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Article

Green Supply Chain Management (GSCM) Performance Implemented by the Textile Industry of Gazipur District, Dhaka

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Abstract: Globally, pollution has spurred corporate players to use eco-friendly polishes and the textile industry is not an uncommon case. Textile commercial enterprises should adopt the same green supply chain management (GSCM) practices and this research paper seeks to identify the green supply chain management (GSCM) practices embraced by a textile industry in Gazipur District, Dhaka. Essential information was sourced from 200 respondents to support the review. Information was dissected with the assistance of weighted arithmetic mean and chi-square tests and it has been concluded that a huge number of green supply chain management practices are being embraced by the textile industries of Gazipur district.

Keywords: green supply chain management; textile industry; ISO 14001

1. Introduction

Environmental pollution is a very real issue that humanity currently faces. Worldwide pollution and enhanced awareness are provoking clients to choose more environmentally friendly options. ‘Green’ standards and techniques have become fundamental for organizations as widespread familiarity with their environmental impacts has become commonplace.

Today, clients are more health cognizant and actively support greener lifestyles. Additionally, green supply chain management is perceived as sustainable supply chain management or environmental supply chain management [1,2]. It starts from supply chain management, which considers the natural context of each procedure in the supply chain.

Green textiles provide customers with more environmentally friendly choices. Here, environment-related terms are used for laws, goods and services, guiding principles, and policies which impose minimum damage on the environment [3].

It is also important in green clothing to consider the item’s life and, during its life expectancy, the degree to which it impacts the environment. What is more, to obtain green clothing, effective administration is required at all stages, beginning from outlining the environment, acquiring raw materials, producing garments, disseminating them to the channels and stores and, furthermore, thinking about their reverse logistics [4].

Basically, the ambition of green supply chain management is to integrate the industrial system to become more energy efficient and avoid harming the environment when practical. This is one of the aims that underline the significance of this research issue; furthermore, this study proposes to assess the factors affecting the implementation of GSCM practices.

Literature Review

Green Supply Chain Management (GSCM) aims to minimize the damage to the environment by industrial processes, thus translating environmental concerns into supply chain management. GSCM has extended acceptance with both academics and practitioners. The development of a green supply chain has achieved immense popularity and businesses in the textile industry are concentrating more on improving their supply chain prominence, efficiency, and reducing costs [5].

With increasing cognizance towards environmental concerns and global warming, consumers are now more environmentally conscious towards the products they are buying.

Supply chains are designed to accomplish a sustainable competitive improvement for all parties involved. Social and political anxieties regarding environmental concerns have encouraged manufacturing firms to “green” their supply chains [6].

To simultaneously enhance both monetary and environmental efficiency throughout their supply chains, green manufacturing factories have made systems of providers or subcontractors to buy environmentally friendlier items and then implement basic practices to reduce waste and improve operational efficiencies [7]. To support administrative consistence of their business practices, green manufacturing industries frequently support their supply chain partners to build up an environmental management system (EMS) using ISO 14000 measures to get an ISO 14001 certification [8]. Usage of the EMS includes recognizing new systems and opportunities for the successful administration of environmental effects. All things considered, green manufacturing firms may need to support their supply chain accomplices in creating environmental management capacities by providing training projects and sharing their green learning.

Rashid et al. [9] specified that Bangladesh Ready-Made Garments (RMG) have been produced on a large scale over the last decades, but unfortunately the products’ quality remains an issue. As shown by the BGMEA report (2015), 40% of aggregate manufacturing, 50% of total employment, and an enormous 78% of total export income are generated from RMG and 90% (about 4.2 million) of the employees are women.

Nonetheless, Bangladesh RMG shows a lack of concentration on Supply Chain Management (SCM) practices with a specific end goal to successfully accomplish the desired objectives. Consequently, the point of this paper is to recognize the effect of Supply Chain Management (SCM) and Total Quality Management for supportable development in the Readymade Garments (RMG) sector of Bangladesh where HRM practices play an intervening role. It is important to specify that, regarding the Bangladesh RMG sector, the vast majority of the current literature talks about the infrastructural and key issues though SCM and TQM in trying to enhance a reasonable strategic approach, discussion of both, theoretically, as well as empirically, has not been previously contemplated, particularly in the RMG industry setting. That study is considered a platform for future studies that have identified enhancements in the RMG area with SCM and TQM. In order to generate a more comprehensive argument and bridge the gap, this paper further proposes a procedural framework to ensure an organizational, sustainable competitive advantage.

Wun et al. [10] illustrated a report of textile and apparel manufacturers in Taiwan which investigates the relationship between GSCM practices and green supply chain management (GSCM) drivers, where GSCM practices refer to purchasing, cooperation, investment recovery, and eco-design and GSCM means organizational support, government involvement, and social capital.

This paper also investigates the effect of regulatory and competitive pressures of institutional markets and the results show that (1) GSCM drivers affect GSCM practices positively, except in investment recovery; (2) organizational support affects investment recovery positively; (3) there is no effect of market pressure in the relationship between GSCM practices and GSCM drivers; (4) regulatory pressure shows a positive effect; and (5) negative moderating effects are available in terms of competitive pressure. Finally, the implications of the study as well as future research are considered.

Lo et al. [11] explained the concern of environmental degradation from customers to stakeholders where fashion and textiles manufacturers are struggling to manage the situation. Constant electrical supply and a large amount of water are prerequisites for textile factories and, at the same time, they are threatening the environment by producing large amounts of pollutants. Moreover, the adoption of environmental management systems (EMSs) is considered a vital need; however, these systems are affecting the operational performance of firms. This study reports on the performance and impact of adopting EMSs in fashion and textile industries. In this study, we investigated the fact that adopting the EMS theory on fashion and textiles firms has an impact on financial performance, which provides empirical evidence in the FTI of ISO14000 adoption. In the U.S., a significant impact of ISO 14000 adoptions on ROA and ROS was proven for 14,000 certified and 61 public listed textiles. According to the method of measuring performance, it is noted that, in certified firms, the median abnormal performance is reported as being 1.2% to 2.9% greater than noncertified firms.

Regulations, consumer pressures, estimated business profits, social obligation, merchant pressures, competition, market demand, public pressures, and employee pressures are the basic factors for green supply chain initiatives, according to many researchers. Most of the presented studies support the significant effect of the top four drivers as the most prospective key drivers for GSC initiatives [12–14], while other researchers found no major effect of these drivers on GSC advantages [15,16].

Sustainable development can also influence future government strategy, current generation tasks, and recognize new plans of action, with new activities being proposed or received by both people in general and private divisions [17]. Such restricting enactment arises because of the inclination for sustainability together with the pressures enforced by the clients which have been found to be the fundamental drivers in the reception of ecological approaches in SCM for organizations around the world [14,18–20]. Based on an extensive literature review, Walker et al. [21] identified the factors and barriers to supply chain environmental management (SCEM) practices, which are shown Table 1 (from private and municipal division perceptions):

Table 1. Drivers of SSCM.

Internal	External
Organizational Factors: Skillful plan entrepreneurs Desire to decrease costs Investor Pressure Manage financial risk Improve quality Allowance of founder's and/or owner's importance Employee Contribution Manager's improving point in firm	Regulatory: Governmental and monitoring compliance Pro-active act pre-regulation ISO 14001 certification
	Customers: Pressures by consumers to GSC Customer demand Cooperate with customers E-logistics and environment Marketing Pressures
	Competition: Achieving competitive benefit Progress company performance
	Society: Stakeholder inspiration Potential publicity Public Pressure Decrease risk of customer blame Non-economic investors Force by environmental encouragement groups
	Suppliers: Cooperate with suppliers Supply integration

Environmental performance is the measurement of the decrease in materials and production as related to reducing environmental impacts affected by business organizations [12,22–27]. It also aids to expand productivity and collaboration between business partners and helps to increase

environmental existence, reduce waste, and achieve cost saving [28] and moral practices [29]. Many research works have measured environmental performance. Researchers have established that GSCM practices enrich environmental performance in organizations [30–32]. Cervera and Flores [29], Ninlawan et al. [12], Zhu et al. [16], Vario Corderio and Sarkis [33], Walley and Whitehead [34], Zhu et al. [35], Montabon et al. [36], Wagner et al. [37], and Zhu et al. [38] all found major and affirmative relationships among GSCM practices and environmental performance, as shown in Figure 1.

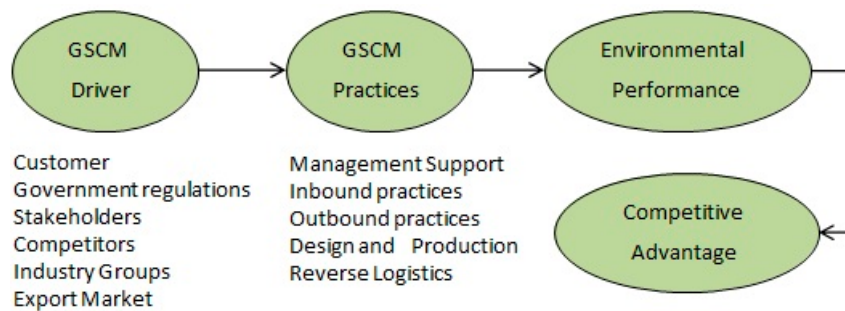


Figure 1. The causal relationship between green supply chain management (GSCM) Drivers, GSCM Practices, Environmental Performance, and Competitive Advantage.

There are many studies regarding GSCM drivers, but our study focuses on GSCM practices; the aim of this study is to find how many industries successfully practice GSCM within our sample.

There are numerous different strategies that can be utilized to gain green supply chain management, like kaizen, six sigma, benchmarking, or lean [39–41]; however, the majority of the papers have concentrated on ISO 14001. Numerous papers discuss its beneficial outcome while many say it does not play any role; others claim that it has the negative effect. As such, to examine its effect from different points, we developed Table 2 to give more subtle elements.

Numerous different investigations were also conducted on the green supply chain, such as considering green supply chain management drivers. As a key organizational advancement approach from a Malaysian viewpoint [42], the effect of green supply chain practices on supply chain performance [43], the incorporation of green practices in the supply chain environment: the acts of inbound, operational, outbound, and reverse logistics [44], and the impact of green practices on green practices on supply chain performance were implemented as a contextual investigation approach [45].

After studying these papers, we became more acquainted with the fact that ISO 14001 helps to gain GSCM if the management support it, if there is strong commitment, if organization thinks in that way, or if the organization needs to be ISO 14001 certified because of their internal reasons and other binding commitments. At that point, it encourages the association to be more profitable in the long run, generally, if organizations undertake activities because of internal pressures, external pressures, client requests, government controls, or to maintain their reputation. Accordingly, in the first period of implementation they demonstrate concerns identified with conditions that decline subsequently to becoming certified, in light of the fact that this standard does not force particular benchmarks on the association, it just determines the vital prerequisites to distinguish, control, and monitor the environmental parts of an association.

In Figure 2 we can see the effect of ISO 14001 on GSCM with 8 out of 10 factors demonstrating a positive effect; 1 indicates a neutral effect and 1 indicates a negative effect.

Table 2. Technique and factors for GSCM.

Authors	Area	Issues Addressed in the Paper	Main Findings	Conclusion Related to GSCM
(Welch, Mori & Midori, 2002)	Chemical, electronics, electric machinery, & electric power	<ol style="list-style-type: none"> (1) Factors adding to embrace ISO 14001 in Japan. (2) Differentiate the first stage and second stage adopters and non-adopters. (3) Differentiate adoption conduct among these firms. 	<p>Fundamental variables: administrative preferred standpoint, aggressive market, social obligation and organizational elements.</p> <p>The early adopters have a tendency to be bigger, greener, and less determined by pressures, contrary for the second level firms. The electric power industry has a tendency to be more social responsible.</p>	Results do not clearly demonstrate the linkage between ISO adoption and greening activity. All things considered, ISO adoption is identified with the environmental action.
(Testa & Iraldo, 2010)	Manufacturing	<ol style="list-style-type: none"> (1) Focused on internal key inspirations that rouse GSCM. (2) Analyze the determinants and impacts of GSCM on environmental and business execution. 	<ol style="list-style-type: none"> (1) Reputation-driven is the best in stimulating, followed by advancement-driven, however for the organizations that have market image are incited by the demand of customers. In any case, for small manufacturers that co-work in a system of providers for a more extensive organization they endure the limitations. (2) Cost effective is an exceptionally weak driver for GSCM. Business partners ought to be included increasingly to accomplish expected outcomes and performance. 	The connection amongst EMS and GSCM practices is positive for an organization's environmental performance.
(Nawrocka et al., 2009)	Swedish manufacturing companies.	To impart, control and check the requirements of the provider, rouse and empower the supplier to consent to the necessities.	<ol style="list-style-type: none"> (1) Companies focus on coordinate ecological angles in the first period of usage of ISO 14001. (2) Direction among the environmental, R&D, and purchasing departments affects the product development activities and avoids several environmental problems in the later stages of the item life cycle. (3) An environmental audit of the supplier is a successful and helpful strategy for control of compliance audits. 	A win-win circumstance can be made by adaptation of ISO 14001 if the same sort of EMS-connected, worked, with repeated improvement. ISO certified organizations are more dynamic in supply chain activities than noncertified.
(Comoglio & Botta, 2012)	Production sector for manufacture of motor components (first tier suppliers)	<ol style="list-style-type: none"> (1) Which operational performance indicator is used to assess continual improvement and monitor environmental aspects in EMS? (2) Whether the EMS adaptation has added to an expanded duty? (3) What element of the change is it? 	<ol style="list-style-type: none"> (1) Survey outcomes showed that the environmental perspectives to which most organizations would have committed themselves—even without an EMS—are local issues (sound) and waste management (55.6%) and utilization of assets and discharge to air (42.2%). These angles are the same to which the organizations proclaimed the most elevated duty with ISO 14001 certification, with various positioning. (2) Yes, EMS adds to duty towards environmental performances as EMS represents to as a driver. 	The EMS adaptation prompts higher responsibility from companies, number of environmental perspectives included, and higher investments towards environmental development.

Table 2. Cont.

Authors	Area	Issues Addressed in the Paper	Main Findings	Conclusion Related to GSCM
(Prajogo, Tang, & Lai, 2012)	Manufacturing sector under ANZIC code and non-manufacturing sector	The examination looks at the connection amongst internal and external industrial implementation intentions with triple bottom line benefits (environmental, social, and market) on the appropriation of ISO 14001.	The outcomes show that external processes (client request, government, and opponent) enhance social and market situations, while inside intentions (environmental performance, competence, control in operations, and interactions among management systems) help ecological advantages (compact pollution, energy & substantial consumption, and condensed risk of environmental threats).	Firms get what they need from ISO 14001 appropriation. Firms that were more inside driven in receiving the standard had more substantial and reasonable advantages than the individuals who did so only for compliance to external demands.
(Boiral, 2011)	Production	Why ISO management frameworks are utilized and to demonstrate how the ISO generic management system is utilized to enhance in-house practices and keep away from well-known traps.	The primary traps in ISO implementation were observed to be inappropriate or over the top documentation, absence of development and framework progression, look for business affirmation, rare assets, externalization of the usage procedure and basic achievement elements of ISO usage indicating implementation were observed to be: Inappropriate or over the top conviction and support, obviously clarifying the purpose behind certification, assembling the workers and information, adjusting the standard to the association, incorporating the association's principal objectives.	While managers regularly embrace management standards in light of external pressures the main reason for these benchmarks is to enhance in-house rehearses. The primary model for ISO is the PDCA-Plan-Do-Check-Act cycle.
(Boiral, 2007)	Manufacturing	To what extent ISO 14001 certified organizations had really incorporated the necessities of the standard into their day-by-day exercises and to what extent individuals were aware of the progressions.	<p>(1) The fundamental main push to receive the ISO 14001 standard was observed to be institutional authenticity. It was likewise affirmed that a portion of the organizations simply approved this standard to give legitimate appearance.</p> <p>(2) The most grounded strain to receive ISO was from internal. Yet, additionally, implies that external factors are not enforced by head office.</p>	This investigation demonstrates that ISO 14001 is received as prevailing fashion and form to support the image, validity, and judiciousness of Environmental management.
(Eltayeb, Zailani & Ramayah, 2011)	Manufacturing	Discover real environmental, intangible, and economic results in the wake of receiving green supply chain activities (Eco-configuration, green purchasing, and reverse logistics).	Of the three proposed green supply chain activities, only eco-configuration demonstrates a noteworthy impact on economic outcomes, impalpable results, and green purchasing and reverse logistics have very less impact on the internal performance of the firm and advantages are thought primarily regarding external parties, and only later regarding firm performance.	Green supply chain activities accomplish the triple bottom line of social, environmental, and financial advantages. ISO helps to take green initiatives.

Table 2. Cont.

Authors	Area	Issues Addressed in the Paper	Main Findings	Conclusion Related to GSCM
	Operations	Explore the role of quality management (ISO 9000, supplier certification, Statistical process control, and TQM) performance (cost, quality, delivery, and flexibility).	Environmental practices are all the more emphatically connected with cost, adaptability, and performance when investments in QM practices are moderately high. In any case, QM does not need to associate with environmental management to drive quality performance, in spite of the fact that every individual arrangement of the practice is emphatically identifies with quality performance.	Organizations gain higher performance benefits when EMP is available as far as cost, adaptability, and delivery performance in quality management practices.
(Barla, 2007)	Pulp and Paper industry	Test, in the case of embracing ISO 14001, whether this significantly influences environmental performance in Quebec's pulp and paper industry.	<ol style="list-style-type: none"> (1) Following certification helped in diminishing the release of natural oxygen, yet, did not help in suspended strong outflows or waste water. (2) Group of plants that embrace standards did not encounter a huge negative pattern in discharges in the oversampled period. 	The outcomes were variable relying on receiving plants as most adopters either maintain or increase emissions after being ISO certified.

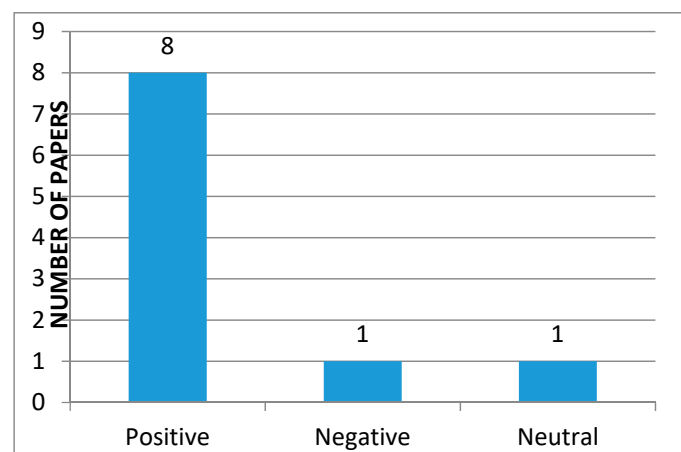


Figure 2. Impact of ISO 14001 on GSCM.

The negative effect is because of the inaccessibility of internal commitment and rather that the certification was done because of legitimacy and to manage image. Also, the drivers recommend that the certification ought to be achieved if the organization's top management support is available such as robust assurance, well-defined duties, internal inspiration, stakeholder participation, training and education, and so forth. Essentially, the papers indicating nonpartisan outcomes say that the outcomes were variable relying on embracing plants, as most adopters either keep up or increase emanations in the wake of being ISO certified; others say that ISO 14001 is subject to the PDCA cycle and we gain from pitfalls, which also implies that, in the event that we demonstrate constant change, we can have positive outcomes.

The standard ISO 14001 Environmental Management System is a structure that helps organizations to better deal with the harmful effects of their activities on the Earth. This structure depends on the Plan-Do-Check-Act cycle, which implies that organizations must commit to distinguishing and ceaselessly enhancing their environmental performance. In particular, associations actualizing the ISO 14001 standard need to meet certain necessities or key components that can be arranged into five fundamental classifications, as shown in Figure 3 [46]. A third-party certification is expected to assess the association's techniques and site visits are made to check conformance concerning implementing ISO 14001.

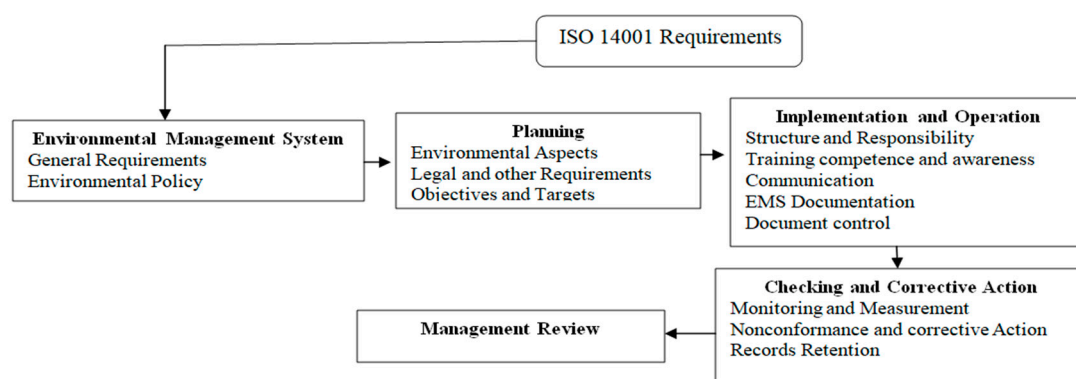


Figure 3. Requirements of ISO 14001.

A number of studies have recognized the significance of the GSC to reduce environmental administrative pressure, deal with environmentally sensible clients and public pressure, and accomplish competitiveness. Tseng and Chiu [47], Tseng et al. [48], Zhu et al. [49], Savita et al. [50], and Eltayeb et al. [51] examined ISO14001 certified manufacturing companies in Malaysia and found that GSCM enhances environmental performance. Rao and Holt [28], reviewing the GSCM practices

among the associations in South East Asia, reason that GSCM enhances environmental performance as well as prompts competitiveness and monetary execution. Zhu and Sarkis [14] conducted observational research between Chinese manufacturing industries and argued that GSCM practices are solid indicators of firms' ecological and monetary performance. Since the textile business is currently suffering environmental contamination issues, studies on GSCM are fundamental to offer a reasonable answer to enhance the environmental performance of a business.

Some researchers have used the chi-square test to identify green supply chain management practices and found that green supply chain performs optimally and positively encourages firm competitiveness, diminishes costs, and develops efficiency. Green distribution is a commendable methodology which the administration should be focused on with the specific end goal of staying inventive, compelling, aggressive, and effective in today's constantly changing unique advertising condition. However, they did not look at the number of companies which had successfully established GSCM in their industries and how many had ISO 14001 Certificates. In this study, we try to find out how many companies have overcome all the barriers and established a green environment within their company and have ISO 14001 certificates.

In view of the writing and theoretical part of these factors, we came up with the following hypotheses. H₁: There is no relationship between the condition of the GSCM process and ISO 14001 certification accomplished by an association. H₂: There is a relationship between the condition of the GSCM process and ISO 14001 certification accomplished by an association. H₃: There is no relationship between the condition of the GSCM process and the size of an association. H₄: There is a relationship between the condition of the GSCM process and the size of an association. The proposed hypothesis model is shown below at Figure 4.

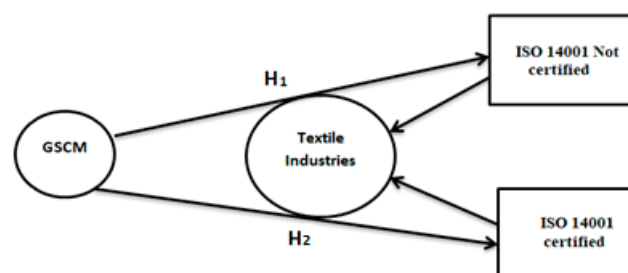


Figure 4. Proposed hypothesis model.

The rest of the paper is organized as follows. The next segment summarizes pertinent writing on green and supportable supply chains. In this area, the authors have defined tools, pointers, and estimation instruments for the assessment procedure in sustainable and green supply chains. The next part presents field investigation, which is an introduction to the depiction of the observational findings which appear in this section. This area shows a narrow range of results from analysis directed at textile companies in the Gazipur district. Finally, the last section concludes the paper with a summary and states further issues.

2. Results & Discussion

2.1. General Information of Sample Companies

This survey was of a private sector textile company with a maximum number of respondents (N = 121, percentage = 60.5) followed by a Sole Proprietor company (N = 37, percentage = 18.5), and MNC (N = 28, percentage = 14). The remainder were working as joint ventures (N = 7, percentage = 3.5), partnership firms (N = 4, percentage = 2), and public enterprises (N = 3, percentage = 1.5), as shown in Figure 5.

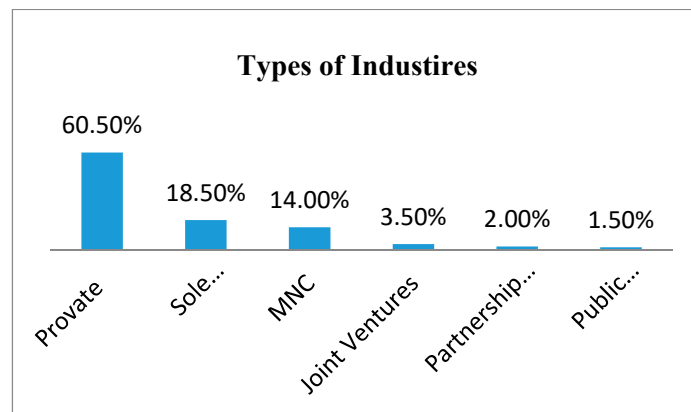


Figure 5. Types of industries used as a sample.

Figure 6 shows the maximum numbers of respondents as working with a medium size organization (N = 132, percentage = 66) followed by small size industry (N = 60, percentage = 30). Only 3% of the large size was of an organization's employees (N = 6) and other respondents (N = 2, percentage = 1) belonged to the micro industry.

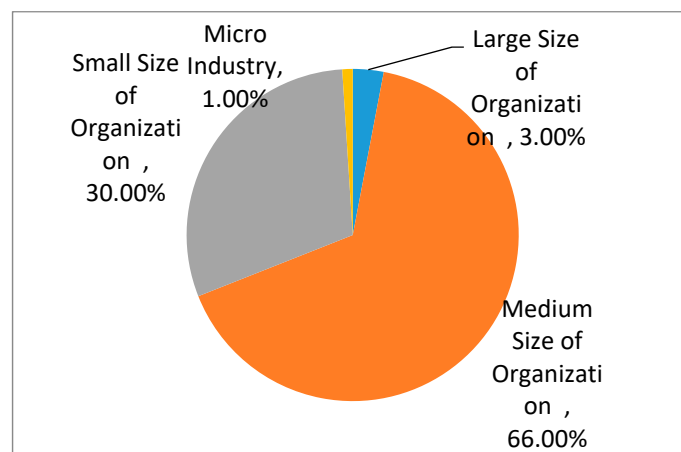


Figure 6. Size of industries used as a sample.

Of the respondents surveyed, 63.5% said that their company does not have ISO 14001 certification, whereas only 36.5% respondents indicated that their textile company has ISO 14001 certification, as is shown in Figure 7.

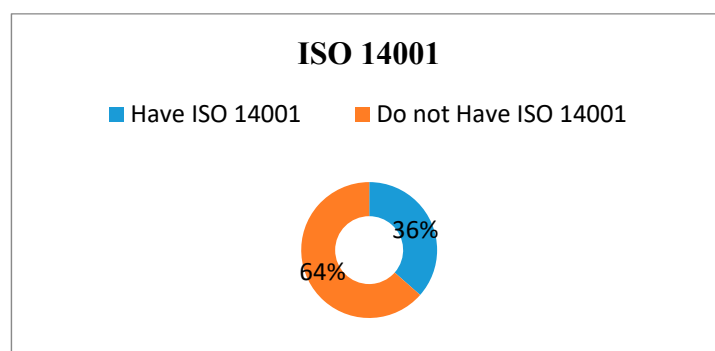


Figure 7. ISO 14001 Certificates portion.

When asked about the Environment Management System, 42.5% of respondents (N = 85) indicated the accessibility of an Environment Management System in their companies. According to their information, 57.5% of the corporations do not have an Environment Management System.

According to the company's position on green activities, these were divided into five categories. The majority of participants (N = 95, percentage = 47.5) show that, in their company, green activities are in the beginning stage, while 39.5% of employees (N = 79) reported that the green activities implementation of their company is in the early stage, 7% of respondents (N = 14) said that, in the last three to five years their company has been using green practices, whereas 4% respondents (N = 8) said that, for the last five years or more, they have been active in green practices. No green activities or strategies were found from 2% employees (N = 4), which means those companies do not have any green activities, as shown in Figure 8.

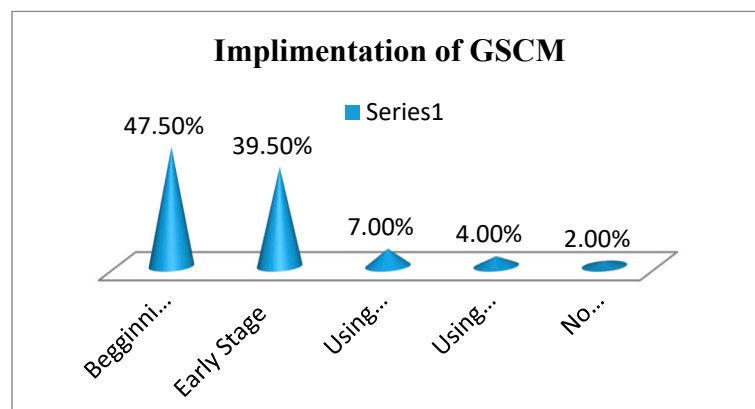


Figure 8. Implementation of GSCM.

2.2. Green Supply Management Practices Adopted by the Textile Companies of Gazipur District

Respondents were requested to demonstrate the Green Supply Chain Management Practices that had been embraced by their textile company; the results are shown in Table 3.

Table 3. Green supply management practices adopted by the textile companies of Gazipur district.

SL No.	Green Supply Chain Management Practices	N	Percentage
1	Optimize transportation operations to reduce the carbon footprint	159	79.5
2	Recycle returned products or scrap material	138	69
3	Reduce energy consumption in manufacturing and buildings	98	49
4	Reduce packaging	85	42.5
5	Redesign the supply chain network to reduce the carbon footprint	168	84
6	Increase use of renewable energy sources	152	76
7	Eliminate/reduce hazardous/toxic materials from products	149	74.5
8	Eliminate, reduce, or repurpose manufacturing waste	155	77.5
9	Eliminate/reduce hazardous/toxic chemicals from manufacturing processes	148	74
10	Implement design for environment practices in product development	124	62

It can be seen that a large proportion of representatives revealed that their textile companies had embraced a redesigned chain network system to reduce carbon footprint (N = 168, percentage = 84); optimized transportation activities to decrease carbon footprint (N = 159, percentage = 79.5), eliminated, lessened, or repurposed fabricating waste (N = 155, percentage = 77.5); increased utilization of sustainable power sources (N = 152, percentage = 76.00); and eliminated/diminished hazardous/toxic materials from products (N = 149, percentage = 74.5). A huge number of respondents demonstrated that their organizations had utilized GSCM practices such as eliminating/decreasing hazardous/toxic synthetic concoctions from manufacturing processes (N = 148, percentage = 74); recycling returned items or scrap material (N = 138, percentage = 69); and implemented a plan for environmental practices in item development (N = 124, percentage = 62). Just a few of the respondents said that

their organizations had utilized Reduce Energy Consumption in assembling and building (N = 98, percentage = 49) and reducing packaging (N = 85, Percentage = 42.5).

2.3. Factors Leading to the Development of Green Supply Chain

Respondents were asked to demonstrate the impact from the factors impacting their organization to create green supply management practices on a 5-point scale from 5 (Extremely Influential) to 1 (Not At All Influential). This last positioning is obtained with the assistance of weighted arithmetic mean. With a specific end goal to compute the sum of the weighted score, the quantities of respondents who have given an impact from 5 to 1 are duplicated by 5 to 1 individually. The mean score is figured by partitioning the total score by adding the number of weights (i.e., 15).

Table 4 demonstrates that the “employees’ values” item was the most impacting factor influencing the organization’s choice of usage of the green supply chain with a WMS of 54.6 followed by environmental responsibility of top administration (WMS = 53.2). Expected business profits by GSCM implementation was positioned third with a WMS of 51.07, trailed by source of competitive advantage fourth with a WMS of 44.8, followed by pressure from society at the sixth rank with a WMS of 43.6.

Table 4. Factors leading to the development of green supply chain.

Weights	1	2	3	4	5				
Level of Influence	Not at All Influential	Slightly Influential	Somewhat Influential	Very Influential	Extremely Influential	Total	Weighted Total	Weighted Avg.	Rank
Factors									
Employee’s values	3	12	19	95	71	200	819	54.6	1
Environmental commitment of top management	5	15	23	91	66	200	798	53.2	2
Pressure from the society	28	24	50	62	36	200	654	43.6	6
Source of competitive advantage	30	19	46	59	46	200	672	44.8	4
Gain legitimacy	42	35	61	53	9	200	552	36.8	7
Compliance with regulations	12	20	69	91	8	200	663	44.2	5
Expected business benefits from GSCM implementation	20	7	19	95	59	200	766	51.0667	3
Pressure from Suppliers	61	75	53	7	4	200	418	27.8667	10
Pressure from NGO’s	35	56	62	30	17	200	538	35.8667	8
Pressure from Customers	42	51	63	31	13	200	522	34.8	9

Gain legitimacy was reviewed at seventh place with a WMS of 36.8, followed by pressure from NGOs at eighth rank with a WMS of 35.87. Pressure from customers/weight from customers positioned as a ninth impacting factor influencing a company’s decision regarding implementation of GSCM with a WMS of 34.8. Pressure from suppliers was positioned at tenth with a WMS of 27.87 which was the least affecting component of GSCM implementation. Here, weighted mean score = WMS.

2.4. Hypothesis Testing

Hypothesis 1. *There is no relationship between the condition of the GSCM process and ISO 14001 certification accomplished by an association.*

Hypothesis 2. *There is a relationship between the condition of the GSCM process and ISO 14001 certification accomplished by an association.*

A chi-square test was applied to quantify the relationship between the condition of the GSCM process and ISO 14001 certification accomplished by an association, which is displayed in Table 5.

At 5% significance and for four degrees of freedom, the analysis gives enough confirmation to reject the hypothesis; therefore, it can be presumed that there is a relationship between the conditions of the GSCM process and ISO 14001 confirmation accomplished by an association.

Table 5. Chi-square test results to measure the association between the state of the green supply chain management process and ISO 14001 certification achieved by an organization.

State of Green Supply Activities	ISO 14001 Certification		Total	Chi-Square		Result
	Yes	No		Calculated Value	Tabulated Value	
No Green	0	5	5	13.95	9.488	Rejected
Early	27	51	78			
Beginning	31	68	99			
Intermediate	8	3	11			
Advanced	7	0	7			
Total	73	127	200			

Level of significance = 5%, Degree of Freedom = 4.

Hypothesis 3. *There is no relationship between the condition of the GSCM process and the size of an association.*

Hypothesis 4. *There is a relationship between the condition of the GSCM process and the size of an association.*

Table 6 shows the chi-square test outcomes used to quantify the relationship between the condition of the GSCM process and the size of association.

Table 6. Chi-square test results to measure the association between the state of the green supply chain management process and the size of an organization.

State of Green Supply Activities	Size of Organization				Total	Chi-Square		Result
	Micro Industry	Small Industry	Medium size	Large Size		Calculated Value	Tabulated Value	
No Green	2	2	0	0	4	131.96	21.026	Rejected
Early	0	41	38	0	79			
Beginning	0	11	84	0	95			
Intermediate	0	4	7	3	14			
Advanced	0	2	3	3	8			
Total	2	60	132	6	200			

Level of significance = 5%, Degree of Freedom = 12.

As the ascertained estimation of chi-square is greater than its tabulated value, it prompts the rejection of the hypothesis and it can be concluded that there is a relationship between the condition of GSCM and the size of an association.

3. Proposed Research Methodology

In the literature, numerous earlier examinations have evaluated the connection between GSCP practices and execution while others show the determination strategies for partners constructed on GSCP. Mwaura et al. [52] and Tundys et al. [53] applied the chi-square test method to identify the competitive factors in food industries in Poland and Kenya, respectively. Additionally, Zhu and Sarkis [14] studied the connection between GSCP and environmental performance among industries who officially adopted GSCP. However, there is still an absence of clearness on how to evaluate the implementation level of GSCP. For example, the investigations between the connection of GSCP and environmental enactment cannot answer the topic regarding the present usage level of GSCP. Since it is not certain whether the textile industry of Gazipur district embraced GSCP or not, it is invalid to associate their practices with environmental performance. The textile industry immediately needs clarification of this issue to increase the environmental performance.

Since there are some earlier examinations in the textile industry in evaluating GSCP, there are various methods accessible to implement as a framework. In addition, the resource-based view hypothesis proposes that every industry is different from another with respect to its resources and abilities. Since GSCM capacities are mind boggling packs of individual abilities, representative abilities, resources, and gathered information [14], another arrangement of measures is fundamental that tends to these skills, capacities, resources, knowledge, and so on, to calculate the performance of GSCP in this industry.

Evaluation of green practices is a challenging assignment and ought to be attempted consistently. Associations need to observe internal and external exercises to guarantee appropriate usage of GSCP. Appropriate usage of GSCP guarantees an expanded market share and monetary benefit by eliminating environmental pollution [54].

Moreover, some studies emphasize environmental management systems (EMS) or environmental certification. The International Organization for Standardization (ISO) 14001 is a standout amongst most well-known EMS frameworks [55,56]. The goal of the ISO 14001 arrangement is to enhance environmental performance by forcing a strict arrangement of standards, for example, consistent legal and ecological regulations, documentation of inside environmental reviews, and so on [57,58]. Henceforth, the cooperation in ISO 14001 natural certification efficiently lessens the negative environmental effect, diminishes waste and resource utilization, and enhances environmental performance [45,59].

After studying the above literature, we have proposed a model to discover our hypothesis and, as indicated by our model, we set up our results and discussion. The proposed research model are shown in Figure 9.

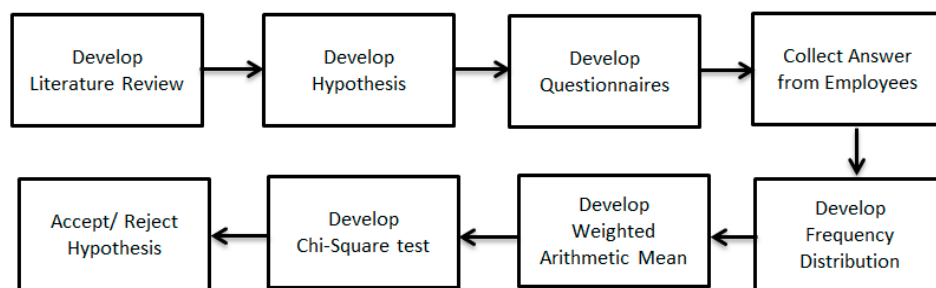


Figure 9. Proposed model for research.

4. Application of Proposed Model

To have a better understanding of the issue, a descriptive investigation design was used. To obtain the primary data a closed-ended questionnaire was administrated.

Our data collation had two phases: Phase 1: Initial survey was to find practices of GSCM; Phase 2: Identifying the factors that lead to develop GSCM.

The demographic shape of the survey included categories of ownership, size of organization, environmental management systems, etc. The questionnaire was distributed to 450 participants in Gazipur districts, and 200 responded to the questionnaire. After three months, visits, emails, and telephone reminders were sent to the respondents resulting in 200 participants responding to our questionnaire. Hence, 44.44% was the valid response rate. Malhotra and Grover [60] and Easterby-Smith et al. [61] suggest that a 20% response rate is sufficient for a positive valuation of the survey.

5. Conclusions

From this research, the following conclusions can be drawn:

1. The majority of respondents proved that their textile organizations had embraced a redesigned supply chain system to decrease carbon footprint, streamline transportation operations to decrease carbon footprint, eliminate, reduce, and alternately repurpose manufacturing waste, and increase utilization of renewable vitality sources as well as eliminate/lessen hazardous/toxic materials.
2. Employee's values were the highest influencing element influencing company choice for usage for GSC taken after promises by the top administration.
3. There is an association between those who stated GSCM process and those who attained ISO 14001 certification.

4. There is an association between those who stated implementing GSCM processes and the size of an association.

Within these 200 factories, most of them are trying to reduce the carbon footprint, while fewer than 50% are not concerned about reducing packaging practices and reducing energy consumption in manufacturing and buildings.

Bangladesh's position as the world's second largest readymade garment exporter continues, but the EPI-2018 (Environmental Performance Index) rank of Bangladesh is the worst; it was 179 out of 180 worldwide and 26th in Asia, which is the lowest. This means that awareness of GSCM is very poor, so it is very important to spread the knowledge of GSCM and implement it as early as possible. Whereas ISO 14001 is potentially attractive for supply chain management as it has the capability of reducing contamination prompting lower expenses of production and higher benefits, has a link with the developing significance of corporate social responsibility, and the likelihood that an ISO-enrolled framework may furnish firms with an exceptional environmental resource, capacities, and advantages that prompt competitive advantage.

5.1. Limitation

We designed a survey based on closed-ended questionnaires so that we could obtain necessary information easily, but it was hard to collect data because large numbers of companies were not ready to contribute due to confidentiality reasons; moreover, we have guaranteed to our respondents that we will not share those data to any Governmental office or NGO. Although these data were collected on textile industries only, we did not classify the categories of textile industries like Knit, Oven, Swing, etc. The sample size of our research was only 200, whereas the number of textile industries exceeds 1500 in the Gazipur district.

5.2. Future Research

Because this is the first work to publish the findings on GSCM textile industries in the Gazipur district we collected fewer samples to test. The differences may be attributable to differences in the sample size. Future research is necessary to reconcile these differences. In addition, this research focuses on the implementation scenario of GSCM practices by textile industries, and this model should be modified to reflect other organization types, such as wholesalers and retailers, and data should be collected to assess the impact of GSC practices on those different types of organizations.

5.3. Implementation

We argue as to whether Gazipur district's textile industry follows GSC practices and if they have ISO 14001 certificates or not. In our study, we found that there many factories which do not follow GSCM practices and we identified which aspects most of the industries have less experience regarding GSCM practices. For compliance managers, this study will be very helpful to check companies' GSCM practices and find where they are lacking. This study shows that NGOs and suppliers are not very concerned about the GSCM issue, so we believe that this study will help NGOs to know where they can improve GSCM.

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