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Management and Leadership MSC. PROGRAM

THESIS TITLE:

Green Supply Chain Management General Literature Analysis and Obstacles

Primary Supervisor: Dr. Gyenge Balázs

Author: Mustafa Emre Kaymakci

Neptun ID: VOVYE8

Department of Agricultural Logistics, Trade and Marketing,

Institute of Agriculture and Food Economics

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Contents

1. Introduction

Green supply chain management covers issues including eco-friendly manufacturing, eco-friendly buying, eco-friendly marketing, eco-friendly customer interaction, eco-friendly logistics, eco-friendly investment recovery, and eco-friendly packaging. Green supply chain management techniques extend to effective supply management with regard to energy conservation, emission reduction, and environmental preservation. They also boost resource and energy usage efficiency and enhance environmental performance for enterprises.

With the rapid advancement of industrial technology, the number of businesses producing has expanded. Companies' desire to sell more has resulted in significant increases in production numbers. This situation has brought the issue of pollution to the forefront, as well as the threat of resource depletion over time. However, until recently, the amount of harm caused to the natural environment by poisonous gases generated by businesses as a result of their manufacturing activities and hazardous chemicals poisoning natural water resources was unknown. The fact that environmental concerns produced by contamination of the natural environment are making human life more difficult has sparked a lot of debate in national and international circles today. Discussions on the protection of the natural environment began to spread to all segments of society over time. Companies have started to adopt green and environmental practices to avoid criminal prosecution and meet the increasing environmental demands of consumers to protect the natural environment. In addition, companies apply an understanding of environmental awareness in the process from the procurement of raw materials needed for the production of goods and services to sales and after-sales services.

“Green supply chain management varies from green purchasing to entering green supply chains, from suppliers to manufacturers and even reverse logistics.” (Sarkis & Zhu, 2004)

“Green supply chain management integrates environmental considerations with the supply chain and delivers the final products to the consumer, including product design, material selection and purchasing, and production processes.” (Srivastava, 2007)

Aims of the research the following are the clear aims of this study:

1. A company's management stance and customers have a significant effect on Green Supply Chain Applications.
2. The Approach of the company's managers has a significant effect on Green Supply Chain Applications.
3. Utilizing GSCM practices has a significant impact on companies' benefit, environment, energy usage, and general waste.
4. Barriers to Implement Green Supply Chain Management Practices.

One of the research goals of this study is to determine how Green Supply Chain Management apps affect companies and the environment. It is possible to form a hypothesis based on this, and as a result, it is possible to determine whether or not Green Supply Chain Management programs significantly affect the benefit of the company, environment, energy usage, and general waste. Because of this, the price of building GSM apps could be high or low. In addition, the effects of managers and clients on GSCM. For this reason, businesses must plan for applications of green supply chain management.

Quantitative research methods can be used in the investigation. To collect primary data for this inquiry directly from the source, a questionnaire and interview will be used.

Green supply chain management is focused on the goal of conserving the natural environment throughout the chain, from the initial supply of raw materials required for the manufacturing of goods and services that will meet consumer needs to the ultimate residual at the conclusion of the user's product use. It also ensures the development of environmentally sustainable production methods by reducing the amount of energy and resources used in the creation of environmentally friendly goods and services. In the long run, the cost advantage afforded by environmentally sustainable production processes offers enterprises with significant market competitive advantages. Many obstacles stand in the way of firms adopting green supply chain management techniques. The key influencers of these aspects can be considered to be country development levels, competition conditions, consumer green awareness levels, and legal regulations and laws. The following is the plan for the next part of this study, which aims to show the present state of green supply chain management and the challenges that have been experienced in its implementation. Green supply chain management, green supply chain development process,

green supply chain management idea, green supply chain management practices, and driving logic are discussed in the second half of the research. The importance of a green supply chain and an environmental management strategy is emphasized. The hurdles to green supply chain management are highlighted in the third chapter, which is then followed by a debate and conclusion section.

2. Literature Review

2.1. Green Supply Chain Management

2.1.1. Development Process of Green Supply Chain

From the 1900s through the 1960s, logistics was largely considered as basic physical distribution activities like transportation and storage, rather than a core competitive advantage for enterprises. Logistics is considered a tactical activity that carries out tasks such as inventory, transportation, storage, and order processing as its major business during this period, and it is assigned less priority in organizations than marketing, sales, and manufacturing (ÖZESEN, 2009).

Bowersox was the first to highlight the phrase physical distribution, which is considered the first stage of supply chain management. Bowersox argued that the distribution function would provide a competitive edge through in-channel integration outside the organization, in addition to sensing important currents in physical distribution thinking (Bowersox, January 1, 1969).

Urbanization and industrialization accelerated substantially after the introduction of the industrial revolution in the 1980s. This process of growth and transformation has resulted in a slew of issues. Companies and managers were forced to consider environmental factors while determining their management style because of the emergence of environmental challenges over time and the depletion of natural resources. From this perspective, businesses transform their supply chains into a more environmentally friendly structure, and they design environmentally friendly green production systems, reduce waste, manage environmental risks, and act with social responsibility awareness by employing green supply chain management. Green supply chain management is a comprehensive system that encompasses green purchasing, green manufacturing, recycling, waste management, green marketing, and green logistics.

The amount of manufacturing expanded dramatically in the 1990s as industrial technology improved, and the market environment became more competitive. Companies have made significant changes in their manufacturing techniques and begun to use a variety of tools that can create a competitive aspect in order to fulfill changing consumer wants and optimize their happiness in a fiercely competitive environment. Consumer happiness is directly related to the ability of consumers to meet their needs, according to businesses. The key goals, without a

doubt, are to reduce costs, ensure customer happiness, and obtain a competitive edge through an efficient and effective supply chain.

A new age began to emerge around the end of the 1990s, when environmental difficulties arose as a result of the massive growth in production quantities. Because of firms' thoughtless industrial efforts, environmental contamination and the risk of natural resource depletion have become contentious concerns. The environmental impact of logistical operations is particularly severe. At these points, the demand for and solutions for green supply chains emerge.

All of these developments are required by companies to produce environmentally friendly products that are sensitive to the natural environment, have social responsibility awareness, use resources more efficiently, and cause less pollution in order to prevent environmental problems caused by increasing environmental pollution (Carter, 2000).

Significant changes in the environment have resulted from rising consumer and citizen environmental expectations, the proliferation and sponsorship of environmental groups, and rising regulatory and competitive situations.

2.1.2. Green Supply Chain Management Concept

Green supply chain management is included in both supply chain management and environmental management literature. Adding the concept of green to supply chain management includes addressing the implications between supply chain management and the natural environment. In the literature, there are some definitions for green supply chain management similar to supply chain management.

Supply chain management is planning and controlling the flow of materials and information. This includes the delivery of raw materials and materials necessary to meet consumer needs from suppliers and their incorporation into production activities, as well as the process of product delivery.

The supply chain has been defined by many researchers and authors in the literature. Some supply chain definitions in the literature are:

A supply chain is a network that transforms raw materials into intermediate and final products and distributes the final products to customers and distributors (Lee & , 1992).

A supply chain is also defined as the set of elements through which materials, products, and information flow, including consumers, logistics providers, manufacturers, distributors, and other suppliers (KOPCZAK, 1997).

According to Chow and Heaver, supply chain is a group of manufacturers, suppliers, distributors, retailers and carriers, information and other logistics management service providers operating in providing goods to consumers. A supply chain includes both external and internal partners for the company (Janvier, 2012).

It is the direct supply and distribution of goods, services, finances, and information from a source to a destination (customer) (Mentzer, et al., 2001).

These concepts represent common functions of the supply chain. The supply chain is a system concept that consists of suppliers, manufacturers, sellers, retailers, and customers. In this system, materials flow from suppliers to customers, money flows from customers to suppliers, and information flows both ways.

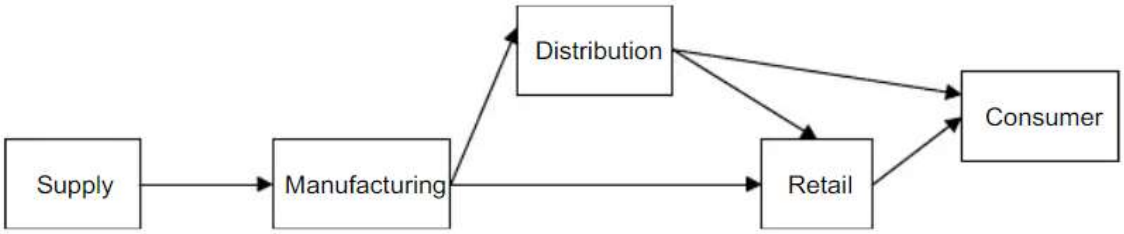

Figure 1. *The Traditional Supply Chain (Beamon, 1999)*

Businesses have long viewed supply chain management as the process between procurement, production, distribution, and consumers in terms of cost, time, quality, and flexibility criteria. This period, known as traditional supply chain management, begins with the procurement of raw materials and materials required for production activities and ends with the final manufactured product being delivered to the consumer by members of the distribution channel (Beamon, 1999).

Increasing demands of consumers for greener products and increasing competition conditions have caused businesses to review their existing supply chains. This situation has led businesses to turn to more environmentally friendly practices. Hervani states that the definition of green supply chain management has emerged as a result of activities aimed at reducing or completely eliminating the negative effects of existing supply chain management activities on the natural environment (Hervani, et al., 2005).

Green supply chain management is a new environmental management approach that has emerged to prevent or mitigate environmental damage caused by production activities in traditional supply chains.

Quality in the late 1980s and the supply chain revolution in the early 1990s led businesses to environmental awareness. Green supply chain management is of great importance for academics and practitioners, aiming to maintain product life quality and reduce waste with the effective use of natural resources (Srivastava, 2007).

The green supply chain initially started with more managerial, less technical scope, such as logistics, and purchasing. Later, reverse logistics, which is environmentally oriented, was integrated with logistics, marketing, transactions, and purchasing (Sarkis, et al., 2011).

2.1.3. Reasons for the Green Supply Chain Orientation

It can be observed that there are numerous different sources of inspiration for the green supply chain. The main driving forces behind this include the rise in environmental pollution, the threat posed by the depletion of natural resources, pressure from society and customers, government environmental laws, and a variety of other macro and microelements. The following is a general list of them:

- Collective environmental awareness and environmental pressures are created as a result of societies' growing knowledge of environmental contamination and the threat posed by the depletion of natural resources.
- Green practices developed to protect the environment provide a competitive advantage by making significant contributions to the performance, cost, and profitability of businesses (Sarkis & Zhu, 2004).

- Governments, unions, and non-governmental organizations are under increasing pressure to protect the environment (Srivastava, 2007).
- Consumers' growing concern about environmental protection puts pressure on businesses.
- The costs of raw materials for businesses are reduced via reverse logistics activities.
- For commercial cooperation and agreements, global businesses that have adopted green supply chain management practices require their suppliers or partners to implement green practices (Sarkis & Zhu, 2004).
- Increasing public and governmental efforts are being made to prevent environmental issues brought on by the threat of resource depletion and pollution.

2.1.4. Differences Between Green Supply Chain and Traditional Supply Chain

The traditional supply chain is focused on cost, quality, time, and flexibility. The green supply chain, on the other hand, focuses on the management of the performance of the elements that make up the chain, green image, ecological efficiency, green design, green product, and sustainability concepts (Hj & Chan, 2003).

The traditional supply chain begins with the acquisition of materials from suppliers and presents the finished product to the customer. On the other hand, in a green supply chain, a product's life cycle begins with the initial raw materials and materials needed for production activities using more environmentally friendly approaches and continues with reverse logistics activities for the waste produced as a result of a product's use.

Characteristics	Conventional SCM	Green SCM
Objectives and values	Economic	Economic and ecological
Ecological optimization	High ecological impacts	Integrated approach Low ecological impacts
Supplier selection criteria	Price switching suppliers quickly Short-term relationships	Ecological aspects (and price) Long-term relationships
Cost pressure and prices	High cost pressure Low prices	High cost pressure High prices
Speed and flexibility	High	Low

Table 1. Differences between the Conventional and GSCM (Ho, et al., 2009, p. 21)

2.1.5. Environmental Management Processes

The move from the traditional supply chain to the green supply chain is reactive, proactive, and value-creating in the environmental management strategy (Berg, et al., 1993).

In the reactive approach, enterprises' use of ecologically friendly green practices is at an all-time low. Businesses typically favor using recyclable items in their production processes. There are recyclable green labels on the product package. Additionally, filters are utilized to lessen the negative effects of trash that results from business manufacturing activities on the environment. Businesses often comply with environmental policies under the reactive approach by having laws and regulations enforced. Outside of statutory requirements, businesses do not take additional steps to build an environmental management strategy. The least amount of resources are often allotted to green practice activities in the reactive approach, and the enterprise's environmental management is given responsibility (Srivastava, 2007, p. 57).

Instead of looking for solutions to prospective environmental issues that may arise as a result of industrial operations, businesses that take a proactive approach work to prevent problems from happening. It basically aims to take preventive remedies for any environmental issues that may develop from manufacturing activities without waiting for the compulsory judgments of regulatory rules. In the proactive approach, the company's senior management adopts green business practices, and there is also a functional approach where green products are produced and initiatives for recyclable and reused materials are discussed (Ulrich, 2000, p. 24).

The value-creating method, on the other hand, expresses it as the creation of green-oriented business strategies and is the most comprehensive approach when compared to the other two approaches. Businesses incorporate green practices into every step of the supply chain and guarantee that all participants in the chain take part. Businesses adopt a strategic environmental strategy across their production processes and create green product models that will harm the environment the least. Environmental life cycle analysis is used in the design of detachable, recyclable, and reusable items (Srivastava, 2007, p. 58)

2.1.6. Green Supply Chain Management Activities

Green supply chain management practices include issues such as green purchasing, environmental cooperation with customers, recovery of investment, eco-design and internal environmental management. (Hervani, et al., 2005)

The first step in implementing a green supply chain is cost accounting. At this stage, it is determined whether the costs arising from the research and evaluation of materials or products represent the company's environmental costs. The second stage is opportunity identification. At this stage, companies consider all kinds of changes to ensure environmental impact and cost savings.

The third step is profit calculation. At this stage, companies use several methods and cost approaches such as net present value and risk assessment. The fourth stage, the green supply chain implementation and management decision, produces effects for the continuous development and sustainable growth of the enterprise.

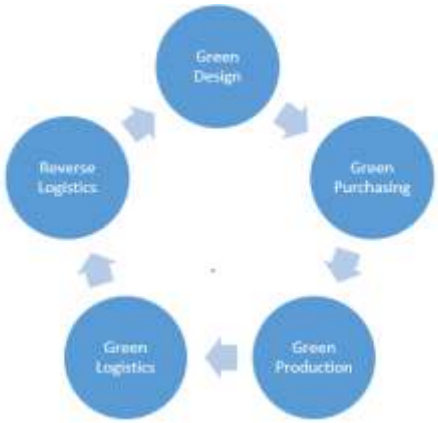

***Figure 2**. Fundamental components of Green Supply Chain Management (Fabio Neves Puglieri, 2021)*

2.2. Obstacles to Using Green Supply Chain Management Techniques

Due to the wastes generated by businesses' production processes as well as the dangerous gases and chemicals they release into the environment, environmental issues have begun to surface. Humans face more challenging living conditions as a result of the environment's steady degradation and the threat of resource depletion. Businesses, governments, and consumer advocacy groups have been compelled to take action to safeguard the environment as a result of

these unfavorable environmental events. The production operations of businesses are mostly to blame for environmental issues. In order to protect the environment, businesses must do more. However, there are numerous obstacles that prohibit companies from adopting green practices. Some of these factors are listed below.

- Unwillingness of Suppliers
- Market competition
- A lack of skilled human resources
- Lack of management support
- Insufficiency of funds
- Lack of expertise and knowledge
- Technology Infrastructure Deficit
- Lack of Consumer Awareness

Figure 3. *Hierachy Model of GSCM Barrier in Construction Industry (Ojo, et al., 2014, p. 1978)*

2.2.1. Unwillingness of Suppliers

For the efficient implementation of green supply chain management, suppliers' willingness to adopt green practices is crucial. The efficiency of the green supply chain is directly impacted by suppliers' readiness to adopt green innovations, swiftly adopt green technology and processes, and show willingness to engage in green activities including participating in the design of green products (Klassen & Vachon, 2006).

2.2.2. Market competition

The adoption of green techniques is highly impacted by the ongoing changes in consumer demands and the market competition. The shift to green supply chain management methods may be hampered by uncertainties brought on by changing consumer demands and market competition.

2.2.3. A lack of skilled human resources

Implementing business strategy successfully depends heavily on the caliber of an organization's human resources. People with the right skills may think of innovative ideas for firms, pick up new concepts fast, and adjust without difficulty. The lack of qualified and experienced human resources trained in green practices in the area where the businesses that will implement green supply chain management are located or the difficulty the businesses have in reaching these individuals can be significant barriers to implementing green supply chain management practices.

2.2.4. Lack of management support

Lack of senior management participation, commitment, and support, weak and unstable management capacity, a lack of corporate leadership and support, a lack of green awareness, and senior management resistance to the change brought about by green practices are significant barriers to the adoption of green supply chain management (Sreejith, 2012).

2.2.5. Insufficiency of funds

Businesses find it challenging to transition to green supply chain management due to the difficulty in obtaining the financing source necessary for all applications along the chain, from the building, equipment, machinery, qualified human resources, and infrastructure required for investment, to recycling, reuse, or disposal of the used products (Shankar, 2005).

2.2.6. Lack of expertise and knowledge

Implementation of green supply chain management may be significantly hampered by stakeholders along the value chain's lack of knowledge and expertise with green techniques. Other significant barriers include the stakeholders' lack of education and experience, the institution's employees' lack of training, and the stakeholders' lack of eco-literacy and environmental understanding (Shankar, 2005) (Sreejith, 2012).

2.2.7. Technology Infrastructure Deficit

Technology is a key factor in determining how businesses will direct their production activities. Businesses require several crucial new technical infrastructures for green applications during the phase of transition from traditional supply chain applications to green supply chain. By enabling the integration of green supply chain components, information technology systems are regarded as being crucial in helping to generate more ecologically friendly products. The effectiveness of managing the processes that fail, need to be established, and need to be improved is made possible by tracking the effectiveness of the components of the information technology value chain and evaluating their performance (Shankar, 2005). For this reason, it can be claimed that a further significant barrier to the development of green supply chain management systems is the absence of green software and hardware in information technology applications.

2.2.8. Lack of Consumer Awareness

Businesses are strongly encouraged to adopt green supply chain management due to the growing customer awareness of the importance of preserving the environment. One of the major barriers to using green supply chain management techniques is consumers' inadequate level of environmental education and awareness (Qinghua Zhu, 2004, pp. 4334-4337).

These days, customers' purchase decisions are influenced by a number of critical aspects, including price and quality. One major motivator for consumer preference is the use of green applications. Consumer awareness of environmental protection and growing green demands are significant drivers of company adoption of environmentally friendly practices in production.

2.3. Green Design

Green design seeks to minimize the harmful effects of items' production on the environment by using the right materials and technologies. According to this definition, producers are required to use environmentally friendly materials in their products and to create designs that will lessen any adverse effects on the environment, both during production and after the product is used by the consumer. The following is a summary of this definition's specifics:

- Designing products and processes to minimize carbon emissions that result from their manufacture and use is known as reducing carbon footprint.
- Products that are reusable or recyclable: After a product's expiration, choosing the materials to be used in production from reusable or recyclable materials.
- Quality and durability: By creating more durable and useful products, we can lengthen their useful lives and cut down on consumption.
- Energy-efficient designs: Those that use less energy during both production and use by the final consumer.
- Utilizing less harmful raw materials: non-toxic, recycled, and materials that need less energy to manufacture.

2.4. Green Supply Chain Concepts

2.4.1. Green Purchasing

Green purchasing plays an important role in green supply chain management. Integrate environmental aspects into procurement processes. The purpose of the company is to purchase eco-friendly materials and components and to manufacture eco-friendly products. In green purchasing, purchased materials are all materials and parts that are harmful to human health, do not contain chemical substances, do not harm people during the product manufacturing process, and do not contain environmental pollutants or hazardous chemical substances. , parts, and products.

Green purchasing is very important in terms of effectively and successfully managing all elements of the supply chain. Green purchasing is the starting point of our first relationship with a supplier, so it has a direct impact on subsequent factors.

Green purchasing refers to strategic purchasing activities in which preventive measures are taken against the hazards that may cause environmental problems, including the selection, evaluation and, development of suppliers. (Zsidisin & Siferd, 2001)

Green purchasing: Purchasing duties include activities including reduction, recycling, reuse and replacement of material. (Carter & Carter, 1998)

Setting different purchasing criteria is an important issue for green purchasing activities. Economic reasons for businesses are the biggest obstacle to the implementation of green purchasing activities. Environmental benefits are one of the important criteria for companies and suppliers applying green supply chain management to evaluate technology, quality, delivery, and cost. Businesses that implement green supply chain management always prefer to choose the supplier that can show the best performance in their field and implement environmentally friendly practices.

In green purchasing, the use of green raw materials is a prerequisite for ensuring the compatibility of the production process with the environment and applying environmental management from raw materials. It focuses on the process from raw material input to resource reduction, recycling and reuse. Raw materials obtained from nature are divided into sections in various ways. Some of these products are recycled and some are returned to nature. Parts are assembled into products, which enter the distribution area and are sold to consumers. During the use of the product, the consumer will reuse the product after repairing it many times. Therefore, the product life cycle continues. After shredding and disassembling the product, some parts are recycled and used directly to assemble the product. Some of it is processed into new parts, the rest is processed into raw materials, and the rest is returned to nature. New resources are created through the deterioration and regeneration of nature. Environmental management of the procurement process focuses on the management of raw material suppliers with a focus on suppliers and logistics to ensure the environmental friendliness of procurement activities.

2.4.1.1. Green Procurement Internal Management

In green purchasing internal management, supplier selection is not only a matter of independence of the purchasing department or environmental protection department but also requires the company to organize the relevant departments from a general perspective, explain responsibilities, and complete tasks together.

For the successful implementation of green purchasing activities, businesses primarily take into account some internal management issues. Businesses also consider more comprehensive environmental problems such as supplier selection, reducing energy consumption, and environmental pollution (Zhu, 2013).

2.4.1.2. Green Supplier Selection

Finding needs is the first step in the supplier selection process. The next step is for the purchasing departments to locate potential sources of supply and initiate contact with them. Methods like bargaining or tendering can be utilized in the selection process among the supplier candidates who can meet the requirements for the material sought. Manufacturers have been forced to look for new strategies to remain competitive by rising competition, mainly in the previous 25 years. Many businesses have simplified their supply chain systems and placed a greater emphasis than before on their connections with their suppliers (Copacino, 1996). Companies have forced their suppliers to improve the quality of their products, accelerate the development of new products, and closely monitor technical advancements by ordering them to use their capacities to the fullest extent possible (Ragatz, et al., 1997).

2.4.1.3. Green Material Selection

The choice of green materials is a crucial aspect of the green purchasing strategy. The following are examples of green materials (Zhu, 2013)

1. Renewable materials.
2. Low energy composition materials.
3. Recycled materials.
4. Recyclable materials.

5. Advanced materials and biodegradable materials.

When possible, renewable materials should be used because they play a significant role in lessening the environmental impact of materials. Businesses might avoid economic risks by avoiding the use of non-renewable materials due to resource limitations. There are ways to recycle the resources or create substitute materials because when the supply of non-renewable materials decreases, their price finally becomes unaffordable. Utilizing sustainable energy sources like wind and solar power is something that companies are doing more and more today.

Due to the current energy crisis, businesses must make every effort to select low-energy composition items. Because of their high energy content, these materials require a lot of energy to mine and produce. If they do not offer advantageous environmental characteristics in the product's real use, materials with high-energy components are avoided to the greatest extent possible. Aluminum, for instance, has a high energy composition and shouldn't be used in items with a short shelf life. However, using aluminum may be appropriate if a product is continually being moved or has a recycling mechanism. Aluminum's low density allows for energy savings during transportation and makes it a viable material for recycling.

Businesses want to use a single type of recyclable material for the complete product, including all parts and components. When picking just one material is problematic or challenging, they opt for complementary materials. The use of materials that are impossible or difficult to separate, such as chemical materials, composite panels, fillers, flame retardant materials, and glass fiber, is avoided when choosing recyclable materials. Businesses prioritize using readily accessible recyclable materials in their operations while avoiding the usage of environmentally hazardous products (Zhu, 2013).

In recyclable materials, businesses prefer to choose only one type of material for the entire product, including different parts and components. If it is impossible or difficult to choose just one material, they choose to choose compatible materials. In the selection of recyclable materials, the use of impossible or difficult to separate materials such as chemical materials, composite panels, fillers, flame retardant materials and glass fiber is avoided. At the same time, businesses give priority to the use of recyclable materials that are easily available in the market and avoid using materials that are prone to environmental pollution (Zhu & Yan, 2013)

Advanced materials and biodegradable materials, some advanced materials can provide significant environmental benefits. When some ceramics and aluminum are mixed together, materials that increase the efficiency of use can be produced due to heat resistance at high temperatures, thus providing energy conservation. Ultra-durable refined fibers made of graphite material are lighter and higher-strength as they can be used in building materials, and at the same time, these materials produce less waste in the production process than other alternatives. In general, readily degradable materials are considered difficult to degrade after being sent to a landfill. Even some papers and similar organic materials take some time to decompose. Some natural materials, such as wood and cotton, have inherent advantages over non-degradable plastics in many applications due to their inherent degradability.

2.4.1.4. Supplier Relationship Management for Green Procurement

The management and selection of suppliers is the key step in green purchasing practices (Qinghua Zhu, 2004).

Suppliers are the first step in a manufacturer's deployment of a sustainable supply chain. As a result, a firm must begin with the supplier selection phase if it wants to make its operations and products ecologically friendly. When choosing a supplier, it is important to check that they are meeting quality and environmental standards. As business ties progress, it is important to maintain the consistency of inquiries and inspections.

The management of supplier relationships is a crucial component of green purchasing. Product quality, technical level, price, production capacity, dependability, location, after-sales service, and delivery time are traditionally considered while choosing and evaluating suppliers.

The environmental impact of the supplier's raw materials, the cleanliness of the manufacturing process, and the energy efficiency of the transportation process should all be taken into account when businesses engage in green purchasing. The impact of the supplier on quality, cost, and environmental sensitivity is taken into account during supplier management for green purchasing. Suppliers can be graded into three categories: key suppliers, key suppliers, and general suppliers (Zhu & Yan, 2013).

2.4.1.5. Green purchasing advantages

Businesses can gain from being green in a variety of ways. These advantages can be categorized under four primary categories: monetary advantages, managerial advantages, environmental advantages, and social advantages (Soyer & Turkay, 2020).

2.4.1.5.1. Financial benefits of Green Purchasing

- Costs will be decreased because less resources will be utilized in the production of green products thanks to the materials and techniques that will be used. When taking into account the lifespan of a product, cost savings will not only apply to the use of materials and resources but will also apply to the costs associated with waste disposal, environmental protection, occupational health, and safety (Soyer & Turkay, 2020).
- The appeal of a firm is greatly influenced by its brand image. All of the firm's interactions and operations contribute to the development of this perception. One of the main predictors of a company's brand image is its financial size. Businesses' brand values will rise if they choose their suppliers in accordance with their company principles (Soyer & Turkay, 2020).
- A research found that 86% of European investors believe that businesses that place a high priority on social and environmental risk management will eventually see a rise in their market value (Soyer & Turkay, 2020).
- Risk management is a constant goal for businesses. Businesses benefit from the green purchasing strategy in this way. Risks can be decreased by evaluating environmental, social, and ethical factors in corporate processes (Little, 2003). Risks can be decreased by proactive management strategies. Additionally, manufacturers want to control any risks brought on by their suppliers.
- Understanding and meeting expectations will be simpler if you are in frequent communication with your suppliers. With the successful involvement of suppliers in product development processes, it appears possible to exchange information and generate products of superior quality. The purchasing unit's close links to the suppliers will be advantageous to both parties.

- Purchasing environmentally friendly products has numerous advantages. It is possible to safeguard natural resources that are quickly approaching depletion through the efficient use of resources. Green products and services generate less pollution, making it feasible to lower the amount of emissions that contribute to global warming.
- It is feasible to decrease the waste produced as a result of the manufacture and use of the product with the changes to be made in the production methods and the designs of the products. Additionally, lowering waste in this way will benefit the environment and need less energy and resources to dispose of the reduced garbage. Similar to this, attention should be made during the design phase to guarantee that the product is recyclable or reused once its useful life has passed. By taking into account all of these recommendations, waste can be decreased by acquiring products and technology.
- Because it encourages the purchase of recycled and recyclable goods, green shopping directly contributes to the reduction of resource use. When deciding to buy paper and plastic products, choosing recyclable and reusable materials will have positive environmental and financial effects (Soyer & Turkay, 2020).
- The choice of manufacturers to buy more ecologically friendly materials directly affects the volume of greenhouse gas emissions that are produced. By using more eco-friendly products, it is feasible to lower greenhouse gas emissions. In this way, we can wake up to a more livable world over the years.
- Green products are advantageous to every link in the supply chain, including the producer, supplier, client, and general public. It promotes environmental and human health protection, ensures employee occupational health and safety, and gives the firm a competitive edge.

2.4.2. Green Production

By employing inputs that will prevent environmental damage in all processes of production activities, green production is the design and development of production activities that reduces waste, energy, and raw material consumption. Utilizing new environmental technology and industrial inputs effectively and efficiently while assessing the potential for recycling,

remanufacturing, and reuse (Sarkis, 1995). By creating environmentally friendly production systems, the major goal is to reduce potential environmental damage brought on by industrial operations (Ninlawan, et al., 2010).

Green manufacturing is a business approach that emphasizes efficient production methods that are profitable. Profitability rises as a result of the policy of cutting waste and resources, which also results in ecologically friendly production methods. The reduction or recycling of trash produced during production is essentially what is meant by "green production practices." However, this impression simply represents the very beginning. Green production is defined as the processes in which industrial methods and technologies are created, developed, and applied to eliminate waste or scrap in one of the earliest studies on the topic. (Sarkis, 1995)

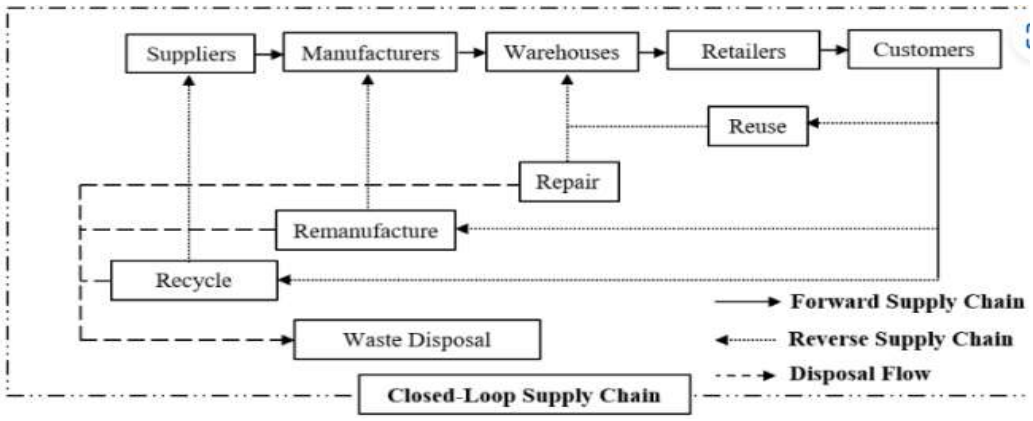

Figure 4. *Three supply chain structures in one frame (Asha, et al., 2022).*

Manufacturing is the application of mechanical, physical, chemical, etc. forces to raw materials in order to mold them into the desired part. the term "processes" is used. In supply chain management, the idea of green production is investigated from various angles. A sustainable method focused on reducing design and engineering operations is known as "green production." (Deif, 2011)

Implementing green production involves considering the effects on the environment while making decisions on things like production design, technologies, and tactics. Green manufacturing focuses primarily on minimizing negative environmental effects, product costs, and hazardous emissions, as well as on lowering input prices and product life cycle costs. In green manufacturing, life cycle costing, life cycle engineering, and process design are used to cut costs and waste in addition to optimizing the production process. Using conventional methods to

produce environmentally friendly goods is unprofitable for many enterprises. Therefore, process design and technological advancements are essential for green production. When designing a green production system, it is important to maximize product and part renewal and reuse without sacrificing product quality, minimize raw material and energy consumption, consume energy sustainably by lowering hazardous emissions and utilizing renewable energy, lengthen the life cycle of the product, and reduce and recycle waste. Considerations like guaranteeing the transformation must be made.

In actuality, "green production" refers to a procedure where inputs and outputs need to be enhanced and controlled. This viewpoint suggests that there are multiple goals for green production. First of all, reducing waste alone is not sufficient; it also calls for reducing pollutants, waste water, and workplace dangers. Using fewer resources should be the second step's goal. Both the utilization of renewable energy resources in the production process and the decrease of raw material requirements for production will be highlighted in this context. Given that natural resources are currently being rapidly depleted, it seems obvious that spreading green production methods needs to be given more priority.

2.4.2.1. Reproduction

Reproduction is the recycling of wastes resulting from production activities and including them in production (S. H. Tang, 2013).

Remanufacturing begins with the return of used durable products. These products are then disassembled, cleaned, tested, and inspected to determine if they meet acceptable quality standards for reuse. After this process, some parts become waste. Other parts that do not meet the standards are repaired or rearranged. These used parts and some new parts are reassembled to recover the original product or create a new identity product. Remanufactured products generally have the same or similar performance characteristics and quality standards as new parts.

Remanufacturing means the repair, remodeling, or re-repair of parts or equipment of recovered products for sale or internal use. The remanufacturing process basically includes the disassembly of components, inspection, and testing of replaceable components, fusion with any new

developments, and reassembly of components with newer systems. After the product is assembled, it is tested, packaged, and distributed as in the new product (Sarkis, 1995).

The manufacturing and remanufacturing operations take place in factories. Numerous materials move through the production and product lines; the majority of these materials are used, and businesses discard the remaining portions. Businesses employ a lot of chemical items in their production operations, and the wastes they produce end up in the environment and end up doing major harm to it. In this light, waste management stands out as a problem that businesses should take seriously because it is important to the production and reproduction processes.

The biggest difference between manufacturing and remanufacturing is the result of using old, discarded or defective products as material sources (Sarkis, 1995).

2.4.2.2. Reuse

Reuse is the distribution or sale of expired products as used without any additional processing for reuse (Hervani, et al., 2005).

Reuse is the practice of using things repeatedly until they reach the end of their useful economic life in the same condition as when they were first collected, with no further processing than collection and cleaning. The reuse method is used widely and offers organizations significant cost advantages. The best instances of this system are when substances in glass bottles and water demijohns are consumed, cleaned, and then reused for the same or other uses. By guaranteeing that materials with economic value are used again as inputs into the economy and by limiting the amount of waste, the reuse of waste results in significant savings in production costs as well as waste disposal expenses.

Reuse techniques are being used widely, which reduce dangerous wastes in the environment, offer energy savings, and speed up industrial processes. Given these considerations, reuse has a significant position for supply chains and industrial systems and also contributes significantly to their environmental friendliness.

2.4.2.3. Recycling

Recycling includes the processes of making the raw materials and material wastes and scraps used in production activities ready for reuse in production as a result of certain physical or chemical processes (Beamon, 1999).

For each type of material, a separate procedure is used in recycling. Recycling waste is a procedure that is used to gather and assess materials with economic value and, as a result, lower the waste stream. It is, in other words, the recycling of trash into the system of production and consumption. Utilizing the recycling process is mostly done to lessen the demand for wasteland, minimize pollution, and save money on electricity.

2.4.2.4. Disposal

The disposal of non-recyclable materials reduces their environmental impact. It is the destruction of non-recyclable wastes, scraps, or expired products in manufacturing activities in order to protect the environment.

2.4.3. Green Marketing

Green marketing, often known as environmental marketing, refers to all forms of eco-friendly and consumer-focused marketing initiatives. While fulfilling these needs and standards, care should be taken to cause the least amount of environmental harm possible.

Businesses do not want to lose their competitive position in the current market, which is a key factor in their preference for green marketing. Because of this, companies have begun to make products that do not harm the environment or the natural environment. By discontinuing the production of their harmful products and emphasizing this situation in their advertisements, they have made sure that consumer demand is directed toward new harmless products, increasing their market share and gaining an advantage over their rivals in this area.

The term "green marketing" describes initiatives taken by businesses to create, advertise, charge for, and distribute environmentally friendly goods (Jain, 2004).The design of all actions to

generate and support any trade that tends to meet people's needs and wants while causing the least amount of harm to the environment is often referred to as "green marketing" (Jain, 2004).

Green marketing is a tactic that companies either now use or intend to use. Consumers now favor green products when shopping. For instance, more consumers are willing to spend more to eat organic food. because people think organic food is safer, tastier, and healthier. Businesses use green marketing by accounting for consumer awareness of and trust in green product usage.

2.4.3.1. Goals of Green Marketing

- Instead than expanding consumer markets, green marketing should focus on making the greatest use of the planet's finite natural resources.
- Green marketing should place less emphasis on creating throwaway goods and more emphasis on preserving the environment and consuming less energy.
- Green marketing should look for options that will stop environmental deterioration and lessen the pollution that industry produces.
- Green marketing should promote the adoption of ecologically friendly products, reduce the amount of packaging, and raise public knowledge of recycling.
- To stabilize the system, responsible sharing in green marketing is necessary. Consumers, governments, and nonprofit organizations ought to be mobilized.

2.4.3.2 Reasons to Choose Green Marketing

- Businesses see green marketing as a chance to accomplish their objectives.
- Businesses believe that by demonstrating societal awareness on the issue, they can boost employee morale.
- Government agencies use a variety of rewards and penalties to compel firms to be environmentally conscious.
- Enterprises exert pressure on their competitors' businesses through their environmental initiatives.

- Businesses are forced to alter their behavior on the issue by cost reasons like the price used during waste disposal and the decrease of the consumption of raw materials and other resources.

2.4.5. Green Logistics

The delivery of raw materials required for product manufacture is followed by the phases of packing, shipping, storage, and distribution to clients as basic logistical activities for a product. Green logistics focuses on developing logistical processes in a way that will harm the environment as little as possible, monitoring the environmental consequences of these processes, and working to reduce these effects. The largest influences on how well green logistics activities are carried out are the fuel consumption of the engine of the vehicle transporting the goods, as well as the frequency, length, and features of the packaging material (Sarkis, 2003).

The most popular definition of a supply chain is a network of mechanisms that move goods from producers to manufacturers, distributors, retailers, and consumers, respectively. The logistical activities are only allowed to be one-way in this system. Logistics operations as well as reverse logistics operations are carried out in green supply chain management.

2.4.6. Green Stocking

A logistics hub called warehousing aids in the planning and balancing of logistics. The warehouse is the most crucial storage facility. It acts as a hub for the distribution of goods or commodities (Zhu & Yan, 2013). It addresses the advancement and application of environmental standards in the recycling of goods after they have served their purpose economically in all facets of the environmentally friendly process of storage, distribution, and exhibition. The environment where the warehouse is located is affected. Because of this, companies evaluate the effects on the environment before developing a warehouse.

2.4.7. Green Transportation

Green Packaging The transportation process significantly affects the environment. Since this process uses a lot of energy and produces toxic gases and noise pollution. Accidents like explosions and leaks can result from transporting hazardous raw materials or products, such as flammable and explosive goods or chemicals.

2.4.8. Green Packaging

Environmentally friendly materials are utilized in green packaging, and after recycling, these materials can be used again. It wastes a lot of resources to overpack. Green packaging, therefore, lessens the environmental impact by using fewer packing materials. Green packaging lowers costs by conserving resources. By utilizing environmentally friendly components, also lessens environmental contamination. By using green packaging, firms can boost their brand's competitiveness and win over customers' trust.

It decreases transportation costs and, inadvertently, lessens the environmental effect of transportation activities while improving distribution efficiency. The following concerns are part of enterprise green transportation management (Saada, 2020).

2.4.9. Management of Waste

Given the scarcity of natural resources in our society, such as energy and raw materials, and the need to ensure maximum efficiency in their use, waste management is described as an essential sector of activity having multiple ties to technological, economic, and social disciplines. Solid wastes can be managed using a variety of techniques, including collection, transportation, reuse, recovery, recycling, incineration, burial, and evaluation. All of these techniques fall under the umbrella of waste management.

At the same time, the designs, devices, and laboring bodies that manage waste are of grave importance to the future of this planet (Reno, 2015). For this reason, the engineering techniques of waste management are now and have always been as much moral and political as they are mechanical and mathematical (Reno, 2015).

2.4.10. Environmental Partnership with Clients

Environmental cooperation with customers in green supply chain management methods entails developing green customer relationships and long-term strategic alliances with commercial clients (Zhu & Yan, 2013).

Green business practices are a key component of meeting regulatory requirements and customer demands companies that manufacture raw materials and intermediates. To meet the needs and demands of customers throughout the supply chain, many firms exert pressure on suppliers. Businesses embracing green supply chain management have outlined their expectations for suppliers when it comes to green purchasing. The environmental criteria and conditions of the enterprises in the production and supply of raw materials or products must be met by the suppliers in the evaluation of the enterprises' suppliers. Therefore, suppliers should not only guarantee the products but also ensure that the ingredients are free of illegal chemicals in order to build strong relationships with clients.

3. A RESEARCH ON GREEN SUPPLY CHAIN MANAGEMENT ACTIVITIES AND OBSTACLES TO IMPLEMENTATION

In this part of the study, the extent to which the green supply chain management practices of enterprises are functional, their effects on companies, the support required for its implementation and the main obstacles and reasons for its implementation, information about the research and research findings are presented.

3.1. IMPORTANCE, PURPOSE, CONTENT OF THE RESEARCH SUBJECT

This content, the importance of the research subject, its content, and the information in its content is presented.

3.1.1 IMPORTANCE OF THE RESEARCH TOPIC

It is understood that in today's societies, rapid consumption is increasing day by day with the increasing population and income, and production has reached unprecedented levels throughout history, taking into account the needs of the individual and society. The concept of sustainability has come to the fore with the absolute sovereign attitude of man over nature, the rapid depletion of natural resources and the change in the perception of limitlessness in resources (Ozcelik, 2013). On the other hand, it is known that both international organizations, national governments and businesses are making some efforts for a sustainable future (Ozcelik, 2013).

Depending on the industry branches, different products and services are created by various businesses. All stages of a product's life cycle involve interaction with the environment. The scope of green supply chain management includes the acquisition of raw materials needed for the creation of new products, the end of the relevant product's life cycle, and the relationship to nature throughout the process, including the subsequent recycling activities. The relationships between businesses and the environment are now being questioned by all parties due to the rising sensitivity to nature. From the process of selecting a facility location through the recycling of products that have finished their product life cycle, the necessary procedure may be encountered everywhere. One of the things that drive businesses to produce more is the growing range of

products required to meet consumers' needs. Unavoidably, as production rises, so does the volume of garbage that results from it. Depending on how they affect the environment, wastes produced by all commercial activities can be categorized as either water, air, or soil pollution (Ghouri & Khan, 2011).

The causes of the natural disasters that are starting to happen more regularly today are the harmful effects of this engagement with nature. The continual growth of the business while also minimizing environmental damage is the basic idea of environmental sustainability.

Green supply chain management has emerged as a result of the redesign of supply chain processes with environmental considerations. There are many ways to look at the factors influencing businesses to use green supply chain techniques (Walker, 2012).

In this process, GSCM has increased its importance with the integrity of environmentally friendly activities in almost every field. Such as environmental protection in logistics activities in its increasing importance. significant improvements.

Although it has been stated in the interviews that the guiding factors that push the businesses to GSCM practices are mainly carried out by financial concerns, it is observed that especially small businesses in the sector exhibit behaviors such as saving most of the day, assuming that they will earn more, and imitating the practices of businesses that they are convinced of exhibiting strategic behavior (Ozkaya & Kazancoglu, 2020, p. 497).

Today's customers' purchasing habits are influenced by the environmental initiatives that firms are implementing. Companies who wish to gain a competitive edge implement innovative environmental practices and highlight them in written and visual ads and on the labels they apply to their product packaging. Due to their purchasing power, customers can therefore put some pressure on them via influencing firms. Enterprises use green supply chains in a wide range of functional areas, including purchasing, design, production, storage, marketing, and distribution (Hervani, et al., 2005).

States have started to prioritize environmental issues. States that are concerned about the welfare of their population show this by their adherence to international treaties, laws, and local punishments.

Environmental regulations are stated to be governed by the triangle formed by government, citizens, and business when green supply chain management is taken into account as a whole. Anybody who interacts with nature has a voice in this process. While the state displays its punishments through the use of the force of the law, consumers demonstrate this through their purchasing habits. Non-governmental organizations, on the other hand, can exert pressure on corporations by raising public awareness of environmental issues.

Green supply chain management is a field of study that is constantly expanding and is studied widely in international academic journals. It is remarkable that this discipline, which can have a broad range of applications globally, has very few theoretical investigations.

GSCM management practices and business performance, effects on the environment, application forms, customer relations have been examined in developed and developing countries, including many different companies. At the same time, the main obstacles for applying the GSCM method are examined and analyzed. With this research, it is worth examining in terms of its contribution to the general literature in terms of giving ideas for future research.

3.1.2 Purpose and Content of the Research

Information on the aim and subject matter of the study is provided in this section.

3.1.2.1. Purpose of the research

The main aim of the research is the general literature analysis of green supply chain management and the obstacles in its implementation. In this context, the sub-objectives of the research can be as follows;

- A company's management stance and customers have a significant effect on Green Supply Chain Applications
- The Approach of the company's managers has a significant effect on Green Supply Chain Applications
- Utilizing GSCM practices has a significant impact on companies' benefit, environment, energy usage, and general waste.
- The most significant barriers to implement GSCM practices and analysis of them.

3.1.2.2. Content of the Research

The majority of the study's participants are companies that use green supply chains. Participants in the study must be employed by larger, worldwide, or regional businesses.

According to its main aim and the aforementioned sub-purposes, it appears probable that the literature analysis of green supply chain activities in general, the advantages of its implementation, and the evaluation of the challenges it faces, can provide fascinating and significant hints.

3.2. Research Methodology

This section contains details about the research variables, its model, its sampling procedure, its method for gathering data and information, as well as its method for data and information analysis.

3.2.1. Variables and Model of the Research

There are both quantitative and qualitative studies that analyze the connection between the general state of the processes and the green supply chain management. The scales that were looked at in the study are as follows, based on research on the topic.

The primary consequences of the study are that working with suppliers to develop environmentally sustainable products and designs is that top -level managers have a positive impact on logistics activities, competitiveness and economic performance on the environment.

Qinghua Zhu, Joseph Sarkis and Kee-Hung Laic tried to put forward a scale model for green supply chain management applications (Zhu, et al., 2008). Environmental, economic, and operational performance make up the operating performance scales that form in enterprise environmental management, green purchasing, customer cooperation, ecological design, and return on investment green supply chain management.

With the implementation of a study among Indian manufacturing sector businesses, Subrata Mitra and Partha Priya Datta assess the effects of green supply chain management scales on value performance (Mitra & Datta, 2013). The research's key conclusions are that working with

suppliers to develop environmentally friendly products has a favorable impact on those items' competitiveness, design, logistics, and economic performance.

With the implementation of this research done by Sreejith Balasubramanian, A hierarchical framework of barriers to green supply chain management in the construction sector is examined (Balasubramanian, 2012). In order to assess the obstacles to the adoption of green supply chain management (GSCM) in the construction industry of the United Arab Emirates (UAE), the research study offers a hierarchical sustainability framework. Through a thorough literature study and expert interviews with academics and business people, 32 barriers to the adoption of GSCM were found. The framework could be used in various industries and other nations.

Several studies from the literature are used to compile the study scales within 4 major areas. Both members of the private sector and academics and students majoring in the relevant subject of study provided feedback on the questionnaire's final form during the project's preliminary phase. The following are the relevant variable groups:

A) Features of Businesses

- Exporting Company
- Main Sector
- Active years in the sector
- Employee Number

B) A company's management stance and customers and environmental management system

- Environmental Management Certificate
- Customer Collaboration
- Awareness of Customers
- Customers' tendency to avoid usage of hazardous products

C) The Approach of the company's managers

- Effect of Top managers on some of GSCM practices.
- Effect of Mid-level managers on some of GSCM practices.

D) Utilizing GSCM practices has a significant positive impact on companies.

- Decreasing environmental violations/accidents.
- The falling cost of energy usage.
- Overall efficiency of the company.
- Company's environmental image.
- Decreasing general waste.

E) **Connection between green supply chain management and business size**

- Connection between company size and GSCM applications utilization

The descriptive research methodology looks at how certain variables relate to one another, but it also aspires to come up with universal definitions. Once the subject and the hypothesis have been sufficiently researched, the descriptive research can be conducted. In the descriptive research model, the questionnaire approach is frequently used. The study's descriptive research model asks whether there is a connection between benefit, environment, energy usage, and general waste, the Approach of the company's managers, a company's management stance and customers, business size and green supply chain management in this situation.

According to the research model, the research questions and hypotheses are listed in the below table.

Research Question	**Hypothesis**
H1: Customer awareness about green topics have a significant impact on Managers approach towards GSCM methods. (Multiple Regression Analysis)	H1a. The customer's awareness about ISO 14000 has a significant impact on Managers approach towards GSCM methods. H1b. Strong customer collaboration has a significant impact on, Managers approach towards GSCM methods. H1c. Customers' tendency to avoid or reduce the usage of hazardous products has a significant impact on Managers approach towards GSCM methods. H1d. Awareness of customers of some kind of recyclable procedures has a positive effect on

	Managers approach towards GSCM methods.
H2. These hypothesis were created to analyze by linear regression analysis.	H2a. GSCM practices implemented and developed by top managers have a significant impact on the company's efficiency. H2b. Top managers considering GSCM as one of the most important parts of corporate strategy have a significant impact on the company's environmental image. H2c. Top managers' approach to value ethical purchasing practices has a significant impact on decreasing purchasing costs. H2d. Mid-level managers' approach on the development of GSCM practices have a significant impact on decreasing environmental violations/accidents.
H3: Is there a connection between green supply chain management and business size? (Chi-square)	H3. There is a strong connection between company size and GSCM applications utilization.

Table 2. *Hypothesis*

3.2.2. Sampling process

The research focuses mostly on companies that use green supply chain management. Regarding the size of the population, time, and cost, it was determined that the "sampling according to quotas" method, one of the non-random sampling techniques, was appropriate to utilize in the

first stage. The units that make up the study universe are categorized using the determined features in the sampling procedure based on quotas.

According to the size of the business and whether it exports or not, quota was employed in the study. The applicable regulation accepts the employee count as the deciding element.

When filling the designated quotas, care was taken to guarantee that there are at least 25 businesses in each quota. Priority was given to the quantity of samples being equal or nearly equal for the pertinent quotas.

3.2.3. The research's method and tool for collecting data and information

Incomprehensible or unclear questions were determined, arrangements were made and the questionnaire was finalized. The questionnaire form consists of four parts. The first part includes information about the business, the second part includes questions about the company's management stance and customers, the third part includes questions about the effect of the approach of the company's managers, and the fourth part includes questions about the general effects of utilizing GSCM practices. In the fifth part, the survey examines the obstacles a business can face while implementing Green Supply Chain Management applications.

The first question in the first part of the questionnaire is a question to understand the profile of the company. After the related question, questions about “the company's sector, the active year of the company in the sector, the total number of employees of the enterprise. With the fifth question, answers are filtered based on if the companies are using GSCM activities”. In the sixth question is for marking if they are using GSCM practices based on “YES” answer in question fifth. In the last question, some practical actions of GSCM methods were determined with the checkboxes.

Businesses that answered "no" to the filter question and do not use green supply chain management in any aspect of their operations were incorporated into the study in a different method and asked to complete a questionnaire outlining the challenges they have faced. Thus, it is aimed to obtain data on the general situation analysis of enterprises that implement green supply chain management, and at the same time, some obstacles to the implementation of GSCM are understood.

The second part begins with the first question. In this section, it was tried to determine the company's management stance and customers' effect on the GSCM applications. In the first question information about the importance of the customer's ISO 14000 accreditation. The second question is information about the existence of customer collaboration to attain environmental goals. Customer tendency to avoid or reduce the usage of hazardous products was directed to the third question. In the fourth question, questions were asked about the effect of the awareness of customers on better GSCM utilization. All questions in this section is using a five-point Likert scale (1: I strongly agree; 5: I strongly disagree).

The third part aims to obtain data on the approach of the company's managers. The variables in this section were tried to be measured with a five-point Likert-type scale (1: strongly agree; 5: strongly disagree). The related scales were grouped into 4 questions. These groups were determined respectively as "Effects of Top Managers and Mid-level Managers on some GSCM applications".

In the fourth part, business performance was tried to be measured with a five-point Likert-type scale (1: strongly agree; 5: strongly disagree). The questions in this section mostly consist of three groups: scales for GSCM's general situation analysis, “a significant impact on companies' benefit, environment, energy usage, and general waste”.

There is one extra hypothesis is added to understand relationship between company size and using GSCM applications. To understand that, employee headcount and utilizing of GSCM applications are used.

The fifth part of the survey aims to collect and understand obstacles and the importance level of the obstacles preventing companies from implementing GSCM methods. A five-point Likert-type scale was attempted to measure the variables in this section. (1: strongly agree; 5: strongly disagree)

The statements are collected into three categories such as obstacles concerning Human factor, obstacles related to governmental regulations and obstacles generated by lack of technical or organizational background. Under the Human factor category the question 1, 3, 4, and 7 are

listed. Point 2, 6, and 8 are connected to the technical and organizational difficulty. The governmental regulation effected point is the 5th.

3.2.4. Information and Data Analysis

The data obtained during the research process were evaluated with the SPSS program. Reliability, exploratory factor, chi-square, single and multiple regression analyzes were used in the analysis of data and information.

3.3. Results of The Research

The evaluation of the findings, the conclusion, and the section with recommendations are all included in this section of the study.

3.3.1. Results Analysis

Frequency distributions, factor and reliability analysis, single and multiple regression analysis, and Chi-square are used the relevant titles for results evaluation. Percentage table of Obstacles also attached lastly.

3.3.1.1. Distributions of Frequency

The frequency distributions obtained as a result of the research are shown in this section.

We are a global exporting company.	**Frequency**	**Percentage**	**Cummulative Percentage**
Global Exporting Company	118	59	59
Not Global Exporting Company	82	41	100
Total	200	100	159

Table 3. *Frequency distributions of exporting and non-exporting companies (Kaymakci, 2023)*

According to the data obtained, 59 percent of the respondents stated that they are a global export company, and 41 percent are not a global export company.

How long has your business been active in this industry? (years)	Frequency	Cummulative Frequency	Percentage	Cummulative Percentage
0 - 20	152	152	76	76
21 - 40	30	182	15	91
41 - 60	8	190	4	95
61 - 80	1	191	0.5	95.5
81 - 100	5	196	2.5	98
100 +	4	200	2	100
Total	200		100	

Table 4. *Frequency distributions of active year in the industry (Kaymakci, 2023)*

According to the data obtained, 46 percent of the participants have experience up to 0-20 years, 15 percent have between 21 and 40 years, 4 percent have 51 and 60 years, 3 percent have 61-100 years and 2 percent have more than 100 years of experience.

How many full-time employees does your company have overall?	Frequency	Cummulative Frequency	Percentage	Cummulative Percentage
Micro Size 1 - 9	42	42	21	21
Small Size 10 - 49	43	85	21.5	42.5
Medium 50 - 249	50	135	25	67.5
Large 250 +	65	200	32.5	100
Total	**200**		**100**	

Table 5. *Frequency distributions of full-time employee (Kaymakci, 2023)*

According to the data acquired, 21% of the firms participating in the research are classified as micro-sized, 21.5% belongs to the category of small sized businesses, 25% of them is medium, and 32.5% is listed under the category of large business.

What is the main business of your company?	Frequency	Cummulative Frequency	Percentage	Cummulative Percentage
Construction,Food	1	1	0.5	0.5
Electricity	1	2	0.5	1
Electronic	1	3	0.5	1.5
Energy	1	4	0.5	2

Entertainment	1	5	0.5	2.5
Green energy	1	6	0.5	3
Housing	1	7	0.5	3.5
Industrial Design	1	8	0.5	4
Insurance	1	9	0.5	4.5
Landscape	1	10	0.5	5
Manufacture-Export	1	11	0.5	5.5
Mobile	1	12	0.5	6
Mobile service provider	1	13	0.5	6.5
Private Education	1	14	0.5	7
Producing beveragen	1	15	0.5	7.5
Steel production	1	16	0.5	8
Tobacco	1	17	0.5	8.5
Trade	1	18	0.5	9
Utility	1	19	0.5	9.5
Cooling	2	21	1	10.5
Cosmetics	2	23	1	11.5
Handicraft	2	25	1	12.5
Industrial	2	27	1	13.5
Logistics	2	29	1	14.5
Media	2	31	1	15.5
Water utility	2	33	1	16.5
Agriculture	3	36	1.5	18
Engineering	3	39	1.5	19.5
Production	3	42	1.5	21
Automotive	5	47	2.5	23.5
Fashion	5	52	2.5	26
Tourism	6	58	3	29
Service	7	65	3.5	32.5
IT services and consulting	9	74	4.5	37
Medical	11	85	5.5	42.5
Education	15	100	7.5	50
Textile	29	129	14.5	64.5
Construction	34	163	17	81.5
Food	37	200	18.5	100
Total	**200**		**100**	**0**

Table 6*. Frequency distributions of sectors (Kaymakci, 2023)*

According to the information obtained, participants from businesses operating in 39 different sectors were included in the research. The food, construction, textile, education and medical sectors are in the top 5.

Do you utilize green supply chain management (GSCM) techniques at your company?	Frequency	Cummulative Frequency	Percentage	Cummulative Percentage
Yes	137	137	68.5	68.5
No	63	200	31.5	100
Total	**200**		**100**	

Table 7. *Frequency distributions of GSCM techniques (Yes/No) (Kaymakci, 2023)*

According to the data collected, 68.5 percent of respondents claimed that one or more of the green supply chain managements are applied in their companies, whereas 31.5 percent stated that they are not.

GSCM Technique usage by business sector	Total response received	Using GSCM Techniques		Does not use GSCM	
	Frequency	Frequency	Percentage	Frequency	Percentage
Fashion	5	5	100.00	0	0.00
Agriculture	3	3	100.00	0	0.00
Cosmetics	2	2	100.00	0	0.00
Logistics	2	2	100.00	0	0.00
Water utility	2	2	100.00	0	0.00
Construction, Food	1	1	100.00	0	0.00
Electricity	1	1	100.00	0	0.00
Electronic	1	1	100.00	0	0.00
Energy	1	1	100.00	0	0.00
Green energy	1	1	100.00	0	0.00
Industrial Design	1	1	100.00	0	0.00
Manufacture-Export	1	1	100.00	0	0.00
Steel production	1	1	100.00	0	0.00
Tobacco	1	1	100.00	0	0.00
Construction	34	28	82.35	6	17.65
IT services and consulting	9	7	77.78	2	22.22
Medical	11	8	72.73	3	27.27
Textile	29	21	72.41	8	27.59
Service	7	5	71.43	2	28.57
Tourism	6	4	66.67	2	33.33
Engineering	3	2	66.67	1	33.33
Food	37	23	62.16	14	37.84
Automotive	5	3	60.00	2	40.00
Education	15	8	53.33	7	46.67
Cooling	2	1	50.00	1	50.00

Handicraft	2	1	50.00	1	50.00
Industrial	2	1	50.00	1	50.00
Media	2	1	50.00	1	50.00
Production	3	1	33.33	2	66.67
Entertainment	1	0	0.00	1	100.00
Housing	1	0	0.00	1	100.00
Insurance	1	0	0.00	1	100.00
Landscape	1	0	0.00	1	100.00
Mobile	1	0	0.00	1	100.00
Mobile service provider	1	0	0.00	1	100.00
Private Education	1	0	0.00	1	100.00
Producing beverage	1	0	0.00	1	100.00
Trade	1	0	0.00	1	100.00
Utility	1	0	0.00	1	100.00
Total	**200**	**137**		**63**	

Table 8. *GSCM application usage by business sector (Kaymakci, 2023)*

Based on the gathered information Green Supply Chain Management technique usage is the most common in the following business sectors: Fashion, Agriculture, Cosmetics, Logistics, Water utility, Construction, Food, Electricity, Electronic, Energy, Green energy, Industrial Design, Manufacture-Export, Steel production, and Tobacco. In the case of the earlier listed sectors, the usage rate reached 100% each, which in answer volume means: 5 companies in Fashion sector claimed to use GSCM techniques, 3 in Agriculture, in Cosmetics, Logistics, Water utility sectors 2 out of 2 Yes answer received to the question concerning if the company is using Green techniques, and 1 answer per sector received for the following sectors: Construction, Food, Electricity, Electronic, Energy, Green energy, Industrial Design, Manufacture-Export, Steel production, and Tobacco.

GSCM actions are the least popular in the following sectors: Entertainment, Housing, Insurance, Landscape, Mobile, Mobile service provider, Private Education, Producing beverage, Trade, and Utility. In each of the listed businesses 0% claimed to use Green techniques, which means 0 out of 1 submitted answer claimed to use it.

Which of the GSCM techniques listed below does your company use?	**Frequency (Yes)**	**Percentage (Yes)**	**Frequency (No)**	**Percentage (No)**
Environmentally friendly packaging	124	90.51	13	9.49
Green logistics	107	78.10	30	21.90
Reverse logistics	59	43.07	78	56.93

Green design	57	41.61	80	58.39
Total quality environmental management (TQEM)	57	41.61	80	58.39
Green procurement	53	38.69	84	61.31
Green Suppliers	52	37.96	85	62.04
Green manufacturing	47	34.31	90	65.69
Green marketing, and customer cooperation	44	32.12	93	67.88
Investment recovery	26	18.98	111	81.02
Green warehousing	2	1.46	135	98.54
Total number of companies using GSCM techniques	**137**			

***Table 9**. Frequency distributions of using GSCM techniques (Kaymakci, 2023)*

According to the data obtained, 90.5 percent of the respondents are using environmental friendly packaging, 78.1 percent is using Green Logistics, 43.07 percent is applying revers logistics, 41.61 percent is utilizing the Green Design, 41.61 percent is applying Total Quality Environmental Management, 38.69 percent of them is using Green Purchasing, 37.96 percent is working with the Green Suppliers, 34.31 percent is using Green Manufacturing methods, 32.22 percent is utilizing Green marketing, and customer cooperation method, 18.98 percent is applying Investment Recovery , and 1.8 percent of them stated that they are using Green Warehousing.

GSCM action taken by companies	**Frequency (Yes)**	**Percentage (Yes)**	**Frequency (No)**	**Percentage (No)**
Have taken steps to reduce the amount of water, electricity, gas, and gasoline used in the manufacturing or disposal processes	96	70.07	41	29.93
Used materials or parts that have been recycled, repurposed, or remanufactured	91	66.42	46	33.58
Have reduced their use of energy, water, and waste by using cleaner/renewable technologies	86	62.77	51	37.23
Have redesigned and enhanced goods and services to satisfy new environmental standards	79	57.66	58	42.34
Have improved products or services to meet environmental standards on directives from the environmental authorities	75	54.74	62	45.26
Redesigned operating and production procedures to increase environmental effectiveness	73	53.28	64	46.72

Total number of companies using GSCM techniques	**137**

Table 10. *Frequency distributions of using GSCM actions taken by companies (Kaymakci, 2023)*

While analyzing the actions that the companies have taken the percentages are the following: 70.07% of the Yes responders have taken steps to reduce the amount of water, electricity, gas, and gasoline used in the manufacturing or disposal processes. At the same time 66.42% of the companies responded Yes to that they have used materials or parts that have been recycled, repurposed, or remanufactured. The third most popular action taken on the list was "Have reduced their use of energy, water, and waste by using cleaner/renewable technologies" with 62.77%. The least used techniques are the following ones, although it has to be noted that even these actions are practiced by more than 50% of the Yes responders: 57.66% of the companies have redesigned and enhanced goods and services to satisfy new environmental standards. To the point concerning if the company have improved products or services to meet environmental standards on directives from the environmental authorities 75 Yes answer is registered which is 54.74% of the total. At the end of the list the least Yes answer is received to the action stating that the business has redesigned operating and production procedures to increase environmental effectiveness with 53.28%.

3.3.1.2. Factor Analysis and Reliability Analysis of Scales

This section provides factor and reliability analyses of the research scales. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test and the Barlett-Test (Barlett Test of Sphericity) were used to perform factor analyses on research variables.

A Kaiser-Meyer-Olkin (KMO) test score of greater than 0.5 suggests that the inputs used for factor analysis are homogeneous. The fact that the Sig. value in the Bartlett Test of Sphericity is less than 0.05 is also an indicative of the significance of the variables applied. (Ozdemirci & Saruhan, 2016)

$$KMO_j = \frac{\sum_{i \neq j} r_{ij}^2}{\sum_{i \neq j} r_{ij}^2 + \sum_{i \neq j} u_{ij}^2}$$

Equation 1. *KMO Formula (Panda, et al., 2021, p. 25)*

KMO Value	Adequacy of the correlations
Below 0.5	Unacceptable
0.5-0.59	Miserable
0.6-0.69	Mediocre
0.7-0.79	Middling
0.8-0.89	Meritorious
0.9 and Higher	Marvelous

Table 11. *KMO Test (Darem, 2014)*

The Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited your data is for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. The statistic is a measure of the proportion of variance among variables that might be common variance. The lower the proportion, the more suited your data is to Factor Analysis (Glen, 2023).

Component Matrix[a]	
	Component
	1
4c. Awareness of customers of some kind of recyclable procedures has a positive effect on better GSCM utilization.	,895
3c. It is important that our customer has a tendency to avoid or reduce the usage of hazardous products.	,889
2c. To attain environmental goals, there is strong customer collaboration.	,887
1c. The customer's ISO 14000 accreditation is crucial.	,816
Extraction Method: Principal Component Analysis.	
Total Explained Variance: %76,1 KMO 0,834 Barlett's test:324,034 p= 0,000	

Table 12. *Component Matrix - Costumer Tendency (Kaymakci, 2023)*

As can be seen in Table 12, while 4 variables were gathered under a single factor, the variance rate explained by this factor was 76.1%. By including the scale consisting of 4 variables, which aim to measure Customer Tendency, into the Exploratory Factor Analysis, it was evaluated according to the KMO and Barlett's test findings whether to continue the analysis. Accordingly, it was seen that the analysis could be continued with Barlett values of .000 and KMO values of 0.854.

Component Matrix[b]	
	Component
	1
1m. The development of an ecologically friendly supply chain management is supported by top managers.	,927
2m. Environmentally friendly supply chain is considered the one of the most important parts of corporate strategy by top managers.	,919
3m. Top managers value ethical purchasing practices that are good to the environment.	,912
4m. The development of environmentally friendly supply chain management is supported by mid-level managers.	,901
Extraction Method: Principal Component Analysis.	
Total Explained Variance: %83.68 KMO 0,840 Barlett's test: 455,976 p= 0,000	

Table 13. *Component Matrix – Manager Approach (Kaymakci, 2023)*

As can be seen in Table 13, while 4 variables were gathered under a single factor, the variance rate explained by this factor was 83.68%. By including the scale consisting of 4 variables, which aim to measure The Approach of the Company Managers, into the Exploratory Factor Analysis, it was evaluated according to the KMO and Barlett's test findings whether to continue the analysis. Accordingly, it was seen that the analysis could be continued with Barlett values of .000 and KMO values of 0.840.

Component Matrix[c]	
	Component
	1
4b. Our company's overall efficiency has increased or improved as a result of environmentally friendly supply chain procedures.	,920
5b. Environmentally friendly supply chain practices have decreased general waste.	,891
6b. The company's environmental image has been boosted by using environmentally friendly supply chain procedures.	,870
3b. Environmentally friendly supply chain practices have decreased fine for environmental violations/accidents.	,858
2b. The cost of energy usage has fallen as a result of environmentally friendly supply chain strategies.	,854
1b. Environmentally friendly supply chain practices have decreased cost of purchasing material.	,823
Extraction Method: Principal Component Analysis.	
Total Explained Variance: %75.652 KMO 0,891 Barlett's test: 675,626 p= 0,000	

Table 14. *Effects of GSCM on Companies' benefit (Kaymakci, 2023)*

As can be seen in Table 14, while 6 variables were gathered under a single factor, the variance rate explained by this factor was 75.652%. By including the scale consisting of 6 variables, which aim to measure The Approach of the Company Managers, into the Exploratory Factor Analysis, it was evaluated according to the KMO and Barlett's test findings whether to continue the analysis. Accordingly, it was seen that the analysis could be continued with Barlett values of .000 and KMO values of 0.891.

Component Matrix[d]	
	Component
Obstacles to Implement GSCM methods	1
8. Ineffective chain member communication and integration	0.874
7. Complicated understanding of environmental ideas.	0.868
3. Low human resource quality.	0.865
6. Lack of managerial support.	0.862
2. Lack of IT implementation.	0.848
4. Lack of consumer knowledge.	0.82
1. Unwillingness to adapt.	0.791
5. A lack of supportive government regulations and public policies	0.648
Extraction Method: Principal Component Analysis.	
Total Explained Variance: %68.6	
KMO 0,934	
Barlett's test: 783,650	
p= 0,000	

Table 15. *Component Matrix - Obstacles to Implement GSCM methods (Kaymakci, 2023)*

As can be seen in Table 15, while 8 variables were gathered under a single factor, the variance rate explained by this factor was 68.6%. By including the scale consisting of 8 variables and one is extracted, which aim to understand Barriers to Implement Green Supply Chain Management Practices, into the Exploratory Factor Analysis, it was evaluated according to the KMO and

Barlett's test findings whether to continue the analysis. Accordingly, it was seen that the analysis could be continued with Barlett values of .000 and KMO values of 0.934.

Cranbach Alfa (α) Value	Reliability Degree
0.80 ≤ α < 1	The scale is highly reliable.
0.60 ≤ α < 0.80	The scale is quite reliable.
0.40 ≤ α < 0.60	The reliability of the scale is low.
0.0 ≤ α < 0.40	The scale is not reliable

Table 16. *Cronbach Alpha Coefficient and Degrees of Confidence (Kilic, 2016)*

As can be seen in Table 16, The Cronbach Alpha method was employed in the study to determine the reliability of the scales. Crobach Alpha values greater than 0.8 are considered "good," larger than 0.7 are considered "acceptable," greater than 0.6 are considered "moderately reliable," and less than 0.6 are considered "poor." (Ozdemirci & Saruhan, 2016)

Scale Number	Number of Variables	Reliability Value (Cronbach's Alpha)
Customer Tendency	4	0.894
Managerial Approach	4	0.934
Benefits of utilizing GSCM practices	6	0.933
Barriers to Implement GSCM practises	8	0.931

Table 17. *Reliability analysis of the scales used (Kaymakci, 2023)*

All of the scales developed to assess the General Situation Analysis and Obstacles are very trustworthy because they are greater than 0.80.

3.3.1.3. Research Hypotheses Evaluation (Multiple Regression Analysis)

Statistics are used in medicine for data description and inference. Inferential statistics are used to answer questions about the data, to test hypotheses (formulating the alternative or null hypotheses), to generate a measure of effect, typically a ratio of rates or risks, to describe

associations (correlations) or to model relationships (regression) within the data and, in many other functions (Alexopoulos, 2010).

Regression models with one dependent variable and more than one independent variables are called multilinear regression (Gulden Kaya Uyanık, 2013).

Customers Tendency H1: Customer awareness about green topics have a significant impact on Managers'u approach towards GSCM methods.	H1a. The customer's awareness about ISO 14000 has a significant impact on Managers' approach towards GSCM methods. H1b. Strong customer collaboration has a significant impact on, Managers' approach towards GSCM methods. H1c. Customers' tendency to avoid or reduce the usage of hazardous products has a significant impact on Managers' approach towards GSCM methods H1d. Awareness of customers of some kind of recyclable procedures has a positive effect on Managers' approach towards GSCM methods.

Table 18. *Costumer Tendency II. (Kaymakci, 2023)*

Multiple regression analysis was used in this study to look at how different independent variables affected a dependent variable. The Inflation Factor of Variance (VIF), which examines the correlation between the variables, was looked at prior to doing all regression tests, and this factor is much below the limit of 10. Additionally, tolerance numbers are higher than the 0.2 upper limit. Furthermore, Condition Index readings are below 30. The variables do not have an exact linear connection. The findings of the regression analyses are substantial, and each variable explains various aspects of the variation. As can be seen in the below table 19 and 20.

	Collinearity Statistics	
	Tolerance	VIF
Constant		
1c.	0,522	1,917
2c.	0,374	2,278
3c.	0,347	2,882
4c.	0,343	2,918

Table 19. *Collinearity Statistics (Kaymakci, 2023)*

	Collinearity Diagnostics
Dimension	Condition Index
1	1,000
2	11,557
3	13,400
4	17,039
5	19,505
	a.Dependent Variable: Av.M

Table 20. *Collinearity Diagnostics (Kaymakci, 2023)*

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,604	,247		2,451	,016
	1c. The customer's ISO 14000 accreditation is crucial.	,063	,065	,071	,979	,329
	2c. To attain environmental goals, there is strong customer collaboration.	,356	,079	,386	4,496	,000
	3c. It is important that our customer has a tendency to avoid or reduce the usage of hazardous products.	,240	,084	,253	2,839	,005
	4c. Awareness of customers of some kind of recyclable procedures has a positive effect on better GSCM utilization.	,167	,083	,180	2,007	,047
a. Dependent Variable: Av.M						
Dependent Variable R square: 0,636		F: 57,591				
Adjusted R square: 0,625		P: 0				

Table 21. *Multiple Regression Analysis - Costumer Tendency (Kaymakci, 2023)*

The results of the multiple regression test on product (service) innovation are given in Table 21. Accordingly, it is seen that the P value of the H1b, H1c, and H1d is less than .05. The hypotheses were supported. But the P value of the H1a is higher than .05 which is why this hypothesis was not supported. In other words, Strong customer collaboration, customers' tendency to avoid or reduce the usage of hazardous products, and awareness of customers of some kind of recyclable procedures have a significant effect on Managers' approach towards GSCM methods. Here, the beta value of Strong customer collaboration is 0,386 and it is seen that it is the most influential variable on Managers' approach towards GSCM methods. The beta value of the awareness of customers of some kind of recyclable procedures is 0,180 and it is seen that it is the variable that has the least effect on Managers' approach towards GSCM methods. The customer's ISO 14000 accreditation is crucial was rejected and its beta value affects just 0,071.

Equation; Y= .064+.063a+.356b+.240c+.167d

H1: Customer awareness about green topics have a significant impact on Managers' approach towards GSCM methods. (Accepted)

H1a. The customer's awareness about ISO 14000 has not a significant impact on Managers' approach towards GSCM methods.

H1b. Strong customer collaboration has a significant impact on, Managers' approach towards GSCM methods.

H1c. Customers' tendency to avoid or reduce the usage of hazardous products has a significant impact on Managers' approach towards GSCM methods

H1d. Awareness of customers of some kind of recyclable procedures has a positive effect on Managers' approach towards GSCM methods.

3.3.1.4. Research Hypotheses Evaluation (Linear Regression Analysis)

Linear regression is a statistical procedure for calculating the value of a dependent variable from an independent variable. Linear regression measures the association between two variables. It is a modeling technique where a dependent variable is predicted based on one or more independent variables. Linear regression analysis is the most widely used of all statistical techniques (Khushbu Kumari, 2018).

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68,130	1	68,130	88,238	,000[b]
	Residual	104,235	135	,772		
	Total	172,365	136			

Table 22. *ANOVA - Top managers' impact on the company's efficiency (Kaymakci, 2023)*

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,309	,310		4,217	,000
	1m. The development of an ecologically friendly supply chain management is supported by top managers.	,666	,071	,629	9,394	,000

Table 23. *Coefficients - Top managers' impact on the company's efficiency (Kaymakci, 2023)*

B = 1,309+0.666M R square is 0.395

Based on regression analysis, the model is significant (F=88,238; p= 0.00). When R square is examined, independent variable explains 33% of dependent variable .Created model explains 33% of total variance. It means, 33% of B can be explained by M.

H2a. GSCM practices implemented and developed by top managers have a significant impact on the company's efficiency.

H2a is accepted.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64,262	1	64,262	104,957	,000[b]
	Residual	82,657	135	,612		
	Total	146,920	136			

Table 24. *ANOVA - GSCM's impact on the company's environmental image (Kaymakci, 2023)*

Coefficients[b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,996	,244		8,176	,000
	2m. Environmentally friendly supply chain is considered the one of the most important parts of corporate strategy by top managers.	,583	,057	,661	10,245	,000

Table 25. Coefficients - GSCM's impact on the company's environmental image (Kaymakci, 2023)

B=1,966+0,583m R square is 0.437

Based on regression analysis, the model is significant (F=104,957; p= 0.00). When R square is examined, independent variable explains 43% of dependent variable .Created model explains 43% of total variance. It means, 43% of B can be explained by M.

H2b. Top managers considering GSCM as one of the most important parts of corporate strategy have a significant impact on the company's environmental image.

H2b is accepted

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77,688	1	77,688	77,305	,000[b]
	Residual	135,669	135	1,005		
	Total	213,358	136			

Table 26. *ANOVA - Ethical purchasing practices' impact on decreasing purchasing costs (Kaymakci, 2023)*

Coefficients[c]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,465	,313		4,683	,000
	2m. Environmentally friendly supply chain is considered the one of the most important parts of corporate strategy by top managers.	,641	,073	,603	8,792	,000

Table 27. *Coefficients - Ethical purchasing practices' impact on decreasing purchasing costs (Kaymakci, 2023)*

B=1,465+0,641m R square is 0.364

Based on regression analysis, the model is significant (F=77,305; p= 0.00). When R square is examined, independent variable explains 36 of dependent variable. Created model explains 36% of total variance. It means, 36% of B can be explained by M.
H2c. Top managers' approach to value ethical purchasing practices has a significant impact on decreasing purchasing costs.

H2c is accepted.

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53,337	1	53,337	60,425	,000[b]
	Residual	118,281	134	,883		
	Total	171,618	135			

Table 28*. ANOVA - GSCM practices' impact on decreasing environmental violations/accidents (Kaymakci, 2023)*

Coefficients[d]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,684	,325		5,181	,000
	4m. The development of environmentally friendly supply chain management is supported by mid-level managers.	,590	,076	,557	7,773	,000

Table 29. *Coefficient - GSCM practices' impact on decreasing environmental violations/accidents (Kaymakci, 2023)*

B=1,684+0,590m R square is 0.311

Based on regression analysis, the model is significant (F=60,425; p= 0.00). When R square is examined, independent variable explains 31% of dependent variable .Created model explains 31% of total variance. It means, 31% of B can be explained by M.

H2d. Mid-level managers' approach on the development of GSCM practices have a significant impact on decreasing environmental violations/accidents.

H2d is accepted.

3.3.1.5. Research Hypotheses Evaluation (Chi-square test)

Chi-square test is used to find if there is any correlation among nonnumeric variables that are frequently used in statistical studies (Kotari, 2007). It is symbolized as X^2. (Kotari, 2007) stated that the following requirements must be fulfilled before the test.

The Chi-square test of independence (also known as the Pearson Chi-square test, or simply the Chi-square) is one of the most useful statistics for testing hypotheses when the variables are nominal, as often happens in clinical research (McHugh, 2013).

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

χ^2 = the test statistic $\sum$ = the sum of

O = Observed frequencies E = Expected frequencies

Equation 2. *Chi-square Formula (Frimodig, 2023)*

Does the fact that the participants are international export companies differ significantly according to the GSCM techniques?

Chi-square analysis reports		Do you utilize green supply chain management (GSCM) techniques at your company?				
		No	Yes	X^2	SD	p
We are a Global Export Company	Yes	97	21	25,047	1	. 00
	No	40	42			
Total		137	63			

Table 30. *Chi-square analysis report (Kaymakci, 2023)*

A chi-square test of independence was performed to examine the relationship between being a global export company and utilizing GSCM techniques. The relation between these variables was significant, X^2 (1, N = 200) = 25.047, p = .00. Global Export Companies were more likely than Non-Global Export Companies to be able to utilize GSCM techniques.

There is a significant relationship between the two variables because P value is less than .05. Since the minimum expected count is greater than 25, Pearson Chi-square value was checked and the value is 25,047.

We are a global exporting company. * Do you utilize green supply chain management (GSCM) techniques at your company? Crosstabulation

			Do you utilize green supply chain management (GSCM) techniques at your company?		Total
			Yes	No	
We are a global exporting company.	Yes	Count	97	21	118
		Expected Count	80,8	37,2	118,0
		% within Do you utilize green supply chain management (GSCM) techniques at your company?	70,7%	33,3%	59,0%
	No	Count	40	42	82
		Expected Count	56,2	25,8	82,0
		% within Do you utilize green supply chain management (GSCM) techniques at your company?	29,2%	66,7%	41,0%
Total		Count	137	63	200
		Expected Count	137,0	63,0	200,0
		% within Do you utilize green supply chain management (GSCM) techniques at your company?	100,0%	100,0%	100,0%

***Table 31**. Crosstabulation (Kaymakci, 2023)*

Based on the gathered information the results are stating that, if a company is a global exporting company it is more likely that it uses Green Supply Chain Management techniques. 70.7% of the

total responders answered Yes to both questions concerning if the firm is a global exporting company and if the business uses GSCM applications, while only 33.3% is claiming to be an exporting firm and not using GSCM methods at the same time. Firms reported not to be global exporting companies and claimed to use GSCM techniques only covering 29.2% of the total responders. The volume of non-global exporting companies that are not using environmentally friendly techniques is 66.7%.

3.3.1.6. Research Hypotheses Evaluation (Obstacles to implement GSCM methods)

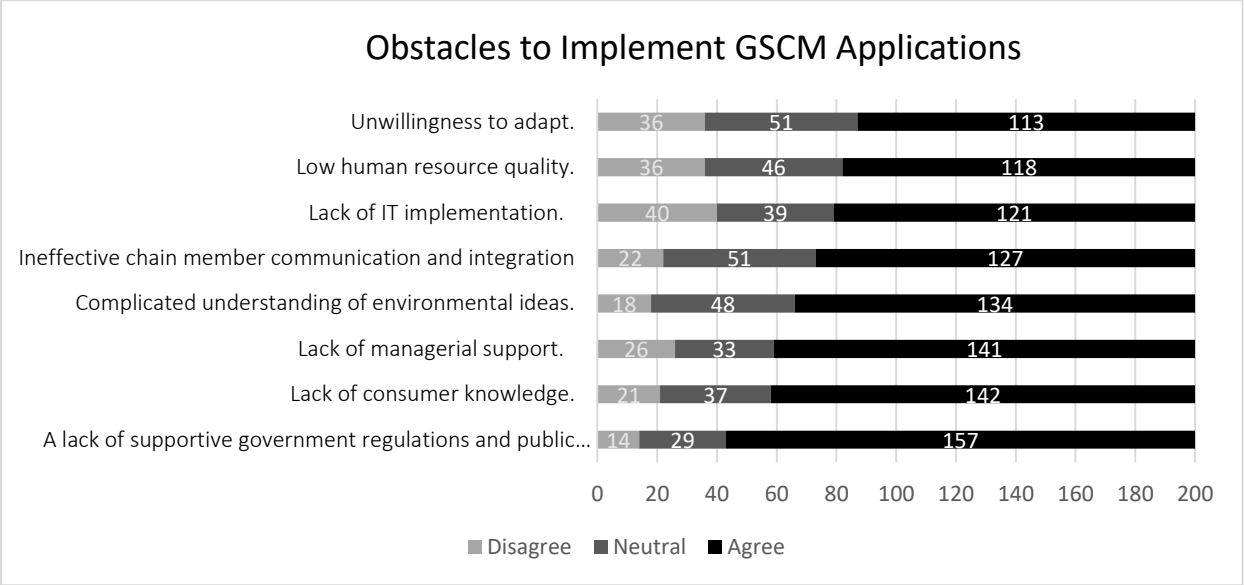

Figure 5. *Obstacles to Implement GSCM Applications (Kaymakci, 2023)*

Based on the information collected the responders estimated the following 3 points as the most serious obstacle stopping firms to implement GSCM applications. “A lack of supportive government regulations and public policies” has received the highest amount of responses positioning this issue as a main obstacle with 157 answers giving 4 or higher grade on an importance scale from 1 to 5 where 5 is marking the maximum level and 1 is marking the minimum. At the same time between the main obstacles “Lack of consumer knowledge” has to be mentioned as well, with the total of 142 answers grading 4 or 5 to the importance of the issue. The third highest response rate is dedicated to the obstacle “Lack of managerial support.” with 141 responders agreeing to the importance to the issue.

4. Discussion and Results

The research findings indicate that 59% of the surveyed companies are global export companies, and 41% are not. The majority of the surveyed companies have experience up to 0-20 years, with 46% having this range of experience. Moreover, 21% of the surveyed firms are classified as micro-sized, 21.5% are small-sized, 25% are medium-sized, and 32.5% are large-sized. The food, construction, textile, education, and medical sectors are among the top five sectors where the surveyed participants are operating. The usage rate of green supply chain management techniques is 68.5%, and it is most commonly used in the fashion, agriculture, cosmetics, logistics, water utility, construction, food, electricity, electronic, energy, green energy, industrial design, manufacture-export, steel production, and tobacco sectors. On the other hand, the surveyed participants from the entertainment, housing, insurance, landscape, mobile, mobile service provider, private education, producing beverage, trade, and utility sectors did not report using green techniques.

The surveyed companies' most commonly implemented green supply chain management techniques are environmentally-friendly packaging, green logistics, reverse logistics, green design, total quality environmental management, green purchasing, green suppliers, green manufacturing methods, green marketing, customer cooperation, and investment recovery. The most popular actions taken by the surveyed companies include reducing water, electricity, gas, and gasoline usage, using recycled or remanufactured materials or parts, and using cleaner or renewable technologies. However, the least commonly implemented action is redesigning operating and production procedures to increase environmental effectiveness.

The multiple regression analysis results show that strong customer collaboration, customers' tendency to avoid or reduce the usage of hazardous products, and customer awareness of recyclable procedures have a significant effect on managers' approach towards green supply chain management methods. However, the customer's ISO 14000 accreditation was found to have no significant impact on managers' approach towards green supply chain management methods.

Based on linear regression analysis, the model is significant for all four hypotheses (H2a: $F=88.238$, $p=0.00$; H2b: $F=104.957$, $p=0.00$; H2c: $F=77.305$, $p=0.00$; H2d: $F=60.425$, $p=0.00$). When examining R square, it was found that the independent variable explains between 31% and 43% of the dependent variable. Therefore, H2a, H2b, H2c, and H2d are all accepted.

A chi-square test of independence was also conducted to determine the relationship between being a global export company and using GSCM techniques. The results showed that there is a significant relationship between these variables ($X2$ (1, $N = 200$) = 25.047, $p = .00$), with global export companies being more likely to use GSCM techniques.

Specifically, 70.7% of the respondents answered "Yes" to both questions about being a global exporting company and using GSCM applications, while only 33.3% claimed to be an exporting firm but not using GSCM methods. Non-global exporting companies that do not use environmentally friendly techniques make up 66.7% of the total responders.

Furthermore, the study gathered information about the most significant obstacles preventing firms from implementing GSCM applications. "A lack of supportive government regulations and public policies" was identified as the most severe obstacle, with 157 responders giving it a score of 4 or higher on an importance scale from 1 to 5. "Lack of consumer knowledge" was also considered a significant obstacle, with 142 responders ranking it as a 4 or 5. Finally, "Lack of managerial support" received the third-highest response rate, with 141 responders agreeing that it was a significant issue.

5. Conclusion and Recommendations

In this chapter; the results of the research on the general analysis of green supply chain management and the obstacles to its implementation are evaluated and suggestions are mentioned together with personal comments.

59% of the companies participating in the research are global export companies and 41% are non-global export companies. 68.5% of the participants stated that they applied green supply chain management in the enterprises they worked for, however, the remaining 28.5 percent stated that they did not implement it at all. According to the relevant result, it is seen that a significant majority of businesses that implement green supply chain management implement green supply chain practices.

Participants from businesses operating in 39 different sectors were included in the study. The food, the construction, textile, education, and medical sectors are in the top five. In the case of the earlier listed sectors, the usage rate reached 100% each, which in answer volume means: 5 companies in Fashion sector claimed to use GSCM techniques, 3 in Agriculture, in Cosmetics, Logistics, Water utility sectors 2 out of 2 Yes answer received to the question concerning if the company is using Green techniques, and 1 answer per sector received for the following sectors: Construction, Food, Electricity, Electronic, Energy, Green energy, Industrial Design, Manufacture-Export, Steel production, and Tobacco.

76 percent of the participants have 0-20 years, 19 percent have 20 to 60 years, 3 percent have 61 to 100 years, and 2 percent have more than 100 years of work experience. Based on the relevant data, it can be stated that most of the participants who share information about green supply chain management are from companies with 0-20 years or more of work experience.

21% of the companies that the participants work for are micro size, 21.5% small size, 25% medium size and 32.5% large size. As a participant, the density is on the large size company side.

90.5 percent of respondents use environmental friendly packaging, 78.1 percent use Green Logistics, 43.07 percent use reverse logistics, 41.61 percent use Green Design, 41.61 percent use Total Quality Environmental Management, 38.69 percent use Green Purchasing, 37.96 percent work with Green Suppliers, 34.31 percent use Green Manufacturing methods, 32.22 percent use Green Marketing and Customer Cooperation method, 18.19 percent is applying Investment

Recovery, and 1.8 percent of them stated that they are using Green Warehousing. Based on the research, Environmentally friendly packaging is mostly used by companies and then Green logistics follows. However, it is seen that Green manufacturing, Green marketing, Customer cooperation, Reverse logistics, Green design, Total quality environmental management (TQEM), Green procurement, and Green Suppliers sections are not used enough on the environment. Businesses in this context should take into account their relationships with the environment as a whole in order to implement effective green supply chain management. Therefore, it is possible to infer that departmental cooperation will likewise improve.

Analyzing the actions taken by companies, the percentages are: 70.07% of yes respondents are taking action to reduce the amount of water, electricity, gas and gasoline used in manufacturing or disposal processes. At the same time, 66.42% of companies said they use recycled, reused or remanufactured materials or parts. The third most popular action on the list was 'reducing energy, water and waste use through the use of clean/renewable technologies' at 62.77%. The least used techniques are: Even these measures were put into practice by over 50% of those who answered yes, and 57.66% of businesses redesigned and improved their products and services to meet new environmental standards. Concerning whether the company has upgraded its products or services to satisfy environmental requirements based on directives from environmental authorities, 75 Yes responses were recorded, accounting for 54.74% of the total. At the conclusion of the list, the action declaring that the business has altered operating and production systems to boost environmental effectiveness receives the fewest Yes responses (53.28%).

According to the data gathered, survey respondents identified the most significant challenges facing firms in implementing GSCM applications. The most commonly cited obstacle, with 157 respondents giving it a rating of 4 or higher on a 1-to-5 scale, was "a lack of supportive government regulations and public policies." Additionally, "lack of consumer knowledge" was identified as a significant obstacle, with 142 respondents rating it as a 4 or 5. The third most commonly cited challenge was "lack of managerial support," with 141 respondents agreeing on its importance.

As a result of the simple regression analyses, which are included in the green supply chain management applications; there is a positive relationship between the approach of the company manager and utilizing GSCM techniques and the companies' benefits. According to this; It can be said that as the approach of company managers increases in a positive sense, GSCM techniques

and companies' benefits will also increase. At the same time, the damage to the environment will be reduced. GSCM practices implemented and developed by top managers have a significant impact on the company's efficiency. Top managers considering GSCM as one of the most important parts of corporate strategy have a significant impact on the company's environmental image. Top managers' approach to value ethical purchasing practices has a significant impact on decreasing purchasing costs. Mid-level managers' approach to the development of GSCM practices has a significant impact on decreasing environmental violations/accidents.

Multilinear regression is the name given to regression models with one dependent variable and multiple independent variables. In understanding the relationship between Customer awareness about green topics and Managers' approach toward GSCM methods, the multiple regression model was used. Customer awareness about green topics has a significant impact on Managers' approach toward GSCM methods. Based on the results, it has been seen that the P value of the three hypotheses is less than .05. The hypotheses were supported. But the P value of the H1a is higher than .05 which is why this hypothesis was not supported. 3 independent variables are enough to explain the model but the customer's awareness of ISO 14000 has not had a significant impact on Managers' approach toward GSCM methods. As a result, Customer awareness about green topics has a significant impact on Managers' approach toward GSCM methods.

A chi-square independence test was used to investigate the association between being a global export company and using GSCM strategies. The relationship between these variables was substantial, and Global Export Companies were more likely to be able to use GSCM procedures than Non-Global Export Companies. Based on the gathered information, the results state that, if a company is a global exporting company, it is more likely to use Green Supply Chain Management techniques. 70.8% of the total responders answered Yes to both questions concerning whether the firm is a global exporting company and if the business uses GSCM applications, while only 33.3% claim to be an exporting firm and not using GSCM methods at the same time. Firms reported not to be global exporting companies and claimed to use GSCM techniques only covering 29.2% of the total responders. The volume of non-global exporting companies that are not using environmentally friendly techniques is 66.7%.

Although the current research's findings cannot be generalized, the data collected allows for a number of recommendations for future investigations. When the study methodology, comparable

studies, and green supply chain management methods around the globe are taken into account, it is possible to arrive at similar conclusions.

Approaches of business managers to green supply chain management increase the potential to apply supply chain management while increasing the benefit to the company while minimizing the damage to the environment. Supply chain management is generally considered by most business managers as green packaging and green logistics activities. When it comes to green supply chain management, knowledge is even less. Different interpretations of green supply chain management cause application differences.

During the research process, questionnaires were conducted on the participants on a voluntary basis. As a result of the application, it was seen that the enterprises that accepted to participate in the research were quite limited. Many of the participants were from Turkey, and other participants were internationals from Hungary. As a result, comparisons with data from comparable research conducted abroad will be feasible.

Each of the components that make up green supply chain management has its own importance. And the result of using these components in the most effective way is undeniable. Considering the deficiencies in this matter, research to be conducted on the least used practices in the green supply chain will contribute to green supply chain management. At the same time, it is necessary to investigate the obstacles as to why the least used methods are used less.

The most significant challenges facing firms in implementing GSCM applications are a lack of supportive government regulations and public policies, a lack of consumer knowledge, and a lack of managerial support. Supportive government regulations and policies can incentivize firms to adopt environmentally sustainable practices, while lack of consumer knowledge can impact the demand for environmentally sustainable products. Finally, managerial support is crucial for the successful implementation of GSCM practices.

Obstacles encountered in green supply chain management complicate implementations. With this research, some of the obstacles were tried to be revealed. Next research can be had a detailed examination of the barriers and suggestions for how to increase practices may be offered after getting information from this research.

The present research examines the general literature analysis of green supply chain management and the obstacles to implementing it. Based on this research, further research could focus on the

effects of green supply chain management on business performance by comparing it to two different countries, or on the barriers to green supply chain adoption.

6. Summary

Based on the data gathered, it can be concluded that there is a positive relationship between the approach of the company manager and the utilization of GSCM techniques, as well as the benefits of the companies. As the approach of company managers becomes more positive towards GSCM, the utilization of GSCM techniques and the benefits of the companies will also increase. At the same time, this will lead to a reduction in the damage to the environment.

The implementation and development of GSCM practices by top managers have a significant impact on the efficiency of the company. If top managers consider GSCM as one of the most important parts of corporate strategy, it will have a significant impact on the company's environmental image. Additionally, the approach of top managers towards ethical purchasing practices has a significant impact on decreasing purchasing costs.

On the other hand, the approach of mid-level managers towards the development of GSCM practices has a significant impact on decreasing environmental violations and accidents. Therefore, it can be concluded that the approach of managers at different levels in the company towards GSCM practices is crucial for the successful implementation and development of these practices.

In order to understand the relationship between customer awareness about green topics and managers' approach towards GSCM methods, a multiple regression model was used. The results showed that customer awareness about green topics has a significant impact on managers' approach towards GSCM methods. This suggests that companies should focus on increasing customer awareness about green topics in order to encourage managers to adopt and implement GSCM practices.

In conclusion, the study provides valuable insights into the current state of GSCM practices in companies operating in various sectors. The findings indicate that there is a positive trend towards the adoption and implementation of GSCM practices, but there is still room for improvement. The study also highlights the importance of the approach of managers towards GSCM practices and the need for increased customer awareness about green topics. Companies that successfully implement GSCM practices will not only benefit from increased efficiency and cost savings, but also contribute to the protection of the environment.

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Appendix

Appendix 1: Questionnaire

Interview Questions for Enterprises/ Organizations

1. **We are a global exporting company.**
    - *Yes/No*
2. **What is the main business of your company?**
    - *Short-answer text*
3. **How long has your business been active in this industry?**
    - *Short-answer text*
4. **How many full-time employees does your company have overall?**
    - *Short-answer text*
5. **Do you utilize green supply chain management (GSCM) techniques at your company? For instance, Reverse Logistics (reuse of products and materials), Green procurement, Green Suppliers, Green Manufacturing, Green Design, Green Packaging, Green Distribution, or Green Logistics. If it is No, please go to section about obstacles.**
    - *Yes/No*
6. **Which of the GSCM techniques listed below does your company use? (Check every box that applies.)**

- *Green procurement*
- *Reverse logistics*
- *Green design*
- *Green manufacturing*
- *Environmentally friendly packaging*
- *Green distribution*
- *Green logistics*
- *Green suppliers*
- *Investment recovery*
- *TQEM*
- *Green marketing, and Customer cooperation*
- *Green warehousing*
- *Other*

7. **Select the actions that your company taken.**
    - *Have taken steps to reduce the amount of water, electricity, gas, and gasoline used in the manufacturing or disposal processes.*
    - *Used materials or parts that have been recycled, repurposed, or remanufactured.*

- *Have reduced their use of energy, water, and waste by using cleaner/renewable technologies.*
- *Redesigned operating and production procedures to increase environmental effectiveness.*
- *Have redesigned and enhanced goods and services to satisfy new environmental standards.*
- *Have redesigned and enhanced goods and services to satisfy new environmental standards.*

8. **Does your company's management have the following stance on a Green Supply Chain Applications?**

- *The customer's ISO 14000 accreditation is crucial. (scale, 1 to 5)*
- *To attain environmental goals, there is strong customer collaboration. (scale, 1 to 5)*
- *It is important that our customer has a tendency to avoid or reduce the usage of hazardous products. (scale, 1 to 5)*
- *Awareness of customers of some kind of recyclable procedures has a positive effect on better GSCM utilization. (scale, 1 to 5)*

9. **Does your company's management have the following approach about environmentally friendly supply chain?**
    - *The development of an ecologically friendly supply chain management is supported by top managers. (scale, 1 to 5)*
    - *Environmentally friendly supply chain is considered the one of the most important parts of corporate strategy by top managers. (scale, 1 to 5)*
    - *Top managers value ethical purchasing practices that are good to the environment. (scale, 1 to 5)*
    - *The development of environmentally friendly supply chain management is supported by mid-level managers. (scale, 1 to 5)*
10. **Has your company benefited in the following ways by practicing environmentally friendly supply chain practices?**
    - *Environmentally friendly supply chain practices have decreased cost of purchasing material. (scale, 1 to 5)*

- *The cost of energy usage has fallen as a result of environmentally friendly supply chain strategies. (scale, 1 to 5)*
- *Environmentally friendly supply chain practices have decreased fine for environmental violations/accidents. (scale, 1 to 5)*
- *Our company's overall efficiency has increased or improved as a result of environmentally friendly supply chain procedures. (scale, 1 to 5)*
- *Environmentally friendly supply chain practices have decreased general waste.*
- *The company's environmental image has been boosted by using environmentally friendly supply chain procedures. (scale, 1 to 5)*

11. This section is about to understand the main obstacles to apply GSCM practices.

- *Unwillingness to adapt. (scale, 1 to 5)*
- *Lack of IT implementation. (scale, 1 to 5)*
- *Low human resource quality. (scale, 1 to 5)*
- *Lack of consumer knowledge. (scale, 1 to 5)*
- *A lack of supportive government regulations and public policies. (scale, 1 to 5)*
- *Lack of managerial support. (scale, 1 to 5)*
- *Complicated understanding of environmental ideas. (scale, 1 to 5)*
- *Ineffective chain member communication and integration. (scale, 1 to 5)*

Appendix 2: Figures and Pictures

Appendix 3: Equations

Appendix 4: Tables

Szent István Campus, Gödöllő
Address: H-2100 Gödöllő, Páter Károly utca 1.
Phone.: +36-28/522-000
Homepage: https://szic.uni-mate.hu/

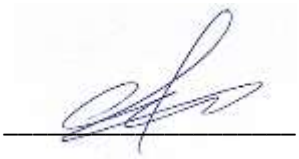
Annex no 1.

STUDENT DECLARATION

Signed below Mustafa Emre Kaymakci, student of the Hungarian University of Agricultural and Life Sciences, Szent Istvan Campus, Management and Leadership MSc Course full time/correspondence* declare that the presented Thesis is my own work, and I have used the cited and quoted literature in accordance with the relevant legal and ethical rules. I understand that the one-page-summary of my thesis will be uploaded on the website of the Campus/Institute/Course, and my thesis will be available at the Host Department/Institute and in the repository of the University in accordance with the relevant legal and ethical rules.

Confidential data are presented in the thesis: yes no*

Date: 04/17/2023



Student

SUPERVISOR'S DECLARATION

As primary supervisor of the author of this thesis, I hereby declare that review of the thesis was done thoroughly; the student was informed and guided on the method of citing literature sources in the dissertation, attention was drawn to the importance of using literature data in accordance with the relevant legal and ethical rules.

Confidential data are presented in the thesis: yes no*

Approval of thesis for oral defense on Final Examination: approved not approved

Date: 04/18/2023

Internal Supervisor

*** Please underline the correct one!**

Szent István Campus, Gödöllő
Address: H-2100 Gödöllő, Páter Károly utca 1.
Phone.: +36-28/522-000
Homepage: https://szic.uni-mate.hu/

Annex No. 2

CONTENT SUMMARY OF THE THESIS

Thesis title*:* **Green Supply Chain Management General Literature Analysis and Obstacles**

Author name*:* **Mustafa Emre Kaymakci**

Management and Leadership MSc, full time course

Department of Agricultural Logistics, Trade and Marketing, Institute of Agriculture and Food Economics

Internal Supervisor: (Dr. Gyenge Balázs, Instructor/Supervisor, Hungarian University of Agriculture and Life Sciences)

The purpose of this study on green supply chain management is to provide information on green supply chain management techniques as well as to highlight the problems and certain impediments that organizations encounter in implementing green supply chain management in the current environment. In this regard, extensive research has been conducted, green supply chain management has been thoroughly explained, and the effective aspects and obstacles that make green supply chain management difficult to implement have been identified. With this thesis to understand the impact of companies' management stance and their customers on Green Supply Chain Practices, the impact of companies' managers' Approach on Green Supply Chain Practices, and the impact of utilizing GSCM practices on companies' utility is much clear. Also, barriers to implementing GSCM methods were investigated and described. While investigating these hypotheses, chi-square, simple regression analysis, multiple regression analysis, and tables were used. And as a result, the hypotheses were found to be significant, and the main obstacles to the application of GSCM methods were listed. Finally, the study's shortcomings were discussed, and some recommendations for further research were made.