99,100], and, more precisely, an attempt to examine the individual impact of all three isomorphic pressures to adopt internal and external GSCM practices [19]. The effect of external practices as a higher order construct on environmental performance was studied by de Sousa Jabbour et al. [13] who recommended the inclusion of both internal and external GSCM practices as higher-order constructs. Thus, we conducted the study to investigate the impact of internal and external GSCM practices on the environmental and economic performance of manufacturing companies in Pakistan. Two theoretical lenses, namely institutional theory and RDT, were used to precisely understand and explain the complete path analytical model [1,13,47,101].

This empirical study identified that all isomorphic pressures had different impact levels on each set of practices, showing the importance and need of studying these pressures separately so that manufacturers can plan appropriately. A strong significant relationship between the CP and Internal (H1a) implied that regulatory pressures are a vital force for the manufacturing sector to adopt and improve their internal green practices, which was evident from the highest mean values of 4.28 and 4.14 out of 5 for items related to national and provincial environmental regulations, respectively. Regulatory pressures were reported as the most critical drivers to adopt ECO practice in both developed and developing countries [14,58,59,102], while coercive pressures proved instrumental in taking up IEM practices [20,59].

Interestingly, coercive pressures showed a negative effect for the adoption of external GSCM practices in the manufacturing companies in Pakistan. Even with high and significant beta value hypothesis, H2a was not supported due to its opposite direction. At the level of the individual practice, this study revealed all relations of coercive pressures with GP, CC, and IR were non-significant. Therefore, the current study supports existing works that have reported negative or no significant connection between coercive pressures and external GSCM practices [14,57,65]. The possible reason could be the focused concentration of companies mainly on internal improvement to avoid any fines, penalties, or license cancellations by the government, just like other developing countries [14].

Normative pressures play a significant role in the context of Pakistan by positively and significantly pressuring manufacturers to adopt both internal and external GSCM practices (H1b and H2b). Normative pressures have proven to be highly significant as they are connected with every internal and external GSCM practice except one, i.e., ECO. This is in line with the findings of Vanalle et al. [20] who found no significant impact of normative pressures on ECO. Furthermore, normative pressures are significant for the adoption of IEM, which is in line with the results from Bhakoo et al. [103], who identified that a higher level of normative pressures for manufacturing companies in the health sector were highly linked with improved internal administrative and management practices. Zhu et al. [14] also found a positive effect of normative pressures on Internal, but no impact on External. Although a study by Sancha et al. [65] found no effect of normative pressures on individual practices such as green supplier coordination, some other studies have seen a significant positive effect of normative pressures on GP, CC, and IR [82,102].

The only type of institutional pressures which proved non-significant for the adoption of internal GSCM practices in the manufacturing companies of Pakistan was mimetic pressures (H1c). The result of this hypothesis suggests that mimetic pressures are not strong enough to push the manufacturing industry in Pakistan to adopt internal GSCM practices. The reason could be the behavior of laggards as they prefer to imitate only secure processes for survival without spending time and money on R&D. Although Chandra and Shukla [7] found a positive relation between mimetic pressures and IEM, others could not see any link [14,104], as in this study. However, the mimetic pressures are effective in convincing the Pakistani manufacturers to adopt external GSCM practices by collaborating and learning from their upstream and downstream partners (H2c). This fact reinforces the studies by Sancha et al. and Hoejmose et al. [65,67] that found a positive relationship between mimetic pressures and external GSCM practices. Hypothesis H3 was supported, which strengthens the existing idea of first adopting internal GSCM practices, as such practices will enable companies to move outside confidently [8,50]. RDT is also helpful in explaining this as organizations tend to minimize their dependence on the outer world by enhancing their internal capabilities and trying to bring them to a level from where they can confidently negotiate with external parties for long-term collaborations.

The results further revealed that internal GSCM practice did have a significant positive effect on the environmental performance of the manufacturing companies in Pakistan by supporting the hypothesis H4a. The prime target of all environment-related strategies is to minimize the negative environmental impact of production by reducing the usage of energy and materials as well as waste reduction. Ideally, these goals should be achieved in the design stage of any product. Empirical evidence is available in the literature where ECO practices had a significant positive effect on environmental performance, and the results of this study also support the continuity such findings [33,50,58,59,61,102]. A vision of top management, the commitment of middle management, and the collaborative work of cross-functional teams are sine qua non for ECO implementation. Hence, in reality, it is the IEM practice that needs to be implemented to obtain the foreseen results of ECO practice. This study showed a healthy relationship between IEM and environmental performance, which coincided with previous findings [7,33,59,105]. Therefore, it is evident that the combination of IEM and ECO also showed a significant positive effect on improved environmental performance.

Internal GSCM practices have a negative relationship with economic performance, which was indicated by the rejection of hypothesis H4b. This result strengthened the viewpoint of those studies that claimed that adopting GSCM practices might have an adverse effect on economic performance at early stages given that companies need to allocate and spend on a lot of resources to improve the process and production facilities [7,14]. Other studies have also elucidated a negative or no impact of internal GSCM practices on economic performance [50,61].

An examination of the descriptive statistics of all internal and external GSCM practices revealed that the manufacturing industry of Pakistan is still in the learning phase and hence more focused on adopting internal practices. The lowest mean values at the first-order level for items of ECO and IEM were higher than the highest mean values of external GSCM practices. External GSCM practices

were hypothesized to have a direct, positive, and significant impact on environmental performance (H5a), but the results did not verify this. Many studies have shown a positive effect of external GSCM practices on environmental performance [7,13,43,50,61,102]. The findings of this study were the opposite to these, as only IR had a significant positive effect on environmental performance while CC and GP had a negative effect and the effect of GP was significant as well as similar to the following studies [49,50,56].

In contrast to internal GSCM practices, external GSCM practices had a non-significant effect on environmental performance, but a significant positive effect on economic performance (H5b). This part of the study had quite exciting results as, individually, all three practices had different directions and levels of significance, but, in combination, they presented a significant positive effect. The positive impact of GP on economic performance was in line with the results of [50,61,79,102]. The literature suggests that a supplier transfers the cost reduction benefits to its strategic customer through efforts to make the production process green with less pollution and use of resources, hence a buyer reaps the benefits in its attempt of GP [43,61,92]. IR had a non-significant positive effect on economic performance which was per the studies of [50,61], while results of CC supported the findings of Zhu et al. [14], who found a negative effect of CC on economic performance. The overall impact of external GSCM practices on economic performance followed the latest studies which have reported positive results of external GSCM practices on economic performance [20,85].

The most important insight for both practitioners and academics in the field of GSCM is to find the level of improved economic performance and the tools in which to improve it. While most of the studies could not find any significant effect or found only negative results [43,82,106,107], few have also found positive results [8,76,108]. There is almost a consensus now that organizations need to consider environmental improvement as a strategic decision while accepting that short-term economic benefits are not possible. It is a long-term journey where the improved environmental performance will not only bring costs down, but also improve the brand and company image. This will be critical in enhancing collaboration with customers and improvement in sales. Therefore, a long-term approach will work for improved economic performance [8,19,50,61,82,88,106,108,109]. Hence, this study was also in line with the mentioned prior studies, where, in the long run, the environmental performance had a positive effect on the economic performance of manufacturing companies in Pakistan.

6. Conclusions and Implications

The empirical results fulfilled the objectives of the study and generated sufficient evidence for practitioners to distinguish the impact of all three isomorphic pressures on internal and external GSCM practices separately. These can guide managers to understand the various kinds of pressures that act as antecedents for different types of GSCM practices and to what extent the adopted practices influence environmental and economic performance dimensions.

In the context of Pakistan, this study produced an idiosyncratic outcome where normative pressures were the most productive to the manufacturing industry for the adoption of both internal and external GSCM practices. The positive impact of normative pressure on GSCM practices indicated an apparent linkage between organizations and external stakeholders such as suppliers and customers. Therefore, the coordination and cooperation of external stakeholders will be indispensable in successfully implementing GSCM practices. Hence, managers need to understand the importance of strategic partners including suppliers and customers. From a RDT perspective, organizations can minimize risk and achieve a competitive advantage by establishing long-term relationships with suppliers of scarce resources, and such moves will not only ensure their future, but also create more sparsity of those resources for competitors [43].

Regulatory pressures at both the national and provincial levels are effective for internal GSCM practices, while for external practices they seem to be a barrier owing to their significant effect in the opposite direction. Local organizations are more focused on internal improvements and lack strong collaborations with suppliers and customers, thus creating impediments to achieving the

desired results. This calls on the organizations to tactfully identify more relevant coercive, normative, and mimetic pressures based on the practices, and then strategically allocate resources to achieve the target [41]. The manufacturing industry in Pakistan seems to follow a reactive approach as per the evidence provided through the results of coercive and normative pressures where they are adopting specific GSCM practices only in response to certain pressures to avoid any penalties or losing business. Another reason could be that they are cost focused and give less importance to long-term relationships with suppliers and customers. Management is required to be proactive and make voluntary decisions to make their production processes more environmentally friendly through proper organizational commitment rather than by just reacting to regulatory demands. It is a proven fact that proactive organizations gain competitive advantage through the voluntary adoption of GSCM practices [14,15].

Both internal and external sets of GSCM practices had different levels and different directions of impact on performance dimensions. This requires that the managers identify the right balanced set of activities to consistently improve both types of performance in a positive direction. Therefore, with due consideration of most of the appropriate industry-specific pressures, identifying the key suppliers and customers concerning environmental conditions, collaborating for strategic planning, establishing trust through timely information sharing and creating win–win situations will enhance the performance of targeted areas. Therefore, a coherent strategy of aligning and extending internal and external GSCM practices is needed to improve both the environmental and economic performance in the minimum possible time.

Furthermore, the proven structural model relationships not only confirmed the presence of specific pressures, but they also signified the direct and indirect positive effect of the adopted practices on environmental and economic performance. It reflected an encouraging and persuading situation for the manufacturers, especially for those who are under immense pressure to switch from traditional manufacturing systems to greener production processes. The management and operational executives of such organizations can be guided by the validated model of this study that internal practices should be the priority to adopt as they not only improve environmental performance, but also allow organizations to prepare to take on external practices. At the same time, the top management should realize that direct economic benefits are strategic goals which will require more time and hence patience is required with regard to the possible indirect economic benefits that may come through in the short to medium term due to improved environmental performance.

For policymakers and regulators, the findings provide insights into the importance of normative pressures in the context of Pakistan so that they can develop a pertinent mix of regulations and educational plans for customers and producers to achieve the desired objectives. Both national and provincial governments need to develop an environment that creates awareness among people so that they can generate pressures on manufacturers to become environmentally responsible [110]; on the other hand, they should also play the role of an enabler to the manufacturers by providing motivation, training, and encouragement [7].

To summarize, first, this study extended the current knowledge on the theoretical underpinnings of the effect of separate institutional pressures on internal and external GSCM practices. Second, it enhanced the role of theory in understanding the complex nature of GSCM by incorporating resource dependence theory to understand and effectively manage the power dependence relationship with critical stakeholders for the adoption of GSCM practices, which will consequently positively impact environmental and economic performance. Third, the study combined institutional pressures, GSCM practices, and environmental and economic performance into a single dynamic model for the manufacturing industry in Pakistan. Furthermore, the paper contributed in generalizing the findings for the field of GSCM in two ways: (a) by empirically supporting the research work of previous scholars while pointing out a few new possible dimensions for the pressures–practices–performance path; and (b) by adding a contextual factor (Pakistan). Finally, the study extended the developing trend of investigations in GSCM knowledge and practice at a higher level of abstraction instead of item

level; undoubtedly, such higher-level constructs and their interrelationships can enhance the executive decision making capability, capacity, and their outcome.

Limitations and Future Research

GSCM is still in its infancy, specifically in the context of Pakistan. A quantitative study provided a broader scope, but at the expense of more detailed information. Therefore, future studies should use a mix of methods to obtain more in-depth knowledge. Furthermore, the sample data for this study were collected from only one province in Pakistan; as such, further studies must collect data covering the whole of Pakistan to acquire a more representative picture. Additionally, it is recommended that future studies explore and identify the pressures to adopt GSCM practices and their level of adoption; testing these along with some mechanisms (mediator/moderator) to speed up the whole process will help the manufacturing industries in Pakistan. Another research avenue is to substantiate the findings through a longitudinal examination of the data in contrast to the cross-sectional approach of this study. Finally, similar studies that have investigated and tested the results in the context of other developing nations, specifically in the neighboring South and Southeast Asian countries will be helpful in generalizing the findings through a comparison of the similarities and differences.

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References

1. Dubey, R.; Gunasekaran, A.; Childe, S.J.; Papadopoulos, T.; Hazen, B.; Giannakis, M.; Roubaud, D. Examining the effect of external pressures and organizational culture on shaping performance measurement systems (PMS) for sustainability benchmarking: Some empirical findings. *Int. J. Prod. Econ.* **2017**, *193*, 63–76. [[CrossRef](#)]
2. Seuring, S.; Müller, M. From a literature review to a conceptual framework for sustainable supply chain management. *J. Clean. Prod.* **2008**, *16*, 1699–1710. [[CrossRef](#)]
3. Sarkis, J. Manufacturing's role in corporate environmental sustainability. *Int. J. Oper. Manag.* **2001**, *2*, 666–686. [[CrossRef](#)]
4. Varma, A.; Peng, A.C. Moving goods sustainably in surface transportation. *Inst. Transp. Eng. J.* **2010**, *80*, 20–24.
5. Centobelli, P.; Cerchione, R.; Esposito, E. Environmental sustainability in the service industry of transportation and logistics service providers: Systematic literature review and research directions. *Transp. Res. Part D Transp. Environ.* **2017**, *53*, 454–470. [[CrossRef](#)]
6. Li, Z.; Xu, Y.; Deng, F.; Liang, X. Impacts of power structure on sustainable supply chain management. *Sustainability* **2017**, *10*, 55.
7. Chandra Shukla, A.; Deshmukh, S.; Kanda, A. Environmentally responsive supply chains: Learnings from the Indian auto sector. *J. Adv. Manag. Res.* **2009**, *6*, 154–171. [[CrossRef](#)]
8. De Giovanni, P. Do internal and external environmental management contribute to the triple bottom line? *Int. J. Oper. Prod. Manag.* **2012**, *32*, 265–290. [[CrossRef](#)]
9. Geng, R.; Mansouri, S.A.; Aktas, E. The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *Int. J. Prod. Econ.* **2017**, *183*, 245–258. [[CrossRef](#)]
10. Vachon, S.; Klassen, R.D. Extending green practices across the supply chain: The impact of upstream and downstream integration. *Int. J. Oper. Prod. Manag.* **2006**, *26*, 795–821. [[CrossRef](#)]
11. De Sousa Jabbour, A.B.L. Understanding the genesis of green supply chain management: Lessons from leading brazilian companies. *J. Clean. Prod.* **2015**, *87*, 385–390. [[CrossRef](#)]

12. Centobelli, P.; Cerchione, R.; Esposito, E. Environmental sustainability and energy-efficient supply chain management: A review of research trends and proposed guidelines. *Energies* **2018**, *11*, 275. [[CrossRef](#)]
13. De Sousa Jabbour, A.B.L.; Vazquez-Brust, D.; Jabbour, C.J.C.; Latan, H. Green supply chain practices and environmental performance in brazil: Survey, case studies, and implications for b2b. *Ind. Mark. Manag.* **2017**, *66*, 13–28. [[CrossRef](#)]
14. Zhu, Q.; Sarkis, J.; Lai, K. Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices. *J. Purch. Supply Manag.* **2013**, *19*, 106–117. [[CrossRef](#)]
15. Zhu, Q.; Sarkis, J. Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *J. Oper. Manag.* **2004**, *22*, 265–289. [[CrossRef](#)]
16. Kim, M.G.; Woo, C.; Rho, J.J.; Chung, Y. Environmental capabilities of suppliers for green supply chain management in construction projects: A case study in Korea. *Sustainability* **2016**, *8*, 82. [[CrossRef](#)]
17. Gopal, P.; Thakkar, J. Sustainable supply chain practices: An empirical investigation on Indian automobile industry. *Prod. Plan. Control* **2016**, *27*, 49–64. [[CrossRef](#)]
18. Teixeira, A.A.; Jabbour, C.J.C.; de Sousa Jabbour, A.B.L.; Latan, H.; de Oliveira, J.H.C. Green training and green supply chain management: Evidence from brazilian firms. *J. Clean. Prod.* **2016**, *116*, 170–176. [[CrossRef](#)]
19. Yang, C.-S. An analysis of institutional pressures, green supply chain management, and green performance in the container shipping context. *Transp. Res. Part D Transp. Environ.* **2017**, in press. [[CrossRef](#)]
20. Vanalle, R.M.; Ganga, G.M.D.; Godinho Filho, M.; Lucato, W.C. Green supply chain management: An investigation of pressures, practices, and performance within the brazilian automotive supply chain. *J. Clean. Prod.* **2017**, *151*, 250–259. [[CrossRef](#)]
21. Becker, J.-M.; Klein, K.; Wetzels, M. Hierarchical latent variable models in pls-sem: Guidelines for using reflective-formative type models. *Long Range Plan.* **2012**, *45*, 359–394. [[CrossRef](#)]
22. Edwards, J.R. Multidimensional constructs in organizational behavior research: An integrative analytical framework. *Organ. Res. Methods* **2001**, *4*, 144–192. [[CrossRef](#)]
23. Zhu, Q.; Sarkis, J.; Lai, K. Confirmation of a measurement model for green supply chain management practices implementation. *Int. J. Prod. Econ.* **2008**, *111*, 261–273. [[CrossRef](#)]
24. Zhang, M.; Tse, Y.K.; Doherty, B.; Li, S.; Akhtar, P. Sustainable supply chain management: Confirmation of a higher-order model. *Resour. Conserv. Recycl.* **2018**, *128*, 206–221. [[CrossRef](#)]
25. Hoejmoose, S.U.; Adrien-Kirby, A.J. Socially and environmentally responsible procurement: A literature review and future research agenda of a managerial issue in the 21st century. *J. Purch. Supply Manag.* **2012**, *18*, 232–242. [[CrossRef](#)]
26. Winter, M.; Knemeyer, A.M. Exploring the integration of sustainability and supply chain management: Current state and opportunities for future inquiry. *Int. J. Phys. Distrib. Logist. Manag.* **2013**, *43*, 18–38. [[CrossRef](#)]
27. Ketchen, D.J.; Hult, G.T.M. Bridging organization theory and supply chain management: The case of best value supply chains. *J. Oper. Manag.* **2007**, *25*, 573–580. [[CrossRef](#)]
28. Pfeffer, J.; Salancik, G.R. *The External Control of Organizations: A Resource Dependence Perspective*; Stanford University Press: Palo Alto, CA, USA, 2003.
29. Wolf, J. The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainability performance. *J. Bus. Ethics* **2014**, *119*, 317–328. [[CrossRef](#)]
30. Sarkis, J. A boundaries and flows perspective of green supply chain management. *Supply Chain Manag. Int. J.* **2012**, *17*, 202–216. [[CrossRef](#)]
31. Liu, C.-C.; Yu, Y.-H.; Wernick, I.K.; Chang, C.-Y. Using the electronic industry code of conduct to evaluate green supply chain management: An empirical study of Taiwan's computer industry. *Sustainability* **2015**, *7*, 2787–2803. [[CrossRef](#)]
32. Seuring, S.; Gold, S. Sustainability management beyond corporate boundaries: From stakeholders to performance. *J. Clean. Prod.* **2013**, *56*, 1–6. [[CrossRef](#)]
33. De Sousa Jabbour, A.B.L.; de Oliveira Frascareli, F.C.; Jabbour, C.J.C. Green supply chain management and firms' performance: Understanding potential relationships and the role of green sourcing and some other green practices. *Resour. Conserv. Recycl.* **2015**, *104*, 366–374. [[CrossRef](#)]
34. Gualandris, J.; Kalchschmidt, M. Customer pressure and innovativeness: Their role in sustainable supply chain management. *J. Purch. Supply Manag.* **2014**, *20*, 92–103. [[CrossRef](#)]

35. Scott, W.R. The adolescence of institutional theory. *Adm. Sci. Q.* **1987**, *32*, 493–511. [[CrossRef](#)]
36. Williams, Z.; Lueg, J.E.; Taylor, R.D.; Cook, R.L. Why all the changes? An institutional theory approach to exploring the drivers of supply chain security (SCS). *Int. J. Phys. Distrib. Logist. Manag.* **2009**, *39*, 595–618. [[CrossRef](#)]
37. Dimaggio, P.; Powell, W. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *Am. Sociol. Rev.* **1983**, *48*, 147–160. [[CrossRef](#)]
38. De Grosbois, D. Corporate social responsibility reporting in the cruise tourism industry: A performance evaluation using a new institutional theory based model. *J. Sustain. Tour.* **2016**, *24*, 245–269. [[CrossRef](#)]
39. Sarkis, J.; Gonzalez-Torre, P.; Adenso-Diaz, B. Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *J. Oper. Manag.* **2010**, *28*, 163–176. [[CrossRef](#)]
40. Khalifa, M.; Davison, M. Sme adoption of it: The case of electronic trading systems. *IEEE Trans. Eng. Manag.* **2006**, *53*, 275–284. [[CrossRef](#)]
41. Chu, S.H.; Yang, H.; Lee, M.; Park, S. The impact of institutional pressures on green supply chain management and firm performance: Top management roles and social capital. *Sustainability* **2017**, *9*, 764. [[CrossRef](#)]
42. Walker, H.; Di Sisto, L.; McBain, D. Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. *J. Purch. Supply Manag.* **2008**, *14*, 69–85. [[CrossRef](#)]
43. Hollos, D.; Blome, C.; Foerstl, K. Does sustainable supplier co-operation affect performance? Examining implications for the triple bottom line. *Int. J. Prod. Res.* **2012**, *50*, 2968–2986. [[CrossRef](#)]
44. Sheu, J.-B. Green supply chain collaboration for fashionable consumer electronics products under third-party power intervention—A resource dependence perspective. *Sustainability* **2014**, *6*, 2832–2875. [[CrossRef](#)]
45. Hillman, A.J.; Withers, M.C.; Collins, B.J. Resource dependence theory: A review. *J. Manag.* **2009**, *35*, 1404–1427. [[CrossRef](#)]
46. Lai, K.; Wong, C.W.; Lam, J.S.L. Sharing environmental management information with supply chain partners and the performance contingencies on environmental munificence. *Int. J. Prod. Econ.* **2015**, *164*, 445–453. [[CrossRef](#)]
47. Sarkis, J.; Zhu, Q.; Lai, K. An organizational theoretic review of green supply chain management literature. *Int. J. Prod. Econ.* **2011**, *130*, 1–15. [[CrossRef](#)]
48. Mathivathanan, D.; Kannan, D.; Haq, A.N. Sustainable supply chain management practices in Indian automotive industry: A multi-stakeholder view. *Resour. Conserv. Recycl.* **2018**, *128*, 284–305. [[CrossRef](#)]
49. Zailani, S.; Jeyaraman, K.; Vengadasan, G.; Premkumar, R. Sustainable supply chain management (SSCM) in malaysia: A survey. *Int. J. Prod. Econ.* **2012**, *140*, 330–340. [[CrossRef](#)]
50. Green, K.W., Jr.; Zelbst, P.J.; Meacham, J.; Bhadauria, V.S. Green supply chain management practices: Impact on performance. *Supply Chain Manag. Int. J.* **2012**, *17*, 290–305. [[CrossRef](#)]
51. Zsidisin, G.A.; Siferd, S.P. Environmental purchasing: A framework for theory development. *Eur. J. Purch. Supply Manag.* **2001**, *7*, 61–73. [[CrossRef](#)]
52. Chan, R.Y.; He, H.; Chan, H.K.; Wang, W.Y. Environmental orientation and corporate performance: The mediation mechanism of green supply chain management and moderating effect of competitive intensity. *Ind. Mark. Manag.* **2012**, *41*, 621–630. [[CrossRef](#)]
53. Bouzon, M.; Govindan, K.; Rodriguez, C.M.T. Evaluating barriers for reverse logistics implementation under a multiple stakeholders' perspective analysis using grey decision making approach. *Resour. Conserv. Recycl.* **2018**, *128*, 315–335. [[CrossRef](#)]
54. Saeed, A. Role of TEAM (Trust, Ethics, Alignment, & Motivation) for Successful Implementation of Supply Chain Management of Retail Store Chains in Pakistan: A Conceptual Model. In Proceedings of the 1st International Conference on Business Management (ICoBM), Lahore, Pakistan, 5–6 January 2011; Available online: <https://cscr.umt.edu.pk/Research-and-Publications/Research-Papers.aspx> (accessed on 9 May 2018).
55. Marshall, D.; McCarthy, L.; Heavey, C.; McGrath, P. Environmental and social supply chain management sustainability practices: Construct development and measurement. *Prod. Plan. Control* **2015**, *26*, 673–690. [[CrossRef](#)]
56. Eltayeb, T.K.; Zailani, S.; Ramayah, T. Green supply chain initiatives among certified companies in Malaysia and environmental sustainability: Investigating the outcomes. *Resour. Conserv. Recycl.* **2011**, *55*, 495–506. [[CrossRef](#)]

57. González-Benito, J.; González-Benito, Ó. Environmental proactivity and business performance: An empirical analysis. *Omega* **2005**, *33*, 1–15. [[CrossRef](#)]
58. Hanim Mohamad Zailani, S.; Eltayeb, T.K.; Hsu, C.-C.; Choon Tan, K. The impact of external institutional drivers and internal strategy on environmental performance. *Int. J. Oper. Prod. Manag.* **2012**, *32*, 721–745. [[CrossRef](#)]
59. Yu, W.; Ramanathan, R. An empirical examination of stakeholder pressures, green operations practices and environmental performance. *Int. J. Prod. Res.* **2015**, *53*, 6390–6407. [[CrossRef](#)]
60. Yu, J.; Welford, R.; Hills, P. Industry responses to eu weee and rohs directives: Perspectives from China. *Corp. Soc. Responsib. Environ. Manag.* **2006**, *13*, 286–299. [[CrossRef](#)]
61. Esfahbodi, A.; Zhang, Y.; Watson, G.; Zhang, T. Governance pressures and performance outcomes of sustainable supply chain management—an empirical analysis of uk manufacturing industry. *J. Clean. Prod.* **2017**, *155*, 66–78. [[CrossRef](#)]
62. Seles, R.P.; Michel, B.; Jabbour, A.B.L.S.; Dangelico, R.M.; Jabbour, C.J.C. Green Supply Chain Practices as a Consequence of the Green Bullwhip Effect: Understanding the Relationship. Available online: <https://strathprints.strath.ac.uk/57056/> (accessed on 8 May 2018).
63. Saeed, A.; Yun, J.; Priyankara, H.P.R. Globalization and Green Supply Chain Management: Role of Multinational Companies in Pakistan—An Institutional Theory Perspective. In Proceedings of the International Conference on Innovation and Management (ICIM2016), Kuala Lumpur, Malaysia, 28–30 November 2016.
64. Zhu, Q.; Geng, Y.; Fujita, T.; Hashimoto, S. Green supply chain management in leading manufacturers: Case studies in japanese large companies. *Manag. Res. Rev.* **2010**, *33*, 380–392. [[CrossRef](#)]
65. Sancha, C.; Longoni, A.; Giménez, C. Sustainable supplier development practices: Drivers and enablers in a global context. *J. Purch. Supply Manag.* **2015**, *21*, 95–102. [[CrossRef](#)]
66. Beske, P.; Koplin, J.; Seuring, S. The use of environmental and social standards by german first-tier suppliers of the volkswagen ag. *Corp. Soc. Responsib. Environ. Manag.* **2008**, *15*, 63–75. [[CrossRef](#)]
67. Hoejmose, S.U.; Grosvold, J.; Millington, A. The effect of institutional pressure on cooperative and coercive ‘green’ supply chain practices. *J. Purch. Supply Manag.* **2014**, *20*, 215–224. [[CrossRef](#)]
68. Vachon, S.; Klassen, R.D. Environmental management and manufacturing performance: The role of collaboration in the supply chain. *Int. J. Prod. Econ.* **2008**, *111*, 299–315. [[CrossRef](#)]
69. Zhu, Q.; Sarkis, J.; Lai, K. Green supply chain management innovation diffusion and its relationship to organizational improvement: An ecological modernization perspective. *J. Eng. Technol. Manag.* **2012**, *29*, 168–185. [[CrossRef](#)]
70. Beamon, B.M. Measuring supply chain performance. *Int. J. Oper. Prod. Manag.* **1999**, *19*, 275–292. [[CrossRef](#)]
71. Gunasekaran, A.; Patel, C.; McGaughey, R.E. A framework for supply chain performance measurement. *Int. J. Prod. Econ.* **2004**, *87*, 333–347. [[CrossRef](#)]
72. Morais, D.; Barbieri, J.C. Social Performance Measurement for Sustainable Supply Chain Management. Available online: https://www.researchgate.net/publication/303365409_Social_performance_measurement_for_sustainable_supply_chain_management (accessed on 8 May 2018).
73. Laosirihongthong, T.; Adebajo, D.; Choon Tan, K. Green supply chain management practices and performance. *Ind. Manag. Data Syst.* **2013**, *113*, 1088–1109. [[CrossRef](#)]
74. Zhu, Q.; Sarkis, J.; Lai, K. Examining the effects of green supply chain management practices and their mediations on performance improvements. *Int. J. Prod. Res.* **2012**, *50*, 1377–1394. [[CrossRef](#)]
75. Zailani, S.; Govindan, K.; Iranmanesh, M.; Shaharudin, M.R.; Chong, Y.S. Green innovation adoption in automotive supply chain: The malaysian case. *J. Clean. Prod.* **2015**, *108*, 1115–1122. [[CrossRef](#)]
76. Rao, P.; Holt, D. Do green supply chains lead to competitiveness and economic performance? *Int. J. Oper. Prod. Manag.* **2005**, *25*, 898–916. [[CrossRef](#)]
77. Huang, X. Green Supply Chain Management in Manufacturing Small and Medium-Sized Enterprises: Perspective from Chang Chiang Delta. Ph.D. Thesis, University of Liverpool, Liverpool, UK, 2013.
78. Zhu, Q.; Sarkis, J.; Lai, K. Green supply chain management implications for “closing the loop”. *Transp. Res. Part E Logist. Transp. Rev.* **2008**, *44*, 1–18. [[CrossRef](#)]
79. Mitra, S.; Datta, P.P. Adoption of green supply chain management practices and their impact on performance: An exploratory study of Indian manufacturing firms. *Int. J. Prod. Res.* **2014**, *52*, 2085–2107. [[CrossRef](#)]

80. Esfahbodi, A.; Zhang, Y.; Watson, G. Sustainable supply chain management in emerging economies: Trade-offs between environmental and cost performance. *Int. J. Prod. Econ.* **2016**, *181*, 350–366. [[CrossRef](#)]
81. Lee, S.M.; Tae Kim, S.; Choi, D. Green supply chain management and organizational performance. *Ind. Manag. Data Syst.* **2012**, *112*, 1148–1180. [[CrossRef](#)]
82. Saeed, A.; Priyankara, H.P.R.; Naotunna, N.P.G.S.I. Role of normative pressures to adopt green supply chain management practices and their impact on environmental and economic performance. In Proceedings of the International Conference on Innovation and Management, Swansi, UK, 28–29 September 2017.
83. Bowen, F.E.; Cousins, P.D.; Lamming, R.C.; Farukt, A.C. The role of supply management capabilities in green supply. *Prod. Oper. Manag.* **2001**, *10*, 174–189. [[CrossRef](#)]
84. Eduardo, O.; Moneva, J.M.; Álvarez, I. Sustainable supply chain and company performance: A global examination. *Supply Chain Manag. Int. J.* **2014**, *19*, 332–350.
85. Yang, C.-S.; Lu, C.-S.; Haider, J.J.; Marlow, P.B. The effect of green supply chain management on green performance and firm competitiveness in the context of container shipping in taiwan. *Transp. Res. Part E Logist. Transp. Rev.* **2013**, *55*, 55–73. [[CrossRef](#)]
86. Beske-Janssen, P.; Johnson, M.P.; Schaltegger, S. 20 years of performance measurement in sustainable supply chain management—what has been achieved? *Supply Chain Manag. Int. J.* **2015**, *20*, 664–680. [[CrossRef](#)]
87. Huo, B.; Han, Z.; Zhao, X.; Zhou, H.; Wood, C.H.; Zhai, X. The impact of institutional pressures on supplier integration and financial performance: Evidence from China. *Int. J. Prod. Econ.* **2013**, *146*, 82–94. [[CrossRef](#)]
88. Oke, A.; Prajogo, D.I.; Jayaram, J. Strengthening the innovation chain: The role of internal innovation climate and strategic relationships with supply chain partners. *J. Supply Chain Manag.* **2013**, *49*, 43–58. [[CrossRef](#)]
89. Okumus, B.; Ali, F.; Bilgihan, A.; Ozturk, A.B. Psychological factors influencing customers' acceptance of smartphone diet apps when ordering food at restaurants. *Int. J. Hosp. Manag.* **2018**, *72*, 67–77. [[CrossRef](#)]
90. Younis, H.; Sundarakani, B.; Vel, P. *The Impact of the Dimensions of Green Supply Chain Management Practices on Corporate Performance*; Emerald Group Publishing Limited: Bingley, UK, 2016.
91. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]
92. Burnett, R.D.; Hansen, D.R.; Quintana, O. Eco-efficiency: Achieving productivity improvements through environmental cost management. *Account. Public Interest* **2007**, *7*, 66–92. [[CrossRef](#)]
93. Ringle, C.M.; Wende, S.; Becker, J.-M. *Smartpls 3.2.7*; SmartPLS GmbH: Boenningstedt, Germany, 2015.
94. Field, A. *Discovering Statistics Using SPSS*; Sage Publications: Thousand Oaks, CA, USA, 2009.
95. Sarstedt, M.; Ringle, C.M.; Hair, J.F. Partial least squares structural equation modeling. In *Handbook of Market Research*; Springer: New York, NY, USA, 2017; pp. 1–40.
96. Henseler, J.; Ringle, C.M.; Sarstedt, M. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* **2015**, *43*, 115–135. [[CrossRef](#)]
97. Peng, D.X.; Lai, F. Using partial least squares in operations management research: A practical guideline and summary of past research. *J. Oper. Manag.* **2012**, *30*, 467–480. [[CrossRef](#)]
98. Ringle, C.M.; Sarstedt, M.; Mitchell, R.; Gudergan, S.P. Partial least squares structural equation modeling in HRM research. *Int. J. Hum. Resour. Manag.* **2018**, 1–27. [[CrossRef](#)]
99. Dubey, R.; Gunasekaran, A.; Ali, S.S. Exploring the relationship between leadership, operational practices, institutional pressures and environmental performance: A framework for green supply chain. *Int. J. Prod. Econ.* **2015**, *160*, 120–132. [[CrossRef](#)]
100. Kauppi, K.; Hannibal, C. Institutional pressures and sustainability assessment in supply chains. *Supply Chain Manag. Int. J.* **2017**, *22*, 458–472. [[CrossRef](#)]
101. Ramanathan, U.; Gunasekaran, A. Supply chain collaboration: Impact of success in long-term partnerships. *Int. J. Prod. Econ.* **2014**, *147*, 252–259. [[CrossRef](#)]
102. Eltayeb, T.K.; Zailani, S. Going green through green supply chain initiatives towards environmental sustainability. *Oper. Supply Chain Manag.* **2009**, *2*, 93–110.
103. Bhakoo, V.; Choi, T. The iron cage exposed: Institutional pressures and heterogeneity across the healthcare supply chain. *J. Oper. Manag.* **2013**, *31*, 432–449. [[CrossRef](#)]
104. Gholami, R.; Sulaiman, A.B.; Ramayah, T.; Molla, A. Senior managers' perception on green information systems (is) adoption and environmental performance: Results from a field survey. *Inf. Manag.* **2013**, *50*, 431–438. [[CrossRef](#)]

105. Saeed, A.; Yun, J. The impact of internal environmental management on environmental performance: Assessing the mediating role of open innovation and moderating role of absorptive capacity. *Eur. J. Bus. Manag.* **2017**, *9*, 47–53.
106. Zhu, Q.; Sarkis, J. The moderating effects of institutional pressures on emergent green supply chain practices and performance. *Int. J. Prod. Res.* **2007**, *45*, 4333–4355. [[CrossRef](#)]
107. Zhu, Q.; Sarkis, J.; Geng, Y. Green supply chain management in China: Pressures, practices and performance. *Int. J. Oper. Prod. Manag.* **2005**, *25*, 449–468. [[CrossRef](#)]
108. De Giovanni, P.; Vinzi, V.E. Covariance versus component-based estimations of performance in green supply chain management. *Int. J. Prod. Econ.* **2012**, *135*, 907–916. [[CrossRef](#)]
109. Dubey, R.; Bag, S.; Ali, S.S. Green supply chain practices and its impact on organisational performance: An insight from Indian rubber industry. *Int. J. Logist. Syst. Manag.* **2014**, *19*, 20–42. [[CrossRef](#)]
110. Zhu, Q.; Geng, Y.; Sarkis, J. Shifting chinese organizational responses to evolving greening pressures. *Ecol. Econ.* **2016**, *121*, 65–74. [[CrossRef](#)]



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