Barriers and Drivers to Green Supply Chain Management Practices: Evidence from Manufacturing and Agricultural Sectors of Sri Lanka

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Abstract - **Green Supply Chain Management (GSCM) is one of the newest trends in Supply Chain Management's (SCM) evolution. The objectives of this study are to (i) evaluate the internal and external barriers and drivers of GSCM, and (ii) make timely recommendations to implement GSCMP in manufacturing and agricultural sectors in Sri Lanka. An online questionnaire survey was conducted to examine these barriers, drivers, and recommendations for improving the GSCMP. Thirty experts have participated in the survey and the data were evaluated by descriptive statistics. The findings reveal that lack of knowledge and experience, and a lack of green professionals was the main internal and external barriers respectively. Also, top management support and green procurements were the main internal driver and external driver respectively. The findings of this study will assist the manufacturing and agricultural sectors in Sri Lanka to move on to sustainability.**
Keywords: **Supply Chain Management, Green Supply Chain Management, Barriers, Drivers, Sustainability**

I. INTRODUCTION

Supply Chain Management Practices (SCMP) plays an essential role in the rapid growth of industrialization that has taken place in Sri Lanka. A Supply Chain (SC) is the entirety of all activities of a production process, from the selection of raw materials to the final process that is the delivery of products to customer. This process includes all the stakeholders such as procurement agents, buyers, suppliers, manufacturers, financial institutions, distributors, wholesalers, retailers, and customers (Chin, Tat, and Sulaiman 2015; Dhull and Narwal 2016; Priyashani and Gunarathne 2018; Da Silva *et al.,* 2018). The main focus of SCMP is to provide the right product to the right customer, with the right form at the right cost, within the right time and quality (Chin *et al.,* 2015; Kormych *et al.,* 2019; Priyashani and Gunarathne 2018; Rajamanickam, Waidyasekara, and Pandithawatta 2019). The manufacturing and agricultural sectors can take benefits from the implementation of SCMP to gradually mitigate waste generation, cost, and transport delays. Moreover, other benefits of implementing SCMP include increased inventory revenue, increased profits, increased customer awareness, on time delivery, mitigation of customer satisfaction, purchase costs, inventory costs and mitigate level delays, and providing better customer services (Chin *et al.,* 2015; Fawcett, Magnan, and McCarter 2008;

Rajamanickam *et al.,* 2019). This continuous evolution of supply chain management is guided not only by regular regulations but also by voluntary environmental programs (Carvalho *et al.,* 2020).

Based on the rapid use, SCMP has to deal with negative environmental conditions such as climatic changes, increased demand for natural resources, increased sewage generation, and harmful gas emissions (Sarker *et al.,* 2018). Recognizing the seriousness of this situation, both developed and developing economies of the world have taken various measures to prevent these issues. To this end, they have prepared several laws and regulations that are unique to them under international laws and policies. In addition to these environmental laws and regulations, several organizations and groups set up to protect the environment may need to devise more practical and timely strategies to overcome the severe negative effects of their SCMP on the environment (Dhull and Narwal 2016). As a result of this, the complete concept of the Green Supply Chain (GSC) was born into the world in 1996. This was presented to the world by Manufacturing Research Consortium at Michigan State University in the United States (Jayarathna 2016). International Organization for Standardization (ISO) established its eco standard of ISO14000 in that year for a detailed analysis of negative environmental impacts and SC on resource optimization. This set of ISO 14000 standards provides practical solutions to several negative impacts on the environment by the industries or organizations (Dhull and Narwal 2016). GSC is implemented mainly to mitigate water and air pollution, which occur through the SC and business operations (Amemba *et al.,* 2013; Hervani, Helms, and Sarkis 2005; Seman *et al.,* 2012).

Environmental protection and management can be accomplished through a combination of environmental management principles and Green Supply Chain Management Practices (GSCMP) to combat adverse environmental conditions (Dube, Nashik, and Gawande 2017). The concept of GSCMP is based on the concept of SCMP (Luthra, Garg, and Haleem 2013). GSCMP is defined as a chain of activities that mitigates the adverse effects on the environment through the whole process of green manufacturing activities, saving resource usage,

mitigation of harmful substances to the environment, and product recyclable and reuse of products (Eltayeb and Zailani 2014; Gandhi *et al.,* 2015; Hervani *et al.,* 2005; Zhu and Sarkis 2004). Environmental thinking is integrated and implemented for GSCMP (Chin *et al.,* 2015; Srivastava 2007). Moreover, environmental concern is the major difference between SCMP and GSCMP. This is due to the strong focus on environmental concerns at GSCMP from production planning to the end of product productive life (Abdul Rehman Khan 2019). The key concepts of green procurement, green manufacturing, green distribution, and green logistics play a vital role in the implementation of GSCMP for the sustainable performance of manufacturing and agricultural sectors (Amemba *et al.,* 2013; Sarker *et al.,* 2018).

GSCMP is the best strategy for any business organization to overcome the challenge of mitigating carbon emissions, improving sustainability, and also increasing environmental efficiency (Balasubramanian 2012). GSCMP is the activation of SC to integrate eco-friendly options (Puviyarasu 2016). Environmental factors can be addressed strongly by combining SCM principles with implementation and preventing the environmental damage caused by business SC operations (Dube *et al.,* 2017). Moreover, additional benefits can be accomplished by implementing GSCMP such as mitigating waste generation, improving overall performances of companies, mitigating production costs, improving the efficiency of company assets, and

building a positive consumer attitude towards the business (Fang and Zhang 2018). Therefore, GSCMP can be considered as a successful trend that has emerged in the 21st century. Today, this concept operates as a major solution to adverse environmental conditions (Dube *et al.,* 2017; Govindan *et al.,* 2014; Hervani *et al.,* 2005; Sarker *et al.,* 2018).

II. PROBLEM STATEMENT

Most of the previous studies considered GSCMP in the world (Jayarathna 2016). There have been several types of published studies on several sub-topics in GSCMP within the recent past. Further, there is also a lack of studies about internal and external barriers and drivers or a public or privately linked project to maneuver the management of GSCMP of manufacturing and agricultural sectors in Sri Lanka. This study is done to fill out this empirical and theoretical gap.

III. OBJECTIVES OF THE STUDY

1. To examine the internal and external barriers and drivers that affects the implementation of GSCMP in the manufacturing and agricultural sectorsin Sri Lanka.
2. To make timely recommendations to improve the GSCMP of manufacturing and agricultural sectors in Sri Lanka.

TABLE I INTERNAL BARRIERS (IB) AND EXTERNAL BARRIERS (EB) ON GSCMP OF THE MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA AND THEIR DESCRIPTIONS

Barriers and Codes	Descriptions
Lack of top management commitment (IB₁)	Top-level management resisting to make their attitudes towards GSCMP.
Lack of environmental awareness (IB₂)	This reflects those employees, customers, stakeholders don't know about the importance of the environment.
Lack of financial gains, resources, and capacity (IB₃)	There aren't financial gains, resources, and capacity available in the industries.
Lack of new technology (IB₄)	Its emphasis on the lack of new technologies used in the industries. They have still used the old technologies.
Lack of knowledge and experience (IB₅)	It means low knowledge and experiences of the stakeholders to implement GSCMP.
Lack of training related to reverse logistics (IB₆)	Most of the industries don't provide reverse logistics-related training.
Fear of failure (IB₇)	Most of the industries have a big fear that they will fail through the implementation of GSCMP.
Customers unawareness toward GSCM (EB₁)	Customers don't know the green concept and its advantages.
High cost in green packaging (EB₂)	This means the eco-friendly packaging is very costly.
The complex design of process and available technology (EB₃)	The GSCM process and the available technology are very difficult to implement.
Lack of government policies and regulations (EB₄)	No support from the government and they don't establish regulations and policies towards GSCMP.
Lack of green innovations (EB₅)	It reflects, there aren't new green innovations in the industries.
Lack of green professionals (EB₆)	This means a lack of green professional bodies available in the industries.
The high cost of waste disposal (EB₇)	It reflects the high cost required to remove the waste.
Lack of award system (EB₈)	It means to authenticity award system for GSCMP.

Source: Identified by the researcher by referring to past literature sources

IV. LITERATURE REVIEW

GSCMP has become a powerful component of this studyasit mainly collides with the environment. However, some factors hinder the performance, and some factors contribute to the increased performance of GSCMP. These are called barriers and drivers respectively. The barriers of GSCMP mean the factors that hinder or prevent the successful implementation of GSCMP. These factors mainly limit the implementation of GSCMP (Dube *et al.,* 2017). The proper knowledge of these barriers is required to apply GSCMP successfully (Dhull and Narwal 2016). The study recognized 15 barriers (as 7 internal barriers and 8 external barriers) that affect GSCMP after referring to past literature. Here, the factors that hinder asector from implementing GSCMP internally are called internal barriers, and factors that hinder asector from implementing GSCMP outside the organization are called external barriers. These barriers and their brief descriptions are given in Table I and the literature sources of those barriers are given in Table II. Further, these internal barriers (IB) are coded as IB_1– IB_8, and external barriers (EB) are coded as EB_1– EB_7 for ease of use.

TABLE II SUMMARY OF THE LITERATURE SOURCES USED TO IDENTIFY THE INTERNAL AND EXTERNAL BARRIERS TO GSCMP OF MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA

Barrier codes	Literature Sources												
	(Baki 2018)	(Kormych et al, 2019)	(Jayant and Azhar 2014)	(Dube et al., 2017)	(Puviyarasu 2016)	(Luthra et al., 2011)	(Dhull and Narwal 2016)	(Majumdar and Sinha 2019)	(Sarker et al., 2018)	(Govindan et al., 2014)	(Mathiyazhagan, Govindan, and Noorul Haq 2014)	(Da Silva et al., 2018)	(Balasubramanian 2012)
IB_1	√	√	√	√	√	√	√	√	√	√	√	√	
IB_2	√							√		√			
IB_3	√				√			√		√	√	√	
IB_4		√	√	√	√	√	√	√	√	√	√	√	√
IB_5		√	√	√	√					√	√	√	√
IB_6	√							√					
IB_7	√		√					√		√	√		
EB_1	√		√	√	√	√			√	√			
EB_2	√						√	√			√	√	
EB_3							√	√			√		
EB_4		√	√		√	√			√	√	√	√	
EB_5								√	√				
EB_6		√		√	√		√		√	√		√	
EB_7	√		√					√		√	√	√	
EB_8			√	√	√								√

Source: Literature survey

Dhull & Narwal (2016) define drivers as the factors that motivate GSCMP to mitigate the adverse effects on the environment. These factors provide a strong impetus for GSCMP. The study recognized 13 drivers (as 7 internal drivers and 6 external drivers) to GSCMP after referring to the past literature sources. Here, the factors that encourage an organization to implement GSCMP internally are called internal drivers, and factors that encourage those outside the organization to implement GSCMP are called external drivers. These drivers and their brief descriptions are given in Table III and the literature sources of those drivers are given in Table IV. These internal drivers (ID) are coded as ID_1– ID_8 and external drivers (ED) are coded as ED_1– ED_7 for ease of use.

TABLE III INTERNAL AND EXTERNAL DRIVERS ON GSCMP OF THE MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA AND THEIR DESCRIPTIONS

Drivers and Codes	Descriptions
Top management support (ID_1)	The top management of the industries makes their decisions towards GSCMP.
Reverse logistics (ID_2)	The industries can earn more profits by using the reverse logistics mechanism and it helps to recycle the resources.
The economic welfare of the community (ID_3)	Creating economically advantageous conditions for the community through the implementations of GSCMP.
Environmental collaboration with suppliers (ID_4)	Suppliers make a partnership with the environment for providing eco-friendly resources to the industries.
Stakeholder pressure (ID_5)	Due to the awareness of the stakeholders, they ask the industries to produce eco-friendly products.
Organization's culture (ID_6)	An organization's culture plays a key role to go its journey towards GSCMP.
Environment collaboration with the customer (ID_7)	It means customers have mutually agreed to buy eco-friendly goods and services.
Government regulations (ED_1)	Better government policies and regulations help the industries to go towards GSCMP.
Safety standards (ED_2)	Establish various safety standards to prevent negative effects from the implementation of GSCMP.
Green procurement (ED_3)	Green procurement helps customers to purchase eco-friendly products.
The flexibility of suppliers (ED_4)	It means suppliers have mutually agreed to supply eco-friendly resources to the industries.
Compliance statements (ED_5)	This is a document used to confirm the business is compliant with the eco-friendly rules and regulations set by the government.
Social well-being (ED_6)	Implementing GSCMP contributes to the well-being of society.

Source: Identified by the researcher by referring to past literature sources

TABLE IV SUMMARY OF THE LITERATURE SOURCES USED TO IDENTIFY THE INTERNAL AND EXTERNAL DRIVERS ON GSCMP OF MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA

Driver Codes	Literature Sources												
	(Sandeep et al., 2013)	(Gandhi et al., 2015)	(Luthra et al., 2013)	(Diabat, Khodaverdi, and Olfat 2013)	(Saeed, Waseek, and Kersten 2017)	(Kormych et al., 2019)	(Shibin, Gunasekaran, and Dubey 2017)	(Dhull and Narwal 2016)	(Wu, Tseng, and Vy 2011)	(Mathiyazhagan et al., 2014)	(Niemann, Kotze, and Adamo 2016)	(Zhu and Sarkis 2006)	(Hu and Hsu 2010)
ID_1	√	√	√	√	√								
ID_2		√		√		√	√						
ID_3				√									
ID_4				√				√	√				
ID_5					√	√			√	√			
ID_6					√	√	√				√	√	
ID_7				√					√				
ED_1	√	√	√		√	√			√				
ED_2				√	√	√							
ED_3			√							√			√
ED_4								√	√				
ED_5													√
ED_6					√	√			√		√		

Source: Literature survey

V. RESEARCH METHODOLOGY

This section describes the methodology adopted in the study. First, reviewing available A preliminary study was conducted to identify barriers, and driversfor improving the performance of GSCMP.

Second, the specialized persons such as Engineers, Assistant Engineers, Managers, Technicians, and Technologists who areemployed in the manufacturing and agricultural sectors in Sri Lanka were identified to conduct questionnaire survey. All respondents in our samples were key informants with knowledge of environmental management systems designed or implemented by their sectors. Further, the respondents were well versed in the topic of GSCMP and helped to ensure the quality of the data collected in this study.

Third, an online questionnaire survey conducted to identify the most significant the barriers and drivers recognized in the past literature sources. The online questionnaire consisted of four major sections. They are (A) background information of respondents, (B) barriers for introducing GSCMP according to their perception, (C) drivers for introducing GSCMP according to their perception, and (D)

recommendations for introducing and implementing GSCMP. In section (A), the background of all respondents who participated in this study consisted of five sub-questions. As mention insections (B) and (C) of this online questionnaire form, the respondents could make use of their perception on this topic and present information on the barriers and drivers involved in GSCMP. For this, they were instructed to use the five-point Likert scale (1- Very Low, 2- Low, 3- Moderate, 4- High, 5-Strongly High). According to Dung *et al.,* (2013), a Likert scale is a broadly used criterion in many studies of cognitive behavior and design theory, and a Likert item means alevel of agreement or disagreement with afactor used to evaluate a subjective or objective criterion. Further, in the online questionnaire, they could comment onbarriers, drivers, and recommendations for introducing and implementing GSCMP (section (D)) based on their perception. This study was a quantitative study.

The methodology flow chart (Figure 1) was used to achieve the objectives of this study. The people were contracted by using e-communication (e-mail, and WhatsApp) with ethical approval and a link to the online questionnaire. All links were unique and could only be used once by one respondent.
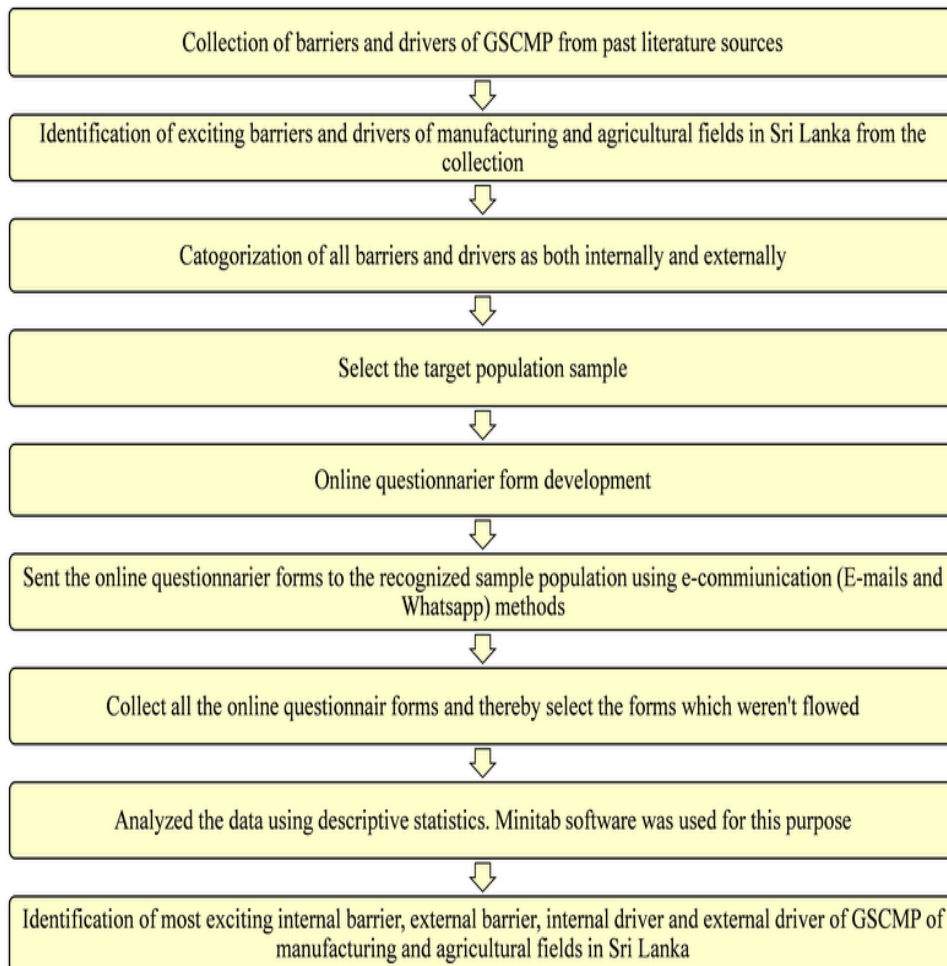
Fig.1 Methodology flow chart

Forth, the target population of this study was 35. Simple random sampling strategy was used to select the target population. Totally, 32 questionnaires were completed from 35 respondents and 30 valid responses were used for this study. Fifth, the data extracted from the online questionnaire survey were analyzed by using descriptive statistics. Minitab software was used to analyze the data in the usage of the most effective and prominent way.

This survey was conducted from mid-February to mid-October 2020. The main scope of this study is provided an opportunity to identify and remove internal and external barriers and to identify and improve internal and external

drivers in green supply chain management practices. However, the main limitation was that a small group of about 35 respondents had to be used for this study.

VI. FINDINGS AND DISCUSSION

A. Background of the Respondents

The first aspect of this study was to evaluate the background of the respondents. Thus, industry type, position in the organization, years of experience in the manufacturing or agricultural sector, their ideas about SCMP, and their ideas about GSCMP are summarized in Table V.

TABLE V THE CALCULATED FREQUENCIES (N) AND PERCENTAGES (%) OF THE BACKGROUND OF THE RESPONDENTS

Background	Frequency (N)	Percentage (%)
Industry type	**30**	**100**
Manufacturing	12	40
Agriculture	4	13
Electricity, gas, steam, and air conditioning supply	7	24
Water supply, sewerage, waste management, and remediation activities	5	17
Building automation and IT systems	1	3
Workshop	1	3
Position in the organization	**30**	**100**
Engineer	7	23
Assistant engineer	8	27
Manager	11	37
Technician	3	10
Assistant technician	1	3
Years of experience in the sector	**30**	**100**
Less than one year	5	17
1 – 5 years	15	50
6 – 10 years	7	23
11 – 15 years	2	7
Over 15 years	1	3
Have an idea about SCMP?	**30**	**100**
Yes	30	100
Have an idea about GSCMP?	**30**	**100**
Yes	30	100

Source: Researcher's computation

The results indicate that most respondents 40% (N=12) who contributed to this study are from manufacturing industries and are serving as Managers 37% (N=15). Further, most of these respondents, i.e., 12% (N=15) have a carrier span of 1-5 years. Finally, they are all well versed in the topic of SCMP and GSCMPin the questionnaire. They all answered as 'yes' to those two questions ''Do you have an idea about SCMP?'' and ''Do you have an idea about GSCMP?'', which were 100% (N=30) and 100% (N=30) respectively.

B. Barriers to Introduce GSCMP

The second aspect of this studywas to examine the barriers of GSCMP recognized as internal barriers and external barriers by using past literature sources. All these barriers were ranked by the respondents on the Likert scale and the analyzed data is summarized in Table VI.

TABLE VI COMPARISON OF RANKS OF RESPONSES OF INTERNAL AND EXTERNAL BARRIERS ON GSCMP OF
MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA

Barriers	N	Mean	Min	Max	Rank
Lack of top management commitment (IB_1)	30	3.23	1.00	5.00	2
Lack of environment awareness (IB_2)	30	3.20	2.00	5.00	3
Lack of financial gains, resources, and capacity (IB_3)	30	3.03	1.00	5.00	6
Lack of new technology (IB_4)	30	2.87	1.00	5.00	7
Lack of knowledge and experience (IB_5)	30	3.53	2.00	5.00	1
Lack of training related to reverse logistics (IB_6)	30	3.07	2.00	5.00	5
Fear of failure (IB_7)	30	3.10	1.00	5.00	4
Customers unawareness toward GSCMP (EB_1)	30	3.27	1.00	5.00	4
High cost in green packaging (EB_2)	30	3.37	2.00	5.00	3
The complex design of process and available technology (EB_3)	30	3.00	1.00	5.00	6
Lack of government policies and regulations (EB_4)	30	2.97	1.00	5.00	7
Lack of green innovations (EB_5)	30	3.13	1.00	5.00	5
Lack of green professionals (EB_6)	30	3.47	2.00	5.00	1
High cost of waste disposal (EB_7)	30	3.43	2.00	5.00	2
Lack of award system (EB_8)	30	2.20	1.00	5.00	8

Source: Researcher's computation

Based on that analysis, the most exciting internal barrier that affects the implementation of GSCMP is recognized as IB_5. This finding demonstrates that the stakeholders are unable to adopt GSCMP as they do not have or are lack knowledge and experience about this concept.Therefore, the environmental-based institute must organize training programs or awareness programs to provide the knowledge and experience about the GSCMP to the stakeholders related to the manufacturing and agricultural sectors in Sri Lanka. In support of this fact, the study conducted by Singh *et al.,* (2012) has found in their study thata lack and knowledge and experience about GSCMP as an existing internal barrier. Moreover, the most exciting external barrier that affects the implementation of GSCMP is recognized as EB_6. These finding claims that the manufacturing and agricultural sectors in Sri Lankaare lacking green professional bodies. It implies that there is a lack of people who have knowledge about the implementation of GSCMP. Luthra *et al.,* (2013) showed in their study that the lack of the skilled green professional bodies as an existing external barrier.

However, the internal barrier named IB_4 and the external barrier named EB_8 scores very low mean values, emphasizing the lack of new technologies used in the manufacturing and agricultural sectors. There is a lackauthenticity award system for GSCMP. These overall findings show that GSCMP could be a unique milestone in Sri Lanka's journey towards sustainable development and basic knowledge, technology, experience. However, skilled human resources required are to be trained for this to implement successfully.

In addition to the barriers, the study found in the preliminary study that, the respondents used their perception to point out several other internal and external barriers of GSCMP of manufacturing and agricultural sectors in Sri Lanka. These barriers and their brief descriptions are given in Table VII and internal barriers are coded as $IB_8 – IB_9$ and external barriers are coded as $EB_9 – EB_{13}$ for ease of use.

TABLE VII INTERNAL AND EXTERNAL BARRIERS TO GSCMP IN
THE MANUFACTURING AND AGRICULTURAL SECTORS IN
SRI LANKA COMMENTED ON BY RESPONDENTS
BASED AND THEIR DESCRIPTIONS

Barriers and Codes	Descriptions
Fear to invest (IB$_8$)	This reflects that organizations have a big fear to invest in the resources for GSCMP.
Internal communication failures (IB$_9$)	It means the limitations of communication about the GSCMP inside the industries.
The media doesn't have anypolicy to cover GSCMP (EB$_9$)	The media doesn't give support to promote the GSCMP in manufacturing and agricultural sectors.
Product cost and market situation are unbalanced (EB$_{10}$)	It means there isn't a balanced combination of product costs and the market.
Cost implications (EB$_{11}$)	It refers to the high cost of production and maintenance of the products.
The decrease in the efficiency of GSCMP (EB$_{12}$)	It means the efficiency of the GSCMP is low.
Lack of eco designs (EB$_{13}$)	There aren't the eco designs to the required size.

Source: Researcher's computation

C. Drivers for Introducing GSCMP

The third aspect of this study was to examine the drivers of GSCMP recognized as internal drivers and external drivers.

The respondents were instructed to rank the internal drivers and external drivers of GSCMP. After receiving the ranked data from the respondents', analyzed data are summarized in the following Table VIII.

TABLE VIII COMPARISON OF RANKS OF RESPONSES OF INTERNAL AND EXTERNAL DRIVERS ON GSCMP OF
MANUFACTURING AND AGRICULTURAL SECTORS IN SRI LANKA

Drivers	N	Mean	Min	Max	Rank
Top management support (ID_1)	30	3.43	2.00	5.00	1
Reverse logistics (ID_2)	30	2.67	1.00	5.00	5
Economic welfare of community (ID_3)	30	3.17	2.00	5.00	3
Environmental collaboration with suppliers (ID_4)	30	2.47	1.00	5.00	7
Stakeholder pressure (ID_5)	30	2.53	1.00	4.00	6
Organization's culture (ID_6)	30	3.13	2.00	5.00	4
Environment collaboration with customer (ID_7)	30	3.30	1.00	5.00	2
Government regulations (ED_1)	30	2.73	1.00	5.00	3
Safety standards (ED_2)	30	2.33	1.00	5.00	6
Green procurement (ED_3)	30	2.90	2.00	5.00	1
Flexibility of suppliers (ED_4)	30	2.63	1.00	4.00	5
Compliance statements (ED_5)	30	2.70	1.00	5.00	4
Social well-being (ED_6)	30	2.83	1.00	5.00	2

Source: Researcher's computation

According to the evaluated data, theinternal driver with the highest mean valuewas found as ID_1. Thus, these results imply that top managements make their decisions towards implementing GSCMP. Here, it can broadly be described that the top management manage their financial, human, and technologies most efficiently to implement GSCMP in their sectors. Also, Zhang *et al.,* (2009) has found in their study that the support of the top management towards GSCMP and their attitudes isan existing internal diver.

Moreover, the results show that ED_3 is the most exciting external driver. Thus, it can be described as green procurement helps consumers to purchase eco-friendly products. However, the present survey results made us confirmed that ID_4 and ED_2 scored a very low level of perception. These could be due to a lack of concern for the environment by suppliers when dealing with the environment as an internal driver, and ignorance of safety standards for GSCMP and their unawareness as to the external driver. Further, these internal and external drivers are supported for the manufacturing and agricultural sectors in Sri Lanka to develop the GSCMP.

In addition to the drivers found in the preliminary study, the respondents were used their perception to point out several other internal and external drivers of GSCMP of manufacturing and agricultural sectors in Sri Lanka. These drivers and their brief descriptions are given in Table IX and internal drivers are coded as $ID_8 – ID_9$ and external drivers are coded as $ED_7 – ED_8$ for ease of use.

TABLE IX INTERNAL AND EXTERNAL DRIVERS ON GSCMP
IN THE MANUFACTURING AND AGRICULTURAL SECTORS
IN SRI LANKA COMMENTED ON BY RESPONDENTS
ANDTHEIR DESCRIPTIONS

Drivers and Codes	Descriptions
Safe working environment (ID_8)	There is a good safe working environment situation in the industries.
Internal policy of the industry (ID_9)	This reflects the negative internal policies about GSCMP in the industries.
Customer pressure (ED_7)	Due to the awareness of the customers, they purchase eco-friendly products from the market.
Supplier pressures (ED_8)	The suppliers supply eco-friendly materials to the industries.

Source: Researcher's computation

VII. SUGGESTIONSAND RECOMMENDATIONS FROM THE RESPONDENTS

It is also requirement of the study that data on suggestions and recommendations from the respondents. Hence, the questionnaire included some questions to collect them. Their suggestions and recommendations to enhance the performance of GSCMP of manufacturing and agricultural sectors in Sri Lanka are several. They were on the opinion that measures should be taken to improve reverse logistics and efficiency of green packaging systems, mitigate cost of energy consumption and create more demand for eco-friendly products while giving emphasis on developing technology to enhance green initiatives in supply chain management.

VIII. CONCLUSION

This study mainly focuses on investigating the basis of internal and external driversthat force the sectors to adopt GSCMP, internal and external barriers that hinder the sectors to adopt GSCMP of manufacturing and agricultural fields in Sri Lanka. Based on the findings, lack of knowledge and experience (IB_5) was the main exciting internal barrier and lack of green professionals (EB_6) was the main exciting external barrier of this study. Moreover, top management support (ID_1) was the main exciting internal driver and green procurement (ED_3) was the main exciting external driver of this study. Also, the respondents have commented on another seven barriers, four drivers, and seven recommendations of GSCMP of manufacturing and agricultural sectors in Sri Lankaregarding their perception. Further, researchers believe that this is a significant study and development in this world exists as awareness about the environmental concern is increasing, and this increase in the study of these important environmental-based organizational research sectors. Further, the findings of this study can be used by professionals for further studies in Sri Lanka, including manufacturing and agriculturally based findings to determine exciting barriers and drivers and Suggestions on GSCMP introduction in the manufacturing and agricultural sectors in Sri Lanka. Also, the findings of this study can be used by governmental authorities when introducing GSCMP motivation factors and regulations.

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