

A SYSTEMATIC LITERATURE REVIEW ON DEVELOPMENT OF GREEN SUPPLY CHAIN MANAGEMENT

Nekmahmud Md., Rahman S., Sobhani F. A., Olejniczak-Szuster K., Fekete-Farkas M.*

Abstract: Nowadays, the world is facing a crisis of sustainability challenges and industries in developed countries are making strategies to respond to those challenges by implementing Green Supply Chain Management (GSCM). Similarly, the industries of developing countries are striving to apply GSCM for sustainable development. This study aims to present a systematic literature review of GSCM practices and discusses its current status in the context of Bangladesh. This study used the PRISMA model and considered 70 research papers on GSCM published in Scopus and the Web of Science indexed journals in the context of developing countries including 21 papers on Bangladesh. The papers presented here identified the barriers and critical success factors to implement GSCM by reviewing selected papers including theoretical and practical issues. Furthermore, it indicates that the number of empirical research work on GSCM has increased rapidly over the last few years. This review paper would help managers, researchers, academicians, and policymakers for a better understanding of GSCM practices in Bangladesh and other developing countries.

Keywords: green supply chain management, sustainable supply chain management, green value chain, PRISMA model.

DOI: 10.17512/pjms.2020.22.1.23

Article history:

Received October 28, 2020; *Revised* November 20, 2020; *Accepted* November 30, 2020

Introduction

Currently, the awareness of climate change and sustainability issues are increasing rapidly. The growth of consumers' green concerns and increasing pressure from

* **Md. Nekmahmud**, PhD Research Fellow, Doctoral School of Economic and Regional Sciences, Szent István University, Hungary. **Shafiqur Rahman**, Academic staff, PhD, Kent Institute Australia and Central Queensland University, Australia. **Farid Ahammad Sobhani**, Prof., PhD, School of Business and Economics, United International University, Bangladesh. **Katarzyna Olejniczak-Szuster**, PhD, Faculty of Management, Czestochowa University of Technology, Poland. **Maria Fekete-Farkas**, Prof., PhD, Faculty of Economic and Social Sciences, Szent István University, Hungary.

✉corresponding author: nekmahmud.argon@gmail.com;

✉shafiq.australia@gmail.com; drsobhani@uiu.ac.bd; katarzyna.olejniczak.szuster@wz.pcz.pl; farkasne.fekete.maria@szie.hu

governmental regulations are influencing the industries to manage all operations from environmental perspectives (Mutingi et al., 2014). Besides, industries are rapidly changing their strategies and policies towards sustainability to provide environmentally friendly products and services. The implementation of GSCM is a vital issue for every industry and it has become an increasingly complex challenge for organizations globally (de Oliveira et al., 2018; Kot et al., 2019). Suppliers, consumers, governments, legal defense agencies are asking for solutions to create impacts on the activities of their production cycle (Jabbour et al., 2014a, b).

To gain a competitive advantage in the supply chain industry, many businesses are considering incorporating GSCM (Bititci et al., 2012). GSCM has gained increased attention by adopting value creation efforts in industrial and environmental sustainability, throughout the supply chain. A number of previous studies conducted a few reviews on GSCM (Soda et al., 2016; Islam et al., 2018; Micheli et al., 2020). Some other studies were conducted on sustainable supply chain (Fahimnia et al., 2015; 2018; Zhang & Yousaf, 2020), GSCM (Sarkis, 2003; Srivastava, 2007; Green et al., 2012; Tseng et al., 2019; Liu et al., 2020), sustainable business (Bocken & Geradts, 2020), green marketing (Nekmahmud & Fekete-Farkas, 2020; Szczepańska-Woszczyzna et al., 2016) and green business (Hasan et al., 2019; Urbański & Haque, 2020). Furthermore, some studies focused on the methodology part of GSCM literature (Soda et al., 2016), while recently, only a few studies (Bajdor & Grabara, 2011; Malviya & Kant, 2015; de Oliveira et al., 2018; Badi & Murtagh, 2019; Tseng et al., 2019) have focused on a systematic literature review paper on the entire field of GSCM in the global context. Bangladesh is an industrial and production-oriented developing country having several leading industrial sectors such as textile, chemical, leather, plastic, and agriculture. As GSCM is at the early stage in Bangladesh, only a few studies on GSCM have been conducted in the context of this country in the textile, leather, chemical, agriculture, and food industries (Moktadir et al., 2018; Tumpa et al., 2019; Shohan et al., 2020; Habib et al., 2020).

This paper reviews previous studies of GSCM for understanding the current implication, barriers, critical success factors, and opportunities of GSCM in several industries. Besides, it discusses the current performance of GSCM in developed countries and presents its implications in developing country context. This is the first review paper that used the PRISMA model on GSCM, a new contribution in the context of Bangladesh.

Literature review

The first green supply chain (GSC) concept came into being in 1989 where Kelle and Silver mentioned the commercial application of reusable products. Businesses sparked

to incorporate sustainability as a result of the 1980s quality revolution and 1990s supply chain revolution (Srivastava, 2007). Nevertheless, NavinChandra (1991) first was introduced a green design for reducing the effect of product waste. Besides, several studies (Ashley, 1993; Richards & Allenby, 1994) were conducted for enhancing the green design framework. In the contemporary period, Webb (1994) also used the term GSC and indicated that this term originated from the concept of green purchasing. The author further used the term 'Environmental Responsibility Manufacturing' in another study in 1996. Green operations in terms of reverse logistics concept were first introduced by Kelle and Silver (1989) and waste management by Roy and Whelan (1992), which came out of the GSCM literature. According to Handfield et al. (1997), GSC includes design, procurement, production, packaging, logistics, and distribution. GSC also successfully contributed to reduce waste, sustain the quality of product life and natural resources (Ashley, 1993; Srivastava, 2007; Lahkani et al., 2020). In the late 1990s, many scholars conducted comprehensive reviews of GSCM where topics such as recycling in the supply chain, green planning, and manufacturing (Barros, Dekker & Scholten, 1998; Sarkis & Cordeiro, 2001; Pakurár et al., 2020) were presented thoroughly.

Green Supply Chain Management (GSCM) is an integration of sustainability issues in production, procurement, supply and distribution, sales, marketing, and relevant areas to enhance productivity and profitability (Srivastava, 2007; Green et al., 2012; Grabara et al., 2020). According to Darnall, Jolley & Handfield (2008), GSCM practices incorporate environmental activities to ensure eco-friendly products or services and to reduce costs in its value chain. GSCM ranges from the implementation and monitoring of the environment management programs to further creating or controlling practices which are implemented through various Rs (re-use, reduce, rework, recycle, refurbish, reclaim, remanufacture, reverse logistics, etc.) towards attaining a GSCM waste minimization activities. GSCM is a coordinated supply chain considering environmental issues. It also incorporates internal aspects of the business to bring efficiency and effectiveness in managing the information, material, and capital flows involving the purchase, production, and distribution to meet stakeholder needs, to increase the profitability and market competitiveness, and business resilience (Ahi & Searcy, 2013, Kozma, 2017; Małkus & Tyrańska, 2019). According to Malviya and Kant (2015), GSCM is a holistic approach that incorporates environmental awareness in a supply chain and supports firms to enhance their sustainability. Moreover, GSCM is a strategic management tool to enhance the environmental effectiveness of manufacturing industries. It also improves other sustainability performance goals (Hassan et al., 2016). It can be observed that the evolution of the meaning of GSCM has changed chronologically since 1997. Initially, supply chain management focused

mostly on green logistical issues, nowadays, GSCM incorporates a combination of sustainability issues including green procurement, green production, green distribution, and green marketing for increasing environmental and social welfare.

GSCM is gaining popularity in every industry worldwide. During the last two decades, the concept of GSCM, which incorporates green design, reverse logistics, green operations, recycling, waste management, and green manufacturing were applied in various industries and academic sectors (Srivastava, 2007; Green et al., 2012; Hasan et al., 2019; Liu et al., 2020). For example, BMW and General Motors have used GSCM in the automobile industry (Thierry et al., 1995). Among others, Hewlett Packard, StorageTek, and TRW were also using reverse logistics as a supply chain process (Dube, Gawande & Coe, 2011). Globally, GSCM is applying to several industries such as automobile, chemical, textile, global oil & gas exploration, leather, pharmaceutical, metal production, fast-moving consumer goods (FMCG), electronic, construction, plastic, and tourism, and so on. In the academic sector, in the last 10 years, about 4,706 articles have been published in GSCM related to the SCOPUS Journal, after searching for the GSCM keyword on the web of science (WoS). Researchers around the world are therefore trying to expand the theoretical application of GSCM in every industry. Table 1 helps to understand with a comparison of the number of articles published during 1975-2020 how researchers are working on GSC, GSCM, green value chain, sustainable green supply chain management (SGSCM), and green business.

Table 1. The number of published articles in GSCM globally (in SCOPUS, SSCI & ESCI)

Search Keywords in WoS	1975-2020	1990-2000	2001-2010	2011-020
green supply chain management	3209	4	192	3012
green supply chain	4468	30	300	4137
Sustainable green supply chain	1718	0	78	1640
green value chain	3114	174	533	2407
sustainable business	13996	277	2100	11620
green business	4517	137	641	3721
Reverse logistic	5257	183	1089	3984

Source: Authors' elaboration based on Web of Sciences

Over the prior three decades, GSCM has become popular worldwide, both in developed and developing countries (Govindan et al., 2014; Singh, 2014). A number of industries in developing countries especially in China, India, Malaysia, Pakistan, South Africa, Brazil, Turkey, and so on are practicing GSCM in several industries to reduce environmental impact, increase profits, and to gain market share by increasing

environmental efficiency. At present, the governments of many developing countries have formulated or in the process of developing policies, rules, and regulations, and guidelines for the industry to implement GSCM practices. Besides, several businesses started combining the green supply chain model to support strategic planning, operational practice and increased business efficiency to gain anticipated results (Bras & Isaacs, 2006). However, there are limited studies on GSCM in developing country context, (Suhi et al. 2019). Figure 1 shows the number of publications related to GSCM in developing countries by searching in the web of sciences (WoS). The issue of GSCM has gained attention at a significant level in recent studies where Chinese, Indian, and Malaysian context ranked the top.

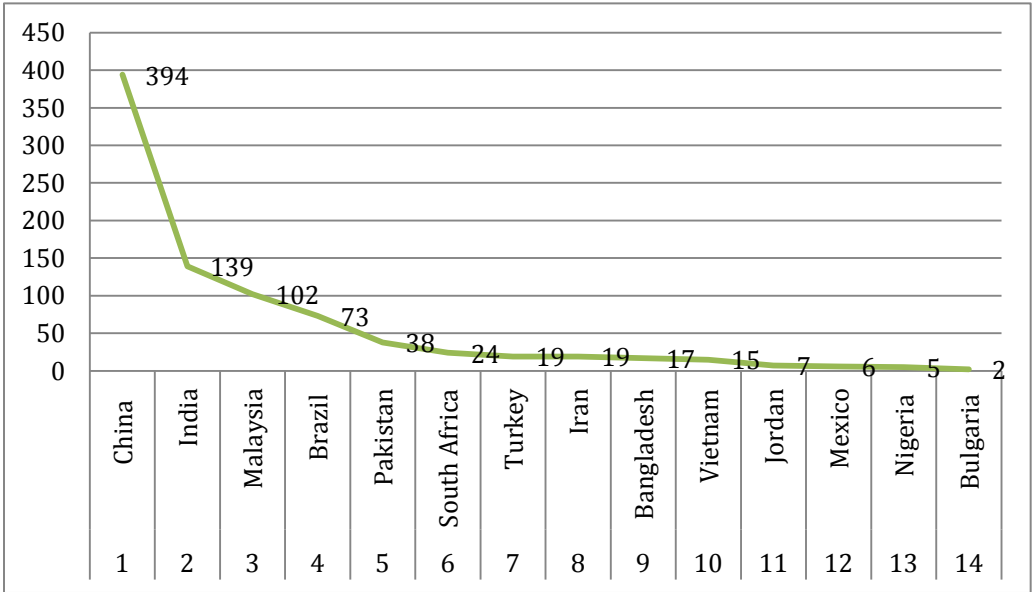


Figure 1: Number of published articles in GSCM in developing countries based on Scopus SSCI and ESCI (1975-2020)
 Source: Authors elaborations

GSCM practice is at the initial stage in the context of Bangladesh where most industries have realized the importance of GSCM practice as it can reduce environmental impact and improve organizational competitiveness. For example, the practice of GSCM in the textile industry of Bangladesh is still in its infancy (Reza et al., 2017). Similarly, the chemical and leather industries are also at the initial stage for applying GSCM practices

(Shohan et al., 2019; Uddin et al., 2019). Furthermore, the textile industry is suffering from various challenges including technological, economic, and social benefits from GSCM practices (Majumdar & Sinha, 2018). Likewise, there have been a limited number of academic studies on GSCM in the context of the country.

Methodology

This research is a systematic review of the literature on GSCM practices. The main aim of the systematic review is to develop the summaries of prior research in an individual research area (Mardani et al., 2020). To fulfill the research objective, to sum up, the previous studies of GSCM, a systematic review method, the PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis, Liberati et al. 2009) has been chosen as a research method. At present, many research scholars have applied the PRISMA model in several research fields to progress the literature review (Mardani et al., 2020; Paliwal, Chandra & Sharma, 2020; Oláh et al., 2020). Likewise, our study has used the PRISMA statement, having three components, namely literature search, screening, and selection of eligible previous publications. This study also gathers details of GSCM information and summaries them in the context of Bangladesh.

To review the GSCM literature the two largest citation databases were selected, which have several online indexes including Social Sciences Citation Index and Science Citation Index Expanded. To find out the published research papers, the search was first performed on the basis of relevant keywords as GSCM, green supply, green logistics, SCM, sustainable supply chain management (SSCM), Bangladesh and green supply chain (GSC), environmental SCM, green supplier, developing countries, etc. Moreover, to get the specific articles on GSCM and Bangladeshi industries, the advanced searching options platform of Science Direct, SpringerLink, Emerald insight, Taylor & Francis, Sage, and MDPI were used. The results of the literature search have been presented in Figure 2.

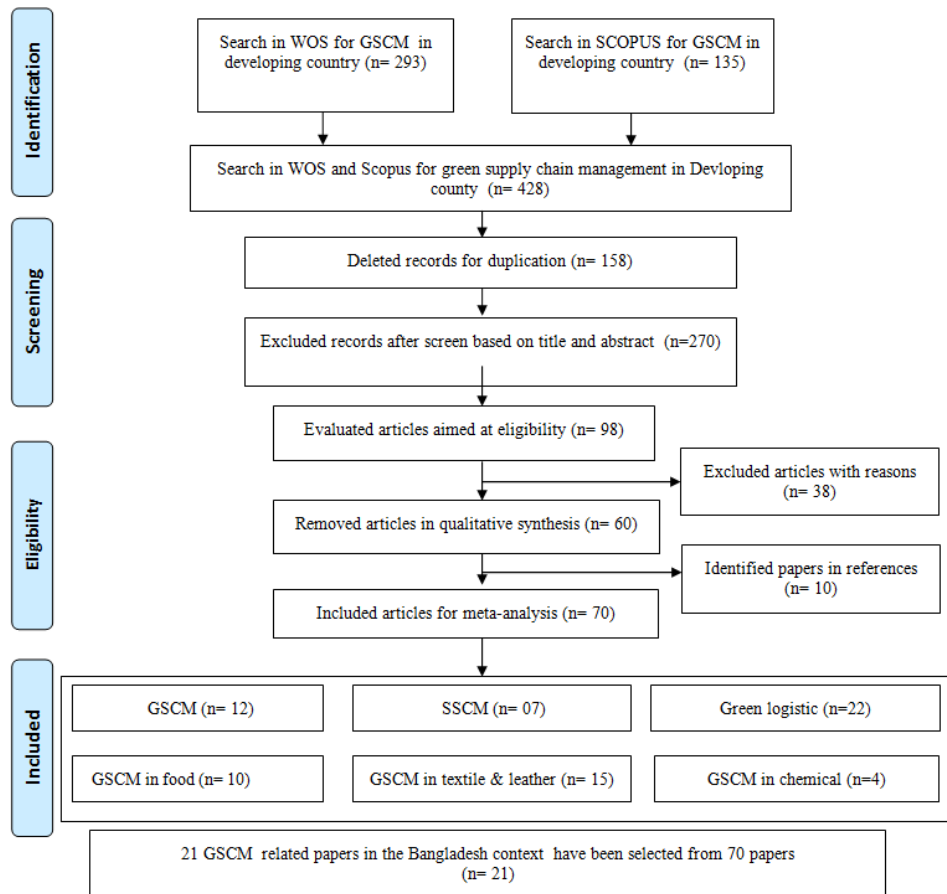


Figure 2: Flowchart of study based on PRISMA statement

According to our initial search, we found the following records related to GSCM studies. Thus, in the first stage of searching, we have found 428 records. The next step was removing duplicated records and articles with unnecessary data. Consequently, 158 articles were removed due to redundancy. Finally, 70 relevant articles have been identified for discussion of the definition of GSCM in global and developing country context. Most of these research papers were from Elsevier, Emerald, Springer, Wiley, Taylor & Francis, and so on.

In this section, a detailed review of selected articles is presented. As a result of the process, 70 published papers have been selected related to GSCM, SSCM, and green

logistics focusing on in developing country context. Finally, all GSCM related papers in the context of Bangladesh from 2000 to 2020 have been considered. At this stage, 21 papers related to GSCM and SSCM from numerous peer-reviewed journals and international conferences where the publishers were Elsevier, Springer, Taylor & Francis, Emerald Insights were examined based on the inclusion criteria for this research.

Table 2. A shortlist of journals published articles related to GSCM in the context of Bangladesh

Name of Journals	Number of Articles (n=21)	Publisher	IF
Resources, Conservation & Recycling	1	Elsevier	8.086
Journal of Cleaner Production	4	Elsevier	7.246
Environmental Impact Assessment Review	1	Elsevier	4.135
Production Planning & Control	1	Taylor & Francis	3.605
Ocean and Coastal Management	1	Elsevier	2.842
International Journal of Sustainable Development & World Ecology	2	Taylor & Francis	2.772
Annals of Operations Research	1	Springer	2.583
Review of International Political Economy	1	Taylor & Francis	2.312
International Journal of Logistics Research and Applications	1	Taylor & Francis	2.152
Cogent Business & Management	1	Taylor & Francis	
Management of Environmental Quality: An International Journal	1	Emerald	
Benchmarking: An International Journal	1	Emerald	
Revista de Pielarie Incaltaminte/ Leather and Footwear Journal	1	INCDTP, RO	
International Conference on Business & Management	1	BRAC University	
Pacific Asia Conference on Information Systems (PACIS) 2013 PROCEEDINGS	1	PACIS	
IOP Conference Series: Materials Science and Engineering	1	IOP publishing	

Source: Authors elaborations

Finally, 21 GSCM related papers have been selected (see table 3) for review in the context of Bangladesh with the following industries: textile, leather, chemical, agriculture, footwear, and plastic. The review and summary of these papers are based on several important perspectives including application area, research focus, methods, publication year, authors, sample size, methods, major findings, and results.

Table 3. A Comprehensive Overview of the Key Aspects of GSCM Research in Bangladesh

Authors	Main Focus	Industry	Methods and Sample Size No.	Remarks/Findings
Chowdhury et al., 2013	SSCM stakeholders requirements	textile	Exploratory multiple-case study approach <i>No: 15 (experts opinions)</i>	<ul style="list-style-type: none"> ● sustainability, compliance, and governance were also very important. ● economic sustainability led by social, environmental, and operational compliance requirements.
Moktadir, et al, 2017	CSFs (critical success factors) to execute GSCM	footwear	MICMAC analysis <i>No: (expert's opinion and knowledge)</i>	<ul style="list-style-type: none"> ● support and commitment of top management were highlighted.
Islam et al. 2018	GSCM practices in Bangladesh applying fuzzy importance and performance analysis (FIPA)	leather industry	FIPA (fuzzy importance and performance analysis) approach <i>No:34</i>	<ul style="list-style-type: none"> ● viewpoints of suppliers and manufacturers were the most critical aspects of GSCM practices. ● the important features were recycling water and reducing waste during manufacturing, participating in an ISO 14001, and selecting suitable suppliers. ● the performance aspects are not satisfactory.
Sarker et al., 2018	identifying the barriers to GSCM	footwear industry	Delphi approach <i>No: 10 (5 industrial and 5 academic experts)</i>	<ul style="list-style-type: none"> ● 22 significant barriers had been identified, including financial constraints, lack of eco-friendly materials, lack of energy, and waste management.
Moktadir et al., 2018	relationships among the barriers to GSCM	leather	DEMATEL (decision making trial and evaluation laboratory) approach <i>No: N/A</i>	<ul style="list-style-type: none"> ● top causal barriers were lack of concerns among the customers and the absence of commitment from top management. ● outdated machinery and poor reverse logistics practices were the significant barriers to GSCM
Moktadir et al., 2018	circular economy and sustainable manufacturing practices	leather	GTMA (graph theory and matrix approach) <i>No: N/A, (Experts' and</i>	<ul style="list-style-type: none"> ● the results reveal that knowledge of the circular economy was crucial to applying GSCM in the leather industry. ● the driver of customer awareness was more significant for large-scale businesses than small-scale businesses.

			<i>academic opinions</i>	<ul style="list-style-type: none"> Government support and influence for small companies' were required for the adoption of sustainable manufacturing practices.
Moktadir et al., 2018	drivers to circular economy and sustainable manufacturing practices	leather	GTMA (graph theory and a matrix approach) <i>No: N/A</i>	<ul style="list-style-type: none"> knowledge of the circular economy was the most significant for executing sustainable manufacturing practices.
Rahman et al., 2019	barriers to implementing GSCM	plastics	Mix method & Fuzzy-VIKOR approach <i>No: 4 (managers from 4 plastic company)</i>	<ul style="list-style-type: none"> lack of support and knowledge ranked the top as key-barriers to executing GSCM practices. insufficient technology, financial constraint, infrastructure, unsupportive organizational, and operational policies created significant barriers.
Shohan et al., 2019	structural framework of drivers for implementing GSCM	chemical	Delphi approach <i>No: 14 (14 experts opinions from 5 company)</i>	<ul style="list-style-type: none"> the most significant drivers for GSCM were supplier pressure and willingness. the most significant barrier was the high cost for GSCM.
Salim et al., 2019	GSCM practices in superstores	superstores	Questionnaire Survey No: 90 (employers' opinions)	<ul style="list-style-type: none"> there was a significant correlation between the arrangement of seminars and workshops with greening and tree plantation management.
Uddin et al., 2019	a new framework that evaluates the barriers to GSCM	leather	AHP (analytical hierarchy process) and ELECTRE-I method <i>No: N/A</i>	<ul style="list-style-type: none"> the high cost of advanced technology was the most significant barrier to GSCM. green technology and techniques were the most vital pathways to GSCM.
Suhi et al., 2019	evaluation of GSCM in the context of an emerging economy	emerging economies	Best worst method (BWM) <i>No: (opinions of 34 experts)</i>	<ul style="list-style-type: none"> waste management was the most significant indicator for establishing environmental sustainability, substantiated by a sensitivity analysis.
Ahmed, et al., 2019	barriers and opportunities to GSCM	construction	Qualitative method <i>No: 163 15 interviews of field professionals from 15 countries</i>	<ul style="list-style-type: none"> 34 barriers and 23 opportunities had been identified. the strategies to implement GSCM included green procurement, innovative green design, green distribution, green packaging, and management.
Tumpa et al., 2019	barriers to GSCM in the context of an emerging economy	textile	Questionnaire survey method <i>No: 30 (practitioners of operations)</i>	<ul style="list-style-type: none"> 15 barriers to GSCM had been identified. the most significant barriers were the low demand from customers and financial constraints.

Gomes & Daud, 2020	implementation of GSCM	textile	Qualitative & Quantitative methods <i>No: 8 (experts opinions)</i>	<ul style="list-style-type: none"> ● the industry was also using appropriate raw materials in the production process to minimize the waste of resources. ● raw materials should be free from any defects. Also, raw materials should be environmentally friendly.
Anner, 2020	squeezing workers' rights in global supply chains	textiles	Mixed methods <i>No: (223 factories and 30 interviews)</i>	<ul style="list-style-type: none"> ● price squeeze and sourcing squeeze had harmful impacts on working conditions and workers' rights.
Habib, et al., 2020	the impact of GSCM on green entrepreneurial and market orientation	textile	Exploratory and Quantitative methods <i>No: 246 (manufacturing firms)</i>	<ul style="list-style-type: none"> ● green entrepreneurial concept has a significant positive impact on market orientation and GSCM practices. Such impact also positively affects the economic, environmental, and social dimensions of firm performance.
Shohan et al., 2020	building theory of GSCM	chemical	Delphi method <i>Sample Size: 14 (experts opinions)</i>	<ul style="list-style-type: none"> ● significant barriers to GSCM were the lack of government legislation and guidelines to support the expense of disposing hazardous goods.
Banik et al., 2020	critical success factors for executing GSCM in an emerging economy	electronics	Pareto analysis, DEMATEL <i>No: 22 (experts from three renowned consumers)</i>	<ul style="list-style-type: none"> ● Barriers to GSCM were government regulations and standards, top management commitment, environment management certification, and pollution prevention and hazardous waste management.
Roy et al., 2020	appraising GSCM in the context of an emerging economy	FMCG fast-moving consumer goods)	FCM (fuzzy cognitive map) and DEA (data envelopment analysis) <i>No: N/A</i>	<ul style="list-style-type: none"> ● the results identified the usefulness of data envelopment analysis and integrated fuzzy cognitive map methods for appraising the strategies for GSCM.
Moktadir et al., 2020	evaluating barriers to reverse logistics practices	leather footwear	Delphi method and the fuzzy-AHP(analytical hierarchy process) <i>No: N/A</i>	<ul style="list-style-type: none"> ● the major obstacles for implementing reverse logistics were lack of interest and assistance to 'knowledge and support'.

Source: Authors elaborations

Results and Discussion

Barriers and critical success factors in GSCM

Moktadir, Mithun, and Kumar (2018) have considered four positive impactful drivers in the leading industries in Bangladesh for GSCM practices which are 'knowledge of circular economy', 'leadership & commitment', 'customer awareness, and 'top management, and governmental support'. Among them, knowledge of circular economy (training & education, available information, employee motivation, and

knowledge sharing, concerns about environmental impacts) gets priority due to its high impact on executing GSCM practices. On the other hand, the green logistic factors (conforming of environmental rules and regulation, verification of environmental management system, the arrangement of seminar and workshop, tree plantation activities, regular meetings of the employees towards the saving of the environment) have supported to implement GSCM in superstores (Salim, 2019). Nevertheless, Moktadir, Rahman and Ali (2017) identified 10 CSFs to implement GSCM practices in the footwear industry including organizational policy, suppliers green practice, and stakeholders' awareness, motivation to technology advancement, long-term financial benefit, competitiveness, and pressure from the society. Comparatively, the support and commitment of 'top management' are considered an important critical success factor. Moreover, eco-friendly raw materials, material management, distribution management, cost and green issues, reverse logistics, recycling, and reuse are the major factors for implementing GSCM in the RMG sector. Besides, pressure from the suppliers and their willingness are two significant drivers in the chemical industry (Shohan et al., 2019). Rahman et al., (2019) have identified four main-barriers, which are insufficient knowledge and support, inadequate technology and infrastructure, financial limitations, and having no support from the organization and operational policies suitable for implementing GSCM practices in the plastic industry. In the footwear industry, the internal barriers are the challenges of appropriate regulations and lack of awareness of GSCM. Besides, other barriers to GSCM are financial constraints, lack of energy and waste management, and lack of source of eco-friendly materials (Sarker et al., 2018). Further, Uddin et al., (2019) identified some barriers in the leather industry which include lack of government support and policies, lack of technological knowledge, insufficient finance, and high expense of advanced technology. Tumpa et al., (2019) have identified a few significant barriers to GSCM in the textile industry, which are the low demand for environmentally friendly products due to lack of customer awareness, fewer incentives from the government, financial constraint, technical obstructions, lack of promotion of green textile materials and poor government policies and regulations. Besides, in the chemical industry, high cost is the most important barrier to GSCM (Shohan et al., 2019). Chowdhury, Dewan and Quaddus, (2013) have been suggested that the textile supply chain members need to comply with the social, environmental, economic, and operational requirements. In an organization, ensuring a good working environment and satisfying the workers can smooth the operation and improve the economic performance and sustainability. If a company wants to overcome GSCM related weaknesses, it should focus on practicing more on those variables that have a higher level of importance and effectiveness to sustainability (Islam et al., 2018).

Green techniques and green technology are the two most influential pathways to overcome the barriers to GSCM (Uddin et al., 2019). For example, in the textile industry, the implementation of GSCM can assist in using resources effectively and protect nature from unpredictable pollution (Gomes & Daud, 2020). Besides, innovative green design, green packaging, green procurement, green distribution, end-of-life management, and emission reduction could play a vital role to execute GSCM (Ahmed, Thaheem & Maqsoom, 2019). The development of cleaner technology and high-tech infrastructure can significantly enhance the implementation of GSCM. Developing organizational policies pertinent to greening practices can play a vital role in implementing GSCM if substantial financial support is available. Appropriate action plans can help policymakers to develop strategies to overcome the barriers to GSCM (Rahman et al., 2019).

The results of this study may encourage managers to increase GSCM practices in their businesses which can enhance firm performances. Some barriers identified in this study can help managers to make decisions to overcome them. In addition, managers may focus on the critical success factors of GSCM practices which may help in increasing their productivity. Based on the comprehensive overview of the key aspects of GSCM practices in several industries in Bangladesh, farm managers in other industries in Bangladesh and other developing countries may use similar strategies.

Conclusions

Environmental sustainability is a vital issue both locally and globally. This study shows that GSCM practices can reduce production costs and environmental pollution. Though GSCM practices are at the initial stage in Bangladesh, it is in the process of adoption by several industries of the country, namely textile, leather, chemical, footwear, construction, and agriculture. This study attempts to provide summaries of previous studies concerning GSCM practices in Bangladesh. A systematic literature review reveals a comprehensive overview of studies in the field until the present time. Based on the literature review, the major barriers to GSCM are lack of various elements including knowledge and support, green technology and infrastructure, financial, technology, awareness of GSCM, source of eco-friendly materials, government support, policies, and customer awareness.

The main limitation of the study is the small number of research conducted in the context of Bangladesh. In addition, while searching GSCM studies with the keyword 'Bangladesh', a few studies might not have captured which did not have the word 'Bangladesh' in their titles.

The future researchers may consider a systematic review of GSCM literature in the context of other developing countries having similar socio-economic backgrounds as

well as consider models for the systematic review other than the PRISMA model. Furthermore, authors may also consider studying GSCM comparing different business sectors of Bangladesh or any other country in the world.

References

- Ahi, P., Searcy, C., (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of cleaner production*, 52, 329-341.
- Ahmed, M., Thaheem, M. J. and Maqsoom, A., (2019). Barriers and opportunities to greening the construction supply chain management. *Benchmarking: An International Journal*, 27(3), 1211-1237.
- Anner, M., (2020). Squeezing workers' rights in global supply chains: purchasing practices in the Bangladesh garment export sector in comparative perspective. *Review of International Political Economy*, 27(2), 320-347.
- Ashley, S., (1993). Designing for the environment. *Mechanical Engineering-CIME*, 115(3), 52-56.
- Badi, S., Murtagh, N., (2019). Green supply chain management in construction: A systematic literature review and future research agenda. *Journal of cleaner production*, 223, 312-322.
- Bajdor, P., Grabara, J. K., (2011). Implementing "green" elements into the supply chain-The literature review and examples. *Annales Universitatis Apulensis: Series Oeconomica*, 13(2), 584
- Banik, A., Taqi, H. M. M., Ali, S. M., Ahmed, S., Garshasbi, M. and Kabir, G., (2020). Critical success factors for implementing green supply chain management in the electronics industry: an emerging economy case. *International Journal of Logistics Research and Applications*, 1-28.
- Barros, A. I., Dekker, R. and Scholten, V., (1998). A two-level network for recycling sand: a case study. *European journal of operational research*, 110(2), 199-214.
- Bititci, U., Garengo, P., Dörfler, V. and Nudurupati, S., (2012). Performance measurement: challenges for tomorrow. *International journal of management reviews*, 14(3), 305-327.
- Bocken, N. M., Geradts, T. H., (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities, *Long Range Planning*, 53(4), 101950.
- Bras, B., Isaacs, J. A. and Overcash, M., (2006). Environmentally benign manufacturing—a workshop report, *Journal of cleaner Production*, 14(5), 527-535.
- Chowdhury, M. M. H., Dewan, M. N. A. and Quaddus, M. A., (2013, January). Sustainable Supply Chain Management through Compliance of Stakeholders' Requirements: A Study on Ready-Made Garment (RMG) Industry of Bangladesh. *In PACIS*, (p. 269).
- Darnall, N., Jolley, G. J. and Handfield, R., (2008). Environmental management systems and green supply chain management: complements for sustainability?. *Business strategy and the environment*, 17(1), 30-45.

- de Oliveira, U. R., Espindola, L. S., da Silva, I. R., da Silva, I. N. and Rocha, H. M., (2018). A systematic literature review on green supply chain management: Research implications and future perspectives. *Journal of Cleaner Production*, 187, 537-561.
- Dube, A. S., Gawande, R. R. and Coe, D. B., (2011). Green supply chain management—a literature review. *International Journal of Computer Applications*, 975, 8887.
- Elsevier. (2019). Scopus. <https://www.elsevier.com/solutions/scopus> (accessed on 29 November 2020).
- Fahimnia, B., Sarkis, J. and Davarzani, H., (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, 162, 101-114.
- Gomes, D., Daud, D., (2020). Implementation of Green Supply Chain Management in Ready-made Garment (RMG) Sector of Bangladesh. *MS&E*, 780(7), 072017.
- Govindan, K., Kaliyan, M., Kannan, D. and Haq, A. N., (2014). Barriers analysis for green supply chain management implementation in Indian industries using analytic hierarchy process. *International Journal of Production Economics*, 147, 555-568.
- Grabara, J., Dabylova, M. and Alibekova, G., (2020). Impact of legal standards on logistics management in the context of sustainable development. *Acta Logistica*, 7(1), 31-37.
- Green, K. W., Zelbst, P. J., Meacham, J. and Bhadauria, V. S., (2012). Green supply chain management practices: impact on performance. *Supply Chain Management: An International Journal*, 17(3), 290-305.
- Habib, M. A., Bao, Y. and Ilmudeen, A., (2020). The impact of green entrepreneurial orientation, market orientation and green supply chain management practices on sustainable firm performance. *Cogent Business & Management*, 7(1), 1743616.
- Handfield, R. B., Walton, S. V., Seegers, L. K. and Melnyk, S. A., (1997). 'Green' value chain practices in the furniture industry. *Journal of Operations Management*, 15(4), 293-315.
- Hasan, M. M., Nekmahmud, M., Yajuan, L. and Patwary, M. A., (2019). Green business value chain: A systematic review. *Sustainable Production and Consumption*, 20, 326-339.
- Hassan, M. G., Abidin, R., Nordin, N. and Yusoff, R. Z., (2016). GSCM practices and sustainable performance: A preliminary insight. *Journal of Advanced Management Science*, 4(5), 430-434
- Islam, S., Karia, N., Fauzi, F. B. A. and Soliman, M., (2017). A review on green supply chain aspects and practices. *Management & Marketing. Challenges for the Knowledge Society*, 12(1), 12-36.
- Islam, S., Tseng, M., Karia, N. and Lee, C., (2018). Resources, Conservation & Recycling Assessing green supply chain practices in Bangladesh using fuzzy importance and performance approach. *Resources, Conservation & Recycling*, 131(December 2017), 134–145.
- Jabbour, A. B., Jabbour, C., Govindan, K., Kannan, D. and Arantes, A. F., (2014a). Mixed methodology to analyze the relationship between maturity of environmental management and the adoption of green supply chain management in Brazil. *Resources, Conservation and Recycling*, 92, 255-267.
- Jabbour, A. B., Jabbour, C., Latan, H., Teixeira, A. A. and de Oliveira, J. H. C., (2014b). Quality management, environmental management maturity, green supply chain practices

- and green performance of Brazilian companies with ISO 14001 certification: Direct and indirect effects. *Transportation Research Part E: Logistics and Transportation Review*, 67, 39-51.
- Kelle, P., Silver, E. A., (1989). Forecasting the returns of reusable containers. *Journal of Operations Management*, 8(1), 17-35.
- Kot, S., Haque U.A. and Kozlovski, E., (2019). Strategic SCM's mediating effect on the sustainable operations: Multinational perspective. *Organizacija*, 52(3), 219-235.
- Kozma, T., (2017). Cooperation in the supply chain network. *Forum Scientiae Oeconomia*, 5(3) 45-58.
- Lahkani, M.J., Wang, S., Urbański, M., Egorova, M. (2020). Sustainable B2B E-commerce and blockchain-based supply chain finance. *Sustainability*, 12(10), art. no. 3968
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. and Moher, D., (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of clinical epidemiology*, 62(10), e1-e34.
- Liu, J., Hu, H., Tong, X. and Zhu, Q., (2020). Behavioral and technical perspectives of green supply chain management practices: Empirical evidence from an emerging market. *Transportation Research Part E: Logistics and Transportation Review*, 140, 102013.
- Majumdar, A., Sinha, S., (2018). Modeling the barriers of green supply chain management in small and medium enterprises. *Management of Environmental Quality: An International Journal*. 29(6), 1110-1122.
- Malkus, T., & Tyranska, M., (2019). Reaction to risk in logistics cooperation-results of empirical research. *Acta logistica*, 6(3), 77-84.
- Malviya, R. K., Kant, R., (2015). Green supply chain management (GSCM): a structured literature review and research implications. *Benchmarking: An international journal*. 22(7), 1360-1394
- Mardani, A., Kannan, D., Hooker, R. E., Ozkul, S., Alrasheedi, M. and Tirkolaee, E. B., (2020). Evaluation of green and sustainable supply chain management using structural equation modelling: A systematic review of the state of the art literature and recommendations for future research. *Journal of Cleaner Production*, 249, 119383.
- Micheli, G. J., Cagno, E., Mustillo, G. and Trianni, A., (2020). Green supply chain management drivers, practices and performance: A comprehensive study on the moderators. *Journal of Cleaner Production*, 121024.
- Moktadir, A., Mithun, S. and Kumar, S., (2018). *Drivers to sustainable manufacturing practices and circular economy : A perspective of leather industries in Bangladesh*. 174, 1366–1380.
- Moktadir, M. A., Ali, S. M., Rajesh, R. and Paul, S. K., (2018). Modeling the interrelationships among barriers to sustainable supply chain management in leather industry. *Journal of Cleaner Production*, 181, 631-651.
- Moktadir, M. A., Rahman, T. and Ali, S. M., (2017). *Critical Success Factors in Implementing Green Supply Chain Management Practices in Footwear Industry in Bangladesh – An Interpretive Structural Modeling Approach*. 447–452.

- Moktadir, M. A., Rahman, T., Ali, S. M., Nahar, N. and Paul, S. K., (2020). Examining barriers to reverse logistics practices in the leather footwear industry. *Annals of Operations Research*, 293, 715–746.
- Moktadir, M. A., Rahman, T., Rahman, M. H., Ali, S. M. and Paul, S. K., (2018). Drivers to sustainable manufacturing practices and circular economy: A perspective of leather industries in Bangladesh. *Journal of Cleaner Production*, 174, 1366-1380.
- Mutingi, M., Mapfaira, H. and Monageng, R., (2014). Developing performance management systems for the green supply chain. *Journal of Remanufacturing*, 4(1), 6.
- Navinchandra, D., (1991). Design for environmentability. *Design Theory and Methodology-DTM'91-*, DE-31, ASME, 119.
- Nekmahmud, M., Fekete-Farkas, M., (2020). Why Not Green Marketing? Determinates of Consumers' Intention to Green Purchase Decision in a New Developing Nation. *Sustainability*, 12(19), 7880.
- Oláh, J., Krisán, E., Kiss, A., Lakner, Z. and Popp, J., (2020). PRISMA Statement for Reporting Literature Searches in Systematic Reviews of the Bioethanol Sector. *Energies*, 13(9), 2323, 1-34.
- Pakurár, M., Khan, M. A., Benedek, A. and Oláh, J., (2020). The impact of green practices, cooperation and innovation on the performance of supply chains using statistical method of meta-analysis. *Journal of International Studies*, 13(3), 111-128.
- Paliwal, V., Chandra, S. and Sharma, S., (2020). Blockchain Technology for Sustainable Supply Chain Management: A Systematic Literature Review and a Classification Framework. *Sustainability*, 12(18), 7638.
- Rahman, T., Ali, S. M., Moktadir, M. A. and Kusi-Sarpong, S., (2019). Evaluating barriers to implementing green supply chain management: An example from an emerging economy. *Production Planning & Control*, 31(8), 673-698.
- Reza, A. K., Islam, M. S. and Shimu, A. A., (2017). Green industry in Bangladesh: An overview. *Environmental Management and Sustainable Development*, 6(2), 124.
- Richards, D. J., Allenby, B. R. (Eds.), (1994). The greening of industrial ecosystems. *National Academies Press*.
- Roy, R., Whelan, R. C., (1992). Successful recycling through value-chain collaboration. *Long range planning*, 25(4), 62-71.
- Roy, S., Das, M., Ali, S. M., Raihan, A. S., Paul, S. K. and Kabir, G., (2020). Evaluating strategies for environmental sustainability in a supply chain of an emerging economy. *Journal of Cleaner Production*, 121389.
- Salim, Z. R., Ahmmed, M., Hossain, S. and Tusar, A. S. M., (2019). Green Supply Chain Management Practices by Superstores in Bangladesh: A Case Study in Dhaka. *European Journal of Business and Management*, 11(16), 61-65.
- Sarker, R., Ahmed, F., Deb, A. K. and Chowdhury, M., (2018). Identifying barriers for implementing green supply chain management (GSCM) in footwear industry of Bangladesh: A Delphi study approach. *Revista de Pielarie Incaltaminte*, 18(3), 175.
- Sarkis, J., (2003). A strategic decision framework for green supply chain management. *Journal of cleaner production*, 11(4), 397-409.

- Sarkis, J., Cordeiro, J. J., (2001). An empirical evaluation of environmental efficiencies and firm performance: pollution prevention versus end-of-pipe practice. *European Journal of Operational Research*, 135(1), 102-113.
- Shohan, S., Ali, S. M., Kabir, G., Ahmed, S. K. K., Suhi, S. A., Haque, T. and Haque, T., (2019). Green supply chain management in the chemical industry : structural framework of drivers. *International Journal of Sustainable Development & World Ecology*, 00(00), 1–17.
- Shohan, S., Ali, S. M., Kabir, G., Ahmed, S. K., Haque, T. and Suhi, S. A., (2020). Building theory of green supply chain management for the chemical industry. *Management of Environmental Quality: An International Journal*. 31(5), 1285-1308.
- Singh, B., (2014). Supply chain strategies in emerging markets: an Indian perspective., *Forum Scientiae Oeconomia*, 2(4), 51-61.
- Soda, S., Sachdeva, A. and Garg, R. K., (2016). Literature review of multi-aspect research works carried out on the concept and implementation of GSCM. *International Journal of Industrial and Systems Engineering*, 23(2), 223-253.
- Strivastava, S. K., (2007). Green supply- chain management: a state- of- the- art literature review. *International journal of management reviews*, 9(1), 53-80.
- Suhi, S. A., Enayet, R., Haque, T., Ali, S. M., Muktadir, M. A. and Paul, S. K., (2019). Environmental sustainability assessment in supply chain: an emerging economy context. *Environmental Impact Assessment Review*, 79, 106306.
- Szczepańska-Woszczyna, K., Kurowska-Pysz, J. (2016). Sustainable business development through leadership in SMEs. *Engineering Management in Production and Services*, 8 (3), 57-69
- Thierry, M., Salomon, M., Van Nunen, J. and Van Wassenhove, L., (1995). Strategic issues in product recovery management. *California management review*, 37(2), 114-136.
- Tseng, M. L., Islam, M. S., Karia, N., Fauzi, F. A. and Afrin, S., (2019). A literature review on green supply chain management: Trends and future challenges. *Resources, Conservation and Recycling*, 141, 145-162.
- Tumpa, T. J., Ali, S. M., Rahman, M. H., Paul, S. K., Chowdhury, P. and Khan, S. A. R., (2019). Barriers to green supply chain management: An emerging economy context. *Journal of Cleaner Production*, 236, 117617.
- Uddin, S., Ali, S. M., Kabir, G., Suhi, S. A., Enayet, R. and Haque, T., (2019). An AHP-ELECTRE framework to evaluate barriers to green supply chain management in the leather industry. *International Journal of Sustainable Development & World Ecology*, 26(8), 732-751.
- Urbański, M., Haque, U.A. (2020) Are you environmentally conscious enough to differentiate between greenwashed and sustainable items? A global consumers perspective. *Sustainability*, 12(5), art. no. 1786.
- Webb, L., (1994). Green purchasing: forging a new link in the supply chain. *Resource: Engineering and Technology for Sustainable World*, 1(6), 14-18.
- Zhang, X., Yousaf, H. A. U., (2020). Green supply chain coordination considering government intervention, green investment, and customer green preferences in the petroleum industry. *Journal of Cleaner Production*, 246, 118984.

SYSTEMATYCZNY PRZEGLĄD LITERATURY DOTYCZĄCY ROZWOJU ZIELONEGO ZARZĄDZANIA ŁAŃCUCHEM DOSTAW

Streszczenie: Obecnie świat stoi w obliczu kryzysu związanego z wyzwaniami związanymi ze zrównoważonym rozwojem, a branże w krajach rozwiniętych opracowują strategie odpowiadające na te wyzwania, wdrażając zielone zarządzanie łańcuchem dostaw (GSCM). Podobnie branże krajów rozwijających się starają się stosować GSCM dla zrównoważonego rozwoju. Niniejsze opracowanie ma na celu przedstawienie systematycznego przeglądu literatury na temat praktyk GSCM i omówienie jego obecnego stanu w kontekście Bangladeszu. W badaniu wykorzystano model PRISMA i uwzględniono 70 artykułów naukowych na temat GSCM opublikowanych w Scopus i indeksowanych czasopismach Web of Science w kontekście krajów rozwijających się, w tym 21 artykułów na temat Bangladeszu. W przedstawionych tutaj dokumentach zidentyfikowano bariery i krytyczne czynniki sukcesu we wdrażaniu GSCM poprzez przegląd wybranych artykułów, w tym zagadnienia teoretyczne i praktyczne. Ponadto wskazuje, że liczba badań empirycznych dotyczących GSCM gwałtownie wzrosła w ciągu ostatnich kilku lat. Ten artykuł przeglądowy pomoże menedżerom, badaczom, naukowcom i decydentom w lepszym zrozumieniu praktyk GSCM w Bangladeszu i innych krajach rozwijających się.

Słowa kluczowe: zielone zarządzanie łańcuchem dostaw, zrównoważone zarządzanie łańcuchem dostaw, zielony łańcuch wartości, model PRISMA.

关于绿色供应链管理发展的系统文献综述

摘要:如今,世界正面临着可持续发展挑战的危机,发达国家的工业正在制定战略,通过实施绿色供应链管理(GSCM)来应对这些挑战。同样,发展中国家的工业正在努力将GSCM应用于可持续发展。这项研究旨在对GSCM做法进行系统的文献综述,并讨论其在孟加拉国背景下的现状。这项研究使用了PRISMA模型,并考虑了在发展中国家范围内在Scopus和WebofScience上发表的70篇关于GSCM的研究论文,其中包括21篇关于孟加拉国的论文。通过审查包括理论和实践问题在内的精选论文,本文介绍的论文确定了实施GSCM的障碍和关键成功因素。此外,这表明在最近几年中,关于GSCM的实证研究工作数量迅速增加。本文将帮助管理人员,研究人员,院士和政策制定者更好地了解孟加拉国和其他发展中国家的GSCM做法。

关键词:绿色供应链管理, 可持续供应链管理, 绿色价值链, PRISMA模型。