

Ministry of Higher Education and Scientific Research

Higher National School of Management

ENSM – KOLEA



**Dissertation submitted in partial fulfilment of the requirement for the
Academic Master Degree in “Supply Chain Management”**

**Green Supply Chain Management: Integrating
environmental thinking into the supply chain
management**

(Case: Advertising Agency “COREX”)

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2021/2022

Abstract

Increases in environmental problems require companies to be more aware towards the environment and take precautions regarding the problems. As a result, companies have started to embrace the concept of green supply chain which includes environmental issues rather than the concept of supply chain which is based on profitability alone. This dissertation seeks to explore the impact of integrating the environmental aspect into the different stage of the supply chain, greening it. In order to achieve the objectives of this research, an extensive study of the related literature was included and practical research was carried out in the advertising agency COREX. A quantitative approach was adopted. Thus, a survey was administered to the employees. The results obtained from the statistical interpretation of the employees' responses showed that GSCM plays a crucial role as it can lower production costs and environmental pollution while also boosting the economy, giving the business a competitive advantage through higher customer satisfaction and a better public image. This study suggests raising awareness of the function of GSCM practices for the good of all stakeholders as well as for the advancement of sustainable economic and environmental development.

Key terms: green supply chain management, environmental awareness, competitive advantage.

Résumé

L'augmentation des problèmes environnementaux oblige les entreprises à être plus conscientes de l'environnement et à prendre des précautions pour y remédier. En conséquence, les entreprises ont commencé à adopter le concept de la chaîne logistique verte qui inclut les questions environnementales plutôt que le concept de chaîne d'approvisionnement qui est basé uniquement sur la rentabilité. Cette thèse vise à explorer l'impact de l'intégration de l'aspect environnemental dans les différentes étapes de la chaîne logistique, en la rendant plus verte. Afin d'atteindre les objectifs de cette recherche, une étude approfondie de la littérature connexe a été incluse et une recherche pratique a été réalisée dans l'agence de publicité COREX. Une approche quantitative a été adoptée. Ainsi, un questionnaire a été administré aux employés. Les résultats obtenus à partir de l'interprétation statistique des réponses des employés ont montré que la GSCM joue un rôle crucial car elle peut réduire les coûts de production et la pollution de l'environnement tout en stimulant l'économie, en donnant à l'entreprise un avantage concurrentiel grâce à une plus grande satisfaction des clients et une meilleure image de marque. Cette étude suggère de sensibiliser à la fonction des pratiques de la GSCM pour le bien de toutes les parties prenantes ainsi que pour la promotion d'un développement économique et environnemental durable.

Mots clés : management de la chaîne logistique verte, conscience environnementale, avantage concurrentiel.

ملخص

مع تزايد المشاكل البيئية، تحتاج الشركات إلى أن تكون أكثر وعياً بالبيئة وأن تتخذ الاحتياطات اللازمة لمعالجتها. ونتيجة لذلك، بدأت الشركات في اعتماد مفهوم سلسلة التوريد الخضراء الذي يشمل القضايا البيئية بدلاً من مفهوم سلسلة التوريد الذي يقوم فقط على الربحية. يسعى هذا البحث إلى استكشاف تأثير دمج الجانب البيئي في المراحل المختلفة لسلسلة التوريد، مما يجعله أكثر خضرة. ولتحقيق أهداف هذا البحث تم تضمين دراسة موسعة لأدبيات ذات الصلة وإجراء بحث عملي في وكالة الإعلان COREX. تم اعتماد نهج كمي إذ تم توجيه استبيان إلى الموظفين. أظهرت النتائج التي تم الحصول عليها من التفسير الإحصائي لردود الموظفين أن سلسلة التوريد الخضراء تلعب دوراً حاسماً لأنه يمكن أن يقلل من تكاليف الإنتاج والتلوث البيئي مع تحفيز الاقتصاد، مما يمنح الشركة ميزة تنافسية من خلال زيادة رضا العملاء و علامة تجارية أفضل.

الكلمات الرئيسية: إدارة سلسلة التوريد الخضراء، الوعي البيئي، الميزة التنافسية.

Acknowledgement

First and foremost, I express my gratitude to God Almighty for granting me the strength, perseverance, and will to complete this work.

I would like to express my thanks to my supervisor Dr Ali BELAIDI for his expertise, generosity, assistance, and understanding. Without his great advice, support, and patience, this project would not have been accomplished.

Many thanks to the members of jury for kindly accepting to read and evaluate my modest work.

I would like to express my sincere gratitude to COREX for their assistance in this study, their enthusiastic participation made the process of finishing this work enjoyable.

Lastly, I would be remiss in not mentioning my family and friends, their belief in me has kept my spirits and motivation high during this process.

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List of abbreviations and acronyms

SCM: Supply Chain Management

GSCM: Green Supply Chain Management

GHG: Greenhouse Gas

EM : Environnemental Management

EMS : Environnemental Management System

ISO: International Organization for Standardization

QM: Quality Management

IOT: Internet of Things

AI: Artificial Intelligence

WMS: Warehouse Management System

MFD: Multi-function Device

INTRODUCTION

Numerous environmental issues have evolved in the modern era, including pollution of the environment, global warming, the rapid depletion of resources, and a decline in biological diversity. The end-customers' growing environmental, ecological, and ethical awareness and expectations to conserve energy, lessen pollution and waste, and guarantee consumer safety have put pressure on businesses to systematically analyze their production processes and their supply chains as a whole. (Sezen & Çankaya, 2017) (Lintukangas *et al*, 2013).

Supply chain management is the coordination and management of a complicated network of operations involved in providing a finished good or service to the end-user or customer. The environmental burden of a supply chain is impacted by all phases of a product's life cycle, including resource extraction, manufacture, usage and reuse, final recycling and disposal (Zhu *et al*, 2007). The addition of the "green" component to this definition refers to green supply chain management (GSCM) that is described as “green purchasing + green manufacturing + green distribution + reverse logistics”. The goal of GSCM is to reduce or eliminate waste (energy, emissions, hazardous solid wastes) that ensues from the supply chain (Hervani *et al*. 2005).

Manufacturers are increasingly concerned about environmental issues as a result of legislation and customer mandates, particularly in the US, the European Union (EU), and Japan. GSCM has emerged as a significant new invention that aids businesses in creating "win-win" strategies that achieve profit and market share goals by reducing their environmental risks and impacts and increasing their ecological efficiency (Hoek & Remko, 2000).

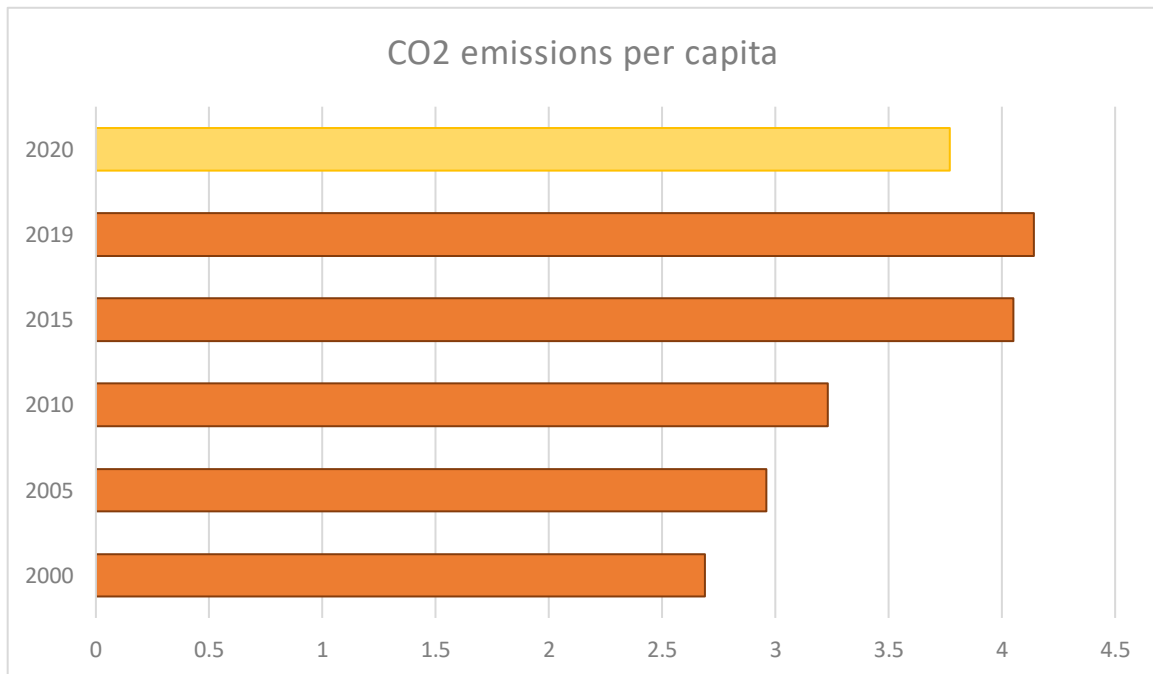
1. Problem statement

Global GHG emissions had been on the rise from the beginning of the 21st century and up until the year 2019 primarily because of the rise in CO₂ emissions from China and other growing economies. As a result, the levels of greenhouse gases in the atmosphere significantly increased, boosting the natural greenhouse effect, which may have a

damaging effect on life on Earth. Despite the fact that the world-wide COVID-19 pandemic induced a slowdown in the global emissions in 2020, climate change remains a concern (European Commission, 2021).

Since environmental concerns have grown over the past ten years, there is a growing understanding that supply chain management challenges related to environmental degradation brought on by industrial development should be handled collectively, helping to promote "green supply chain management" (Al-Sheyadia *et al.* 2019).

Figure 1 CO2 emissions per capita in Algeria



Source: EDGAR 2021 report

When it comes to the escalating environmental problems, Algeria is not an exception. But as the issue worsens, awareness is also growing. As a result, green supply chains are gradually being adopted by Algerian industries in order to lower their carbon emissions, cut down on waste, all while increasing profit.

With that being said, the present study seeks to answer the following research questions:

- What are firms doing to green their supply chain?
- What are the benefits of implementing GSCM practices?
- What is the state of awareness of employees in Algerian societies?

In order to answer the aforementioned research questions, we proposed the following hypothesis:

- Green supply chain management contributes to improved economic and environmental performance.

Objective of the study

The purpose of this research is to survey current green activities in an Algerian company and to evaluate green supply chain management. The specific objectives of the study are:

1. To determine the state of GSCM adoption at one of the advertising agencies (COREX).
2. To determine whether the implementation of GSCM practices is profitable.
3. Shedding light into how employees view the application of GSCM.

Value of the study

This study is the outcome of deeply held principles. From the researchers' perspective, paying consideration to the environmental impact of the company is one of the most important concerns that managers should address. What makes this research even more significant is that greening the supply chain not only reduce the harmful impact of the said chain on the environment but also has a considerable cost saving and competitive advantage.

Another value of this research is to bring more attention towards the state of GSCM in Algeria. Therefore, it encourages researchers to put more focus on this topic.

It's important to mention that implementing a green supply chain will be even more crucial in the future than it is now. The reasons for this include higher government regulations, increased environmental awareness, and a pressure from customers to be more sustainable. Greening the supply chain is no longer optional, it is becoming the norm.

2. Research methodology

A quantitative approach was adopted to carry out the aims of the research. According to (Aliaga & Gunderson, 2002), quantitative research methods involve acquiring data in numerical form and evaluating it using mathematical techniques, particularly statistics, to explain a problem or phenomena. This method uses deductive reasoning and is independent of context.

According to (Creswell, 2003), quantitative research uses tactics of inquiry like surveys and experiments to gather data on preset instruments that provide statistical data. For this study, we used a survey that was addressed to 19 employees including 3 managers of the advertising agency COREX as the data collecting instrument. The survey consists of only close-ended questions for an easier survey-taking experience for the participants.

Case study

The practical part of this research took place in an advertising agency COREX, which is located in "Cité des moudjahidines, Ben Aknoun". The company was founded in 2012. The study was conducted in the agency's artistic division, which focuses on print and digital design. However, the survey was sent out to employees from each department.

Structure of the Study

The research will essentially be divided into two main chapters in order to fulfill the purpose of the current study.

The theoretical framework of the study is covered in the first chapter. It is divided into two sections; section 1 is devoted to a general review of the literature related to the incorporation of the environmental aspect into supply chain management. The second section focuses on the core ideas behind the current research. It identifies the essential components and offers some of their definitions. It attempts to provide a conceptual positioning amid the main theoretical approaches that displays clear differences.

The second chapter is devoted to the methodology, which covers the data collection approach utilized in this study; which is the quantitative approach, the population and sample, the data analysis tool, and an extensive discussion of the results.

The research concludes with a general conclusion that includes the findings in response to the research questions submitted as well as some recommendation.

CHAPTER I: THEORETICAL FRAMEWORK

Chapter 1

Theoretical framework

Preamble:

The present chapter is dedicated to the literature review and the conceptual framework. The literature review will focus on identifying the essential topics surrounding our study and some definitions of the research's major concepts will be provided in the second section.

1. Incorporating Environmental Concept into Supply Chain Management

Internal processes become more intertwined as firms work to establish partnerships and more effective information links with trading partners. Organizations are then faced with the management of an extended enterprise as a network of relationships, procedures, and technologies. For participating companies, a successful deployment becomes a source of competitive advantage (Power, 2005).

In this vein, Power (2005) stated that considerable internal and external organizational changes are needed to accompany the introduction of technologies and processes for supply chain management. Selecting the appropriate areas of concentration will be a crucial aspect in determining the success of any implementation, and understanding how the adoption would affect all trading partners. Due to the challenges and complexities involved in implementation, frameworks (e.g. SCOR) have been developed to facilitate this process. The acceptance and use of these frameworks, as noted by the author, is at best limited. Therefore, it is best to attempt that implementation through a progressive rather than a “big bang” approach.

According to Green *et al.* (2008), to serve the final customers of the supply chain, supply chain management (SCM) calls for the integration, coordination, and alignment of

business processes and strategies throughout the integrity of the supply chain. Business processes that must be integrated and coordinated include purchasing, manufacturing, marketing, logistics, and information systems. The strategic imperatives that must be integrated include customer focus, efficiency, quality, and responsiveness (Zelbst *et al.* 2010) and most recently environmental sustainability.

The prior studies emphasized the critical relevance of implementing supply chain strategies and how they can provide a source of competitive advantage. Customers and government agencies have begun to demand environmentally sustainable processes, products, and services. Therefore, there is a need for further research concerning the incorporation of the environmental aspect into supply chain management.

In the same token, industries are beginning to grasp that they need to be able to assess their environmental performance more accurately and continuously in real-time. They must also be quick to spot new business opportunities in order to boost performance while lowering potential environmental risks. In this regard, Patil (2018) pointed out that Environmental Management Information System (EMIS) is a system that aims to reduce the amount of environmental impacts of all of the processes included in the organization's activities. The system contains a central database and designed day-to-day managerial functions such as pollution source management, environmental statistics, emission charge management.

Klassen & McLaughlin (1996) argued that Environmental Management plays a pivotal role in the financial performance of the firm. They proposed that EM is interconnected with both corporate and functional strategies. Environmental management, which consists of product, operations, and management system technologies, is a key factor in determining environmental performance. Operations is one of the most important functional areas because it is in charge of product development, manufacturing, and distribution. They have stated that as stock prices are considered to be indicators for financial success under the Efficient Market Theory, they largely reflect the true financial advantages of environmental performance.

Allur *et al.* (2018) have noted after reviewing 65 academic articles that the conventional body of academic literature indicates that QM may be especially useful as a perspective to assist business managers in embracing corporate EM and other relevant environmentally friendly initiatives. Many studies in the field of management, some of which are considered classics, have explored shared elements between QM and environmental sustainability. Similar to this, a number of publications claim that implementing QM procedures leads to noticeably increased organizational support for implementing EM principles.

Obviously, the studies mentioned above have showcased that environmental management has a significant impact not solely on mitigating environmental risks generated by the companies' various activities, but also on improving business performance.

Consequently, Hoek & Remko (2000) suggested three approaches in GSCM, namely reactive, proactive and value-seeking. In the reactive approach, businesses devote a small amount of resources to environmental management, begin labeling recyclable items, and deploy "end of pipeline" measures to lessen the environmental impact of production. In the proactive strategy, they begin to anticipate new environmental requirements by making a modest resource commitment to launch product recycling and green product design. In the value-seeking approach, businesses incorporate environmental actions into their business strategies, such as green purchasing and ISO adoption as strategic initiatives.

For instance, the study conducted by Arimura *et al.* (2011) determined how ISO 14001 certification influences the green supply chain management (GSCM). The study showed that GSCM practices are greatly promoted by ISO 14001 and the voluntary EMS government program. Their results shows that facilities with environmental management systems (EMS) that have received ISO 14001 certification are 40% more likely to evaluate the environmental performance of their suppliers and 50% more likely to demand that these suppliers follow certain environmental standards.

Al-Sheyadia *et al.* (2019) had studied the complementarity of Green Supply Chain Management practices and the impact on environmental performance. They found a strong link between the level of collective GSCM competency and the environmental impact achieved. Their findings support the belief that complementarities between GSCM activities provide higher levels of performance. Managers should therefore focus on implementing bundles of GSCM practices rather than searching for individual best practices.

G.Azevedo *et al.* (2011) examined the links between green practices of supply chain management and supply chain performance in the context of the Portuguese automotive supply chain. The conceptual model for this study was derived from data analysis that shows how green practices have both good and negative effects on supply chain performance as well as beneficial benefits on quality, customer satisfaction, and efficiency.

Liu *et al.* (2012) have analyzed the relationship between green supply chain management level and the classified determinant factors. The study indicated that regular internal training of employees to expand a company's involvement in GSCM procedures will significantly improve a company's environmental management capabilities. Another research conducted by Liu (2011) examined the adoption levels of GSCM practices in China and explored the performance measurement for GSCM. The findings demonstrated that GSCM significantly balanced other advanced management methods and enhanced environmental performance.

Relying on the research presented above, we assume that Green Supply Chain Management is linked to a variety of other business aspects, including ISO 14001 certification, supply chain performance, and the impact on environmental performance. The outcomes of those relationships can be very beneficial to the organization and used to increase efficiency, quality and performance.

Accordingly, the firm should adhere to GSCM best practices, which include environmental supply chain management principles. Numerous studies have attempted to

pinpoint GSCM practices in organizations that are referred to as internal systems like environmental and quality management systems. Improving the organization's environmental performance depends on internal environmental management. (Zhu *et al.*, 2006).

In accordance with Zhu & Sarkis (2004), quality management facilitates GSCM deployment. They suggest that firms can enhance their environmental practices by learning from the mistakes made by their quality management programs when subject to strict quality control. Organizations can develop organized procedures for ongoing environmental performance improvement by obtaining the ISO 14001 environmental management system (EMS) certificate (Kitazawa & Sarkis, 2000).

Beamon (1999) suggested that advances in GSCM and logistics have prompted companies to adopt the closed-loop supply chain. Closed-loop supply chain management stands for “the design, control and operation of a system to maximize value creation over the entire life-cycle of a product with the dynamic recovery of value from different types and volumes of returns over time” (Guide, 2000).

Some research focused on external environmental elements such as customers and suppliers. Organizations need interactions with the government, suppliers, customers, and even competitors to improve the environmental efficiency of their supply chains. For organizations to close the supply chain loop, collaboration with suppliers and customers is crucial (Zhu *et al.*, 2006).

More recent studies have demonstrated that all supply chain operations must be taken into account while integrating GSCM.

Rao & Holt (2005) explored GSCM in three dimensions: inbound function dimension including green purchasing activities, outbound function dimension including green marketing, environmentally friendly packaging, and eco-friendly distribution and recycling activities, and lastly green production dimension. The authors showed how

green supply chains and economic performance are related. Additionally, they discovered that GSCM procedures increased competitiveness and enhanced economic growth.

Shang *et al.* (2010) had investigated GSCM by using multiple dimensions. They categorized green practices into six groups: green production and packaging dimension, the environmental participation dimension, green marketing dimension, green supplier dimension, green stock dimension and green design dimension.

The implementation of GSCM practices is expected to result in improved environmental performance. Several research have focused on determining GSCM practices. There are those who refer to the practices in the literature as internal systems, those who refer to them as elements of the external environment, and those who take a multidimensional approach to the practices. The following table shows the different viewpoints of green supply chain management practices.

Table 1 Viewpoint of green supply chain management practices

Research	GSCM practices
Zhu & Sarkis (2004) “Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises”	Internal systems (environmental and quality management systems)
Kitazawa & Sarkis, (2000) “The relationship between ISO 14001 and continuous source reduction programs”	
Guide (2000) “Production planning and control for remanufacturing: industry practice and research needs”	

Zhu et al. (2006) Green supply chain management implications for “closing the loop”	External environmental elements (interactions with the government, suppliers, customers and competitors)
Rao & Holt (2005) “Do green supply chains lead to competitiveness and economic performance?”	Multidimensional approach
Shang et al. (2010) “A taxonomy of green supply chain management capability among electronics-related manufacturing firms in Taiwan”	

Source: realized by us

After having an overview of the origins of GSCM and its current state among researchers, we conclude that traditional SCM lacks in the environmental aspect, therefore the integration of GSCM practices in their integrity (following the multidimensional approach) is essential, as it can also signal to organizations the ability to create value in the long run.

2. Conceptual Framework

In this section we define the key terms and concepts used in this study.

2.1. Traditional Supply Chain Management

Supply chain management is the administration and coordination of a complicated network of operations involved in getting a finished product to the customer or the end-user. It is a crucial business activity, and the procedure entails obtaining raw materials and components, manufacturing and assembling together goods, storing them, entering and tracking orders, distributing them through various channels, and eventually delivering

them to the customer. Customers (commercial or end-user), external distributors, internal company functions and external suppliers make up a company's supply chain structure. Companies may participate in several supply chains simultaneously. The administration and coordination are made more difficult by the worldwide nature of the participants, who operate across time zones and geographical boundaries. Customer expectations, governmental regulations, information technology, globalization, competition, and the environment all have an impact on how successfully a supply chain is managed (Joseph *et al.* 2005).

Monczka *et al.* (1998) define SCM as a concept, whose main goal is to integrate and manage the material sourcing, flow, and control across various departments and levels of suppliers utilizing a complete systems perspective. SCM requires that separate materials functions report to an executive in charge of coordinating the entire materials process and calls for cooperative partnerships with suppliers at various tiers.

Another extreme viewpoint that is particularly prevalent in academic papers includes all sourcing, transport, manufacturing, and distribution activities in a network of distinct businesses that extends from the supplier of the raw materials to the final customer, as well as return and after-sales services (Hompel *et al.* 2014).

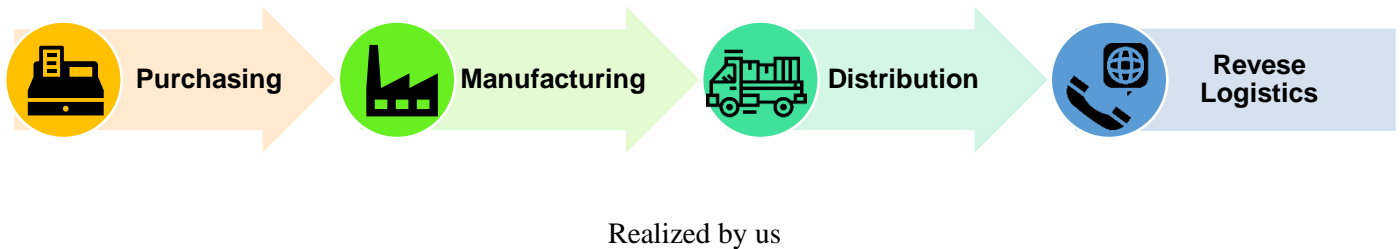
According to the various definitions, the term "supply chain management" causes confusion among those who are trying to build a supply chain approach to management as well as those who are investigating the phenomenon. Adopting a single definition would benefit both research and practice.

To sum up, supply chain management is defined as the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.

2.1.1. Supply Chain Management operations

In our study, we visit the supply chain in the 4 processes shown in (figure 1).

Figure 2 Supply Chain Processes



- **Purchasing:** It is the step in which the company selects its suppliers of goods and services, create a set of pricing, delivery, and payment processes, and develop methods of evaluating and improving management. Also, it is crucial to combine the products and services provided by suppliers, including delivery, invoice verification, transfer of goods to production, and approved payments to suppliers (Huang & Shih, 2009).
- **Manufacturing:** The progress includes preparations for the production, testing, packaging, and delivery. It makes up the majority of the SCM progress, including testing the degree of quality, product yield, worker productivity, and other metrics (Drumwright, 1994)
- **Distribution:** A company's distribution strategy is crucial. Simply put, a strong distribution network increases the likelihood that a business will outperform its rivals in terms of sales of its goods. A company will generate higher margins and endure longer in challenging market conditions if it expands its product line more quickly and widely than its competitors at lower costs. Distribution involves a good transport system, a good tracking system and good packaging (Florescu *et al.* 2019).

- Reverse logistics: The series of actions taken to recapture value and put an end to a product's lifecycle is known as reverse logistics. It usually entails returning a goods back to the producer or distributor or sending it somewhere else for maintenance, repair, or recycling. Aftermarket supply chain, aftermarket logistics, or retrologistics are other names for reverse logistics (Alshamsi & Diabat, 2015).

2.2.Environmental Management

Appropriate environmental management entails the management of environmental risks, which can range from pollution prevention to more pro-active technological innovation. Therefore, environmental management offers cost mitigation and pollution reduction by managing raw materials, eliminating and reducing contaminants, improving operational efficiency, recycling and reuse, and self-regulation (Potricha *et al.* 2019).

The term "environmental impact" refers to the potential harm that a business may cause to the environment through the usage and discharge of environmental pollutants. Environmental costs involve internal expenses that have a direct influence on a company's income statement (e.g. waste treatment and discharge cost, energy consumption, product take back costs) and external costs that are inflicted on society at large but are not paid for by the business that initially generated the cost (e.g. carbon emissions, forest degradation, social welfare cost) (Al-Sheyadia *et al.* 2019).

Environmental standards are communication tools that businesses use on a voluntary basis to assure conformity to specific environmental requirements, with the ultimate goal of voluntarily minimizing the environmental effect of their operations (Murmura *et al.* 2017).

2.2.1. Environmental Management System

The Environmental Management System became a critical success factor in order to compete on the market. The International Organization for Standardization (ISO) defines an environmental management system as “part of the management system used to manage environmental aspects, fulfill compliance obligations, and address risks and opportunities.” (Al-Sheyadia *et al.* 2019).

The release of the ISO 14000 standards marked the end of a protracted consultation process that the International Organization for Standardization (ISO) had started in 1991 to examine the creation of global standards in the area of environmental management. A framework for discussion was developed with the formation of the Technical Committee on Environmental Management, which was tasked with coordinating the work of teams of worldwide experts and creating the ISO 14000 series of standards. EM, environmental audits, labeling, environmental performance evaluations, life cycle assessments, and terminologies and definitions were among the many facets of environmental management that these standards were to address (Sala, 1998).

The ISO 14001 standard is part of the ISO 14000 family of standards; it provides useful tools for businesses and organizations looking to better manage their company's environmental consequences. Particularly, the ISO 14001 standard sets the standards that must be adhered to for the establishment of an efficient Environmental Management System. To date, there are over 300,000 ISO 14001 certifications worldwide, present in 171 countries (Bravi *et al.* 2020).

As a result of its widespread adoption around the world, the ISO 14001 standard has become the primary reference for corporate environmental management for more than 20 years (Boiral *et al.* 2018).

2.3.Green Supply Chain Management

Due to the number of environmental and social problems, sustainable development has received more attention in recent years. To address these problems, managers should integrate environmental efforts into the supply chain (Zhu *et al.* 2007). GSCM has emerged as an organizational concept that can assist businesses increase their ecological efficiency while simultaneously reducing environmental risks and achieving profit and market share (Hoek & Remko, 2000). It is a powerful management tool for manufacturing companies that can lessen negative environmental effects while assisting businesses to attain operational performance (Svensson, 2007). Institutional and stakeholder pressure are key factors that drive organizations to adopt GSCM techniques (Tate *et al.* 2010). In

addition, many businesses have adopted GSCM procedures in response to consumer demand for green products and services (Green *et al.* 2015).

The concept of green supply chain was first arisen by the Michigan State University in 1996 during “environmentally responsible manufacturing” research. It was proved to be an effective way of management by the scholars in Michigan State University. Later they found the establishment of green supply chain management in these enterprises such as IBM effectively solved the conflict between economic interests of environmental protection, thus it became admired (Lu, 2007).

A series of green supply chain definitions have been provided. (Narasimhan & Carter, 1998) defined environmental supply chain management as addition of activities related to recycling, reducing and reuse of materials to purchase functions (Zsidisin & Siferd, 2001). This definition offers a helpful starting point for comprehending the supply chain's environmental activities. However, the definition solely addresses environmental challenges from the standpoint of purchasing. Also, the term overlooks the holistic and synergistic impact of internal and external organizational practices on the environment (Zsidisin & Siferd, 2001).

(Zsidisin & Siferd, 2001) defined GSCM as the development of supply chain management strategies while taking the environment into account during the design, distribution, use, recycling, and disposal of firm products and services.

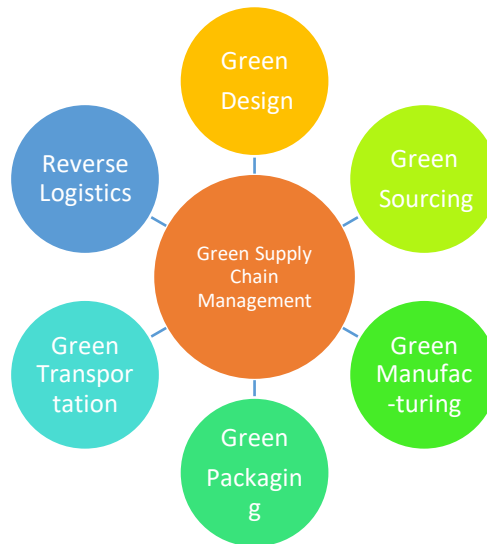
According to Beamon (1999) Green supply chain is defined as the activities aimed at reducing environmental harms caused throughout a product's lifecycle, such as green design, resource conservation, reducing the amount of harmful compounds in the product, recycling, and reuse.

Thus, GSCM is defined as: management systems, production equipment, methods and procedures, product designs and product delivery mechanisms that conserve energy and natural resources; minimize environmental impact of human activities, and protect the natural environment (Zhu & Sarkis, 2004).

As can be observed from the definitions given above, GSCM not only aims to reduce environmental impacts produced during the lifecycle of the product but also aims to reduce environmental impacts created by the activities of stakeholders who participate in the supply chain.

2.3.1. Green Supply Chain Management Practices

Figure 3 Green Supply Chain Management Practices



Source: (Taleghani, 2020)

(Srivastava, 2007) had stated that GSCM includes green design, green purchasing, green production, green distribution, logistics marketing and reverse logistics activities.

(Walker *et al.* 2008) asserted that GSCM practices cover all phases of a product's lifecycle, including material procurement, production, distribution, usage, and disposal.

The study of (Zhu & Sarkis, 2004) is one of the leading studies that took a multidimensional approach to green supply chain management practices. Based on the factor analysis the authors explored green supply chain management in four dimensions: internal environmental management, external practices, eco-design, and investment recovery.

(Shang *et al.* 2010) divided green practices into six categories:

- a. Green production and packaging: This involve using recyclable and reusable packaging, reducing waste and harmful substances, and choosing clean transportation options.
- b. The environmental participation: This also provides environmental training programs for the employees and the creation of an environmental management system.
- c. Green marketing includes sponsoring of environmental events, environmental labeling, and posting information on environmental issues on the company website.
- d. Green supplier: consists of practices such as collaborating with the supplier about environmental issues and choosing the suppliers based on environmental standards.
- e. Green stock, is related to the sales of excess, scrap and used materials.
- f. Green design, includes product design to reduce the use of materials and energy.

2.3.1.1. Technology developments that are impacting green supply chain practices

Variety of software applications and advanced technology support green supply chain management at various steps of the process. These could range from warehouse management systems (WMS) that boost warehouse efficiency to new manufacturing technologies that use less energy to make products or reduce the quantities of hazardous materials involved in the manufacturing process. When employees learn and readily adopt technology that enables green supply chains, organizations tend to see good results.

- The Internet of Things (IoT):

Organizations can track equipment, inventory, and energy consumption in real time thanks to IoT. For instance, sensors can track the temperature and lighting inside a warehouse, making it possible to control these aspects from afar. Organizations gain greater awareness of energy waste, overstocking, and other missteps. That leads to a clearer picture of what needs to change throughout the supply chain (Anitha *et al.* 2021).

- Digitization of the supply chain:

Improved digital tools, such as smarter WMS, make it possible to increase supply chain efficiency and automate processes from stock reordering to optimizing warehouse picking paths. This helps supply chain leaders increase accuracy, avoid rush orders that require expedited shipping solutions like air freight, and prevent overordering. In turn, these improvements help reduce waste and energy use (Ben-Daya, 2019).

- Artificial intelligence (AI):

AI helps automate processes, boost efficiency, and prevent errors. These capabilities are useful throughout the supply chain from streamlining manufacturing processes to using data to forecast product demand to analyzing delivery routes and planning the quickest journey. By helping people work faster and more accurately, AI leads to less wasted effort and resources. For example, say route optimization tools enabled by AI help shave an average of a few minutes off each truck haul. Over the course of a year, that could add up to a significant reduction in fuel expenditure and CO2 emissions.

The successful use of green technologies will make a major contribution towards reducing emissions. This is why many developed and some developing countries are now transitioning towards this form of technology to help protect them from harmful impacts on the climate.

2.3.2. Benefits of implementing green supply chain

Making green the supply chain can cause to improve the company's competitive position by reducing costs. For industrial firms at their private section with lower profit margins, supply chain costs can improve their market situation.

Green supply chain is also important for government to achieve international competition at their industrial sector of the country. While economics are seeking for solving sustainability challenges, the main issue is in the maintenance of market situation which is the ability of a nation's industry in designing and production of green products that minimizes demanding for resources (Shahriarpour & Tabriz, 2017).

1- implementing a green supply chain improve the public image and marketing:

According to research by (Boston Consulting Group, 2022) Consumers of today admire businesses that make an effort to go green., 70% of consumers are actually willing to spend a 5% price premium for sustainable products. After all, environmentally friendly supply chain methods do more than only protect the world for coming generations. They improve. And as consumer values change, there will be an increasing need for green products.

- a) Supply chain reflects organizational capabilities to carry out effective marketing activities.
- b) It is used to assess the cost.
- c) It can be evaluated in comparison with the supply chain competitors.
- d) Target market can affect condition of supply chain.
- e) The decisions made by organization outside sources depends on supply chain weaknesses.
- f) Improves strategic decision making and cooperation for entering in new markets or access to special abilities to meet consumer needs.
- g) Supply chain, enables value-added analysis from the perspective of customers (Mahmoud & Navid, 2008).

2- Reduce environmental impact:

There is a widespread misperception that minimizing a company's environmental impact is expensive. In actuality, it may result in significant financial savings. You may instantly see results by lowering waste and improving the effectiveness of structures, vehicles, and equipment.

John Mitchell Ltd invested in driver training for its haulage fleet and reaped savings of over £650,000. Nike modified how certain of their footwear are made, cutting labor expenses by up to 50% and cutting material utilization by 20%, which produced margins that were 0.25% higher (Fattal, 2021).

Investing in sustainable technologies can help reducing risk by avoiding hazardous material that leads to environmental effect.

3- Green supply chain practices can lead to technological innovation:

Making a strong case for building strategic collaborations with suppliers in order to leverage the supply chain and incorporate GSCM practices, (Geffen & Rothenberg, 2000) studied the role of partnerships between original equipment manufacturers (OEMs) and their suppliers in improving the environmental impact of manufacturing operations. The study was conducted among US automobile assembly plants and found that strong partnerships with suppliers, aided by suitable incentive systems resulted in successful execution of innovative environmental technologies.

2.3.3. Challenges of Green Supply Chain Management

Many businesses have benefited from green supply chain initiatives, but it is not without facing some challenges in its implementation. The literature has shed light on the numerous difficulties or barriers that the industry would face in adopting GSCM. The obstacles have been divided in some studies into four general categories: institutional challenges, organizational challenges, informational challenges, and economic challenges

(Khidir & Zailani, 2009). While this was going on, other authors (Walker *et al.* 2008) separated the difficulties into internal and external categories.

- Internal challenges:

Internal challenges are issues that arise inside the individuals or organizations themselves. Financial restrictions were the biggest internal problem mentioned in the literature (Ojo *et al.* 2014). However, in addition to the financial difficulties, implementing GSCM proved to be a huge task when it came to changing an organization's thinking and culture as well as the employees themselves. Changing the fundamentals and core features of organizations (organizational goals, forms of authority, core technology, and operational and marketing strategy) are one of the challenging tasks to the organizations

- External Challenges:

In addition to the internal factors, external factors also posed some challenges to the industry in implementing GSCM. According to the literature, the most significant external challenge faced by the construction industry is lack of support from the government (Mathiyazhagan & Haq, 2013). The government basically catalyzes since their support can be both drivers and challenges in the implementation of the green supply chain. Development of appropriate policies, standards, and regulations encourage the industry players to adopt green initiatives. The fact that GSCM involved much interaction with suppliers, the management of suppliers also proves to be a challenge for many organizations (Mathiyazhagan *et al.* 2013). For example, green purchasing requires a supplier to comply with environmental requirements; thus, it is crucial for the supplier to be responsible and to provide a strong commitment to achieving GSCM.

CHAPTER II: METHODOLOGY, RESULTS AND DISCUSSION

Chapter 2

Methodology, results and discussion

Preamble:

This chapter is divided into two sections to address the research questions previously mentioned. Section one demonstrates the methodological framework guiding this research, including a restatement of the research inquiries, a brief introduction to the field of practical research, the population and sample that this research is concerned with, and the tools used for data collection and analysis. The presentation, analysis, and discussion of the survey's findings are covered in Section 2.

1. Methodological framework

This section addresses the methodology used in data collection. The purpose of this chapter was to explain the methods and tools used in presenting and analyzing data to achieve and justify relevant information to be used for the topic under study.

1.1. Restatement of the research aim

As mentioned before, the main issues of the current study can be summed up as follows:

1. To determine the state of GSCM adoption at one of the advertising agencies (COREX).
2. To determine whether the implementation of GSCM practices is profitable.
3. Shedding light into how employees view the application of GSCM.

1.2. Case study

The study was conducted at COREX, which is an advertising agency that specializes in both digital and paper printing, as it participates in web design, digital marketing, printing,

and graphic design as well as the conception and hosting of websites. The company is a natural person founded in 2012.

It is situated in "Cité des moudjahidines, Ben Aknoun", this location is strategically advantageous for an advertising agency. Since the 1970s, a large number of printing companies, providers of printing supplies and raw materials like paper, inks, etc., and communication agencies have congregated in this city, making it well known throughout the country.

COREX benefits from the competition among the various firms because it fosters greater cooperation with other businesses in the same industry. A very important point in terms of competition, is that out of the 45 businesses present on the property, COREX is the only one that provides a web service (hosting and web design).

Evolution:

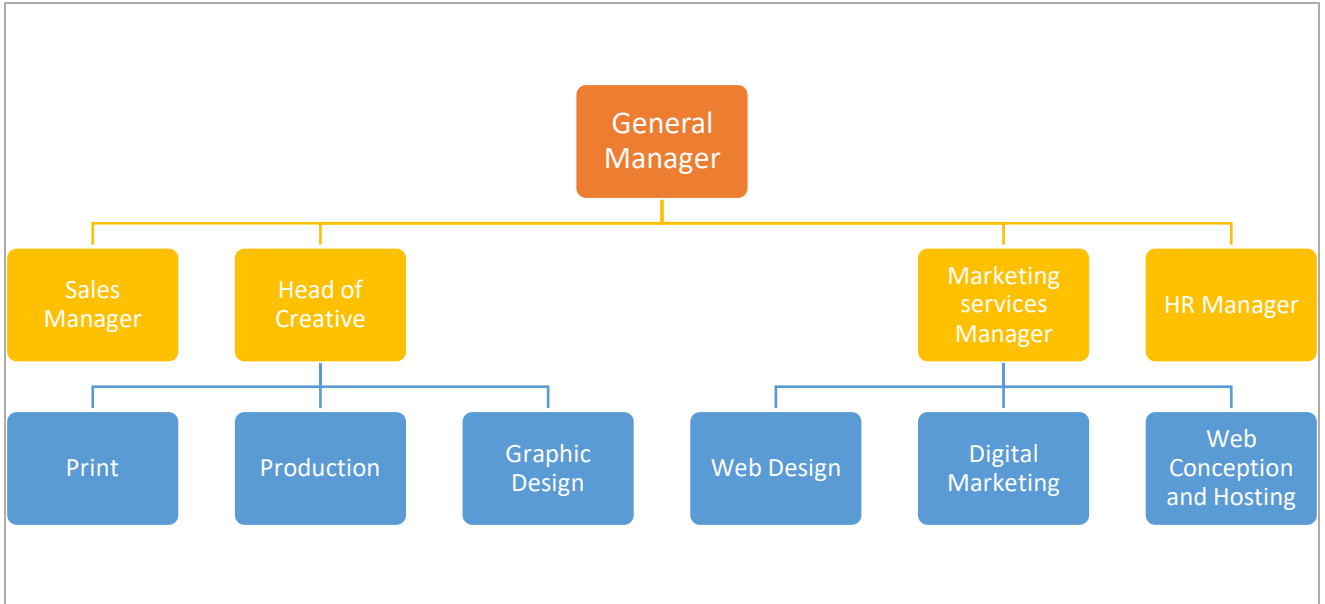
- 2012 : web hosting, web design
- 2017 : printing, and graphic design
- 2019 : digital marketing
- 2020 : marketing strategies
- 2022 : Affiliate marketing

Mission, vision, values :

- Mission: With more visibility for their brand image and easier project implementation and durability, COREX puts all of its expertise at the service of its clients in order to help them increase sales.
- Vision: Our vision is to continuously improve our management mechanisms and achieve perfection in the service we offer while respecting the environment.
- Values: Four fundamental values are retained by the agency: responsiveness, flexibility, transparency, and trust.

1.2.1. Organizational chart:

Figure 4 Organizational chart of COREX



Source: COREX

1.2.2. Green Supply Chain Management activities adopted by COREX:

In order to include GSCM techniques into their supply chain, COREX chose the following green practices:

- Green purchasing:

Green procurement is to source materials considered environmentally-friendly, recyclable and degradable, and will enable to remove waste. On this regard, the business chooses to get its raw materials from environmentally friendly suppliers like "Navigator," which offers 100% recyclable paper. As well as sourcing biodegradable kraft paper for use in manufacturing and order packaging.

- Green manufacturing:

Green production is the adoption and planning of activities that will require less energy and resource use in the production system and cause the least possible environmental

pollution. COREXs' way of minimizing the power consumption is by the use of modern printers and MFDs with energy saving settings and 'Quick Startup' technology, which puts them to sleep when they're not in use. This contributes to cost and energy-saving measures. A crucial component of successful environmental sustainability strategies is employee behavior. In order to achieve that, COREX has developed a set of simple instructions for the staff to follow, including reminders to use the equipment, office computers, and even the lights in a less energy consuming frequency. To get the customers on board with the company's sustainability goals, COREX recommends clients to choose uncoated paper for their orders.

- Green distribution:

Green distribution is the practice of transporting goods in an environmentally friendly manner. COREX streamline its transportation logistics to save money and shrink their carbon footprint. For instance, they cumulate the number of sales in order to deliver them and that permits to utilize cargo space more efficiently and reduce the number of trips.

- Reverse logistics:

RL is the set of activities that is conducted after the sale of a product to recapture value and end the product's lifecycle. For their waste management, each month, the organization generates 32kg of solid trash in total. 2 kilograms of recyclable plastics and 20 kg of paper are both destined for recycling. Thus, COREX has decreased its solid waste to just about a third of its original volume.

1.3.Epistemological stance

Epistemology is the study of beliefs about knowledge and how knowledge is created. It is one of the philosophical assumptions that determines the procedures and methods that researchers believe to be appropriate (Crotty, 1998).

Postpositivist researchers are frequently interested with establishing averages and trends in the dataset, aiming to reduce or regulate variance from these trends, and generalizing

results to a larger population. Traditionally, quality or validity has been centered on measurement, generalization, and controlling variables to reduce bias (Hammersley, 2008).

In this research, the importance of human viewpoint and error is recognized while staying committed to objective measurement and observation. Therefore, we are taking a post-positivism stance.

1.4. Research methodology

Research design can be considered as the structure of research it serves as the “Glue” that binds all of the pieces in a research project together, in brief it is a plan of the proposed research work. Different social scientists describe research design differently; according to Selltitz *et al.* “A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy and procedure” (Selltitz *et al.* 1962). As per (Manheim, 1977) research design not only anticipates and specifies the innumerable decisions involved in carrying out data collecting, processing, and analysis, but it also provides a logical foundation for these choices. (Zikmund, 1988) defined as a master plan detailing the methods and procedure for gathering and analyzing the needed information.

Regarding our research, data collection is conducted using a quantitative approach. A quantitative approach uses statistical data in the description of observations, it also embraces a positivist ideology of knowing the emphasized objectivity while quantifying phenomena through the use of numbers, statistics, and experimental control (Goodwin & Goodwin, 1996) (McMillan & Schumacher, 1993). This method uses deductive reasoning and is context-free. Tables and statistics are used to demonstrate the correlations between various variables. The sample selected by the researcher consists of a specific type and size, and his findings will be applicable to a larger population (McCracken, 1988). According to (Fischler, n.d.), the procedures for conducting such kind of research are as follows:

- 1) Developing a research question
- 2) Conducting of thorough literature review
- 3) Re-define research question
- 4) Identify the target population
- 5) Select the type of instrumentation needed
- 6) Choose or construct the needed measures
- 7) Collect and analyze data
- 8) Draw conclusions and relate findings

According to the perspective adopted in this study, "the social world can only be comprehended from the standpoint of the individuals who are involved in the ongoing action being researched." (Cohen, 2003). Therefore, we think that a quantitative approach would better serve the goals that the current research is trying to accomplish. This is driven by the fact that this kind of method enables the researcher to define and describe the research problem in very particular words, assisting in the achievement of the established research objectives. By employing this technique, the researcher can benefit from highly reliable data collection, which enhances the objectivity of the conclusions obtained. More importantly, this type of approach aids in evaluating the viability of the predictive hypothesis that guides the current research (Nachmias & Nachmias, 1987).

1.5.Data collection technique

A survey is a type of quantitative research that focuses on questionnaire sampling, questionnaire design, and questionnaire administration in order to collect data from the group or population being studied, and after that conduct analysis to comprehend their actions/characteristics (Sukamolson, 2007). Consequently, the survey is the research instrument used for gathering data in this study.

1.5.1. Population and sampling

The survey was addressed to the total number of nineteen (19) employee in all 3 departments; artistic department, marketing service department and sales department, distributed: 16 employees and 3 managers.

1.5.2. Survey design

The survey was addressed to employees from 3 departments of the advertising agency, it consists of only close-ended questions for an easier survey-taking experience for the participants. Different response options are presented to the participants, and they can select their answer by checking it. In general, the following question types are employed:

- Multiple choice questions: one type of close-ended questions is dichotomous questions, which allows respondents to choose one of two answer choices (Yes-No). The second is the single answer multiple choice questions, which allow respondents to choose one of many answer choices.
- A Likert five-point rating scale was used to evaluate participant attitudes on the utility of GSCM techniques. A Likert scale offers five options for responses to a statement or question, allowing respondents to express their level of agreement or disapproval with the statement or question on a positive or negative scale.

knowing that the task is challenging and time-consuming, the questions were prepared and arranged with care to allow the participants to express their opinions as they saw fit.

As shown in appendix 1, the survey is divided into four sections:

- Section 1: Going green (questions 1 to 6)
- Section 2: Benefits of GSCM practices (questions 7 to 13)
- Section 3: External factors influence on GSCM adoption (questions 14 and 15)
- Section 4: Thoughts and recommendations (questions 16 and 17)

1.5.3. Survey administration

The survey was distributed using the traditional paper and pen approach, it was handed directly to 19 employees and picked up later on. To prevent any results from being manipulated, the employees were asked to respond to the questionnaire within a set period of time. Personal interactions with the participants allowed for the explanation of the study's objectives, the resolution of respondents' enquiries, and the promotion of cooperation.

1.6.Data analysis technique

A Likert scale makes the assumption that attitudes can be assessed and that the strength or intensity of an attitude is linear, that is, on a continuum from strongly agree to strongly disagree. For instance, each of the five answers would be assigned a number (1-5), This would be utilized to gauge the investigated attitude. Although the response categories on Likert scales are ranked, there is no guarantee that the intervals between the values are equal. Therefore, the mode is probably the most appropriate for straightforward interpretation and the mean and standard deviation are improper for ordinal data. Tables and charts were used to display the results. Results are presented in tabular style with a number assigned to each table for the purpose of clarity. The presentation of results uses sequential numbering as a system of organization.

2. Results and discussion

The presentation, analysis, and discussion of the survey's findings are covered in this section.

2.1.Data Analysis

Now that the research methodology, research methods, and research procedures have been discussed, this section provides a thorough analysis and discussion of the information produced by the research tool that was employed, which is the survey. This survey is being

used to look into the GSCM situation at the advertising agency COREX, its profitability, the attitudes of the employees about the GSCM and their suggestions.

1) Section one: Going green

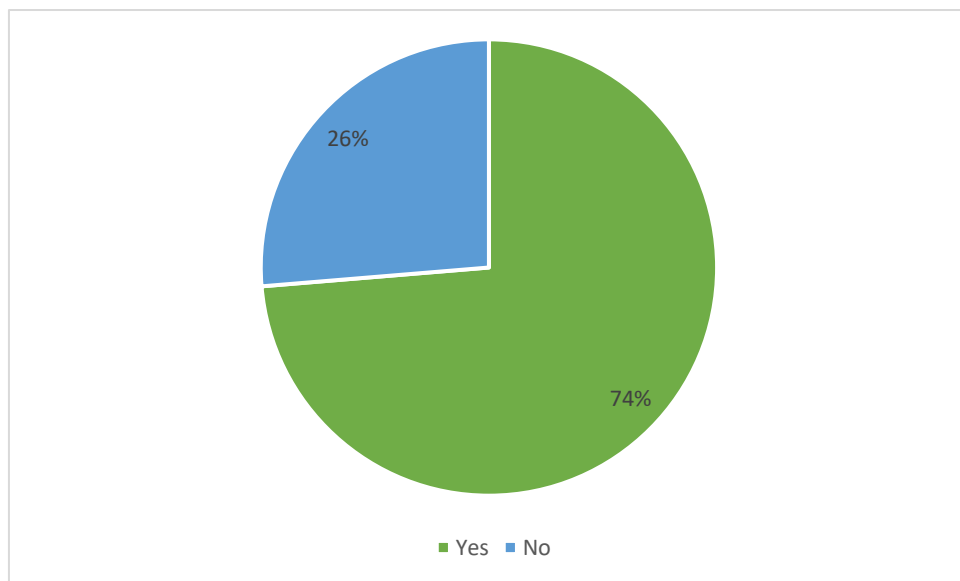
The aim of this section is to assimilate the level of awareness of the employees and managers of COREX.

Q1: Do you believe that eco-products are superior to non-eco products?

Table 2 Participants' opinion on eco-products

Option	Yes	No
Frequency (f)	14	5
Frequency (%)	73.7%	26.3%

Figure 5 Participants' opinion on eco-products



This question's purpose is to let us know about the opinion of the employees about environmental awareness in general. The data show that 74% of the participants prefer

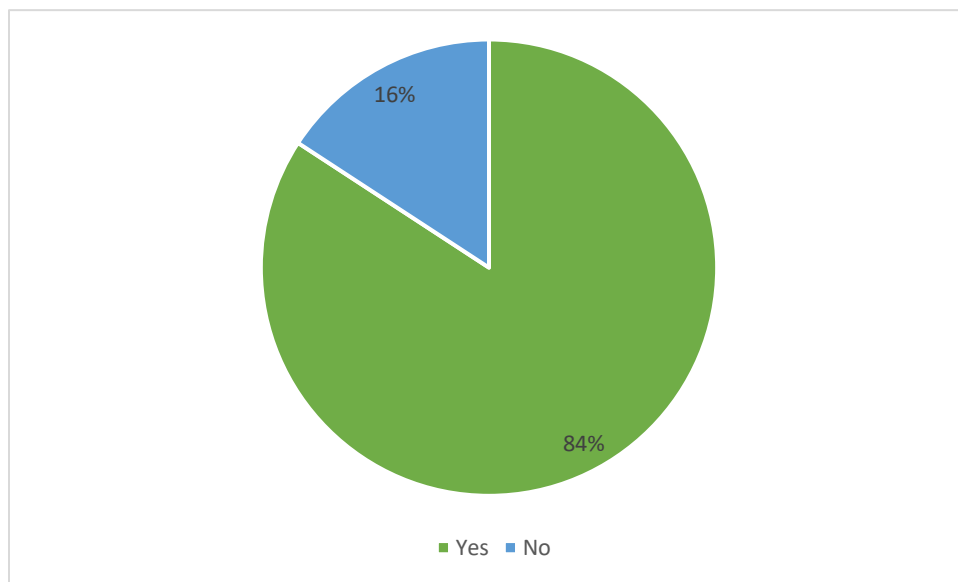
eco-friendly products over non eco ones. It is a good starting point for our survey because it gives us an idea about the populations attitude towards GSCM.

Q2: Do you believe that environmentally friendly workplaces are preferable than ones that are not?

Table 3 Participants' opinion on environmentally friendly workplace

Option	Yes	No
Frequency (f)	16	3
Frequency (%)	84.2%	15.8%

Figure 6 Participants' opinion on environmentally friendly workplace



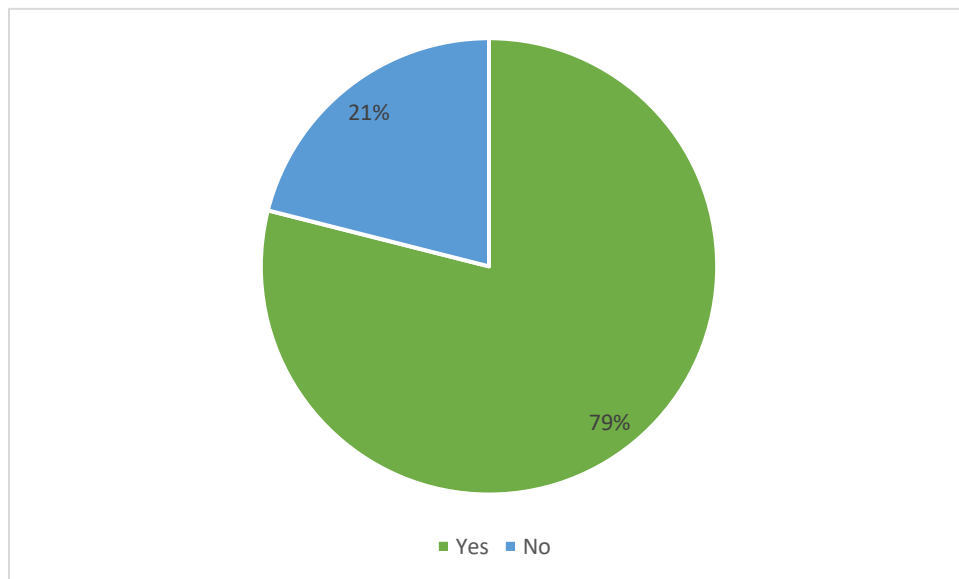
We can see from the participants answers that the vast majority (84%) find it more agreeable to work in an environmentally friendly setting.

Q3: Are you familiar with the GSCM techniques that the organization uses?

Table 4 Participants familiarity with GSCM techniques

Option	Yes	No
Frequency (f)	15	4
Frequency (%)	78.9%	21.1%

Figure 7 Participants familiarity with GSCM techniques



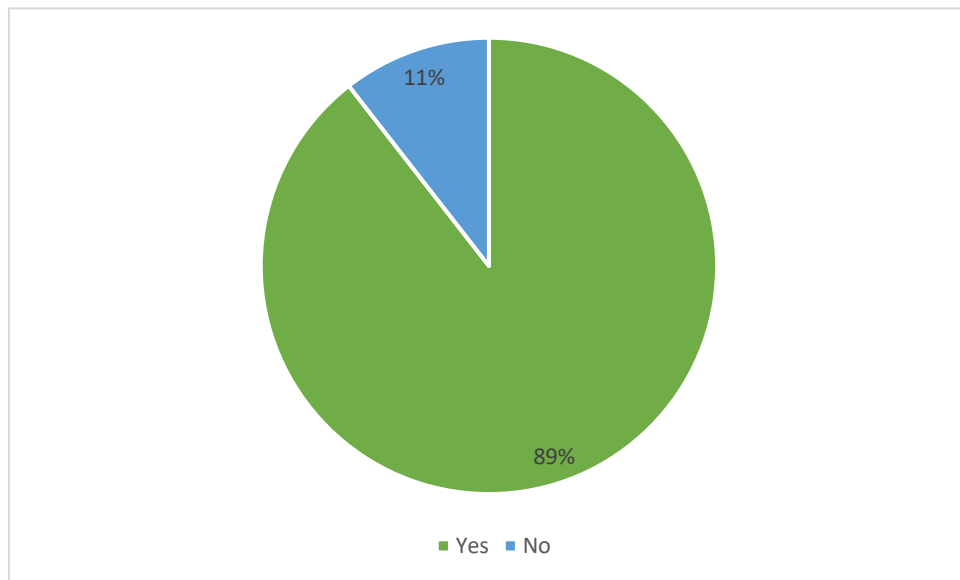
Question 3 allows us to read the level of the personnel's integration into GSCM. From the data collected, most of the employees (79%) are aware about the implementation of the GSCM in the company.

Q4: Are you interested in participating in GSCM activities?

Table 5 Employees interest in GSCM activities

Option	Yes	No
Frequency (f)	17	2
Frequency (%)	89.5%	10.5%

Figure 8 Employees interest in GSCM activities



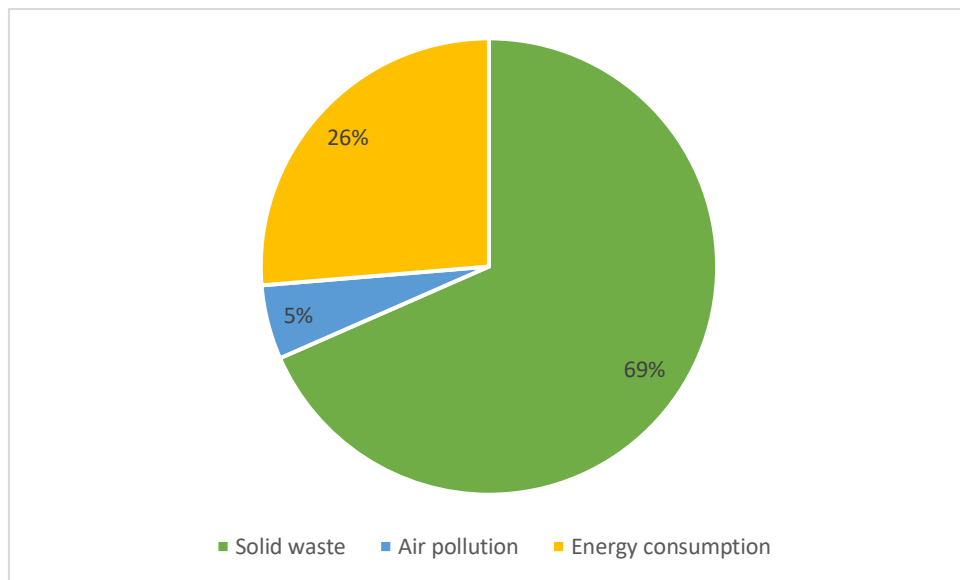
As shown in the chart above, 17 out of 19 responses (89%), are interested in participating in GSCM activities. This question was posed to determine whether or not employees are willing to cooperate with GSCM processes (energy saving guidelines, selective waste sorting...).

Q5: In your opinion, what is the most important environmental issue in your work space?

Table 6 Environmental issues

Option	Solid waste	Air pollution	Energy consumption
Frequency (f)	13	1	5
Frequency (%)	68.4%	5.3%	26.3%

Figure 9 Environnemental issues



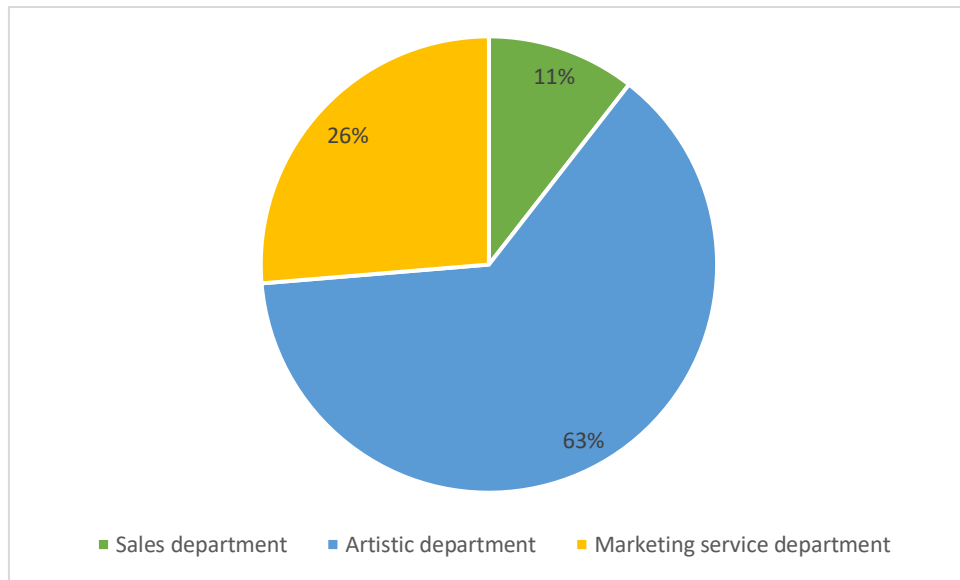
This question enables us to identify which environmental issues are most concerning to employees. According to the pie partition, we can immediately see that the company's largest problem is solid waste at a rate of 69%, followed by the energy consumption. Since it represents only 5% of the problem, the agency's last concern is air pollution.

Q6: Which departments have the most GSCM practices integration?

Table 7 GSCM integration in departments

Option	Sales department	Artistic department	Marketing service department
Frequency (f)	2	12	5
Frequency (%)	10.5%	63.2%	26.3%

Figure 10 GSCM integration in departments



This inquiry was made in an effort to compare the degree of GSCM application in the various departments. the artistic department garnered the most votes (12 votes), while the marketing department accounted for 26%. Lastly comes the sales department with only 2 votes.

2) Section two: Benefits of GSCM practices

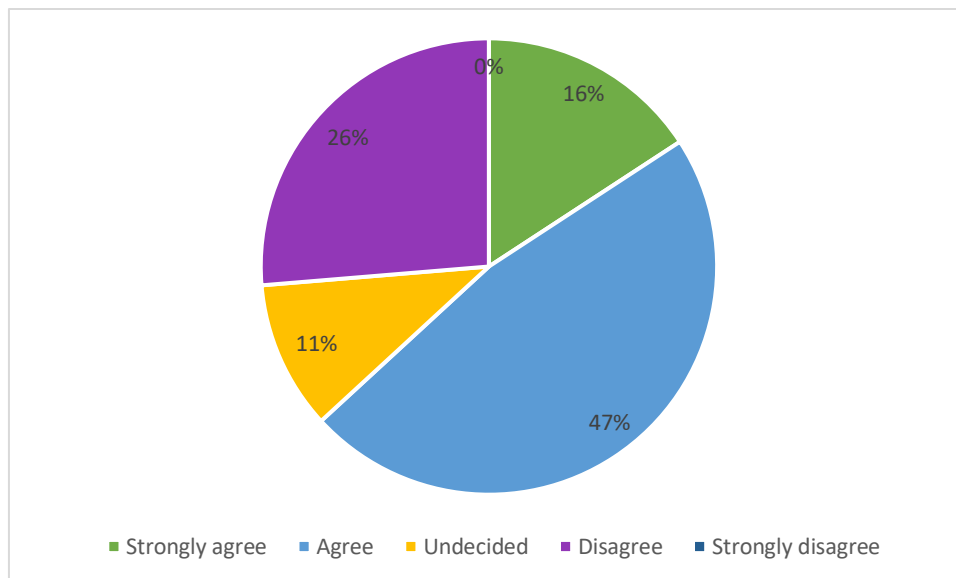
This section's goal is to analyze the impact that GSCM techniques had on each process, as well as on the enterprise's competitiveness and brand image.

Q7: Applying GSCM practices help in reducing costs related to procurement activities

Table 8 Cost reduction in purchasing activities

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	3	9	2	5	0
Frequency (%)	15.8%	47.4%	10.5%	26.3%	0

Figure 11 Cost reduction in purchasing activities



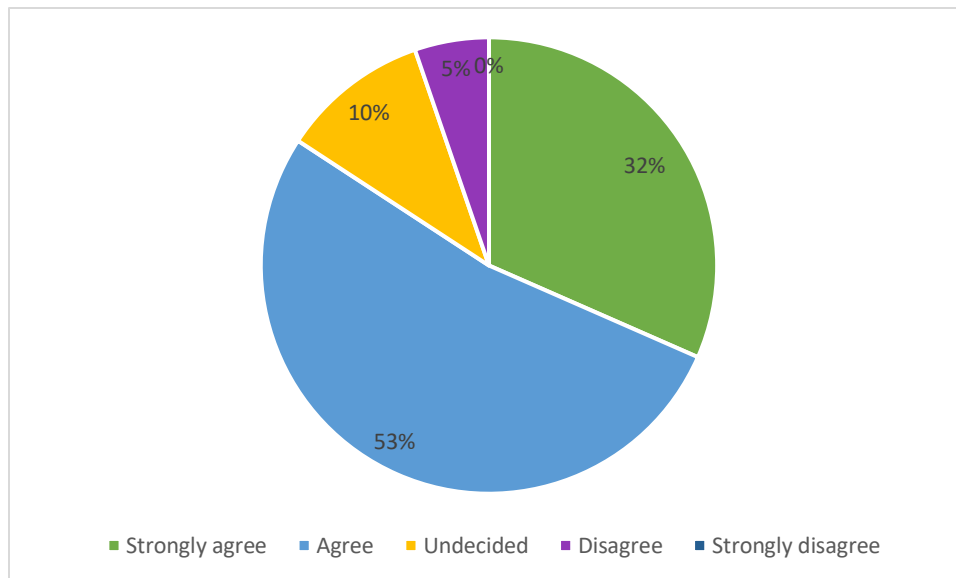
The aim of this statement is to check the workers attitude towards the cost reducing effect of GSCM on the procurement activities. The chart shows that the majority of respondents agree (47%) with the statement on the effectiveness of the GSCM practices on minimizing costs.

Q8: Applying GSCM practices help in reducing costs related to manufacturing activities

Table 9 Cost reduction in manufacturing activities

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	6	10	2	1	0
Frequency (%)	31.6%	52.6%	10.5%	5.3%	0

Figure 12 Cost reduction in manufacturing activities



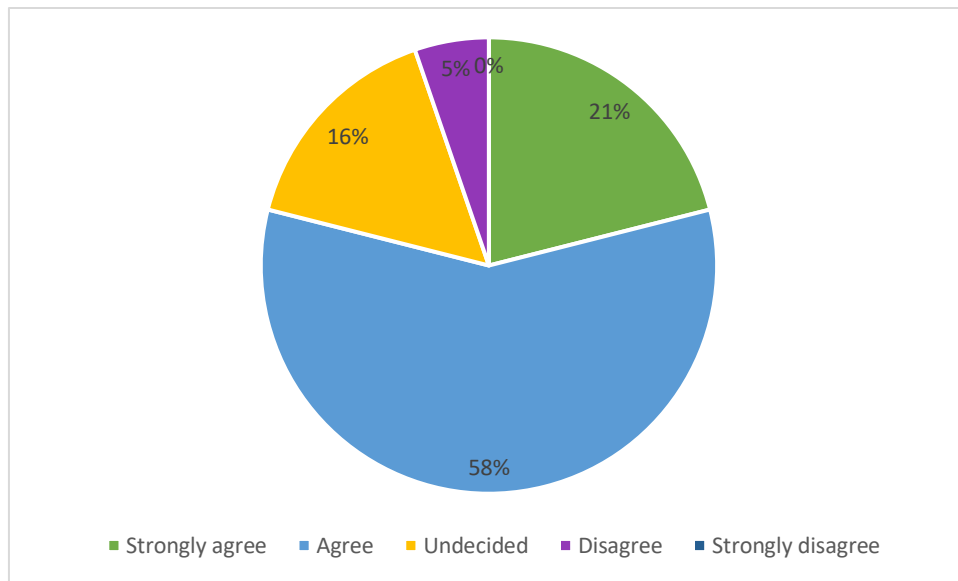
This statement targets the cost reduction effect on the manufacturing process that includes the consumption of as less energy and resource as possible. Whereas the answers were mainly positive, 53% of the participants agree and another 32% of them strongly agree.

Q9: Applying GSCM practices help in reducing costs related to distribution activities

Table 10 Cost reduction in distribution activities

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	4	11	3	1	0
Frequency (%)	21.1%	57.9%	15.8%	5.3%	0

Figure 13 Cost reduction in distribution activities



This inquiry aims to shed light on the impact that GSCM procedures had on the cost reduction in the distribution activities that entail accumulating sales to reduce trips and

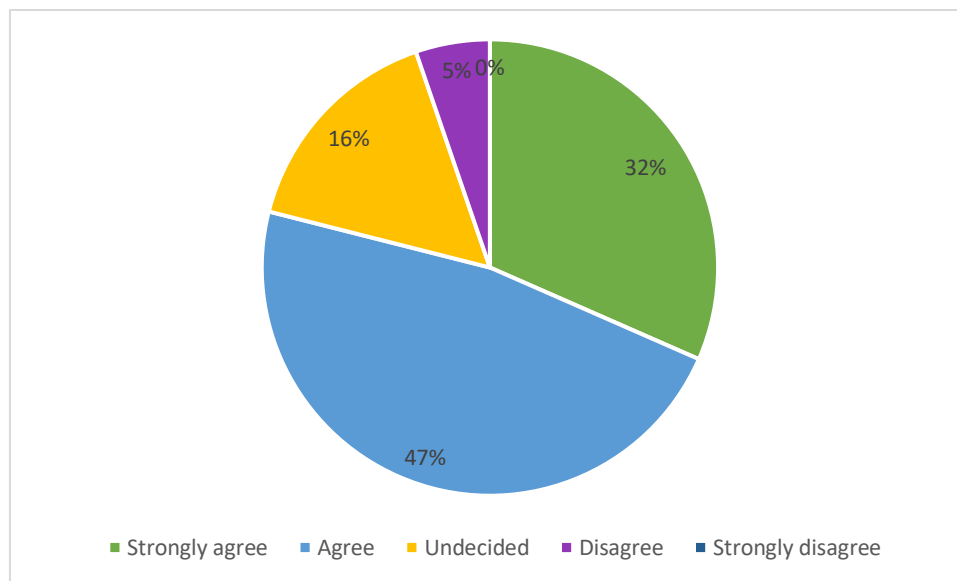
hence lower carbon footprint. The pie chart reveals that 58% and 21% of the employees agree and strongly agree respectively that GSCM indeed has a cost saving benefit in distribution.

Q10: Applying GSCM practices help in reducing costs related to reverse logistics

Table 11 Cost reduction in reverse logistics

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	6	9	3	1	0
Frequency (%)	31.6%	47.4%	15.8%	5.3%	0

Figure 14 Cost reduction in reverse logistics



This question, which focuses on reverse logistics, studied the cost-minimizing element of GSCM, just as the three questions that came before it. With 47% agreeing and 32%

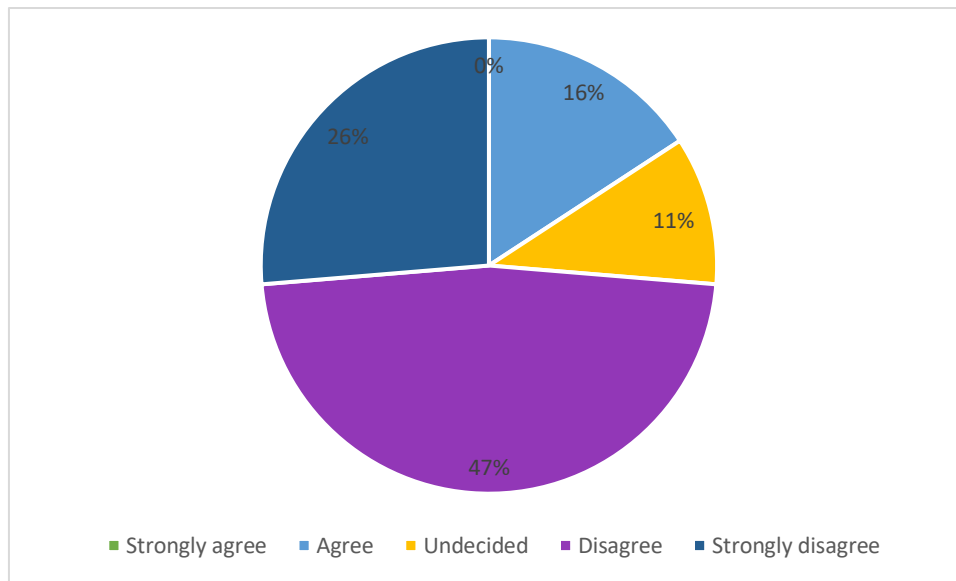
strongly agreeing, the statement about employing waste management being financially beneficial has received positive feedback.

Q11: The adoption of GSCM is more costly than financially advantageous

Table 12 Cost of GSCM adoption

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	0	3	2	9	5
Frequency (%)	0	15.8%	10.5%	47.4%	26.3%

Figure 15 Cost of GSCM adoption



Through this question, respondents are asked to express their opinions about the cost of GSCM adoption. The biggest majority choose to disagree and strongly disagree (47% and

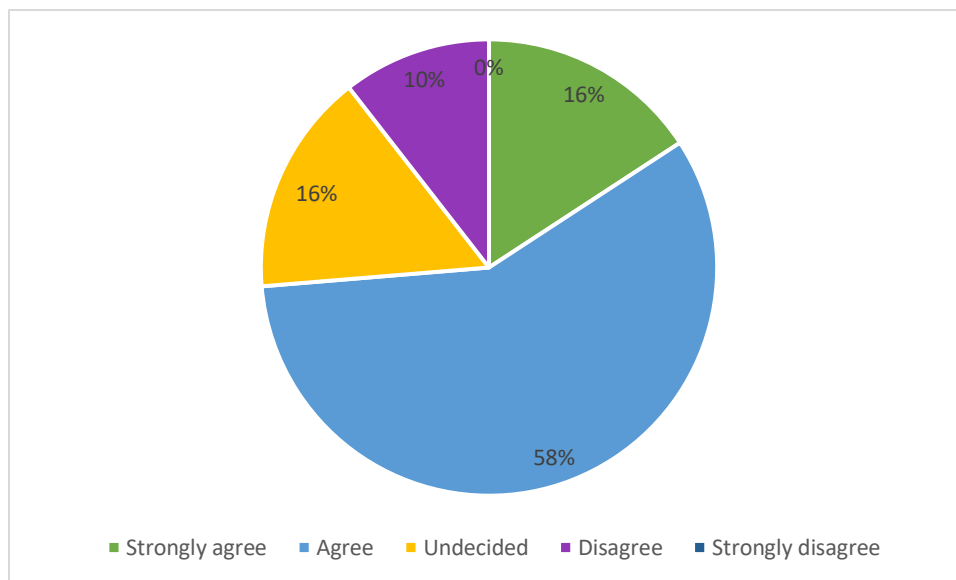
26% respectively). However, just 16% of respondents think that GSCM adoption is more costly than helpful.

Q12: The application of GSCM methods has given the agency a competitive advantage

Table 13 Competitive advantage

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	3	11	3	2	0
Frequency (%)	15.8%	57.9%	15.8%	10.5%	0

Figure 16 Competitive advantage



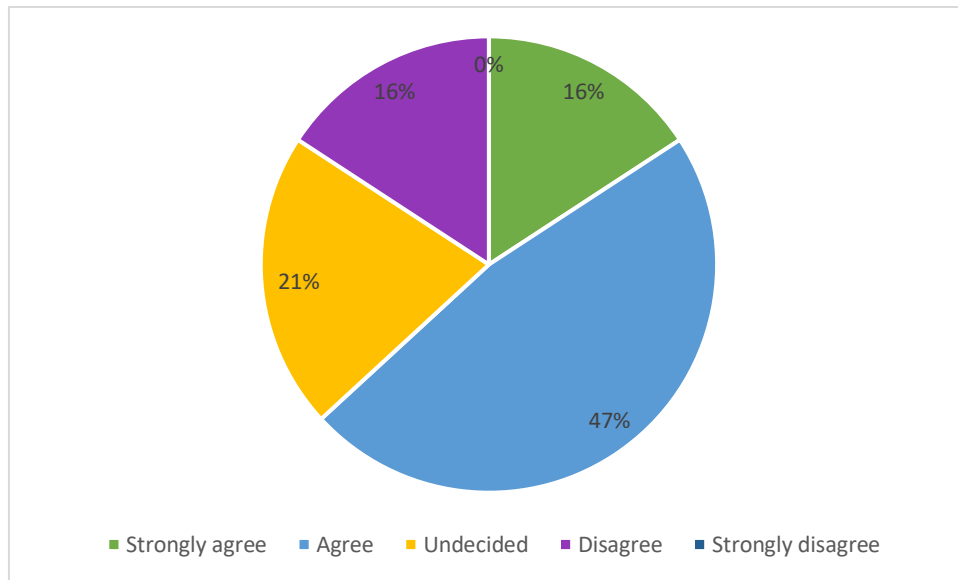
The purpose of this question is to uncover if the attainment of competitive advantage can be related to the application of GSCM. The graph demonstrates that more than half the sample (58%) assesses that GSCM does provide competitive advantage.

Q13: The application of GSCM methods has improved the agency image

Table 14 Agency image

Option	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Frequency (f)	3	9	4	3	0
Frequency (%)	15.8%	47.4%	21.1%	15.8%	0

Figure 17 Agency image



In order to learn about the agency image after the introduction of GSCM techniques, the participants were asked to respond to this inquiry. 47% agreed that the greening had helped the business to present a positive image to customers.

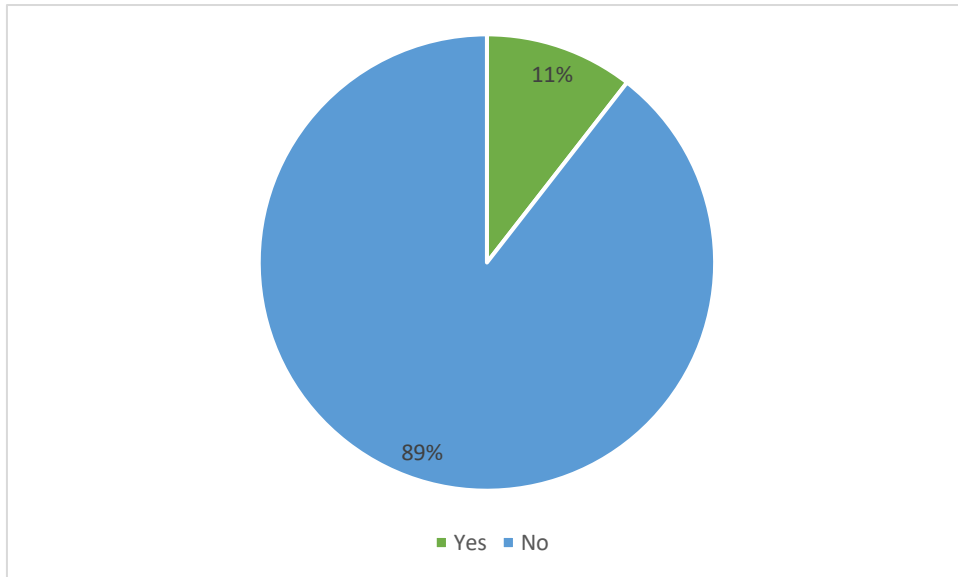
3) Section three: External factors influence on GSCM adoption

Q14: Are there any environmental regulations that the agency is required to comply with?

Table 15 Environmental regulations

Option	Yes	No
Frequency (f)	2	17
Frequency (%)	10.5%	89.5%

Figure 18 Environmental regulations



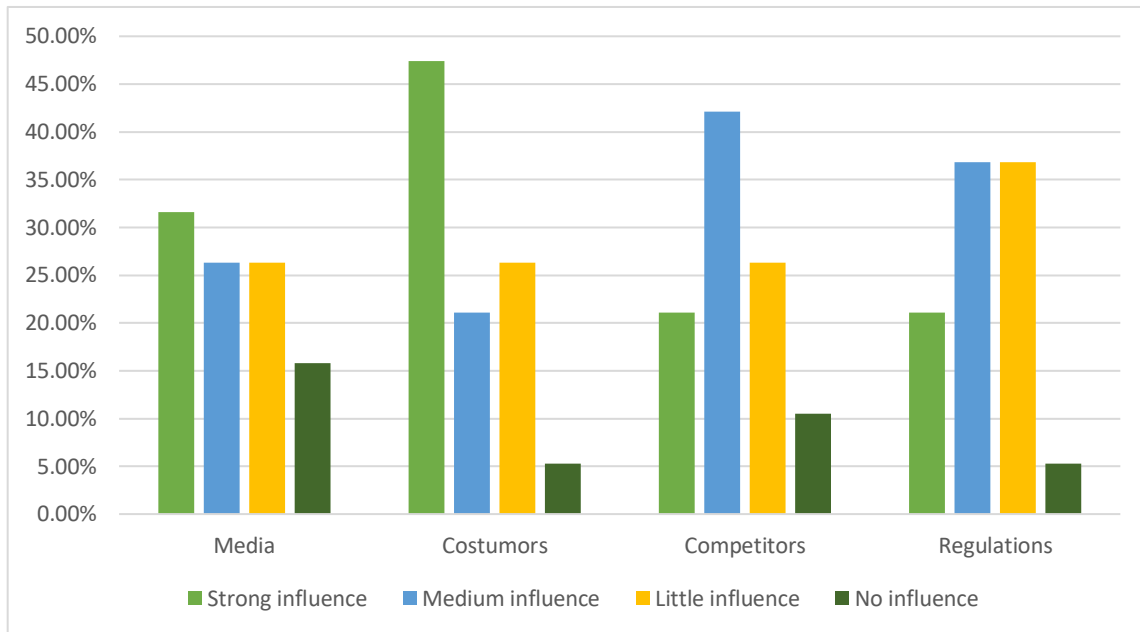
In this question, employees were asked whether the regulators had imposed pressure on the organization to implement GSCM procedures. The findings indicate that 89% of respondents believed that legislation is not one of the forces pressuring the company to go green.

Q15: To what extent do you believe the groups listed below influenced to the agency’s decision to enhance its GSCM performance?

Table 16 Factors influence on GSCM adoption

Options	Strong influence	Medium influence	Little influence	No influence
Media	6	5	5	3
	31.6%	26.3%	26.3%	15.8%
Costumers	9	4	5	1
	47.4%	21.1%	26.3%	5.3%
Competitors	4	8	5	2
	21.1%	42.1%	26.3%	10.5%
Regulations	4	7	7	1
	21.1%	36.8%	36.8%	5.3%

Figure 19 Factors influence on GSCM adoption



This question aims to determine the influence level of each of the 4 factors (media, customers, competitors and regulations) on GSCM adoption. The graph above shows that the customers and media have the strongest influence. The competitors only impact the adoption moderately. Placing last are the competitors and the regulations coming last which are the least influential factor.

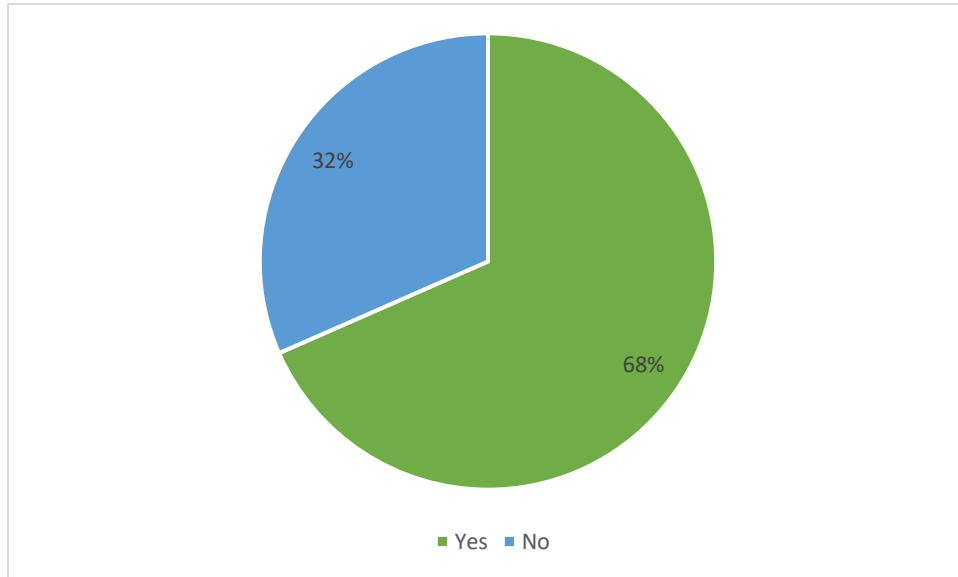
4) Section 4: Thoughts and recommendations

Q16: Do you think IT applications are needed for further greening the supply chain?

Table 17 The need for IT application

Option	Yes	No
Frequency (f)	13	6
Frequency (%)	68.4%	31.6%

Figure 20 The need for IT application



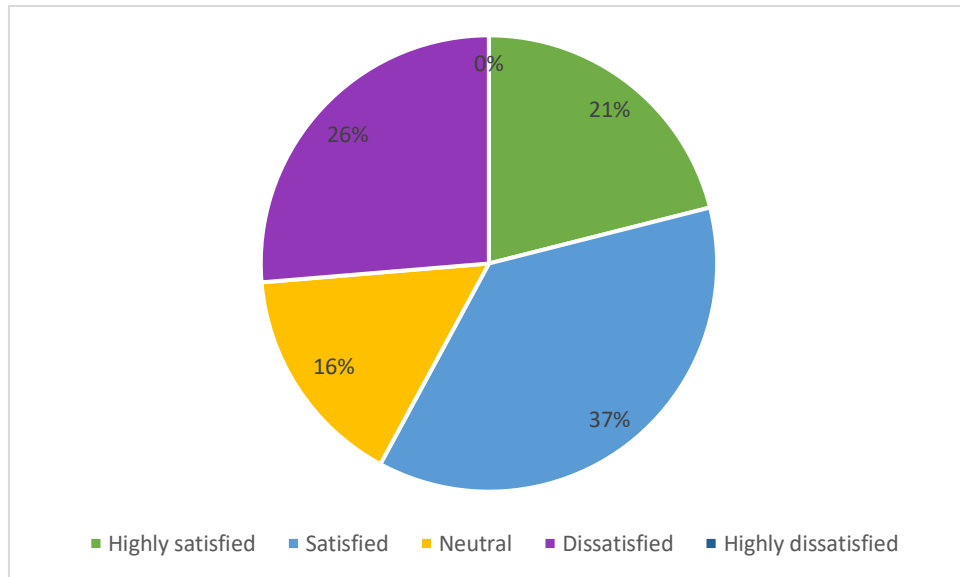
In this question, participants are asked to express their perspectives regarding the adoption of IT applications for further greening the supply chain. A large number of respondents 68% are for the adoption of new applications. However, a 32% are totally satisfied with the current state of GSCM.

Q17: How would you describe your satisfaction with the current state of GSCM application?

Table 18 Participants satisfaction

Option	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied
Frequency (f)	4	7	3	5	0
Frequency (%)	21.1%	36.8%	15.8%	26.3%	0

Figure 21 Participants satisfaction



In this question, participants are invited to express their degree of satisfaction concerning the current GSCM application. The results indicate that 37% of respondents are satisfied, 21% are extremely satisfied, and 26% are unsatisfied and demand a more in-depth implementation of the GSCM.

2.2. Discussion

The analysis of the survey has revealed many facts about the participants' attitudes toward the GSCM and its current state in the company.

We were able to learn more about the employees' knowledge of the GSCM thanks to the first section. The vast majority of them are eager to take part in its adoption and are completely aware of the GSCM position.

The final two questions in this section helped us in identifying that the main environmental problem at COREX is solid waste, which mostly originates from the artistic division. Fortunately, this division has the most GSCM processes in place, which indicates that the organization is effectively managing this issue.

The data on the advantages the agency has reaped as a consequence of implementing GSCM procedures is provided in the second section. Results demonstrate that each of the four processes—green purchasing, green manufacturing, green distribution, and reverse logistics—has profited from the GSCM's ability to lower costs.

The usage of MFDs with energy-saving modes and the basic yet crucial recommendations that are successfully implemented by the staff have both contributed to lower electricity use over time, which prompted the business to have improved efficiency and reduced production costs leading to economic and environmental gains.

As fewer trips are required for the green distribution, less fuel is used, resulting in lower fuel costs and a smaller carbon footprint overall. Additionally, waste management aids the creation of more revenue from recyclables.

By attracting customers' attention through the use of environmentally friendly materials and by lowering the price of goods and services, GSCM contributed to a competitive advantage and a better image for the company.

The third section's findings respond to our questions concerning whether external pressure on the agency existed and contributed to a better adoption of GSCM. Based on the findings, greening the supply chain lacked sufficient legal framework.

Furthermore, the corporation was under pressure from some consumers' growing environmental consciousness to comply with their request and take the implementation of its GSCM more seriously.

As far as the results of our study are concerned, our hypothesis can be confirmed. The participants positive attitudes towards the usefulness of GSCM practices reflects the essential role it plays in improving the economic and environmental performance.

CONCLUSION

Conclusion

The present dissertation has investigated the importance of green supply chain practices in contributing to economic and environmental gains. This study's primary objectives were to determine the state of adoption of green practices in the advertising company, as well as exploring the benefits that GSCM provides for businesses.

To achieve the above stated aims, it was deemed necessary to explore the concept of green supply chain management. Utilizing the literature, the theoretical framework from the first chapter has demonstrated that incorporating eco-friendly ideas into supply chain management has improved environmental sustainability through a variety of green activities.

The analysis and interpretation of the survey data were performed. It was discovered that adopting GSCM practices can improve the environmental and financial performance of organizations, consistently with Sarkis and Srivastava's findings, which highlighted the positive benefits of implementing GSCM practices in enhancing ecological and fiscal efficiency. A company shouldn't prioritize short-term profit while ignoring long-term viability. Instead of constantly exploiting the available resources, it is vital to promote economic development while also taking into account the environmental cost. This will help to preserve the environment and natural resources on which the entire human species depends on.

Limitations of the study

The quality of this research is influenced by some uncontrollable circumstances. One clear hindrance was time, the nature of this study necessitates much more time than was allotted due to the complexity of the supply chain. In this circumstance, we were forced to restrict the scope of our data collection method to a single survey and a brief observation. Another limitation is that the data pertaining to the financial activities could not be disclosed. As a result, we were forced to rely on employees' responses to address the research questions.

Recommendations

The study was conducted in one of the Algerian advertising agencies that make use of some green practices. In line with the availability of the areas provided by the company to explore the GSCM techniques and their impact, this research only looked at the advantages and convenience of GSCM implementation. Other aspects, such as restrictions and difficulties, were left out of the work. Therefore, more investigation into the constraints and disadvantages of GSCM implementation is suggested.

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APPENDICES

Ministry of Higher Education and Scientific Research

Higher National School of Management – Kolea

Survey

Section 1: Going green

1. Do you believe that eco-products are superior to non-eco products?
 - Yes
 - No
2. Do you believe that environmentally friendly workplaces are preferable than ones that are not?
 - Yes
 - No
3. Are you familiar with the GSCM techniques that the organization uses?
 - Yes
 - No
4. Are you interested in participating in GSCM activities?
 - Yes
 - No
5. In your opinion, what is the most important environmental issue in your work space?
 - Solid waste
 - Air pollution
 - Energy consumption
6. Which departments have the most GSCM practices integration?
 - Sales department
 - Artistic department
 - Marketing service department

Section 2: Benefits of GSCM practices

Please indicate the extent to which you disagree or agree with each of the following statements.

7. Applying GSCM practices help in reducing costs related to procurement activities
 - Strongly agree
 - Agree

- Undecided
 - Disagree
 - Strongly disagree
8. Applying GSCM practices help in reducing costs related to manufacturing activities
- Strongly agree
 - Agree
 - Undecided
 - Disagree
 - Strongly disagree
9. Applying GSCM practices help in reducing costs related to distribution activities
- Strongly agree
 - Agree
 - Undecided
 - Disagree
 - Strongly disagree
10. Applying GSCM practices help in reducing costs related to reverse logistics
- Strongly agree
 - Agree
 - Undecided
 - Disagree
 - Strongly disagree
11. The adoption of GSCM is more costly than financially advantageous
- Strongly agree
 - Agree
 - Undecided
 - Disagree
 - Strongly disagree
12. The application of GSCM methods has given the agency a competitive advantage
- Strongly agree
 - Agree

- Undecided
- Disagree
- Strongly disagree

13. The application of GSCM methods has improved the agency image

- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly disagree

Section 3: External factors influence on GSCM adoption

14. Are there any environmental regulations that the agency is required to comply with?

- Yes
- No

15. To what extent do you believe the groups listed below influenced to the agency's decision to enhance its GSCM performance?

○ Media:

- | | |
|--------------------|--------------------|
| • Strong influence | • Little influence |
| • Medium influence | • No influence |

○ Customers:

- | | |
|--------------------|--------------------|
| • Strong influence | • Little influence |
| • Medium influence | • No influence |

○ Competitors

- | | |
|--------------------|--------------------|
| • Strong influence | • Little influence |
| • Medium influence | • No influence |

○ Regulations

- | | |
|--------------------|--------------------|
| • Strong influence | • Little influence |
| • Medium influence | • No influence |

Section 4: Thoughts and recommendations

16. How would you describe your satisfaction with the current state of GSCM application?

- Highly satisfied
- Satisfied
- Neutral
- Dissatisfied
- Highly dissatisfied

17. Do you think IT applications are needed for further greening the supply chain?

- Yes
- No

Thank you