ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

THE PRACTICES AND CHALLENGES OF GREEN SUPPLY CHAIN MANAGEMENT IMPLEMENTATION IN BOTTLED WATER INDUSTRY IN ADDIS ABABA

BY

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A THESIS SUBMITTED TOADDISABABA UNIVERSITY SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS' OF ARTS IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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APPROVED BY THE BOARD OF EXAMINERS:

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External Examiner	**Signature and Date**

DECLARATION

I Merry Nigatu Achenef, *declare that this thesis in title* "**The Practices and Challenges of Green Supply Chain Management Implementation in Addis Ababa**" *was conducted by myself that the work contained herein is my own except where explicitly stated otherwise in the text, and this work has not been submitted for any other degree or professional qualification except as specified for the partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University, School of commerce. I have duly acknowledged all the sources and references from which the ideas and extracts have been taken.*

Merry Nigatu Achenef

Signature:_____

Date: _____

CERTIFICATION

*This is to certify that the thesis in title "***The Practices and Challenges of Green Supply chain Management Implementation in Bottled Water Industry in Addis Ababa***" that is being submitted by* **Merry Nigatu Achenef** *for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University, School of commerce is a record of bona fide work carried out by him under my guidance and supervision. The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.*

Shiferaw Mitiku (PhD)

Signature: _____

Date: _____

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ABBREVIATIONS/ACRONYMS

EBWSMI- Ethiopian Bottled Water and Soft Drinks Manufacturing Industries

GSCM- Green Supply Chain Management

ISO- International Organization for Standardization

SCM- Supply chain management

SPSS- Statistical Packages for Social Science

UNDP- United Nations Development Programme

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ABSTRACT

Green Supply Chain Management (GSCM) is defined as the incorporating appropriate of adequate environmental initiatives at each stage of the supply chain phase. These initiatives cover procurement, product design and development, production, transportation, packaging, storage and after the sales management.

As pre assessment discussion with Water Bottled Water Industry Supply chain department, even though there is some projects undergoing in the company like waste water treatment plant, Implementing Environmental management system, but, the practice, benefits, impact on the organization as well as on the environment, challenges have not been well identified.

The objective of this study is to assess the practices and challenges of green supply chain management at bottled water industry.

This study were used descriptive type of research design which shows the extent in which bottled water industries is implementing Green supply chain management practice. Both quantitative and qualitative research approach has been employed. Both primary and secondary data sources were employed. Primary data were collected from production manager and employees of bottled water industries and secondary data collected from different related literatures. Both descriptive and inferential statistics were used for the part of data analysis. From the total population of 246 production manager and employees 200 samples was used by using purposive sampling techniques. The study incorporate six variables in which all of them was measured on a 5-point Likrt-Scale, with "1" stands for "Strongly Disagree" and "5" stands for "Strongly Agree". Apparently, mean was used as a measure of central tendency. Furthermore, the data were encoded, processed and evaluated using Statistical Package for social science version. 24.

The analysis result show that the mean score values for Green supply chain management practice was to the minimum the average mean value (only between 3.5 and 3.9) which actually indicates the Green supply chain management practice of bottled water industries in Addis Ababa is precisely strong. Regarding the correlation, it indicates that economic factors, resistance to technology, lack of organization encouragement, cost implications and poor quality of human resources strongly or highly correlated with the practice of green manufacturing and also economic factor and supplier reluctance highly correlated with reverse logistics respectively.

The result given on the conclusion entails that, the research questions were considerably assessed strong by which actually indicates the Green supply chain management practice is at required level in Bottled Water Industries In Addis Ababa.By relying on the study findings, the researcher suggests the following points as credible recommendations to the problem such as develop green supply chain management, technology advancement, management commitment and green supply chain strategies.

Keywords - Green Supply Chain management (GSCM), Supply chain management

CHAPTER ONE

INTRODUCTION

This chapter presents background information on subject of the study and the study covers problem statement, research objective, and research question, study significance and study demarcation. And also the key concepts of managing the green supply chain presented on background of the study.

1.1 BACKGROUND OF THE STUDY

Business is a course of routine activates that requests a due consideration of market in an endeavour to attain the hub purpose of its establishment. Since, our day to day life as individual or entity is surrounded by enormous demand for goods and service; the main intent of every business is satisfying this demand and attains the financial benefit out of it. This natural phenomenon is the source of interaction between people or firms in the demand side and producers or supplier in the other edge. This is all because of the self-insufficient nature of human being. The need for supply chain management emanated from the reliantly nature of the existing business activity. In this regard Christopher, M. (2005), says that there is no longer any possibility of manufacturing and marketing acting independently of each other. Organization cannot longer act as an isolated and independent entity in competition with others similarly 'stand-alone' organizations.

In a competitive market, manufacturing enterprises needs to expand their supply chain on a global scale. Supply chain management (SCM) is the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective & efficient ways possible. Supply chain activities cover everything from product development, sourcing, production, and logistics, as well as the information systems needed to coordinate these activities.(Robert 2020).

Effective green supply chain management should address common objective of the

organization in the supply chain. On the other side, to be sustainable in the global market the supply chain has to be socially responsible and has to focus to keep the environment safe to human being. (Neramballi, 2017)

Integrating environmental thinking into green supply chain management includes considering green manufacturing, eco - design, green procurement, green distribution and transportation as well as reverse logistics (Neramballi 2017)

Bhattacharjee (2015) described Green Supply Chain Management as well as traditional supply chain management practices incorporating environmental considerations or requirements, long term buying decision – making relationships. He also added that, Green Supply chain management mandates the incorporation of the environmental idea into each product phase and operation in the Supply Chain.(Bhattacharjee 2015).

The other basic concept for green supply chain is reverse logistics. Reverse logistics deals with the flow of goods that go back up the supply chain for a number of reasons, including: product returns, repairs, maintenance and end-of-life returns for recycling or dismantling. Reverse logistics has both a service (repair, recalls, etc.) and an environmental component. (Hoek 2008).

This research address challenges to implement the extent of green supply chain management on water bottling industry in Ethiopia especially focusing which is related with green supply chain management.

1.2 STATEMENT OF THE PROBLEM

The goal of effective supply chain system is to reduce the inventory and waste. With the help of sophisticated software systems such as ERP, it is easier to track flow of all the 4 activities in supply chain management (Waters, 2009). Regarding product specialized firms, Michael (2013) warned although bottled water has a long shelf life and is unlikely to expire, and excess bottles tie up capital, occupy valuable storage space, and offer the potential for damage as they wait to work through excess supply. According to Michael (2013), Rodwan (2010), Fishman

(2007) and others were specifically conducted to examine the implementation of supply chain management practices in food and beverage processing industry. They said it was carried out in developed countries which have different economic, political, technology, social, legal and cultural status. As a result, it may be difficult to directly apply and generalize that the same practices and collaboration as well as problems of supply chain management exists in emerging economy like our country. Diane Lesley Holt (2005), the 'greening' of the supply chain is identified as one of the future challenges facing organizations. They also put their concern as, 'in the future organizations will have to make all supply chain decisions within the context of environmental concerns. Therefore, assessing supply chain from environmental perspectives can be considered as the command of the time.

Moreover, over the past decade, Green Supply Chain Management (GSCM) has emerged as an important factor of the environmental and supply chain strategies for a number of companies around the globe. In recent years, some studies are conducted to explore the economic and environmental impact of green supply chain management.

Omain et al. (2010) argued that the implementation set of supply chain management practices differ depending on the country and type of organization involve. This means different organizations and countries have a different set of practices in implementing supply chain management this is due to the fact different managerial perceptions of how supply chain components are related to each other and to the organization example different style of management, different world views from different country and cultural differences.

In addition, manufacturing firms found in developing countries are using their own individual efforts to improve their supply chain management based on individual efforts without considering the holistic supply chain theories and management philosophies; they are not as such effective (Olsson and Skjolde, 2008).

The different challenges of supply chain management practices are quality customer service, costing, risk management, supplied relationship, qualified personnel, unforeseen

delays, fast-changing markets For this reason, it was intended to study the implementation of modern supply chain management principles for improving its product delivery processes as more effective and efficient. Therefore, it was tried to assess its supply chain management with a systematic management of the whole process of production life-cycle phases through the collaboration among different actors and all stakeholders. Regarding bottled water industry green supply chain practice, as the main objective is to provide quality water products in bottle form with affordable price, those industries also have to bring attention to protect the environment by implementing green supply chain practice.

Illegal water bottling is a serious challenge according to the general assembly of the recently formed the Ethiopian Bottled Water and Soft Drinks Manufacturing Industries Association (EBWSDMIA). Plastic product producers have to be asked about their activity, where they are getting their supply, and who is behind their product. The major problem related with water bottled industry is its plastics. Plastic use is a threat to environment due to the high amount of chemical material required in production process, as well as incorrect usage and disposal product. Most of this waste is disposed in landfill. Waste incineration is one of waste management widely used in many sector. Incineration of plastic waste is energy efficient and may be considered as recovery operation. The result of the simulation indicates that waste incineration process generate the dangerous environmental impact, these are marine aquatic ecotoxicity, marine sediment ecotoxicity, acidification, ionizing radiation. For avoiding these problem waste incineration is suitable if the purpose are reducing the amount of waste and recovery energy or heat, however, the environmental impact produced by waste incineration process need to be considered in process selection.

The other problems related with not using green supply chain management in bottled water manufacturing industry it stars during production stage and its part of transportation and it creates injuries in marine life from discarded bottles and ugly garbage dumps filled with empty bottles. Plastic water bottles are typically made from crude oil. During their production, pollutants such as nickel, benzene and ethylene oxide are released. These harm the environment and pollute the air we breathe. It takes 1.5 million barrels of oil to

produce water bottles we use each year. Additionally, trucks release more pollutants and use gasoline when they transport bottled water to stores.

By looking up the determents the researcher attempt to give some insight contribution and enhance new findings of this area of research for which considering these companies in order to fill those gaps mostly found in bottled water industries especially considering their green supply management in empirical evidence.

Therefore the main aim of this paper is to analyze the green supply chain management processes, advantages and challenges of water bottling industry.

1.3 RESEARCH QUESTIONS

The study of green supply chain management practice guided by the following main research questions;

- How green supply chain management is being practiced in bottled water manufacturing industry?
- To what extent the employees are aware of the green supply chain management practices at bottled water manufacturing industry?
- What are the major challenges in bottled water manufacturing industry for implementation of green supply chain management?
- What are the perceived benefits in bottled water manufacturing industry by implementing green supply chain management?

1.4 OBJECTIVE OF THE STUDY

1.4.1 GENERAL OBJECTIVE OF THE STUDY

The study's ultimate goal is to determine the practices and challenges for implementation of the green supply chain management practices in water bottling industry.

1.4.2 SPECIFIC OBJECTIVES OF THE STUDY

The specific objectives of this study are:

- To assess the practices of green supply chain management at bottled water manufacturing industry.
- To assess the awareness level of employee towards green supply chain management practices at bottled water manufacturing industry.
- To identify the major challenges of green supply chain management practice at bottled water manufacturing industry.
- To identify the perceived benefits of Green supply chain management at bottled water manufacturing industry.

1.5 SCOPE OF THE STUDY

The key emphasis of this study is the evaluation of Green supply chain management activities and challenges in water bottling industry. From the different factories found in Ethiopia, the study concentrates on water bottling industries that are set up in Addis Ababa.

1.6 LIMITATION OF THE STUDY

Although this study was subjected to different literatures and data analysis tools, it has its own limitations and should be mentioned in order to provide a path for further studies. The first limitation of this study the study was limited to only Addis Ababa factory. In carry out this study, considerable constraint was limited literatures or secondary source available on green supply chain management practises. The other important challenge due to this current issue most respondent be unwillingness and cannot get them easily.

1.7 SIGNIFICANCE OF THE STUDY

Analyzing the Green supply chain management practice has significant importance to the water bottling industry. And other stakeholder organizations like supply chain partners, government, scholars, customers as well as the entire community to check and evaluate their activities in green supply chain management practice.

The second perceived importance of this study brings various concepts on Green supply chain management practice in the manufacturing companies and also used to eliminate those challenges which are related with green supply chain management. The impact of

globalization, forced manufacturing enterprises to deal with green supply chain to fulfill the requirement of producing environmental friendly products. For supply chain practice implementation of green supply chain have significant importance for the entire participants in the supply chain. Therefore, the research result give significant importance to supply chain participants to measure their contribution for the globe in terms of providing some contribution for greening the environment.

The research result also helps policy makers, organizations, managers and stakeholders as an additional input for their improvement plan. The findings also give insights to supply chain partners (distributors, retail outlets, transporters, etc.) in the chain of manufacturing industry to analyze their own contribution on the supply chain with respect to greening the environment and social contribution. As this research has its own limitation in different dimensions, the result helped researchers for further study.

1.8DEFINITION OF TERMS

- **Green Supply Chain**: covers every stage from product design, procurement, sourcing and supplier selection, manufacturing and production processes, logistics in the supply chain and the delivery of the final product to the consumers, together with the end-of-life product managemnet. (Emmett, 2010)
- **Supply Chain**:is a network of autonomous and semiautonomous business entities collectively responsible for the procurement, manufacturing and distribution activities associated with one or more products to satisfy ultimate customer needs (Swaminathan, 1996)
- **Corporate Social Responsibility**: is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families, as well as of the local community and society at large. (World Bank, 2000).

1.9 ORGANIZATION OF THE PAPER

This research paper consisted into five chapters. Chapter one includes the introduction part

that comprise background of the study, the research problems, research questions, research objectives, definition and terms, study significance, scope of the study. Chapter two the literature reviews on Green supply chain management and related literatures explained. In this chapter, the researcher focus on related empirical and theoretical literatures in supply chain to develop conceptual frame work which address the problem statements indicated in chapter one. In chapter three, the research methodologies presented. The research design, sample and sampling techniques, source of data, procedures of data collection, methods of data analysis, and presenting results described. Chapter four, results and findings discussed. The finding interpreted based on related literature review. In chapter five summary of the research findings, conclusion and recommendation presented.

CHAPTER TWO

RELATED LITERATURE REVIEW

INTRODUCTION

This chapter gives an insight into the literature by other scholars and researchers on the green supply chain management practices. It reviews literature that is related to the specific and general objectives of the research. It specifically covers the past studies/main review where it discusses literature related to the specific objectives of the study.

2.1THEORETICAL LITERATURE FRAMEWORK

2.1.1 SUPPLY CHAIN MANAGEMENT

The pressure of environmental changes forces manufacturing enterprises for the implementation of green supply chain practicing social responsibility. Supply chain management focused on the flow of goods, information and funds so as to create efficiency and effectiveness to optimize the streamlining the network and continually to use on improving the manufacturing and logistics business process that manage products to the market. This development has put focus on sustainability within supply chains, leading to the rise of Green Supply Chain Management (GSCM).

2.1.2 GREEN SUPPLY CHAIN MANAGEMENT

Green supply chain management is defined as the organization's open, strategic integration achievement of an organization's economic, environmental and social objectives for long-term improvement of inter-organization business processes product output and its supply. This implies that specific criteria have to be applied by all supply chain partners. At the same time, responsible environmental and social behaviour must be as well for the good of the entire chain (Wu and Dunn, 2012).

Green supply chain management (GSCM) is an emerging field that differentiates itself from the traditional supply chain perspective. Supply chain management was earler viewed as a process in which materials are converted into final products Beamon,(1999).In this process companies extract and exploit natural resources in various forms(Srivastava,2007)making it more related to the environment. This exploitation and damage caused to the environment can be prevented or reduced by making the concept of green supply chain. Adding the 'green' concept to the 'supply chain' concept to opens up a new paradigm. These two paradigms were mostly considered to be in head-on collision with each other (Srivastava, (2007). A study by Schaper (2002) 18 quotes that "green" supply chain management though a newly evolved concept that developed forty years ago. Kelleand Silver's (1989) article was the first to quote on Green supply chain. Later studies have modified the concept of GSCM according to their nature of study across the supply chain or partly on a functional area of the supply chain.

Wu et al (2013) confirmed that GSCM practices are the focal points of internal theoretical model environmental management and green information systems as a background and environmental, economic, operational, and as consequences for organizational performance. Additionally green information systems give the information necessary to make green purchasing decisions, the level of cooperation with customers, design of the product, and investment recovery.

Green supply chain management (GSCM) includes the incorporation of conventional supply chain management activities, environmental considerations long – term buying decision making requirements for suppliers (Gilbert, 2000).

GSCM is the summary of green purchasing, green manufacturing, green packing, green marketing and distribution. GSCM is to intend to eliminate or minimize energy, emission, hazardous, chemical and solid waste (Olugu, Wong, & Shaharoun, 2010).

Many corporate and industrial environmental philosophies and practices are closely related and supported. Green supply chain management which has also been a major subject of research practice and implementation. Dark blue issues are a major concern to decision makers in the business.

In this context, Green Supply Chain Management (GSCM) is defined as the adequate environmental inclusion at each step of the supply chain. These inclusions cover purchases, product design and development, production, transportation, packaging, storage and end-of-life management after the sale. Environmental issues within corporate organizational boundaries have been a concern for decades. These issues have ranged from reactive concerns to legislation and regulatory pressures to more proactive concerns that include building organizational competitive advantage and developing a strong corporate environmental image. Greater importance of inter-organizational relationships has prompted organizations to consider building competitive advantages through their supplier management and customer and network partnerships (Revilla E., James Cordeiro, and Joseph Sarkis, 2011).

According to Wu, Y, *et. al* (2013), GSCM can be divided into intra- and inter-organizational environmental activities; the types of casual ambiguous capital and the latter contribute to social activities and complex means. Intra-organizational environmental policies, such as complete quality control of the environment, waste management and environmental protection programs are oriented towards energy usage, material usage, emissions and waste relating to in-house processes. On the other hand, Wong, *et. al* (2012) and (Vachon and Klassen, 2006) argued that inter organizational practices on the environment, such as design for analysis of the environment, life cycle, green distribution and reverse logistics are typically referred to as product management programs that emphasize mutual partnerships between suppliers and customers to cope with cross company environmental questions. Those activities also stress the importance of taking necessary steps to manage vendors and consumers efficiently are also emphasized. The authors' explanation states that green supply chain integration is company's collaboration and supply chain partners to channel both intra- and inter-organizational environmental practices. To this end, Green Supply Chain helps to measure, analyze and improve action among various members to ensure that companies are operating in environmentally friendly manner or not.

The different Green Supply Chain Practices can be viewed from the perspectives of Green

Procurement, Green Manufacturing, Eco-Design, Green Transportation & Distribution and Reverse Logistics as described by UNDP(2008), ISO(International Organization for Standardization) 14001 Standard), (New et al.,2000), Salam(2008), Nimawat and Namdev (2012), Handfield et al., (2001), Zsidisin and Siferd (2001) , Sarkis (1998), Lin et al(2001), Beamon (1999), APO(2004), Zhang and Zheng (2010), Olaf Schatteman (2013), Al-Odeh and Small Wood(2012), Syed Abdul Rehman Khan(2008), Wills(2012),Mustaffa (2009) are presented as follow.

2.1.1.1GREEN PROCUREMENT

UNDP (2008) defines environmental or green procurement as, "the purchase of products and services which have less impact on the environment and human health compared with competing products or services that serve the same purpose". However, there are others who would argue that green procurement may also be based, not only on purchasing a green product, but on a green process of procurement. This may be done during the supplier appraisal where a supplier is chosen due to (for example) its environmental accreditation (for example implementing ISO (International Organization for Standardization) 14001 standard), or due to its environmental policy. As this 'green' criterion results in a supplier's increased business, it encourages them to continue incorporating 'greenness' in their processes and even in their products and it also encourages competitors to implement green business processes (New *et al*., 2000).

2.1.1.2 GREEN MANUFACTURING

According to Nimawat and Namdev (2012), green manufacturing involves use of reliable, fast, and energy efficient production equipment aimed at eliminating wastes and improving production.

Al-Odeh and Smallwood (2012) associated green manufacturing with efficient technology, clean production method, reduced raw materials and resources so as to reach low input, high output and low pollution.

2.1.1.3 ECO-DESIGN

It is considered one of the green supply chain initiatives because it integrates environmental aspects into product design process, taking into consideration entire flow of the product in its supply chain. This consideration is very important because the majority of environmental impacts arising from production, consumption and disposal of the product are direct consequences of decisions made at the design stage (Handfield*et al*., 2001). At the design stage, the function of the product, process or service is defined, and raw materials, supplies and process chemicals are selected. These in turn determine the energy which will be consumed to create them and the waste which will be generated. The specific eco-design actions or activities vary between companies and products. However, the basic eco-design activities include the following:

1. Design for reduction or elimination of environmentally-hazardous materials such as lead, mercury, chromium and cadmium (Zsidisin and Siferd, 2001).

2. Design for reuse is a design that facilitates reuse of a product or part of it with or without minimal treatment of the used product (Sarkis, 1998).

3. Design for recycling, is a design that facilitates disassembly of the waste product, separation of parts according to material, and reprocessing of the material (Lin *et al*., 2001).

4. Design for remanufacturing, is a design that facilitates repair, rework, and refurbishment activities aiming at returning the product to the new or better than new condition (Beamon, 1999).

5. Design for resource efficiency, including reduction of materials and energy consumption of a product during use, in addition to promoting the use of renewable energy and resources (APO, 2004).

2.1.1.4 GREEN DISTRIBUTION AND TRANSPORATION

According to Syed Abdul Rehman Khan(2018) green distribution and transport have a role to play in reducing the waste and in reducing energy and value addition of green

warehousing products improve overall organizational performance with beret company image. Green distribution also helps an enterprise to obtain superior financial and environmental performance. Green transportation practices also give organizations an opportunity to enhance their image and reduce their costs. Logistics overheads can be saved by promoting the efficiency and improvement of customers' transport systems association may also be obtained in order to establish productivity. Green distribution also includes of green packaging. Packaging consists such as size and materials used, influence distribution because of their effect on the transportation features of the product. Products for medical usage are often considered too delicate in nature. Green packaging involves having products being packaged in manner that conforms to well stipulate environmental guidelines. Willis,(2012).

Mustaffa, (2009) has categorized the purpose of Green packaging in health care, into the following categories; Packaging for distribution- this is the primary packaging allowing for transportation and storage of the product until usage phase. Products in this category ought to have reusable packs. Packaging for transport-This is secondary packaging for the purposes of transportations and storage. It recommended that there minimal, use of paper bags that at times get overheated and melt and therefore damaging the packaging.

2.1.1.5 REVERSE LOGISTICS

According to Nimawat and Namdev (2012), reverse logistics refers to the role of logistics in recycling, reduction of the source, returns of products, replacement of materials, reuse of waste materials, repair and remanufacturing. Organizations can implement reverse logistics through recycling and waste logistics that can be established according to the actual need for the processing, collection, classification, packaging, handling, storage, and distribution to specialized treatment facility for processing (Zhang and Zheng, 2010). It means reverse logistics can implement in the organization through the process of recycling and waste logistics. According to Olaf Schatteman (2013), reverse logistics involves the activities to avoid reduce materials and returns in the forward system so as to reduce materials flow back and ensure reuse and recycling of materials.

2.1.3 DIFFERENCE BETWEEN GREEN SUPPLY CHAIN MANAGEMENT AND SUPPLY CHAIN MANAGEMENT

GSCM and SCM differ in many different ways. The GSCM takes ecological and economic issues as a goal, while SCM aims to concentrate on economy as a single target. GSCM is green, integrated and environmentally friendly, while Conventional SCM does not take into consideration human toxicological effects (Beamon, 1999; Gilbert, 2000; Ho Johnny, Shalishali, Maurice, Tseng, &Ang, 2009). SCM concentrates more on controlling the final product no matter harmful its effects are to the environment during production and distribution. Ecological requirements are key criteria for products and productions and at the same time the company must assure its economic sustainability by staying competitive and profitable (Ho Johnny, Shalishali, Maurice, Tseng, &Ang, 2009). Differences between GSCM and SCM are summarized in the following table.

Figure 2.2.Difference between GSCM and SCM

No	Characteristics	GSCM	SCM
1	Objectives	Ecological and economic	Economic
2	Ecological optimization	High ecological impact	Integrated approach low economic impact
3	Supplier selection criteria	Ecological aspect long term relation ship	Price Switching suppliers quickly Short term relationship
4	cost Pressure	High	Low
5	Flexibility	Low	High
6	Speed	Low	High

Figure 2.2. Difference between the Green Supply Chain Management and Supply Chain Management (Beamon 1999, Gilbert 2000, and Ho Johnny *etal*. 2009)

2.1.4 CHALLENGES OF GREEN SUPPLY CHAIN MANAGEMENT

In order to give a more detailed picture of the challenges, they are separated into internal and external ones. As internal barriers are important for the implementation of green concepts Therefore, it is important to see what problems might occur in order to assure effective cooperation on an inter-organizational basis. The analysis in terms of external barriers shows that the main problem is based that globally acting companies are confronted with different regulations and environmental acts in the different countries. This can impede streamlining an international supply chain. Luthra S, Vinod Kumar, Sanjay Kumar, AbidHaleem (2010) argued that barriers to implementation of GSCM encompasses as follows (1.)Resistance to technology, (2.)Advancement adoption (3.)Lack of organization encouragement (4.)Poor quality of human resources (5.)Market competition and uncertainty (6.)Lack of government support system (7.)Lack of implementing green practices (8.)Lack of top management commitment (9.) Cost implications; and supplier reluctance to change towards GSCM and unawareness of customers.

2.2 EMPIRICAL LITERATURE REVIEW

Under the Empirical Literature Review there are three sub-topics presented below:

2.2.1 Green Supply Chain Practices

In these review there are the researcher conducted by (MesfinKora, 2016). From the research conducted in order to assess the green supply chain management practices in Ethiopian tannery industry, and assessing green supply chain management practices and organizational performance in Ethiotelecom, six independent variables and five dependent variables as well as scales to measure the challenge in greening are identified. And, these variables were in charge to measure the green supply chain management practice in the above-mentioned industries. Those variables are ; Eco-Design, Green Purchasing, Green Marketing, Investment Recovery, Organizational Practice and Challenges of Implementing Green Supply Chain Management.

In the following part further demonstrate the variables listed above and the viable factors influencing the characteristics, performance and nature of those variables. Therefore, the subsequent section of the study illustrates the independent and dependent variables identified in the prior studies as well as their viability to the context under research.

The second variable according to MesfinKora, (2016)Eco-Design which is related to; design of the product with regard to materials and energy utilization, recycle, recovery ofcomponents and reduced use of hazardous products.

The third important variable to analyze the practice of green supply chain practice is issues related to green purchasing which is further to be expressed by five antecedents. As perMesfinKora, (2016) analysis, green purchasing is the sum of supplier cooperation; environmentally design for supplier specification, environmental audit for supplier, ISO 14000 certification and second-tier supplier environmentally friendly practice evaluation. Since, the company under research exhibits comparable features with tanneries and Ethiotelecom in this regard this study will deploy the variable and antecedents mentioned above.The other most important variable to analyze green supply chain practice of an organization is the investment recovery. Investment recovery is among the factors that determine green supply chain in a way that, efficient and effective inventory management, disposal of used or scrap materials and excess capital equipment control (MesfinKora, 2016). The other research green supply chain management in Kenyan Health Care System Green Supply Chain Management practices in Kenyan healthcare system are fairly new. Some of the recent studies done in the area of GSCM may include; Yvonne (2013) who did a study on Green supply chain management practices and performance of pharmaceutical companies in Nairobi, Kenya. The study revealed that challenges to Greening practices are mostly due to ignorance by the stakeholders. The limitation in the study was that it only focused on one aspect that is the pharmaceutical department .This fully representative of the whole healthcare industry. Chege (2012) did a study on Green Supply Chain Management practices and performance of private hospitals in Nairobi, Kenya. The researcher found out that procurement managers ought to provide Eco Friendly and specifications to their suppliers in order to have a Green Supply Chain right

from the time the products enter the health care supply chain.

2.2.2 Challenges of Green Supply Chain Management

The next important variables which researches take are the antecedents of challenges which is obstacle to implement the green supply chain of bottled water as it is. These are environmental compliance, ISO 14000 certification, environmental management system and eco-labeling of products by MesfinKora, (2016).

The Common challenges tend to happen in the course of deploying green supply chain management are categorized based on macro level challenges and micro level challenges.

Macro Level Challenges

- Legal Factor
- Economic Factor
- Socio-Cultural Factor
- Technological Factor

Micro Level Challenges

- Top Management Commitment
- Employee Awareness
- Lack of Skill for GSCM
- Resource unavailability

2.2.3 Benefits of Green Supply Chain Management

Moreover, as per the study conducted on Ethiopia tanner industry by(MesfinKora, (2016) organizational commitment, green purchasing, investment recovery, eco-design, green marketing have a positive effect on environmental, economic and social performance of firms. Similarly, the study conducted on Ethio telecom by MesfinKora, (2016) result also suggested that organizational commitment, eco-design, green purchasing and

environmental practice have statistically significant predicting power on organizational performance.

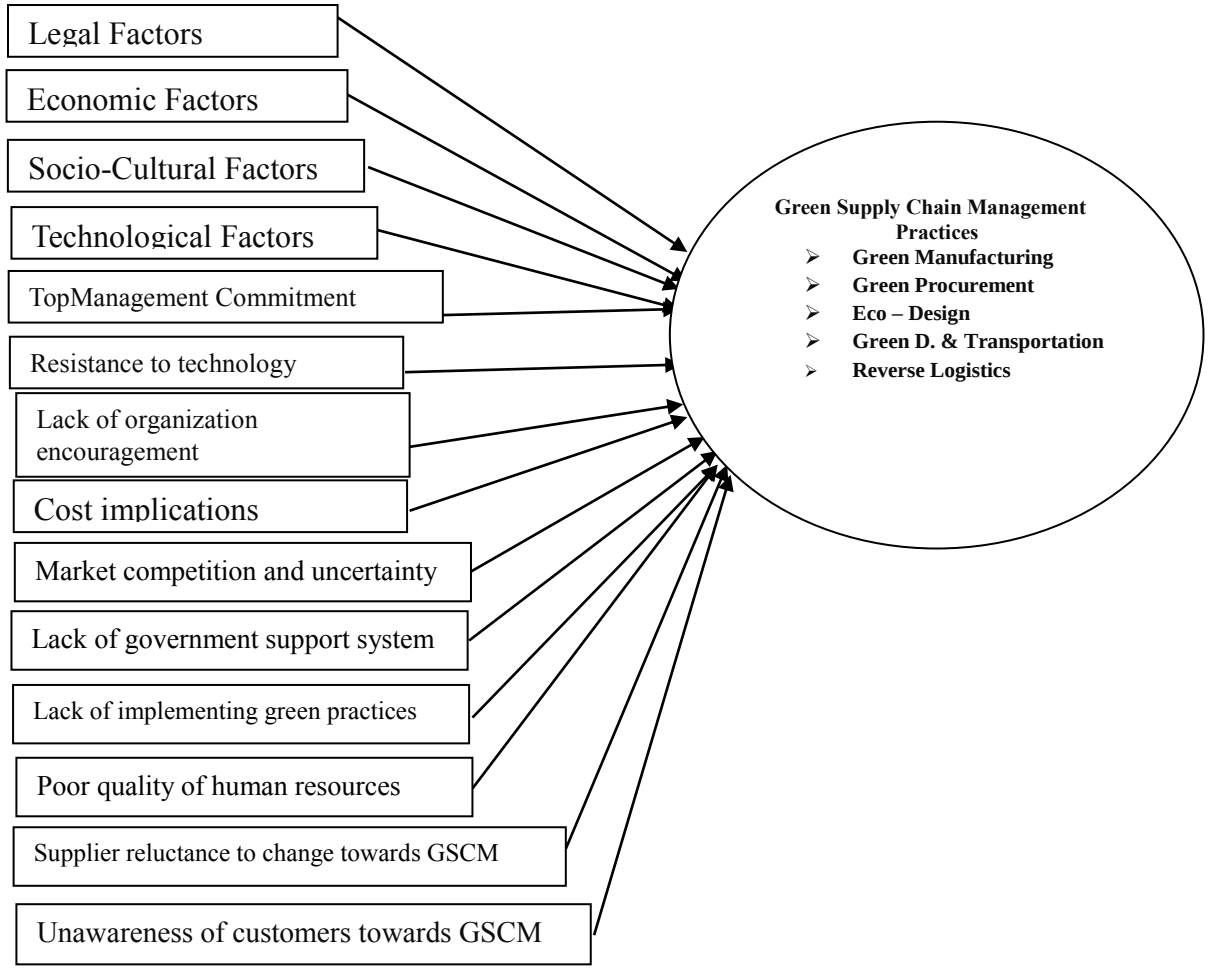
In general, all the above mentioned factors have been assessed through the instrumentalism of different research tools such as; questionnaire and interview. Furthermore, in older to determine the green supply chain performance of water bottling industry other factors has been incorporated and these factors were presented in the data presentation and discussion part of the research. Besides, some of the aforementioned variables and their elements are amended or eliminated to so as to make to order to the specific scenarios. The three benefits gained from green supply chain management. Economic benefits are those benefits essential for green supply chain management those are decrease in cost of materials purchased, decrease in cost of energy consumption, decrease in fee for waste discharge, improvement in earnings per share, improvement in return on investment, and sales growth and profits growth. Environmental benefits are improvement of an enterprise's environmental situation, reduction in waste, reduction in air emission, decrease of consumption for hazardous/harmful/toxic materials, and decrease of frequency for environmental accidents. Social benefits are Improvement in customer satisfaction, improvement in investments on social projects (education, culture, sports), improvement in relations with community stakeholders, e.g., nongovernmental organizations (NGOs) and community activists improved awareness and protection of the claims and rights of people in community. And also there is improvement in employee training and education. (January 2019).

2.3 CONCEPTUAL FRAMEWORK OF THE STUDY

There is still inadequate of studies to investigate GSCM acceptance and implementation in developing countries. However, In Ethiopia there is limited studies on the issue of GSCM in different sector therefore; this study focuses on to identify and assess the challenges to implement green supply chain management on water bottling industry.

Figure 2.3 - Conceptual Framework of the Study

Challenges affecting GSCM Practice



Hypothesis Summary

H1- Legal factors negatively and significantly affects the GSCM practices of bottle water manufacturing companies.

H2- Economic factors negatively and significantly affects the GSCM practices of bottle water manufacturing companies.

H3-Socio-Cultural factors negatively and significantly affects the GSCM practices of bottle water manufacturing companies.

H4- technological factors negatively and significantly affects the GSCM practices of

bottle water manufacturing companies.

H5- Top management commitment negatively and significantly affects the GSCM practices of bottle water manufacturing companies.

CHAPTER THREE

3. METHODLOGY OF THE STUDY

3.1 INTRODUCTION

This chapter sets out various stages and phases that followed in completing the study. Research methodology is an approach and a set of supporting methods and guidelines to be used as a framework for doing design research (Rusell, 2000). According to Mugenda (2003), research methodology includes research design, target population and sample, data collection procedures, data analysis procedures and expected output. In chapter three the research methodologies presented research design, source of data, population and sampling techniques, data collection methods, data analysis, data validity and reliability and ethical consideration described.

3.2 RESEARCH DESIGN AND RESEARCH APPROACH

The study employed descriptive research design to shows the extent of GSCM practices in bottled water. It is implementing green supply chain management practice. Mixed research approach quantitative and qualitative employed. As per Kotheri (2004), Descriptive type of research applied to assess the GSCM practices of the companies and to analyze the challenges to implement green supply chain management at water bottling industry based on observed facts.

3.3 SOURCE OF DATA

The study used both sources of data. The primary data obtained directly from production manager and employees through questionnaire. The secondary data collected from the published books, library, internet, and journal articles, published researches and also previous studies conducted in related topics. The idea of secondary data gathered the necessary information to guide the conduct of the study in order to enrich the primary data.

3.4 POPULATION AND SAMPLING TECHNIQUES OF THE STUDY

Sample is a subgroup of the larger population in which a research studies (Bordens,K.S, and Abbott, B.B 2011). Sampling is a major activity in a business research which requires in depth examination. It is used to make inferences about the whole population using population element. Sampling is used in this research to come up with results that are accurate enough to give conclusions (Zikmund Babin Carr Griffin, 2010). Currently in Ethiopia there are around 67 water bottled industries found. 90% of water bottled manufacturing industries are located more close to Addis Ababa. The target populations of the study include natural mineral water manufacturing companies especially operating more close to Addis Ababa. Among from 67 industries the researcher selected the population by using convenience sampling technique. The trade ministry announced six water bottled industries met the quality standard specifications. Based on the criteria of quality specification the target population selected. Among from 67 industries the target population selected 6 bottled water industries in which is their quality specified. The six bottled water industries which is their quality specified are Yes, Aqua Addis, Abyssinia, Eden, Origin and SPA mineral water. Based on the selection criteria of bottled water industries the target population selected according to their number of employees found in each industry. The target populations selected from each factory are 246 respondents. It included production manager and employees which directly involved in the supply chain process.

3.5 SAMPLE SIZE

For the collection of information, the researcher employed convenience sampling method to select the respondents. In non-probabilistic sampling method, respondents selected deliberately by the researcher instead of using the techniques of random sampling.

Since the total population of this research is infinite it is difficult to estimate the exact number of the whole population is given as under: According to (Zikmund et al, 2010), the formula to be used for estimating infinite number of respondents is as follows.

$$n = \frac{Z2\ c.lpq}{E2}$$

Sources: (Zikmund,2010)

Where n = number of items in sample

Z2 c.l = Square of the confidence level in standard error units

P = estimated proportion of successes

q = 1-q, or estimated proportion of failures

E2 = square of the maximum allowance for error between the true proportion and the sample proportion, or ZclSp squared

It is expected that the sample which is taken to show 20 percent of the population with 95 percent confidence level (Z2 c.l = 1.96) and the allowance for sampling error not be greater than five percentage points (E).

Therefore, it is represented as $n = \frac{(1.96)2 \text{ c.l} \times 0.2 \times 0.8}{0.052}$

$$n = \frac{246}{}$$

Consequently, the researcher distributed 246 sampled respondents of the six water bottled industries.

3.6 DATACOLLECTION METHOD

The study used both primary and secondary type of data. Primary data collected through self-administered structured questionnaires for purposely selected respondents from selected water bottled industries which is 246 sample respondents.

3.7 DATA ANALYSIS

In this study the both descriptive and inferential statistics used to analyse data. Descriptive statistics specifically percentage, frequency, mean and standard deviation were used. Inferential statistics specifically correlation analysis used. The quantitative data which derived from the questionnaires analyzed and computed by mean and standard deviation using a statistical tool, SPSS version 24.

3.8VALIDITY OF THE STUDY

Derived from the Latin term validitas, meaning "strength," validity is a term used in both qualitative and quantitative research. It asserts that a finding can never truly be proven; it can only be argued (Trochim, 1999). In quantitative research, there are several ways in which to establish validity. Here, validity assumes a different meaning to the meaning used in qualitative studies. Validity refers to how well an instrument measures what the researcher wants to evaluate. However, items in the questionnaire prepared by using a five-PointLikert-scale close ended multiple questions. In order to ensure validity of the instrument some SPSS lecturers, and some employees requested to examine it and they had assured the validity.

3.9 RELIABILITY OF THE STUDY

Reliability refers to the extent to which data collection techniques or analysis procedures bring out reliable findings. In this research, respondents had been given enough time for answering the questionnaire and under took to act with information as confidential; there was no subject error or bias. According to Bryman and Bell(2007), reliability analysis is concerned with the internal consistency of the research instrument. As several items in all the constructs were applied, the internal reliabilities of supply chain management practices, SCM practice, SCM challenges and SCM benefit were analyzed in the light of Cronbach's Alpha. This was verified by (Nunnally,1978) stating that the outcome of the reliability values for all the constructs are confirmed to be greater than 0.70,which are considered acceptable, while an alpha score of higher than 0.80 is considered a good measure of reliability. To check the reliability of the study, the most significant tool preferred to the reliability and internal consistency of the findings is Chronbach Alpha Statistics. Chronbach Alpha result should be above 0.70 to obtain a reliable scale and any scale with Chronbach Alpha which is less than 0.70 has to be excluded (Sekaran&Bougie, 2013). The Chronbach alpha result found from the pilot survey tasted.

Table3.9ReliabilityStatistics

Items	Cronbach'sAlpha	Cronbach'sAlpha BasedonStandardized Items	No.of Items
SCMpractices	.87	.867	32
SCMChallenges	.77	.757	5
SCMperformance	.72	.743	14
Total	0.911	0.905	53

As seen on above Table 3.9 the analysis of Cornbrach's Alpha (measure of internal consistency) was computed as 0.911 in organizational performance, SCM practices over 0.70, and competitive advantage in 0.905, respectively. Hence, this explains that a good level of internal consistency for the collected data.

3.10 ETHICAL CONSIDERATION

First, respondent informed about the objective and purpose of the study, and then verbal consult obtained for a better understanding and participation of the respondents in the study. Besides, participants also informed their right not to participate in the study at any time. Moreover, Participants informed the advantage of the research and therefore the research has no risk. Finally, Participants have the right to ask the question for clarification and refuse to give information in any time in the research process.

CHAPTERFOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This thesis paper makes an assesses and evaluates of supply chain management practice and challenges of selected bottled water industries in Addis Ababa, based on the conceptual frame work presented on previous section like the five GSCM practices GSCM challenges, GSCM performance and GSCM benefits.

This chapter has two main parts: the first part is demography of the respondents, the second part consist of data collected from the respondents through questionnaires. In order to address the research questions, 246 questionnaires were prepared and distributed to six bottled water industries production management and employees, Out of these questionnaires 200 were filled and returned, the rest were unreturned and 46 questionnaires were discarded due to missing data.

4.2.DEMOGRAPHY OF RESPONDENTS

A total of 200 responses out of the 246 questionnaires sent out were received, out of which 46 were invalid and rejected from analysis which is an acceptable response rate of 74.07%. All the questionnaires were edited and checked for completeness and used in the data analysis**.**

Table4.2Demographiccharacteristicsofrespondents

Demographic Questions		**Responses of Customers**	
		Frequency	Percentage
Gender	Male	132	66
	Female	68	34
	Total	**200**	**100**
Level of Education	Certificate	0	0
	Diploma	7	3.5
	BA/BSC	178	89
	MA/MSC	15	7.5

	Total	**200**	100
Position	Production	35	17.5
	Human Resource	13	6.5
	Maintenance	13	6.5
	Sales and	54	27
	Supply Chain	69	34.5
	Others	16	8
	Total	**200**	**100**
Experience	Less than 5 Years	44	22
	5-10 Years	94	47
	10-15 Years	48	24
	Over 15 Years	14	7
	Total	**200**	**100**

Table 4.2 Educational level, work experience and gender Cross tabulation

The table given above describes the general findings regarding demographic status of the data. Based on the respondents' gender issues more participants' are male which 66.0%, while 34.0% of the mare Female. As shown in the finding majority of the employees of bottled water industries are Male. Concerning the educational level of the employees of bottled water industries result shows that 7.5% were masters, 89% were first-degree holder, and 3.5% were diploma holder. The result indicates that mos tof the respondents were qualified professionals on that they can easily understand and provide their opinion on research questionnaire. Their position in the company differs by considering their qualification. Most employees include in the supply chain management department which covers 34.5% in water bottled industries. 17.5% included under production manager, 6.5% under human resource managemnet,6.5% maintenance, 27% under sales and marketing 8% employees included under other department which is not related with the supply chain process. The highest percent of respondent taken from the supply chain department which is their activity related with supply chain process in bottled water industries. Regarding to the work experience of the respondents 22% had below 5years experience, 47% under 5-10 years experience, 24% under 10-15 years and 7% more than 15years

experience. The result indicates almost all of the respondents had sound knowledge and experience.

4.3 DESCRIPTIVE ANALYSIS

Mesfin (2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale (that ranges from strongly disagree to strongly agree in the survey questionnaire). A calculated mean value that ranges from 1 to 1.80 implies strong disagreement, a mean range from 1.81 to 2.6, from 2.61 to 3.4,from 3.41 to 4.2 and from 4.21 to 5.00 represented respondents' perceptions of somewhat disagree, neutral, somewhat agree and strongly agree respectively. The 0.8 served as a boundary for each elements of the measurement in the questionnaire.

Small standard deviations (relative to the value of the mean itself) indicate that data are close to the mean whereas a large standard deviation (relative to the mean) indicates that the data points are distant from the mean. The mean is a poor fit of the data. Standard deviation is a measure of how well the mean represents the data (Field 2009). All of the variables were measured using a five point likert scale where 1 stands for Strongly Disagree and 5 stands of Strongly Agree. Therefore the interpretation made using the mean of each variable, as a matter of fact the mean falls between the two ranges, hence if the mean approaches to 1 the interpretation would be the respondents didn't agree on the raised issue or variable and if it approaches to 5 the reverse would be true.

4.4. GREEN SUPPLYCHAINMANAGEMENTPRACTICE

Table 4.4.1 GREEN MANUFACTURING

Items	Mean	Std. Deviation
Our company use fast, reliable and energy efficient production equipment to eliminates waste and improving productivity.	4.43	.62
Our company adopts production processes that use inputs with minimal or reduced environmental impacts.	3.4	1.3
Our company use efficient technology to reduced raw materials and resources to reach low input, high output and low pollution.	3.8	1.0
The company use environmentally friendly energy sources like solar energy, recycling of raw materials and use biodegradable energy services and materials.	4.3	.63
Grand Mean	3.9	.88

N=200

Source: Own survey result *2020*

Concerning the SCM practice items like your organization rely on fast , reliable and energy efficient production equipment to eliminate different waste and improving productivity the participants responded with the mean value of 4.43 and standard deviation of 0.62. Therefore, from the result of the analysis made shows as the respondents strongly agreed about it and also it refers that the organizations were using fast, reliable and energy efficient production equipment to eliminate wastes and improving productivity.

When we come to the second item" the organizations adopts production processes that use

inputs minimal or reduced environmental impacts is the mean score 3.4 and standard deviation of 1.3. The result shows that the organization is at neutral level of using minimal inputs can reduce different environmental impacts.

The company use efficient technology to reduced raw materials and resources to reach low input, high output and low pollution. Most of the respondents replied the result of the mean score is 3.8 and standard deviation of 1.0. The result shows that the organization use efficient technology essential for low pollution can reach high output at an agree level. The overall objective of the green manufacturing making production process more reliable and fast for reaching high output by eliminating wastes and productivity. For the question asked that your organization use environmentally friendly energy sources like solar energy, recycling of raw materials and use biodegradable energy sources and materials about of the respondents answered the mean score is 4.3 and standard deviation of 0.63. The majority of the respondents strongly agreed up on the organization had use environmentally friendly energy sources like solar energy of raw materials and use biodegradable energy sources and materials to fasten the practice of green manufacturing.

The grand mean 2.47 value and standard deviation 1.24 results implies that most respondents agreed on the activities of green manufacturing mostly applied in bottled water industries and it is so essential for eliminating wastes and improving productivity.

Table4.4.2 Eco-Design

Items	Mean	Std. Deviation
The company design products for reduced materials and energy consumption.	3.0	1.4
The company design products for reuse, recycle, recovery of material and component parts.	3.62	1.09
The company design products to avoid or reduce use of hazardous products and/of their manufacturing process.	3.88	1.18
Grand Mean	3.5	1.22

N=200

Source: Own Survey result *2020*

As it is shown in Table 4.3, among from respondents replied the analysis made the mean score of 3.0 and standard deviation of 1.4. The result shows that organization shares a sense off airplay with its customers. This means most of the respondents at a neutral level that the company design products for reduced materials and energy consumption but some of them disagreed on designing products for reduced raw materials agreed up on designing products as another raw materials not for reducing and energy consumption.

For the second category of question the result made of the mean score is 3.62 and standard deviation of 1.09. The result shows that the respondent mostly agreed upon the organization design products for reuse, recycle, recovery of materials and component parts. This shows that the respondent agreed up on the company strategy of designing products for reuse, recycle, recovery of material and component parts.

Regarding question to the bottled water design its products to avoid or reduce use of hazardous products and/or their manufacturing process the mean score is 3.88 and standard deviation of 1.18. This shows that the respondent agreed up on the organization avoiding or reducing use of unimportant products for their further manufacturing process.

To conclude, the grand mean 3.5 and standard deviation 1.22 respectively, eco design practices an essential element in bottled water industries by making another raw materials and reuse, recycle, recovery of material and component parts and avoiding or reducing use of hazardous for their further production process.

Table 4.4.3.Green Procurement

Items	Mean	Std. Deviation
The company cooperates with suppliers for environmental objectives.	3.8	1.1
The company provides design specification to suppliers with environmental requirements.	3.6	1.0
The company conducts environmental audit for suppliers' internal management.	3.8	.98
The company demands its supplier to adopt environment system such as ISO 14001.	3.7	1.1
The company has second-tier supplier environmentally friendly practice evaluation criteria in its procurement.	3.5	1.1
Grand Mean	3.68	*1.0*

N=200

Source: Ownsurveyresult*2020*

The theoretical evidence confirms that supply chain management rides on the back of information in order to meet the required resources at the right time, and at the right place, seamless and instantaneous information flow should exist across the value chain (Russell,2006). With respect to the above theoretical justification, this study tried to investigate the practices of information sharing among the supply chain employees of bottled water industries.

As shown in Table 4.4.3 the mean score 3.8 and standard deviation 1.1. The result show that which is the majority of the respondent's just agreed on the organization cooperates with its business units' proprietary information with suppliers for environmental objectives.

For the second category of question the analysis made of the mean score is 3.6 and standard deviation 1.0. The respondent agreed up on the organization provides design

specification to suppliers with environmental requirements. This shows the organizations design some specifications cooperate with its environmental requirements. Regarding question to the bottled water industries about the organizations conduct environmental audit for suppliers' internal management, the mean score of 3.8 and standard deviation of 0.98. This shows that the respondent agreed up on the system of the organizations provide environmental audit for suppliers' for its internal management. Among the respondents, the analysis made of the mean score is 3.7 and standard deviation is 1.1. The respondent agreed upon the organization demands its supplier to adopt environment system such as ISO 14001 certificate. This means most of the respondents replied that the organization did to adopt new environment measurement for its suppliers. On the last question the result made of the mean score is 3.5 and standard deviation 1.1. It shows that the respondent agreed upon the organization has a second – tier suppler environmentally friendly practice evaluation criteria in its procurement. This shows most of the respondents agreed that the organization should have practice of environmentally friendship of an evaluation criteria in its procurement.

To conclude, the grand mean and standard deviation are 3.68 and 1.0 respectively shows cooperate with suppliers is an essential part to create an environment objectives and designing product specification with environmental requirements to prepare an environment audit to its suppliers to measure an internal management and announcing a different measurement of a certificate of quality measurement for an evaluation criteria in its procurement.

Table4.4.4 Green Distribution and Transportation

Items	Mean	Std. Deviation
The company reduces its energy to add value for warehousing its products.	3.6	1.2
The company involves the activities of obtaining superior financial and environmental performance.	3.7	1.0
The company designs an opportunity for improving its image and to reduce its costs.	3.9	.92
The company also provides transportation system's efficiency and enhancement of customer association can be obtained to create more profitability.	3.7	1.0
Grand Mean	3.7	1.0

N=200

Source: Own survey result 2020

As it is shown in Table 4.4.4 the analysis made of the mean score is 3.6 and standard deviation is 1.2. The result shows that on the first question this means most of the respondents agreed that the company strategy of reducing it energy to add value for warehousing different products which is needed to be stored.

According to the second question, the mean score is 3.7 and standard deviation is 1.0. This means most of the respondents agreed that the organization involved the activities of obtaining superior financial and environmental performance.

The result shows that the mean score is 3.9 and standard deviation is 0.92. Among the respondents, agreed on designing an opportunity of improving its image and to reduce its costs. the For the question of providing transpiration system's efficiency and enhancement of customer association can be obtained to create more profitability the mean score is 3.7 and standard deviation is 1.0. The result shows that the respondent agreed on information exchange between your organization and its trading partners is

adequate. This shows the greater portion of the respondents agreed that the transportation system can create more profitability and enhance good customer association and satisfaction.

The grand mean value and standard deviation value in the bottled water industries are 3.72 and 1.0 respectively. This implies the company can be more successful by reducing its energy and can be improving its financial and environmental performance. And also design an opportunity for improving its image and reduce its costs and providing transportation system for enhancing customer association.

Table4.4.5 Reverse Logistics

Items	Mean	Std. Deviation
The company returns its product; reduce its source, materials, substitution, reuse of materials, waste disposal repair and remanufacturing.	2.83	1.0
Recycling and waste logistics need for collection, classification, processing, handling, storage, and distribution.	3.5	1.2
The company involves the activities to avoid returns, to reduce materials in the forward system.	3.8	.95
The company flow back and ensure reuse and recycling of materials for reducing materials.	3.6	1.0
Grand Mean	3.4	*1.0*

N=200

Source: Own survey result 2020

As presented in the literature review, the last GSCM practice is reverse logistics. Table 4.4.5 above shows, four items developed to investigate the reverse logistics practice of bottled water industries. On the first question the mean score is 2.83 and standard deviation is 1.0. This shows that most respondents at a neutral level of the company involved its product for reducing source and materials substitution and repair of

materials.

Regarding the question of recycling and waste logistics need for collection, classification, processing, handling, storage, and distribution the result made of the mean value is 3.5 and standard deviation is 1.2. This shows as most of the respondents agreed that the company recycle and waste logistics need for collection and processing materials.

According the third question the analysis made of the mean value is 3.8 and standard deviation is 0.95. This shows that most of the respondents agreed up on the organization involve the activities to avoid returns, to reduce materials in the forward system.

The organization flow back and ensure reuse and recycling of materials for recycling materials analysis made of the mean value is 3.6 and standard deviation is 1.0. Most of the respondents agreed up on that flow back and ensure reuse and recycling of materials used for reducing materials.

The grand mean value and standard deviation value in the bottled water industries are 3.4 and 1.0 respectively. This implies the company can return its product for reducing its source materials and reuse of materials and used for waste disposal and repair them. In addition recycling need for collection and handling materials.

Table 4.4.6 Green Supply Chain Management Practices

Items	Mean	Std. Deviation
Green Manufacturing	3.9	0.88
Eco-Design	3.5	1.22
Green Procurement	3.68	1.0
Green Distribution and Transportation	3.7	1.0
Reverse Logistics	3.4	*1.0*

Source: Own survey result 2020

Among from green supply chain management practices green manufacturing is an essential and prominent element. According to Nimawat and Namdev (2012), green

manufacturing involves use of fast, reliable, and energy efficient production equipment aimed at eliminating wastes and improving production. Al-Odeh and Smallwood (2012) associated green manufacturing with clean production method, efficient technology, reduced raw materials and resources so as to reach low input, high output and low pollution.

And also it used in bottled industries to adopts production processes by using some inputs with minimal or reduced environmental impacts. It is also used as to eliminate an essential raw material by using efficient technology to reach high output.

In addition it is used to make environment friendly for using solar energy and recycling of raw materials and use biodegradable energy sources and materials.

4.5 PERCEIVED BENEFIT OF GREEN SUPPLYCHAIN MANAGEMENT PRACTICES

4.5.1 Economic Benefit of Green Supply Chain Management Practices

Benefits	Mean	Std. Deviation
Decrease in cost of materials purchased	3.64	1.07
Decrease in cost of energy consumption	3.41	1.09
Decrease in fee for waste discharge	4.27	.92
Decrease in earnings per share	3.5	1.15
Improvement in return on investment	3.26	1.29
Sales Growth	3.58	1.03
Profits growth	3.82	0.87
Grand Mean	3.64	1.06

N=200

Source:Surveyresult*2020*

Among from objectives perceived benefits of green supply chain management is one of them. The analysis made of the mean score is 3.64 and standard deviation is 1.07. This

shows that most respondents agreed up on that GSCM has a relatively significant of decrease in cost of materials purchased.

The economic benefit of decrease in cost of energy consumption the mean score is 3.41 and standard deviation is 1.09. This shows that most respondents agreed up on that GSCM has a relatively significant of decrease in cost of energy consumption.

Another benefit is decrease in fee for waste discharge the analysis made of the mean value is 4.27 and standard deviation is 0.92. This shows that most respondents strongly agreed up on that GSCM is an important element of decreasing in fee for waste discharge.

On the improvement in earnings per share the mean score is 3.5 and standard deviation is 1.15. This shows that most respondents agreed up on that GSCM has a relatively significant for improvement in earnings per share.

Improvement in return on investment the analysis made of the mean value is 3.26 and standard deviation is 1.29. This shows that most respondents at a neutral level of GSCM have a relatively significant for improvement in return in investment.

Another economic benefit is sales growth the result made of the mean value is 3.58 and standard deviation is 1.03.This shows that most respondents agreed up on that GSCM has a relatively significant for sales growth.

The last economic benefit is profit growth the analysis made the mean value of 3.82 and standard deviation of 0.87. This shows that most respondents agreed up on that GSCM has also a relatively significant for profit growth.

The grand mean value and standard deviation value for the economic benefit of GSCM is 3.69 and 1.06 respectively. It shows that GSCM has a significant economic benefit in bottled water industry.

4.5.2 Environmental Benefit of Green Supply Chain Management Practices

Benefits	Mean	Std. Deviation
Improvement of an enterprise's environmental situation	3.52	1.09
Reduction in waste(water and/or solid)	3.51	1.12
Reduction in air emission	3.57	1.17
Decrease of consumption for hazardous/harmful/toxic materials	3.83	.87
Decrease of frequency for environmental accidents	3.33	1.15
Grand Mean	3.55	1.08

N=200

Source: Own survey result *2020*

Among from objectives perceived benefits of green supply chain management environmental benefit is one of them. Improvement of an enterprise's environmental situation the analysis made the mean value of 3.52 and standard deviation of 1.09. This shows that most respondents agreed up on that GSCM has a relatively significant for improvement of an enterprise's environmental situation.

Another environmental benefit is reduction in waste (water and/or solid) the result made the mean score is 3.51 and standard deviation is 1.12. This shows that most respondents agreed up on that GSCM has a relatively significant for reduction in waste (water and/or solid).

Another benefit is reduction in air emission the analysis made the mean value of 3.57 and standard deviation of 1.17. This shows that most respondents agreed up on that GSCM has a relatively significant for reduction in air emission.

Decrease of consumption for hazardous/harmful/toxic the analysis made the mean value of 3.83 and standard deviation of 0.87. This shows that most respondents agreed up on that GSCM has a relatively significant for consumption for hazardous/harmful/toxic.

Decrease of frequency for environmental accidents the result made the mean value is 3.33 and standard deviation is 1.15. This shows that most respondents at the neutral level of that GSCM has a relatively significant for decrease of frequency of environmental accidents. The grand mean value and standard deviation value for the economic benefit of GSCM is 3.55 and 1.08 respectively. It shows GSCM has a significant environmental benefit in bottled water industry.

4.5.3 Social Benefit of Green Supply Chain Management Practices

Benefits	Mean	Std. Dev.
Improvement in customer satisfaction	3.79	1.04
Improvement in investments on social projects(education, culture, sports)	3.30	1.07
Improvement in relations with community stakeholders.	3.38	.99
Improved awareness and protection of the claims and rights of people in community served	3.67	1.03
Improvement in employee training and education	3.7	0.88
Grand Mean	3.56	1.0

N=200

Source: Own Survey result *2020*

Among from objectives perceived benefits of green supply chain management social benefit is one of them. Improvement in customer satisfaction the analysis made the mean value of 3.79 and standard deviation of 1.04. This shows that most respondents agreed up on that GSCM has a relatively significant for improvement in customer satisfaction.

Another social benefit is improvement in investments on social projects (education, culture, sports) the result made the mean value of 3.30 and standard deviation of 1.07. This shows that most respondents at the neutral level of that GSCM has some degree for

improvement in investments on social projects (education, culture, sports).

Another benefit is improvement in relations with community stakeholders the analysis made the mean value if 3.38 and standard deviation of 0.99. This shows that most respondents at the neutral level of that GSCM have a relatively significant for improvement in relations with community stakeholders.

Another benefit is improved awareness and protection of the claims and rights of people the analysis made the mean value of 3.67 and standard deviation of 1.03. This shows that most respondents agreed up on that GSCM has a relatively significant for improved awareness and protection of the claims and rights of people in community served.

The last benefit is improvement in employee training and education the analysis made the mean value of 3.7 and standard deviation of 0.88. This shows that most respondents agreed up on that GSCM has a relatively significant for improvement in employee training and education.

The aggregate mean value and standard deviation value for the economic benefit of GSCM is 3.56 and 1.0 respectively. It shows GSCM has a significant social benefit in bottled water industry.

Table4.5.6 **PERCEIVED BENEFIT OF GREEN SUPPLYCHAIN MANAGEMENT PRACTICES**

Items	Mean	Std. Deviation
Economic Benefit	3.64	1.06
Environmental Benefit	3.55	1.08
Social Benefit	3.56	1.0

Source: Own survey result 2020

Among the perceived benefit of green supply chain management economic benefit is an essential and prominent benefit. It used in bottled water industry to decrease in cost of materials purchased and cost of energy consumption. And also it is used to decrease a fee

for waste discharge and used as for improving in earnings per share and for return on investment. In addition used as for sales and profits growth.

4.6. Correlation analysis

Correlation shows the strength and direction of relationship between variables. The linear relationship between variable can be measured by correlation coefficient(r), which is commonly called Pearson product moment correlation. Person's "r" mainly measures the data from the interval or ratio level. Table 4.6.1 shows the measures of association and descriptive adjectives between variables.

Table 4.6.1 Measures of Association and Descriptive Adjectives

Measure of Association	Descriptive Adjectives
>0.00 to 0.20;<-0.00 to -0.20	Very weak or very low
>0.20 to 0.40; <-0.20 to -0.40	Weak or low
>0.40 to 0.60; <-0.40 to -0.60	Moderate
>0.60 to 0.80; <-060 to -0.80	Strong or high
>0.80 to 1.0; <-0.80 to -1.0	Very high or very strong

Source:(MacEachron, 1982)

Table 4.7 Challenges affecting Green Supply Chain Management

No	Challenges	Correlation Matrix	Green Supply Chain Management Practices				
			Green Manufacturing	Eco-Design	Green Procurement	Green Distribution and Transportation	Reverse Logistics
1	Legal Factors	Pearson Correlation	.438**	.275**	.258**	.202**	-.341**
		Sig.(2-tailed)	.000	.000	.000	.000	.000
		N	200	200	200	200	200
2	Economic Factors	Pearson Correlation	.164**	.166**	.258**	.082**	.119**
		Sig.(2-tailed)	.020	.019	.340	.246	.094
		N	200	200	200	200	200
3	Socio-Cultural Factors	Pearson Correlation	.570**	.391**	-.122**	.281**	.252**
		Sig.(2-tailed)	.000	.000	.086	.000	.000
		N	200	200	200	200	200
4	Technological Factors	Pearson Correlation	.269**	.246**	-.086**	.112**	.775**
		Sig.(2-tailed)	.000	.000	.226	.114	.000
		N	200	200	200	200	200
5	Top Management Commitment	Pearson Correlation	.256**	.416**	-.183**	.027**	-.179**
		Sig.(2-tailed)	.000	.000	.157	.000	.011
		N	200	200	200	200	200
6	Resistance to Technology	Pearson Correlation	.764**	.411**	-.421**	-.223**	.321**
		Sig.(2-tailed)	.000	.000	.000	.000	.011
		N	200	200	200	200	200
7	Lack of Organization Encouragement	Pearson Correlation	.787**	.644**	-.305**	.127**	.322**
		Sig.(2-tailed)	.000	.000	.000	.074	.000
		N	200	200	200	200	200

8	Cost Implications	Pearson Correlation	.665**	.396**	-.383**	-.240**	-.208**
		Sig.(2-tailed)	.000	.000	.000	.001	.003
		N	200	200	200	200	200
9	Market Competition and Uncertainty	Pearson Correlation	.231**	.393**	.629**	.368**	.008**
		Sig.(2-tailed)	.000	.000	.000	.000	.914
		N	200	200	200	200	200
10	Lack of Government Support System	Pearson Correlation	.231**	-.155**	.746**	.331**	.578**
		Sig.(2-tailed)	.000	.028	.000	.000	.000
		N	200	200	200	200	200
11	Lack of Implementing Green Practices	Pearson Correlation	.334**	-.142**	-.220**	.149**	.296**
		Sig.(2-tailed)	.000	.045	.002	.039	.000
		N	200	200	200	200	200
12	Poor Quality of Human Resources	Pearson Correlation	.157**	.287**	.528**	.240**	.113**
		Sig.(2-tailed)	.000	.000	.000	.000	.110
		N	200	200	200	200	200
13	Supplier Reluctance	Pearson Correlation	.332**	.422**	.484**	.202**	.116**
		Sig.(2-tailed)	.000	.000	.000	.004	.101
		N	200	200	200	200	200
14	Unawareness of Customers	Pearson Correlation	.623**	.186**	-.241**	-.222**	-.183**
		Sig.(2-tailed)	.000	.008	.001	.002	.009
		N	200	200	200	200	200
	**.Correlation is significant at the 0.01 level(2-tailed)						

Source SPSS output survey of 2020

According to Mac Eachron (1982) magnitude of correlation the survey result shows as on the first challenge of legal factors, there is positive and moderate relationship between legal factors and green manufacturing which is the result of r= .438. There is positive and weak or low relationship between legal factors and eco-design which is the result of r= .275. There is positive and weak or low relationship between legal factors and green procurement which is the result of r= .258. There is positive and weak or low relationship between legal factors and green distribution and transportation which is the result of r = .202. There is negative and weak or low relationship between legal factors and reverse logistics which is the result of r = - .341.

On the second challenge of economic factors the correlation result show as there is positive and very high or very strong relationship between economic factors and green manufacturing which is the result of r = .164. There is positive and very high or very strong relationship between economic factors and eco-design which is the result of r = .166. There is positive and weak or low relationship between economic factors and green procurement which is the result of r = .258. There is positive and very weak or very low relationship between economic factors and green distribution and transportation which is the result of r = .082. There is positive and very strong or very high relationship between economic factors and reverse logistics which is the result of r = .119.

On third challenge of socio-cultural factors the correlation result show as there is positive and moderate relationship between socio-cultural factors and green manufacturing which is the result of r = .570. There is positive and weak or low relationship between socio-cultural factors and eco-design which is the result of .391. There is negative and very high and very strong relationship between socio-cultural factors and green procurement which is the result of r = -.122. There is positive and weak or low relationship between socio-cultural factors and green distribution and transportation which is the result of r = .281. There is positive and weak or low relationship between socio-cultural factors and reverse logistics which is the result of r = .252.

On the fourth challenge of technological factors the correlation result show as There is positive and weak or low relationship between technological factors and green manufacturing which is the result of r = .269. There is positive and weak or low relationship between technological factors and eco-design which is the result of r = .246. There is negative and very weak or very low relationship between technological factors and green procurement which is the result of r = -.086. There is positive and very high or very strong relationship between technological factors and green distribution and transportation which is the result of r = .112. There is positive and strong or high relationship between technological factors and reverse logistics which is the result of r = .775.

On the fifth challenge of top management commitment the correlation result show as there is positive ad weak or low relationship between top management commitment and green manufacturing which is the result of r = .256. There is positive and moderate relationship between top management commitment and eco-design which is the result of r = .416. There is negative and very high or very strong relationship between top management commitment and green procurement which is the result of r = -.183. There is positive relationship very weak or very low between top management commitment and green distribution and transportation which is the result of r = .027. There is negative and very high and very strong relationship between top management commitment and reverse logistics which is the result of r = -.179.

On the sixth challenge of resistance technology the correlation result show as There is positive and strong or high relationship between resistance to technology and green manufacturing which is the result of r = .764. There is positive and moderate relationship between resistance to technology and eco-design which is the result of r = .411. There is negative and moderate relationship between resistance to technology and green procurement which is the result of r = - .421. There is negative and weak or low relationship between resistance to technology and green distribution and transportation which is the result of r = - .223. There is positive and weak or low relationship between resistance to technology and reverse logistics which is the result of

r = .321.

On the seventh challenge of lack of organization encouragement the correlation result show as There is positive and strong or high relationship between lack of organization encouragement and green manufacturing which is the result of r = .787. There is positive and strong or high relationship between lack of organization encouragement and eco-design which is the result of r = .644. There is negative and weak or low relationship between lack of organization encouragement and green procurement which is the result of r = - .305. There is positive and very high or very strong relationship between lack of organization encouragement and green distribution and transportation which is the result of r =.127. There is positive and weak or low relationship between lack of organization encouragement and reverse logistics which is the result of r = .322

On the eighth challenge of cost implications the correlation result show as there is positive and strong or high relationship between cost implications and green manufacturing which is the result of r = .665. There is positive and weak or low relationship between cost implications and eco-design which is the result of r = .396. There is negative and weak or low relationship between cost implications and green procurement which is the result of r = -.383. There is negative and weak or low relationship between cost implications and green distribution and transportation which is the result of r = -.240. There is negative and weak or low relationship between cost implications and reverse logistics which is the result of r = -.208.

On the ninth challenge of market competition and uncertainty the correlation result show as There is positive and weak or low relationship between market competition and uncertainty and green manufacturing which is the result of r = .231. There is positive and weak or low relationship between cost implications and eco-design which is the result of r = .393. There is positive and strong or high relationship between market competition and uncertainty and green procurement which is the result of r = .629. There is positive and weak or low relationship between market competition and uncertainty and green distribution and transportation which is the result of r = .368.

There is positive and very weak or very low relationship between market competition and uncertainty and reverse logistics which is the result of r = .008.

On the tenth challenge of lack of government support system the correlation result show as there is positive and weak or low relationship between lack of government support system and green manufacturing which the result of r = .231. There is negative and very high or very strong relationship between lack of government support system and eco-design which is the result of r = -.155. There is positive and strong or high relationship between lack of government support system and green procurement which is the result of r = .743. There is positive and weak or low relationship between lack of government support system and green distribution and transportation which is the result of r = .331. There is positive and strong or high relationship between lack of government support system and reverse logistics which is the result of r = .578.

On the eleventh challenge of lack of implementing green practices the correlation result show as There is positive and weak or low relationship between lack of implementing green practices and green manufacturing which is the result of r = .334. There is negative and very high or very strong relationship between lack of implementing green practices and eco-design which is the result of r = -.142. There is negative and weak or low relationship between lack of implementing green practices and green procurement which is the result of r = -.220. There is negative and very high or very strong relationship between lack of implementing green practices and green distribution and transportation which is the result of r = -.149. There is positive and weak or low relationship between lack of implementing green practices and reverse logistics which is the result of r =.296.

On the twelvth challenge of poor quality of human resources the correlation result show as there is positive and very high or very strong relationship between poor quality of human resources and green manufacturing which is the result of r =.157. There is positive and weak or low relationship between poor quality of human resources and eco-design which is the result of r = .287. There is positive and moderate relationship between poor quality of human resources and green procurement which is the result

of r = .528. There is positive and weak or low relationship between poor quality of human resources and green distribution and transportation which is the result of r = .240. There is positive and very strong or very high relationship between poor quality of human resources and reverse logistics which is the result of r = .113.

On the thirteenth challenge of supplier reluctance the correlation result show as there is positive and weak or low relationship between supplier reluctance and green manufacturing which is the result of r = .332. There is positive and moderate relationship between supplier reluctance and eco-design which is the result of r = .422. There is positive and moderate relationship between supplier reluctance and green procurement which is the result of r = .484. There is negative and weak or low relationship between supplier reluctance and green distribution and transportation which is the result of r = .202. There is positive and very strong or very high relationship between supplier reluctance and reverse logistics which is the result of r = .116.

On the fourteenth challenge of unawareness of customers the correlation result show as there is positive and strong or high relationship between unawareness of customers and green manufacturing which is the result of r = .623. There is positive and moderate relationship between unawareness of customers and eco-design which is the result of r = .186. There is negative and weak or low relationship between unawareness of customers and green procurement which is the result of r = -.241. There is negative and weak or low relationship between unawareness of customers and green distribution and transportation which is the result of r = -.222. There is negative and very strong or very high relationship between Unawareness of customers and reverse logistics which is the result of r = -.183.

Generally the correlation of legal factors with green supply chain management is weak or low. The correlation between economic factors with green supply chain management practices is showed as very high or very strong. On the other hand socio-cultural factors correlate with green supply chain management practices at a moderate level.

The result also showed as technological factors has a strong or high correlation with green supply chain management practices. Top management commitment has a

moderate correlation with green supply chain management practices. Resistance to technology has a correlation with green supply chain management practices at a moderate level. The correlation between lack of organization encouragement with green supply chain management practices is strong or high.

Cost implications and market competition and uncertainty have a weak or low correlation with green supply chain practices. Lack of government support system has strong or high correlation with green supply chain practices. But lack of implementing green practices has very weak or very low correlation with green supply chain management practices.

Poor quality of human resources has weak or low correlation with green supply chain management practices. Supplier reluctance and unawareness of customers have a moderate correlation with green supply chain management practices.

In general the correlation of fourteen challenges with green supply chain management practices is analyzed with the help of SPSS. Legal factors, cost implications and poor quality of human resources correlate at weak or low level. Lack of implementing green practices correlate at very weak or very low level. On the other hand economic factors correlate ate very high or very strong level. Socio-cultural factors, supplier reluctance and unawareness of customers correlate at moderate level. Technological factors, lack of government support system and lack of organization encouragement correlate at high or strong level.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter focuses on the summary, conclusions and recommendations based on the analysis and basic findings on determinants of bottled water industry in Addis Ababa.

5.2 SUMMARY

The prime aim of the study was to asses the practices and challenges of bottled water industry in Addis Ababa.

Currently, the industry is emerging regularly and coming to the market of competition by applying green supply chain management. It is composed of privately owned companies is hence, this study tried to answer which the practices of green supply chain management and their challenges which is obstacle to apply on bottled water industry and also tried to answer the research questions raised in the first chapter of this study.

To analyze the green supply chain management practices in the bottled water industry, the practices are Green Manufacturing, Eco-design, Green Procurement, Green Distribution and Transportation and Reverse Logistics. A sample size was selected using convenience sampling technique. Based on the theoretical frame work and objectives of the study 200 target population were selected to be answered in a five point Likert scale to the respondents. The gathered data was analyzed by using SPSS version 24. The methods used in data analysis include descriptive statistics, correlation and Cronbach's Alpha.

From the demographic characteristics of respondents, the lion share is taken by male (66%) was and the remaining (34%) were female respondents. Besides, the large number of respondents who participated in the study was from the department of SCM. In relation to their qualification level, the respondents had 7.5% of the respondents were

master's degree holders, 89% of them were degree holders, and 3.5% were diploma holders and there were no certificate holders respondent. Moreover, the work experience of the respondents indicate that, 47% of the respondents have 5 to 10 years work experience which is they have acceptable exposure to the work area and potential of bringing change to the organization.

In ordered to answer the research question, descriptive and inferential statistics was employed. The study incorporate six independent variables in which all of them was measured on a 5-point Likert-Scale, with "1" stands for "Strongly Disagree" and "5" stands for "Strongly Agree". Apparently, mean was used as a measure of central tendency. Furthermore, the data were encoded, processed and analysed using SPSS.V 24. The analysis result show that the mean score values for GSCM practice was to the minimum the average mean value (between 3.5 and 3.9) which actually indicates the GSCM practice of Bottled Water Industry is relatively strong. Regarding the correlation, it indicates that economic factors, resistance to technology, lack of organization encouragement, cost implications and poor quality of human resources strongly or highly correlated with the practice of green manufacturing and also economic factor and supplier reluctance highly correlated with reverse logistics respectively.

5.3 CONCLUSION

Under this study, the major issues for GSCM practice raises were about green manufacturing, eco-design, green procurement, green distribution and transportation and reverse logistics .From the result, green manufacturing, green procurement and green distribution and transportation had considerable consequence on practice of GSCM.

In this study, four research questions were developed these were

- How green supply chain management is being practiced in bottled water manufacturing industry?
- To what extent the employees of bottled water industry are aware of the green supply chain management practice?

- What are the challenges of green supply chain management on the implementation in bottled water industry? And
- What are the perceived benefits of green supply chain management in bottle water manufacturing industry?

And the result shows that which were green manufacturing, green distribution and transportation and green procurement are evaluated above the average mean value of 3.5, and the rest two were eco-design and reverse logistics below 3.5. In other words, it shows the study has revealed that GSCM practice in bottled water industry is strong.

Regarding green supply chain practice fully committed in bottled water industry. Also, there is high cross functional cooperation among functional departments and there is no awareness gap in the employee about GSCM practice

Concerning challenges of GSCM practice legal factors, economic factors, socio-cultural factors, technological factors, top management commitment, resistance to technology, lack of organization encouragement, cost implications, market competition and uncertainty, lack of government support system, lack of implementing green practices, poor quality of human resources, supplier reluctance to change towards GSCM and unawareness of customers towards GSCM practice.

The result given on the conclusion entails that, the research questions were considerably assessed strong by which actually indicate the GSCM practice is at required level in bottled water industry.

5.4 RECOMMENDATION

By relying on the study findings, the researcher suggests the following points as credible recommendations to the problem.Based on the finding achieved and conclusions drawn the following recommendations are forwarded;

Develop Green Supply chain Management system: The study exposed that the current status of green supply chain management practice in bottled water industry is weak. This implies that the commitment of different employee is weak. In this regard, different

studies indicate that management and employees commitment and strong support is a critical factor in implementation of environmentally favored green supply chain practice. Therefore, from the nature of green supply chain practice, the study recommended that bottled water industry need to develop and adopt the concept of green supply chain management practice.

Technology Advancement: in order to improve the GSCM practice, technology advancement adoption is vital for the development of one organization; therefore, developing modern technology is essential to the improvement of GSCM practice in the organization.

Management Commitment: the study identified that supplier reluctance to change towards green supply chain management, unawareness of customers and lack of quality of human resources are the major challenges of green supply chain management. Therefore, in order to increase the GSCM practice, the bottled water industries should be concerned on especially top managements and middle management are able to be responsible and fully committed for implementing Green supply chain Management.

Also, provide different trainings and encouraging activities for the employee to improve their awareness about the issue of GSCM practice is expected from the organization for the better implementation of GSCM practice.

Green supply chain Strategies; develop different strategies like reuse, recycle and recovery of materials, component parts, avoid or reduce use of hazardous of products and or their manufacturing process. The ministry of environments should revise polices instead of a simple observation and leveling of companies as non-pollutant, policy and controlling manual must be set up at industry level this will help to effectively monitor the activity and compliance at industry level in agreement with the country green development strategy.

5.5 LIMITATION OF THE STUDY

Although this study was subjected to different literatures and data analysis tools, it has its own limitations and should be mentioned in order to provide a path for further studies.

The first limitation of this study the study was limited to only Addis Ababa factory. In carry out this study, considerable constraint was limited literatures or secondary source available on green supply chain management practises. The other important challenge due to this current issue most respondent be unwillingness and cannot get them easily.

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APPENDIX

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE GRADUATE STUDIES

DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

QUESTIONNAIRE TO BE FILLED BY RESPONDENTS

Dear respondents:

Dear Respondent,

My name is Merry Nigatu. I am a student in postgraduate program of the Addis Ababa University, one of the pioneer's higher education is instituting in Ethiopia. I am conducting this research to fulfill the partial requirements for the Degree of Masters of Logistics and Supply Chain Management (MBA) degree. The topic of my reversal entitled "The practice and challenges of Green Supply Chain Management implementation in bottled water industries in Addis Ababa", designed to collect primary data on the topic under caption. Your genuine answer is significantly respected and will contribute a lot to the accuracy of this study. The information collected from this questioner will merely be used for research purpose and will be treated with strict confidentiality. Hence, it is not necessary to write your name. I would be grateful, therefore, if you kindly take a few minutes of your previous time to fill out this questionnaire as genuinely and completely as possible.

Thank you for your time and consideration

Name – Merry Nigatu

E-mail Address – merrynigatu32@gmail.com

Instruction: Please, put a tick (✓) mark in which you want to select

Part I: Questions related with Background Information

Water Bottled Manufacturing Industries

Part I: Questions related with Background Information of the respondent

1. **Gender** Male ☐ Female ☐
2. **State your highest level of education?**

   Certificate ☐ Diploma ☐ BA/BSC☐ MA/MSC ☐
3. **What is your position in the company?**

   Production Manager ☐ Maintenance☐Supply chain department ☐

   Human Resource ☐ Sales and Marketing ☐ Others☐
4. **How long have you been working in the company?**

   Less than 5 years ☐ 5-10 Years ☐ 10-15 Years☐ Over 15 years☐

Part II

Questions related with **Green Supply Chain Management Practice**. Please indicate your level of agreement by using a tick (✓) mark. The five Likert Scale points denote: 1=Strongly Disagree, 2=Disagree, 3=Neutral 4=Agree 5= Strongly Agree. The questions grouped as five topics are:

No	**Green Supply Chain Management Practice**	1	2	3	4	5
A. Green Manufacturing						
1	Our company use fast, reliable and energy efficient production equipment to eliminating wastes and improving productivity.					
2	Our company adopts production processes that use inputs with minimal or reduced environmental impacts.					
3	Our company use efficient technology to reduced raw materials and resources to reach low input, high output and low pollution.					
4	The company use environmentally friendly energy sources like solar energy, recycling of raw materials and use biodegradable energy sources and materials.					
B. Eco-Design						
5	The company design products for reduced materials and energy consumption.					
6	The company design products for reuse, recycle, recovery of material and component parts.					

7	The company design products to avoid or reduce use of hazardous products and /or their manufacturing process.					
C. **Green Procurement**						
8	The company cooperate with suppliers for environmental objectives.					
9	The company provides design specification to suppliers with environmental requirements.					
10	The company conducts environmental audit for suppliers' internal management.					
11	The company demands its supplier to adopt environment system such as ISO 14001.					
12	The company has second-tier supplier environmentally friendly practice evaluation criteria in its procurement.					
D. **Green Distribution and Transportation**						
13	The company reduce its energy to add value for warehousing its products.					
14	The company involves the activities of obtaining superior financial and environmental performance.					
15	The company design an opportunity for improving its image and to reduce its costs.					
16	The company also provides transportation system’s efficiency and enhancement of customer association can					

	be obtained to create more profitability.					
E. **Reverse Logistics**						
17	The company return its product; reduce its source, materials substitution, reuse of materials, waste disposal repair and remanufacturing.					
18	Recycling and waste logistics need for collection, classification, processing, handing, storage, and distribution.					
19	The company involves the activities to avoid returns, to reduce materials in the forward system.					
20	The company flow back and ensure reuse and recycling of materials for reducing materials.					

Part III

Incorporates issues related with challenges and prospects of Implementing Green Supply Chain Management. The five Likert Scale points denote: 1= not at all, 2= a little bit, 3=to some degree, 4= relatively significant and 5= significant) The questions grouped as five topics are:

No	**Challenges affecting Green Supply Chain Management**	1	2	3	4	5
Legal Factors						
1	Lack of legal factors support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
2	Lack of legal factors support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
3	Lack of legal factors support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
4	Lack of legal factors support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
5	Lack of legal factors support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
Economic Factors						

6	Lack of economic factors support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
7	Lack of economic factors support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
8	Lack of economic factors support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
9	Lack of economic factors support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
10	Lack of economic factors support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Socio-Cultural Factors						
11	Lack of socio-cultural factors support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
12	Lack of socio-cultural factors support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
13	Lack of socio-cultural factors support in resource, leadership, and training negatively affects the **green**					

	procurement practices of the company.					
14	Lack of socio-cultural factors support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
15	Lack of socio-cultural factors support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Technological Factors						
16	Lack of technological factors support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
17	Lack of technological factors support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
18	Lack of technological factors support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
19	Lack of technological factors support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
20	Lack of technological factors support in resource, leadership, and training negatively affects the **reverse**					

	logistics practices of the company.					
Top Management Commitment						
21	Lack of top management support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
22	Lack of top management support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
23	Lack of top management support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
24	Lack of top management support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
25	Lack of top management support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Resistance to technology						
26	Lack of resistance to technology support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
27	Lack of resistance to technology support in resource,					

	leadership, and training negatively affects the **eco-design** practices of the company.					
28	Lack of resistance to technology support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
29	Lack of resistance to technology support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
30	Lack of resistance to technology support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Lack of Organization Encouragement						
31	Lack of organization encouragement support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
32	Lack of organization encouragement support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
33	Lack of organization encouragement support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
34	Lack of organization encouragement support in resource, leadership, and training negatively affects the **green**					

	distribution and transportation practices of the company.					
35	Lack of organization encouragement support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Cost Implications						
36	Lack of cost implications support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
37	Lack of cost implications support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
38	Lack of cost implications support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
39	Lack of cost implications support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
40	Lack of cost implications support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Market Competition and Uncertainty						
41	Lack of market competition and uncertainty support in resource, leadership, and training negatively affects the					

	green manufacturing practices of the company.					
42	Lack of market competition and uncertainty support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
43	Lack of market competition and uncertainty support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
44	Lack of market competition and uncertainty support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
45	Lack of market competition and uncertainty support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Lack of Government Support System						
46	Lack of government support system support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
47	Lack of government support system support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
48	Lack of government support system support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					

49	Lack of government support system support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
50	Lack of government support system support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Lack of Implementing Green Practices						
51	Lack of implementing green practices support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
52	Lack of implementing green practices support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
53	Lack of implementing green practices support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
54	Lack of implementing green practices support system support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
55	Lack of implementing green practices support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					

Poor Quality of Human Resources						
56	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
57	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
58	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
59	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
60	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Supplier Reluctance						
61	Lack of supplier reluctance support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
62	Lack of supplier reluctance support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
63	Lack of supplier reluctance support in resource, leadership, and training negatively affects the **green procurement**					

	practices of the company.					
64	Lack of supplier reluctance support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
65	Lack of supplier reluctance support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					
Unawareness of Customers						
66	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green manufacturing** practices of the company.					
67	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **eco-design** practices of the company.					
68	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green procurement** practices of the company.					
69	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **green distribution and transportation** practices of the company.					
70	Lack of poor quality of human resources support in resource, leadership, and training negatively affects the **reverse logistics** practices of the company.					

Part IV

Incorporates issues related with benefits of Implementing Green Supply Chain Management. The five Likert Scale points denote: 1= not at all, 2= a little bit, 3=to some degree, 4= relatively significant and 5= significant).

No	Perceived Benefit of Green Supply chain Management practices	1	2	3	4	5
A. Economic Benefit of Green Supply Management Practices						
1	Decrease in cost of materials purchased					
2	Decrease in cost of energy consumption					
3	Decrease in fee for waste discharge					
4	Improvement in earnings per share					
5	Improvement in return on investment					
6	Sales growth					
7	Profits growth					
B. Environmental Benefit of Green Supply Chain Management Practices						
9	Improvement of an enterprise's environmental situation					
10	Reduction in waste (water and/or solid)					
11	Reduction in air emission					
12	Decrease of consumption for hazardous/harmful/toxic materials					
13	Decrease of frequency for environmental accidents					

C. Social Benefit of Green Supply Chain Management Practices						
14	Improvement in customer satisfaction					
15	Improvement in investments on social projects (education, culture, sports)					
16	Improvement in relations with community stakeholders					
17	Improved awareness and protection of the claims and rights of people in community served					
18	Improvement in employee training and education					

Thank you for your cooperation