

# **The Impact of Organizational and Technological Barriers on Implementing GSCM Practices in the Food and Beverage Manufacturing Industry in Sri Lanka**

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## **Abstract**

Sri Lankan businesses can anticipate cost savings and greater customer value from the efficient implementation of green supply chain techniques. The food and beverage sector is crucial for promoting pollution-free goods and reducing their negative effects on the environment. This study was carried out to ascertain whether organizational and technological barriers had an impact on the adoption of GSCM techniques in Sri Lankan food and beverage manufacturing companies. Based on the literature, this study assumed that those two factors are the most impactable factors on the dependent variable, and has only tested them rather than considering operational, financial, and other aspect. An online survey was used to gather primary data, which was then processed through the statistical analysis program SPSS (Statistical Package for the Social Sciences). According to the study's findings, both independent variables—organizational and technological factors—have a huge impact on how well GSCM procedures are implemented. Therefore, we can finalize that those two are highly influential barriers on implementation of GSCM practices. Considering the results, the researcher recommends that Sri Lankan food and beverage manufacturing companies take action to overcome those barriers and implement GSCM practices in their organizations. Moreover, some areas for future studies are also provided in this growing field.

**Keywords:** GSCM practices, Organizational barriers, Technological barriers

## **1. Introduction**

Green Supply Chain Management (GSCM) is a new trend in supply chain development (Jayarathna, 2016a). It is developed as follows. Traditionally, businesses have considered their strategy to minimize costs and maximize profits. They place great emphasis on Supply Chain Management (SCM) as a result of effectively supporting SCM to achieve cost reduction and profit improvement, which gives the organization a competitive advantage (Ong & Rui, 2017). In addition, in the 20th century, numerous organizations and corporate strategies related to waste reduction for cost savings and environmental protection purposes came into force. Just after entering the 21st century, the term “green” is gaining strength and recognition to protect the environment and the reputation of the organization (Zhang et al., 2009).

Sri Lankan manufacturing companies are currently considering all GSCM practices and some of them have taken some initial steps to implement GSCM practices (Jayarathna, 2016b). This is evidence that Sri Lankan manufacturing companies are focusing on the environmental impact of their organizational operations. According to EDB (Export Development Board) of Sri Lanka, Sri Lankan food and beverage sector covers a wide range of products such as coconut, vegetables, and fruit-based products, concentrates and juices, semi-cooked food, confectionery, and bakery products, ready-to-serve food, beverages, animal feed, and preparations of cereals and flour. The food and beverage industry is key for promoting pollution-free products and mitigating environmental impact (Wang et al., 2016a). Considering the production, packing and transportation of raw material and finished products, food and beverage manufacturing sector has a huge impact on environment. Therefore, it is important to study about GSCM practices in this industry. Although some manufacturers intend to implement GSCM practices, most have not yet implemented GSCM. Since the food and beverage industry is one of the major industries in Sri Lanka, it is important to focus on this industry with regard to this matter. However, they face a lot of challenges in implementing green supply chain practices; such as organizational barriers, technological barriers, financial barriers, information barriers, and the perception of the company's environmental impact (Ong & Rui, 2017). In particular, organizational barriers and technological barriers have a significant relationship with GSCM adoption (Ong & Rui, 2017). The best way to identify these critical bottlenecks is

through research and development (R&D). Only then, they will be able to take steps to overcome these barriers.

Considering the Sri Lankan context, some research studies have been conducted in terms of green supply chain management and the impact of GSCM on several factors such as organizational performance, customer satisfaction, etc. Although these studies provide some evidence for evaluating the green concept in supply chain management, none of them have exclusively investigated the impact of critical barriers to implementing green supply chain management, particularly organizational and technological barriers, which have a significant relationship with the adoption of GSCM in the food and beverage industry (Ong & Rui, 2017). As the previous studies in the context of Sri Lanka have been conducted in other industries there is a gap in research when organizations find solutions in this matter. Therefore, this study will contribute to the literature, focused on a single industry; food and beverage manufacturing.

This study enables a degree of control of the environment by the most effective examination of industry-specific barriers to implementing GSCM. In this regard, the objectives of this study are to investigate the impact of organizational barriers on implementing GSCM practices in food and beverage manufacturing firms in Sri Lanka, and to investigate the impact of technological barriers on implementing GSCM practices in food and beverage manufacturing firms in Sri Lanka. This research will provide guidance and reference for future researchers to conduct their research studies by getting knowledge and understanding since this covers a research gap. Furthermore, findings will help the manufacturing firms (especially the food and beverage industry) in Sri Lanka to evaluate the critical barriers that affect in implementation of GSCM practices. By understanding them, they can get actions to overcome or mitigate those barriers and implement GSCM practices in their organizations. Moreover, this will contribute to the policymakers to provide insights into the current progress of green practices of manufacturing firms. When there is support and resources from the policymakers, this may further develop the manufacturing firms to the next level in green practices and apply green practices to their supply chain.

## **2. Theoretical Background**

### **2.1 Supply Chain and GSC Management**

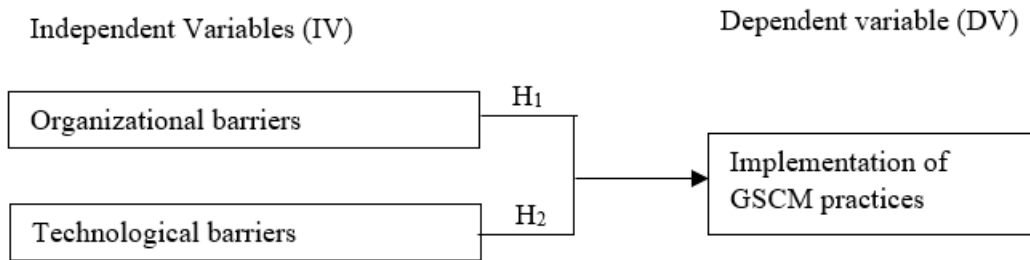
As reported by Mudgal et al., 2009, supply chain management had been outlined, due to the increased competition in the international markets and it is a recent development in management theory. According to Oliveira et al., (2018) green supply chain could be a conception which is gaining increased favour day by day as a result of its commitment to sustainability for the businesses. Green supply chain management (GSCM) is basically greening the supply chain with the objective of balancing environmental problems and the firm's performance (Mudgal et al., 2009). Green supply chain management practices have been developed over the past years and continue to evolve. The addition of the 'green' part to supply chain management includes addressing the influence and association between supply chain management and therefore the natural environment (Srivastava, 2007a; Tyagi., 2017). Most of organizations in developing countries intended to implement green practices to their business to minimize the negative environmental effects rather than implementing a proactive approach to minimize the sources of waste or pollution (Anbumozhi & Kanda, 2005).

According to Min & Kim, (2012) the main purpose GSCM is to preserve our resources and close environments to forestall lives from deteriorating. GSCM is additionally the creation and implementation practices exploitation numerous Rs that area unit cut back, reuse, rework, recycle, remanufacture, reverse supplying, refurbish, reclaim, etc. (Younis ., 2016b) investigate the kind of GSCM practices the corporations adopt in accordance to their firm's position (upstream, midstream and downstream), the results show that corporations that area unit within the downstream position concentrate on inexperienced purchase, style and internal environmental management, corporations within the upstream area unit additional conservative in implementing GSCM and corporations within the midstream focus additional on inexperienced supplying and producing. By considering all these previous researches conducted in implementation of GSCM, this research intends to study the implementation GSCM practices in Sri Lankan manufacturing industry with the support of the theoretical aspects of resource-based theory and stakeholder theory.

## **2.2. Barriers to Implementing GSCM**

According to Uddin et al., (2019) high cost of advanced technology is the most significant barrier for implementing GSCM, while green technology and techniques are the most effective pathways to GSCM. This study has examined the independent variables such as technological barriers, financial barriers, knowledge barriers, government support and policies, and outsourcing. According to the results, they have outlined that the higher cost of the advanced technology is the most critical barrier to this matter. Govindan et al., (2014) also has been focused on outsourcing, technology, knowledge, financial involvement, and support. It has been concluded that lack of technology is the most critical barrier to GSCM implementation.

As reported by Ong & Rui, (2017) perception of company's environmental impact, organizational barriers and technological barriers have a significant relationship with the adoption of GSCM. The cost of green practices is barrier to GSCM implementation (Zhu & Geng, 2013). On other hand, Rodriguez et al., (2017) research proposed that the lack of innovation within the production procedure is taken into consideration as the major barriers in GSCM implementation as all other barriers are the results of failure in innovation. When considering all these previous articles, they have concluded different aspects as critical barriers to implement GSCM practices. All those factors can be basically categorized as organizational barriers, technological barriers, information barriers, resource barriers and knowledge barriers. While reviewing the literature it is able to identify that some of the research propose that organizational barriers and technological barriers play as critical barriers. But some other research articles outline the opposite. Therefore, this study mainly focuses on those two types of barriers and investigate whether they have a significant impact on implementation of green supply chain management practices in Sri Lankan manufacturing companies. Following paragraphs give a description about previous research conducted in organizational barriers and technological barriers.



**Figure 1: Conceptual Model**  
(Source: Ong & Rui, 2017)

### **2.2.1 Organizational Barriers**

According to the previous researchers, organizational barriers like less commitment of top management, less commitment of middle-level management, hinders in the culture of the organization, etc. can impact on the implementation of GSCM. Those factors are discussed under this subheading. Commitment, guidance, support, and leadership from the highest management can considerably impact the success of the company's environmental management practices (Govindan et al., 2014; Griffin et al., 2004; Ojo, Mbowa, & Akinlabi, (2014). Leadership can be considered as an integral factor to implementing strategic initiatives in green supply chain management (Zhu et al., 2012). Lack of interest and commitment by top-level management might cut back the structure capability to think about the likelihood for GSCM and implementation of related practices (Dubey et al., n.d.; Hsu & Hu, 2008). There are other research articles like Jayant et al., (2014).; Kamaruddin et al., (2013) are also supporting the fact that role of top management determines the proactiveness of an organization in GSCM initiatives. Other than that, the commitment and the supportiveness of the middle-level management are also positively related to green supply chain management in a firm. (Ojo, Mbowa, & Akinlabi, 2014). By considering these factors, it can be identified that the commitment of both the top management, middle management, and all the individuals in the organization is very important for being successful in green supply chain management in the particular organization. that means less commitment is a barrier to implementing GSCM in a company. Other than the commitment of the management, the culture of the organization can also be a factor

that comes under the organizational barriers to implementing GSCM. Resistance of change in the company culture is one of the factors which can be considered as organizational barrier (Abdullah et al., 2016; Jayant & Azhar, 2014). Their findings are in keeping with (Dashore, & Sohani, (2008) study, that depicts that poor organization culture like top level management's weak involvement in motivating the workers, can cause barrier in GSCM. According to Srivastav et al., (2015) rewards and motivation is additionally a part of the structure culture to beat the barriers.

Besides the commitment of management and organizational culture, corporate social responsibility and recycle and reuse practices and efforts are also coming under the organizational barriers. Mudgal et al., (2010) proposed that corporate social responsibility (CSR) is one of the elements of organizational commitment. As a result of that, if the organization has only fewer corporate social responsibility practices that can be a notable barrier to the implementation of green supply chain practices in that particular organization. In addition to the CSR activities, attempts of the organizations to implementation of recycling and reusing practices and the sustainability certification (ISO 14002) are also a part of the organizational barriers which outstandingly impact to the implementation of green supply chain management practices in an organization (Jayant & Azhar, 2014). These are the main barriers that previous studies have discussed under organizational barriers.

**Hypothesis 1: There is a significant impact of organizational barriers on implementation of GSCM practices.**

### **2.2.2 Technological Barriers**

There are previous research articles that have outlined some elements which are categorized under the technological barriers to the implementation of green supply chain practices in a company. an environmental monitoring system (EMS) supports GSCM at all levels in an organization and that type of efficient IT systems can increase the supply chain performance (Alemayehu, M. (2008); Ravi & Shankar, n.d.). Wooi & Zailani, (2010) proposed that the technical barrier is a key barrier for manufacturing companies in the implementation of green supply chain management practices. Govindan et al., (2014); Jayant & Azhar, (2014); Muduli & Barve (2011) studies also represent that the technological barriers are critical barriers among all other barrier categories to the implementation of green practices in the organizational supply chain. Some authors include the shortage of the latest

technology processes, applications, resources, and experience, worry of failure, complex to designing of GSCM, and a lot of as a part of the technological barrier in implementing GSCM (Deepak et al., 2014; Govindan et al., 2014; Parmar 2016). Every green practice executed in an organization needs varied technologies and for corporations to unendingly improve their setting performance in their offer chain, they have to incorporate technological characteristics Sarkis, J. (2009). An example is to own info systems like electronic data interchange that's suited and developed from a greening perspective. As reported by Mudgal et al., (2010) every firm should focus on developing and updating themselves and their employees in the firm about the new trends in technological advancements in GSCM implementation.

At the first stage, successful GSCM faces the barrier of acceptive advanced technology because of high value. Also, the companies normally feel fear of failure in implementing GSCM as they think about suffering from non-monetary losses or some kind of product failure also leads to the loss of competitive advantages of the company (Govindan et al., 2014; Perron 2005.) Above mentioned research articles represent that technology is also one of the barriers in the adoption of GSCM practices. If the organizations focus on the technical barriers they are facing, then they may support applying green practices to their supply chain by overcoming those barriers.

**Hypothesis 2: There is a significant impact of technological barriers on implementation of GSCM practices.**

### **3. Methodology**

This research study is conducted using a quantitative approach. For achieving research objectives, this study is conducted by following the hypothetico-deductive research approach with a cross-sectional design.

#### **3.1 Data Collection and Measures**

Primary data was collected by sharing a survey-based questionnaire to obtain quantitative data to statistically test the hypotheses. The survey was conducted using an online questionnaire in the form of a google form and data were gathered from the food and beverage manufacturing companies in Colombo district, Sri Lanka. The section A of the questionnaire included questions regarding



demographic profile of the respondents. Under this section, data regarding structure variables (gender, age, etc.) was gathered. Section A has questions with both nominal scale and ordinal scale. Section B is divided into three parts (organizational barriers, technological barriers and implementation of GCSM practices). This section gathered data regarding explicative variables by only using Likert scale questions. The five-point Likert scale has used which allow the respondents to indicate how strongly they agree or disagree with the given statement. The range is “strongly disagree”, “disagree”, “neutral”, and “agree”. Secondary data were gathered from literature in the forms of journals, books, websites, and previous research articles relevant to the field of this research topic. Databases like Emerald Insight were referred to find out previous academic works that were done in the same area of study.

### **3.2 Participants**

According to (CSE - Colombo Stock Exchange), there are fifty firms in Sri Lankan food, beverage, and tobacco sector (August, 2022). For this study, food and beverage industry was selected since it is one of the main drivers of growth of the factory industry in Sri Lanka (Sriskandarajah & Ariyawardana, 2009). According to (IIP\_20220609E), food and beverage industry has the highest IIP (Index of Industrial Production) in the year 2021. Considering that, I selected food and beverage companies for this study. The Western Province of Sri Lanka accounts for nearly 78% of the value of output generated by the food and beverage industry (Sriskandarajah & Ariyawardana, 2009). Therefore, the western province was selected and, considering the convenience of collection of data, Colombo district was selected as study area of this research. I used several steps for selecting the sample. Firstly, the subgroup of companies in western province is selected from total population. Then Colombo district is selected from that initial subgroup of Western provinces. Finally, I selected individual companies within Colombo District using convenience sampling method.

### 3.3. Reliability of Measures

**Table 1:** Summary of reliability analysis

Variable	Number of indicators	Source	Cronbach's Alpha	Conclusion
Organizational barriers	5	(Ong & Rui, 2017) (Govindan et al., 2014)	0.729	Reliable
Technological barriers	5	(Ong & Rui, 2017) (Wooi & Zailani, 2010)	0.645	Reliable
Implementation of GSCM	5	(Ong & Rui, 2017)	0.734	Reliable

*(Source: Developed by Author)*

Reliability analysis is used to confirm the consistency of the result of the research study to check the internal consistency of the items used in the questionnaire. For the measurement of reliability, Cronbach's alpha is the most widely used method. Here, the alpha coefficient is varied between 1 and 0. Normally, if it is less than 0.6, it is viewed as having poor reliability (Sekaran, U., & Bougie, R., 2016). All three values are higher than 0.6. That means all the variables in this research study are reliable. Therefore, all measuring aspects are holding together to measure each variable.

## 4. Data Analysis and Results

This chapter presents the results of the online-based questionnaire survey gathered from 135 respondents in food and beverage manufacturing organizations in Colombo district, Sri Lanka. All the results are analyzed by using SPSS (Statistical Package for Social Science) software.

### 4.1 Data Analysis for Descriptive Statistics

Descriptive statistics measures which are utilized to describe and to summarize a set of data. This descriptive analysis is normally used only to organize the data at hand in a controllable and understandable manner to explain the characteristics of the responses of the questionnaire (Trochim, 2020). Under this part, demographic data gathered by the questionnaire have been analyzed.

### 4.1.1 Frequency Analysis

Simply the frequency means the number of times a particular aspect takes place. According to Research Optimus, 2020 the analytical method of statistically analyzing the way of recurring aspects with the usage of techniques is known as the frequency analysis. This is an analytical branch that coming under descriptive statistical analysis. With this frequency analysis, frequency of all responses has been summarized into tables with the percentages of each aspect.

**Table 2:** Summary of Frequency Analysis

<b>Item</b>	<b>Percentage</b>
<b>Gender</b>	
Male	72.6%
Female	27.4 %
<b>Age</b>	
18 - 25	36.3%
26 -35	50.4%
36 - 45	9.6 %
46 - 55	3.0%
Above 55	0.7%
<b>Level of occupation in the company</b>	
Junior Executive	30.4%
Executive	28.1%
Senior Executive	23.0%
Manager	13.3%
Above manager's position	5.2%
<b>Service period in the company</b>	
Less than 1 year	27.4%
1-5 years	57.0%
6-10 years	9.6%
11-15 years	3.7%
16 years or more	2.2%
Less than 1 year	27.4%

<b>Is there currently an Environmental Management system is placed in your company?</b>	
Yes	15.6%
No	25.2%
In progress	59.3%
<b>If yes, what is the company's official certification?</b>	
ISO 14001	12.6%
None	87.4%

*(Source: Developed by Author)*

### 4.1.2 Cross Tabulation

Crosstabulation is a technique that can be utilized to quantitatively analyze the relationships between multiple variables. These are also called as contingency tables or as cross tables. These are normally used to examine the hidden relationships between the data gathered that are not readily shown. The majority of the respondents are males who represent the age group of 26-35. That percentage is 37.8% of the total sample size. Moreover, the majority of the respondents are males who represent the junior executive level. The percentage is 20%.

## 4.2 Data Analysis for Inferential Statistics

### 4.2.1 Correlation Analysis

The correlation coefficient can be a positive value, or a negative value and it ranges from -1 to +1. Here, the magnitude of the correlation shows the strength of a particular relationship, and the sign of the correlation coefficient shows the direction of the relationship.

**Table 3:** Rules of Thumb about Pearson Correlation Coefficient

<b>Coefficient Range</b>	<b>Strength of Association</b>
± 0.91 to ± 1.00	Very strong
± 0.71 to ± 0.90	High
±0.41 to ± 0.70	Moderate

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$\pm 0.21$ to $\pm 0.40$	Small but definite relationship
$\pm 0.01$ to $\pm 0.20$	Slight, almost negligible

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(Source: Hair, J., Wolfinbarger, M., Bush, R., & Ortinau, D. (2012))

By assuming the data set is normal, Pearson's correlation is applied for this analysis. According to the correlation analysis, Organizational barriers and implementation of GSCM practices is having a relationship of 0.394 which is a Small but definite relationship. Technological barriers and implementation of GSCM practices is having a relationship of 0.552 which is a moderate relationship.

#### **4.2.2. Regression and Hypotheses Testing**

In this section, multiple linear regression has been used to interpret the relationship between independent variables (organizational barriers and technological barriers) and dependent variable (implementation of GSCM practices). Hypothesis testing is also a statistical technique that use to test hypotheses that are formulated in the study. By using the ANOVA table, we can check whether the model is significant or not. ANOVA table is given below. The model of this research study is as follows.

Implementation of GSCM =  $b_1$  Organizational barriers +  $b_2$  Technological barriers +  $B_0$

H<sub>0</sub>: None of the regressors are significant. (Model is not significant)

H<sub>1</sub>: At least one regressor is significant (Model is significant)

P value approach: P value is 0.000 and, significance level (Alpha / $\alpha$ ) is 0.05. According to the decision rule; If p-value is Less than or equal Alpha = (P value  $\leq \alpha$ ) = Reject H<sub>0</sub> and, if p-value is more than Alpha = (P value  $> \alpha$ ) = Do not Reject H<sub>0</sub>. Therefore, H<sub>0</sub> is rejected. At 5% of significance there is sufficient evidence to reject H<sub>0</sub>. Therefore, we can claim that the model is significant. This means, together all two independent variables (organizational barriers and technological barriers) are influencing the dependent variable (implementation of GSCM practices).

According to the model summary of this study, 32.4% of variability of dependent variable (implementation of GSCM practices) is represented by Organizational barriers and technological barriers. This means there are other barriers that are

affecting on implementation of GSCM practices. This study only examined main two barriers which affect to implementation of GSCM practices. Following evidence from literature show that, other than organizational and technological barriers, there are many other barriers which are impacting on implementation of GSCM.

Wooi & Zailani, 2010 presents that the resource barrier is one of the barriers that impact on GSCM practices. Lack of government support and lack of resources are also some barriers which are under this matter (El-Beheiry et al., 2013). According to Hebaz & Oulfarsi, 2021 financial barriers and cost related factors are also have some kind of impact on implementation of GSCM practices. Moreover, capacity constraints and poor legislation can be impact on this dependent variable (Muduli et al., 2013). Likewise, although most of the articles presents that organizational barriers and technological barriers impact on GSCM implementation as described in literature review chapter, there are many other barriers which are impacting on this dependent variable. But the case is, since there are lots of other barriers, if we consider the impact of each of their impact on GSCM it can be lower than organizational barriers and technological barriers. Therefore, we can say the variability of the dependent variable which is implementation of GSCM practices will be highly presented by organizational and technological barriers rather than the other barriers.

By using the coefficient table, we can check whether the individual variables are significant or not with hypotheses testing.

$$\text{Implementation of GSCM} = 0.170 \text{ Organizational barriers} + 0.464 \text{ Technological barriers} + 1.870$$

Decision rule:

If p-value is Less than or equal Alpha = (P value  $\leq$   $\alpha$ ) = Reject H<sub>0</sub> and,  
 If p-value is more than Alpha = (P value  $>$   $\alpha$ ) = Do not Reject H<sub>0</sub>

**Table 4:** Summary of regression and hypotheses testing

Variable	Coefficient	P value	Status	Decision	Meaning
Organizational barriers	0.170	0.017	P value $\leq$ Alpha	Reject H <sub>0</sub>	There is a significant impact of organizational barriers on

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					implementation of GSCM practices.
Technological barriers	0.464	0.000	P value $\leq$ Alpha	Reject $H_0$	There is a significant impact of technological barriers on implementation of GSCM practices.

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*(Source: Developed by author)*

## 5. Discussion of the Findings

RQ 1: Whether there is an impact of organizational barriers on implementing GSCM practices in food and beverage manufacturing firms in Sri Lanka?

In literature review chapter, it was theorized that there is an impact of organizational barriers on the implementation of GSCM practices. Lack of support, and leadership from the highest management and other organizational barriers can considerably impact the implementation of green practices (Govindan et al., 2014; Ojo, Mbowe, & Akinlabi, (2014). Ong & Rui, 2017 have stated that owners' or management teams' commitment and organizational culture will be organizational barrier, and this has the potential to impact the adoption of GSCM. This is supported by the results of the analysis of this study. With Pearson's correlation values of 0.394 and a significance value of 0.017 which is less than 0.05, it was concluded that organizational barriers have a significant impact on implementation of GSCM practices in food and beverage manufacturing firms in Sri Lanka.

RQ 2: Whether there is an impact of technological barriers on implementing GSCM practices in food and beverage manufacturing firms in Sri Lanka?

In literature review chapter, it was theorized that there is an impact of technological barriers on implementation of GSCM practices. Deepak et al., 2014 have mentioned that the lack of new technological processes, applications, and more as part of the technological barrier, impact to implementing GSCM. Technological barrier is a key barrier for implementation of green supply chain management practices. (Govindan et al., 2014; Jayant & Azhar, 2014). This is supported by the

results of the analysis of this study. With Pearson's correlation values of 0.552 and significance value of 0.000 which is less than 0.05, it was concluded that technological barriers have a significant impact on implementation of GSCM practices in food and beverage manufacturing firms in Sri Lanka.

Moreover, the alternative hypotheses developed for this study were accepted by rejecting the null hypotheses because both independent variables have significance values which are lower than 0.05. The outputs of the research study present that there is a significant impact of organizational barriers and technological barriers on implementation of green supply chain management practices in food and beverage manufacturing firms in Sri Lanka.

## **6. Conclusion and Implications of the Study**

With the globalization and many other factors, supply chains of the organizations have resulted with some kind of issues related to environmental aspect. Therefore, proper environmental management system is important. Specially food and beverage manufacturing companies have a significant role in this area with the reasons described under first chapter. Therefore, they have to consider on implementing GSCM in their organizations. But when considering the Sri Lankan context most of the companies are facing some barriers when they are implementing GSCM practices. In order to overcome these barriers, it is necessary to understand what the most impactful barriers are. This study examined the impact of organizational barriers and technological barriers on implementation of GSCM practices in food and beverage manufacturing organizations in Colombo district. According to the findings of the study, there is a significant impact of organizational and technological barriers on GSCM practices in food and beverage manufacturing firms in Sri Lanka.

There are some limitations regarding this study. The main limitations are time limitation and travel restriction. This study is only focusing on two variables which impact of implementation of green supply chain management practices. Although there are lots of other barriers which can impact on the dependent variable (according to the literature as described in chapter 4), organizational barriers and technological barriers can be considered as significant barriers which impact on implementation of GSCM practices. Therefore, considering the time limitation this study has only examined those two barriers. The researcher had to overlook other



barriers, however the time constraint affected in selecting only two independent variables and selecting a smaller sample. Furthermore, this study has only used online based questionnaire rather than physical distribution of questionnaire, to gather primary data considering travel restrictions. Because of that, the researcher has used those responses collected by sharing an online questionnaire for the analysis of primary data. Those are the limitations which are mostly related to data collection and other areas of the research study.

Although the hypotheses developed under the study are accepted, the researcher is identified some areas for further studies. As describe above, there are some limitations because of the time constraint and travel restrictions faced by the researcher and unable to examine other barriers which can be impact of the implementation of GSCM practices. Future research can cover more than two independent variables and, they can examine the impact of other barriers as mentioned in chapter 4. Also, future research can be done in other sectors in Sri Lankan context. Moreover, they can use physical data collecting method rather than using an online based questionnaire. Likewise, further studies can be conducted in future in this growing field of study is to be recommended to give more improvements in operations of organizations in Sri Lanka.

### **6.1 Recommendations**

The results of this study concluded that organizational barriers and technological barriers has a significant impact on implementation of green supply chain management practices. Therefore, the food and beverage manufacturing companies in Sri Lanka should considered on those areas and get actions to overcome those barriers when implementing GSCM practices in their organizations. While conducting this study the researcher understood that most of the respondents delight about implementing GSCM practices in their organizations and they have a proper knowledge about the advantages they can gathered by implementing green supply chain management in their firms. This characteristic can be taken into consideration when implementing GSCM and because of that, they can get the support of employees to implement GSCM practices in their organizations. Therefore, the recommendation to the food and beverage firms to get the actions to overcome organizational and technological barriers and implement green supply chain management practices in their organizations to

achieve more advantages in Sri Lankan marketplace as well as in global marketplace.

Moreover, Policymakers are advised to provide insights into the current progress of green practices of manufacturing firms and the way of overcoming organizational and technological barriers. With these improvements, Sri Lankan food and beverage manufacturing companies get the ability to overcome organizational and technological barriers and implement green supply chain management practices in their organizations.

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