



ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

**FACTORS AFFECTING IMPLEMENTATION OF GREEN SUPPLY
CHAIN MANAGEMENT: A STUDY ON ETHIOPIAN
PHARMACEUTICAL SUPPLY SERVICE**

BY

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JUNE 2023

ADDIS ABABA, ETHIOPIA

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SERVICE**

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APPROVAL SHEET

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DECLARATION

I, Eden Adam, declare that this thesis entitled: “**FACTORS AFFECTING IMPLEMENTATION OF GREEN SUPPLY CHAIN MANAGEMENT: A STUDY ON ETHIOPIAN PHARMACEUTICAL SUPPLY SERVICE**” submitted in partial fulfillment of the requirements for the Degree of Master of Art in Logistics and Supply Chain Management. It complies with the regulations of the University and meets the accepted standards concerning originality and quality. I, Eden Adam, declare that this thesis is my original work, complies with the regulation of the university, fulfills the accepted standard of thesis quality and all the material resources I used during the thesis proposal write up had been duly acknowledged.

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ENDORSEMENT

This thesis has been submitted to Addis Ababa University, College of Business and Economics for examination with my approval as a university advisor.

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ABBREVIATIONS AND ACRONYMS

EPSS	Ethiopian Pharmaceutical Supply Service
GRI	Global Reporting Initiative
GSCM	Green Supply Chain Management
PSCM	Pharmaceutical Supply Chain Management
SC	Supply Chain
SCM	Supply Chain Management
SSCM	Sustainable Supply Chain Management

ABSTRACT

This study sought to examine factors that affect green supply chain management of pharmaceutical supply chain by taking Ethiopian Pharmaceutical Supply Service as a case. A quantitative research approach along with an explanatory research design was adopted. The survey was conducted on employees working in the quantification & market shaping, procurement and logistics departments of Ethiopian Pharmaceutical Supply Service. A sample of 228 valid and usable responses were collected from the targeted respondents. Multistage sampling techniques was applied to select the employees at the three departments judgmentally, and applied stratified random sampling technique to select the respondents randomly from each stratum. Primary data were collected through a self-administered questionnaire. A multiple linear regression analysis was used to identify factors affecting green supply chain management and their effect on pharmaceutical supply chain with the help of the SPSS 22.0 Software. These factors are government policy, supplier's flexibility, customer demand, staff competence, management support and organizational capacity. The results revealed that, among them, staff competency had relatively the highest effect on green supply chain management followed by management support and customer demand. Whereas, supplier flexibility had the least contribution preceded by organizational capacity and government policy. The managers of quantification, logistics and operation departments should implement business re-engineering system by incorporating performance evaluation systems to mitigate loss of unnecessary costs due to poor operational activities, backed by reward/incentives.

Key words: Ethiopian Pharmaceutical Supply Service, Green Initiative, Green Supply Chain Management, Pharmaceutical Industry, Supply Chain Management, Sustainable Business.

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The escalating environmental issues heavily enforces many organizations to incorporate green initiatives into key functional areas such as supply chain management. Going green is one of the key global advocations to which many businesses respond by applying green principles to their operations. This has given rise to green supply chain management, the incorporation of sustainable initiatives into the supply chain. The extent of the "green idea," as defined by a sustainable green supply chain, is growing, in accordance with new developments and ways to protect environmental sustainability. Effective product design, efficient manufacturing processes, and efficient customer delivery are all part of greening the supply chain (Khan, 2018). Global environmental sustainability is currently a top priority for business, while being a relatively new idea (Mentzer, 2022). However, the lack of a self-regulatory environment and practice uniformity makes it difficult to adopt.

Companies have taken proactive steps to green their operations for corporate sustainability in a number of areas, including green supply chain management. According to Darwish (2021), the fundamental idea behind the "green" notion is undeniably to improve sustainability through reducing pollution, focusing on reactive monitoring of general environmental management programs. However, it's interesting to note that more proactive businesses take use of this chance to save production costs by recycling, remanufacturing, using reverse logistics, implementing innovations, etc. (Zhu, 2021). By generating a competitive edge that results in customer satisfaction, a good reputation, and improved opportunities to offer their goods to the relevant stakeholders, it promotes economic growth while also helping to maintain a sustainable environment (Balun, 2015).

Studies revealed that the adoption of green concept in pharmaceutical supply has great importance for profit-generating activities, business developments, environmental impact, and the production of enterprises (Ahmed, 2019; Grace, 2019; Zhang and Zhao, 2022). According to Ahmed (2019), many businesses use green supply chain management to integrate supply chain management and environmental management practices, as these long-term strategies will boost businesses' competitiveness. Utilizing green supply chains and adopting cutting-edge technologies helps to promote sustainable production, which in turn boosts an organization's productivity (Li, 2020). As a

result, numerous businesses across numerous industries started implementing green supply chain management strategies to increase sustainability.

Supply chain management in the pharmaceutical industry is more challenging than it is for other items. The pharmaceutical industry is more sensitive, particularly when considering the strict deadline and adequate standards (Darwish, 2021). Medical goods with short expiration dates, in particular, require special handling, strong security, and fast delivery for pharmaceutical products. According to the World Health Organization, providing citizens with access to medicine that is always available in sufficient quantities, at the right dosage and quality levels, and at reasonable costs is a top priority (Ahmad, 2018). To ensure that people have access to essential medicines, a functioning and sustainable supply is unquestionable.

Pharmaceutical supply chains are amongst some of the most costly and complex as they operate in a continuously evolving industry (Faisal, 2015). In this regard, like other developing economies, the pharmaceutical supply issues in Ethiopia are more pronounced. The industry accommodates around 11 pharmaceutical companies which have been engaged in large-scale manufacturing of generic medicines. According to FMOH report (2022), the industry is characterized by heavily import-dependent, and hosting few domestic producers supplying or sharing less than 10% of a half a billion-dollar market. To the contrary, they produce considerably high levels of pollution especially as by-products from the production processes (Elias, 2018).

Since the industry is import-dominant, Ethiopian Pharmaceutical Supply Service (EPSS), a public organization, was established primarily for supplying pharmaceuticals and medical equipment mainly to governmental health institutions. EPSS is structured to sustainably supply basic pharmaceuticals used for treating the main health problems in the country and to consider the purchasing capacity of the society in providing its services (FMOH, 2022). It plays a pivotal role by supplying high demanded medication to combat epidemics.

The main purpose of this study is, thus, to identify and examine factors affecting green supply chain management of Ethiopian Pharmaceutical Supply Service. Based on the greening notion of the supply chain management, this study identifies both the external and internal factors that affect the supply chain. A quantitative approach is used by collecting quantitative data from the employees of EPSS and, in doing so, this research contributes with a more comprehensive understanding of greening notion of pharmaceutical supply chain contribution to the social and environmental sustainability.

1.2. Statement of the Problem

The Ethiopian Pharmaceutical Supply Service (EPSS) serves around 100 million people in nine regional states and two administrative states (Federal Ministry of Health Report, 2022). EPSS is responsible for commodity distribution across the country which covers an estimated 1.1 million sq. kilometers. Despite the levels and gaps of coverage in EPSS's branch networks, green pharmaceutical supply management has been implemented for a decade to improve access to essential health commodities for the people of Ethiopia (Dawit, 2022). However, EPSS has acknowledged escalation of complaints from federal and regional health bureaus that a number of health facilities couldn't be covered by EPSS branches. It often leaves the needy without the required health commodities that might lead some of them to dire situation which in turn EPSS has already developed negative public image as well as high cost of delivery (FMoH, 2022).

Failure in supplying effective and quality pharmaceuticals to the consumers has become a cause of most leading causes of death and disability in developing countries which can easily be prevented, treated or at least alleviated with affordable essential drugs. Mortality figures across developing countries can be significantly reduced if affordable, effective and quality pharmaceuticals are available and appropriately used (Grace, 2019). Emelia (2019) stated that, even in industrialized countries, escalating costs of healthcare services have placed evidence-based and efficient pharmaceuticals supply issues high on the agenda.

Irrespective of the reason, supply management has become an area of focus for many pharmaceutical businesses. In this regard, given the sensitivity of the industry, pharmaceutical companies contemplate the integration of environmental practices into their strategic plans and daily operations to mitigate the adverse effect of environmental degradation (Saris, 2018). That means, organizations are facing increasing pressure of balancing their marketing practices and greening environmental performance. Through a number of efforts, supply chain management's green initiative seeks to reduce its "carbon footprint" (Crum, 2011). Since the initiative is influenced by a variety of circumstances, it is crucial to pinpoint these characteristics in order to properly implement this green initiative (Dashore and Sohani, 2013).

Studies in the area demonstrate that there are a variety of internal and external elements that influence an organization's decision to use green supply chain management. According to Sun and Li's (2021) analysis of extrinsic factors, governments' involvement in the creation of advantageous policies may

hasten the adoption of environmentally friendly practices by logistics companies. They found that firms' performance and the adoption of green practices are significantly influenced by government incentives and new environmentally friendly laws. According to Walker and Brammer (2009), buying environmentally friendly products from sources that care about the environment influences the buyer to make green purchases. In addition, customers have direct control over the direction that sustainable business practices and GSCM (green supply chain management) activities take (Lin and Tan, 2013).

Same vein, regarding the internal organizational factors, Johansson (2016) states that staff competence/knowledge is a core resource of an organization as the value of the product isn't what, but how it is designed. Lee and Klassen (2018) also suggest that the support of management is a critical factor in the adoption of new initiatives and is a key factor that affects supply management. The ability of an organization's strategy to achieve its goals is dependent on an organization's capability (Lee and Klassen, 2018). If strategies are put in place to take a proactive stance to sustainability, they could have a greater impact on green initiatives (Lee and Klassen, 2018).

In Ethiopian context, Wondimeneh (2013) studied the supply chain management practices of Ethiopian Pharmaceuticals manufacturing share company. Girma (2020) assessed challenges of pharmaceutical supply chain management in public health facilities Supply chain program of Global Health (2020) also conducted network analysis of EPSS for optimizing commodity delivery to remote health facilities. Past research addresses the challenges and the possible factors affecting it, however, they do not convey this from the perspective of the supply chain staff. Supply chain staff work directly with supply chain activities and they have considerable impact on the operations of a supply chain department (Kumar, 2020). Besides, limited studies have been conducted on identifying the critical factors in pharmaceutical supply chains within Ethiopia. Against this background, the study sought to identify the factors affecting green initiatives of EPSS.

The aim of this study is, thus, to investigate factors affecting GSCM in the case of EPSS in Addis Ababa. The results of this study fill the gap to identify and examine major factors affecting the green supply of pharmaceuticals to the public. It provides insight on whether measures have been put in place improve their effects.

1.3. Research Questions

1. What is the effect of government policy on the green supply management of the Service?
2. How does pharmaceutical suppliers affect the green supply management of the Service?
3. What is the influence of consumers on the green supply management of the Service?
4. How does the management support influence the green supply management of the Service?
5. What is the effect of employee competency on the green supply management of the Service?
6. How does the organizational capacity affect the green supply management of the Service?

1.4. Objectives of the Study

1.4.1. General Objective

The main objective of the study is to examine the factors affecting green supply management of Ethiopian Pharmaceutical Supply Service in Addis Ababa.

1.4.2. Specific Objectives

1. To examine the effect of government policy on green supply chain management of the Service.
2. To assess whether suppliers affect the green supply chain management of the Service.
3. To investigate the influence of consumers on green supply chain management of the Service.
4. To analyze the effect of management support on the green supply management of the Service.
5. To examine whether employee competence affect the green supply management of the Service.
6. To determine the effect of organizational capacity on the green supply chain management of the service.

1.5. Significance of the Study

The output of this study would have a number of importance. Among the majors, the findings will contribute to the existing body of knowledge by providing new insights in the field of green supply chain management. Scant previous studies dealing with factors that affect green supply chain management in leading pharmaceutical manufacturing companies in Ethiopia have been conducted. Nonetheless, this survey examines factors affecting green supply chain management within the major supplier of pharmaceuticals to the public hospitals and healthcare centers. This study further contributes to the literature by providing suggestions as to how the identified factors that impact on green supply chain management initiatives could be improved. It is envisaged that the implementation of proposed suggestions could assist pharmaceutical manufacturers to overcome their particular green

initiative's challenges. Examining the key factors affecting green supply chain management help pharmaceutical supply companies focus on overcoming these factors and utilize their resources more efficiently and effectively which stimulates the success rate of green supply chain management initiatives. This study also provides a basis for future researchers to investigate further the factors affecting green supply chain management in other companies or sectors of the industry.

1.6. Scope of the Study

This study is conducted on Ethiopian Pharmaceutical Supply Service in Addis Ababa, Ethiopia. It only considers the employees at head office and branches in Addis Ababa for the reason that Addis Ababa is the main hub at which most of the supply and logistics operation takes place. All other regional branches have been excluded and inputs from these facilities have been omitted. Conceptually, Supply chain management includes the organization and coordination of all sourcing, procurement, conversion, and logistics management activities. It consists of the four main components of supply chain management: quantification & market shaping, purchasing, production, and logistical operations. Only quantification & market shaping, buying, and logistics management are the three main components of EPSS's supply chain. The management of the green supply chain is impacted by a variety of internal and external issues, as well. However, this study explains the green supply chain management by government policy, suppliers, consumers, staff competence, management support and organizational capacity. Methodologically, the study focuses only on the employees of EPSS. Only primary quantitative data were collected for analysis. However, inclusion of qualitative research approach would have given the bigger picture. Nonetheless, only quantitative data from staff of EPSS were considered and others were rejected not to take part in this study.

1.7. Definition of Key Terms

The key terms and concepts of this study have been illustrated below.

Green Supply Chain Management – It is the incorporation of environmental practices into supply chain activities to improve environmental performance and reduce a business' negative impact on the environment (Zsidisin and Siferd, 2001: pp. 68)

Logistics – Logistics is used as a term to identify the movement and management of products which includes transportation, warehousing and inventory management (Rushton, 2014: pp. 113)

Pharmaceutical Supply Chain - Term used to identify supply chains that operate within pharmaceutical companies (Xie and Breen, 2012: pp. 22)

Procurement - Is used as a term to identify business processes that involve the buying of goods and services for a business to meet its needs (Interagency Procurement Working Group, 2012:2)

Supply Chain Management - It involves the organization and planning of all procurement and sourcing, conversion, and logistics management activities. (Kumar, 2012, pp. 132).

Sustainability - Refers to reducing wastefulness to maintain natural resources and the environment for the future generations (Baumgärtner and Quaas, 2010: pp. 46)

1.8. Organization of the Study

There are five chapters in the main study. The introductory section of the study, which covers the study's background, problem statement, objectives, significance, scope, and organizational structure, was covered in the first chapter. The review of related literature that is appropriate and pertinent to the current investigation was discussed in the second chapter. The third chapter described the procedures to be employed for the data collection, analysis, and interpretation necessary to meet the goals of the study. The study's systematic data analysis, interpretation, and debate are covered in detail in the fourth chapter. And finally, the fifth chapter presented the conclusion and recommendations for the study would reach based on the result obtained from the research process.

CHAPTER TWO

2. REVIEW OF THE RELATED LITERATURE

This chapter mentions literature that is related to the study objectives. The chapter is structured in such a way that it includes theoretical literature review, empirical studies review and the conceptual framework of the study.

2.1. Theoretical Literature Review

Throughout the years environmental degradation has become an area of concern for governments, consumers and businesses. In order to combat environmental degradation both developed and developing countries have adopted legislation to reduce environmental impacts of businesses (Narwal, 2016). In response to the growing needs of environmental compliance supply chains have evolved into Green Supply Chain Management (GSCM) through the incorporation of environmental thinking. Some of the leading features of these environmental trends are the emphasis on life cycle costing, waste reduction, asset efficiency and recycling (Broek, 2010).

2.1.1. Supply Chain Management

Supply Chain Management (SCM) is management of material, money, and information within and across the supply chain to maximize customer satisfaction and to get an edge over competitors. Customers expect their purchases to be made at the appropriate time and location. An excellent synchronization between the manufacturer and the customers is required for this. As we all know, here is where the "barter system" first emerged. One of the persons started managing the collection of goods from various sources and supplying to those in need in order to meet his requirements in return as things became more complicated and one person had to reach out to many people for his needs (Jaya and Kumar, 2016). Additionally, it involves keeping track of the assets, data, and cash as they pass from supplier to manufacturer to wholesaler to retailer to customer.

The management of supply chains entails managing and integrating these flows both inside and across businesses (Borade, 2007). SCM is the management of a network of suppliers, transporters, distributors, retailers, and distributors who take part in the sale, manufacturing, and delivery of a certain product. Supply chain management is more difficult in a global economy because partners and suppliers are dispersed around the globe and because political and economic considerations have a significant impact on traditional logistics including facility placement, sourcing, and delivery.

Linking a global supply chain presents a number of hurdles, including varying tax and customs regulations, production and operation costs, the use of different currencies, and numerous transportation issues (Jaya and Kumar, 2016).

Pharmaceutical supply chains are "the integration of all activities associated with the flow of and transformation of raw materials through to the end-user, as well as associated information flows, through improved supply chain relationships to achieve a sustainable competitive advantage," according to Handfield (1999). The pharmaceutical supply chain differs from conventional supply chains for physical goods in certain ways because to its urgency, significance, storage, transit, regulation, etc.

2.1.2. Green Supply Chain Management

Unquestionably, concerns about how manufacturing companies affect the environment are growing, which has prompted calls for sustainable practices that address social, economic, and environmental needs (Diabat, 2013; Abdullah, 2015; Hussain, 2018). In fact, all firms are now "obligated" to put more effort into balancing their performance in these areas, especially those that face community, competitive, or regulatory challenges (Ayuso, 2014). Finding this equilibrium is regarded as a challenging and, occasionally, contentious task.

There is a need for greater cross-functional research, according to recent studies (Menon, 2012). Identifying concurrent outcomes and reciprocal linkages between distinct activities while investigating the transversal dissemination of green management across diverse organizations or functions. This study examined the links between green management systems in the supply chain and human resources operations in order to meet this need. Since there aren't many research that have looked into the two roles and how they work together, despite the fact that green supply chain management (GSCM) methods have a favorable impact on environmental performance. In order to highlight the inconsistent findings in the GSCM literature (Geng, 2017; Yu, 2014), many researchers have called for additional research on examining the relationships between various GSCM dimensions, such as internal GSCM practices (Int-GSCM) and external GSCM practices (Ext-GSCM) and sustainable performance.

2.1.3. Green Supply Chain Management and Sustainability

The concept of sustainability has become more significant in business operations and SCM. For instance, Vachon and Mao (2008) asserted that environmental sustainability is a supply chain imperative. A good evaluation of sustainable performance includes simultaneous evaluations of economic, environmental, and social performance. According to Green and Inman (2015) and Zhu (2012), "economic performance" refers to improvements in financial and marketing performance that arise from employing green practices and raise an organization's standing in comparison to the norm for its sector. Therefore, "sustainable performance" is defined for the purposes of this study as the real impact of using GSCM and GHRM practices on the performance of the organization in terms of the environment, the economy, and society.

Several sustainability frameworks are in place, and the majority of them are focused on national performance. Supply chain quality is typically associated with the amount and quality of suppliers and customers within a nation, and the three aspects of feasible improvement like natural execution, corporate natural hone, and social supportability, are evaluated. The outcome demonstrates that each of the three sustainable improvement measurements is correlated with supply chain quality (Vachon, 2008; Rashid, 2022). Social, economic, and environmental variables all have an impact on sustainability. A number of components related to each dimension are:

2.1.3.1. Environmental Factors

The natural environment, which includes all living and non-living things found in nature on earth, such as land, water, plants, and animals, is the context in which the word "environment" is most frequently used. One method of enhancing environmental sustainability is to reduce the ecological footprint of the supply chain. The environmental component of supply chain management has received the greatest attention out of the three sectors. In the planning of the areas' economic improvement, the environmental component is crucial (Glinskiy, 2016). We require more precise standards for organizing and evaluating our natural techniques in view of the complicated concerns related to sustainable advancement. Sustainability, in accordance with biological principles, also entails optimizing the intelligence between nature, society, and the economy. Sustainable development aims to balance environmental security and development; all it entails is using resources no faster than they can regenerate themselves and releasing poisons no more significantly than typical resources can acclimate to them (Merkel, 1998).

2.1.3.2. Social factors

Various and competing changes are implemented in the current era of global, territorial, national, and local improvement in all fields of the economy, influencing all activities, including administration. Enterprises are similarly successfully involved in these processes, searching for factors that will improve and increase their competitiveness. As a result, improving management methods and tools is a crucial and essential requirement for assuring sustainable development (Awad and Nassar 2010). Business must feel the need to create and implement a strong administrative framework. In this way, common management principles and practices are applied with uncommon care, and steps are taken to ensure the steady operation of businesses that seek to strengthen their positions in a dynamic environment. It is vital to utilize the accomplishments of world opinion, develop critical approaches and alter methodological approaches and the like.

Human-caused biological problems are becoming less localized and assuming global proportions. Important examples are changes to the climate, the depletion of the ozone layer, and the plight of the forest cover. In many developing countries, social conditions continue to worsen at the same time. Even while the financial and budgetary markets are getting more integrated, and we like to imagine a "worldwide town," our efforts to value natural assurance and improvement as the shared mission and responsibility of all nations have begun to yield results. The industrialized countries should accept extra responsibility if we are to advance sustainably—not just because of their historical environmental efforts, but also because of their current levels of fiscal and technological resources. However, one must be beyond doubt that feasible generation and consumption involve technological advances and social designs of a person's behavior and values (Merkel, 2018).

2.1.3.3. Economic factors

The profit made by supply chain participants and the economic gains made by their host countries, regions, and communities are referred to as the supply chain's economic dimension. Because of the fact that this dimension spans beyond a company's internal profit, some of the characteristics falling under this category could be challenging to quantify in terms of money. Four categories for economic factors have been established. The economy's performance is a reference to a company's ability to operate and market value. In terms of financial resources, the firm's overall well-being and long-term viability are referred to as its financial health. Market conditions and the structure of the supply chain

are related by the market and the organizational structure. And Entities /Processes: Refers to the internal and external processes, procedures, and values of the economic dimension (Sloan, 2010).

The topic of how to prioritize sustainability in company strategy and operations is becoming increasingly important as sustainability gains more attention locally and globally. Businesses may find it advantageous to adopt a sustainable construction flow as a means of moving from reactive to proactive product responsibility, from raw material procurement to final disposal, in order to reduce pollution, reduce waste, and engage in other sustainable activities. The sustainable supply chain management practices used by Malaysian manufacturing businesses are examined in this paper. The primary contribution of the study is to validate the effects of SCM approaches on the performance of the firm's sustainable supply chain. Environmental purchasing and sustainable packaging have been found to directly impact a company's performance, particularly in terms of economic performance (Rashid, 2022).

2.1.4. Pharmaceutical Supply Chain

Pharmaceutical firms are being regarded as being more accountable for sustainability. The need to become more sustainable grows, and the accountability of its operations should be broadened beyond the production site to the entire product chain as the sector comes under increasing pressure from regulatory markets in the demand for more sustainable products (Linton, 2007).

The Global Reporting Initiative (GRI) is a tool used by pharmaceutical companies to implement and assess their level of sustainability. Multiple stakeholders participated in the process of developing and revising the GRI guidelines (GRI, 2011). The GRI standards advise using indicators to assess an organization's performance in the environmental, social, and economic spheres as part of the required sustainability report. They provide a list of more than 100 potential indicators that businesses may employ, including both generic and organization-specific metrics like total water usage and recycled materials. The GRI principles serve as a teaching tool and encourage CSR reporting for combining environmental, social, and economic factors. They also encourage transparency and better communication between businesses and stakeholders (Veleva, 2001). In addition, due to the fact that financial and social criteria are crucial parts, these truly differentiate 'sustainability' reporting from straight environmental reporting (Morhardt, 2002).

Pharmaceutical companies must now consider the requirements of society, the environment, and the economy. Furthermore, environmental protection and sustainability cannot just be utilized to change

how the general public views the prices of resources used as inputs and outputs in production (Bravo, 2013). By reducing waste, generating less waste, using resources more efficiently, developing new, environmentally friendly products and services, and obtaining operating permits from local communities, businesses can set themselves apart from their competitors (Székely, 2005). Additionally, as soon as any harm is discovered and brought to the stakeholders' attention, its root causes are identified and properly recognized. This method of operation improves firm performance and profitability, allowing them to continue operating for a longer period of time (Linton et al., 2007). One can observe from the information presented above that there isn't much literature on the topic of sustainable pharmaceutical supply chains.

2.1.5. Pharmaceutical Green Supply Chain Management Practices

Pharmaceutical businesses must conduct their business in a way that will assure their long-term survival for the benefit of their shareholders, investors, workers, and patients. They can only do that if they want to keep producing and improving the medications that society depends on them to make. The pharmaceutical sector has a significant chance to fill patients' demands in therapeutic areas and, by extension, to make money in regions that have been the focus of their business strategies but have a wide range of unmet needs. However, due to the shifting business climate, it has been seen that pharmaceutical firm growth is slowing down (Baines, 2010). Various studies have linked the growth of firms to factors such as regulation change and political impact, increased competition, dumping, increasing cost of production among others. The elements that influence GSCM initiatives must be identified in order to establish and maintain GSCM inside an organization (Dhull and Narwal, 2016).

2.1.5.1. Government Policy as Determinant of Green Supply Chain Management

Government laws and policies have an impact on GSCM projects because they require businesses to satisfy goals set by the government and, in many circumstances, penalize them if they don't. According to Diabat and Govindan (2011), most businesses will only invest what is necessary to achieve their financial objectives in the field of environmental sustainability. Therefore, GSCM projects are significantly impacted by a lack of governmental and policy rules. As the disposal and reuse of products after their life cycles are controlled, government and policy laws also have a substantial impact on the reverse logistics component of a business' supply chain (Sheu, 2005). In other words, sustainability becomes a legal need rather than a personal preference as a result of policy requirements.

The characteristics that are utilized to assess and contrast an enterprise's success are determined by internal factors. Examples of internal firm elements include human resource management, technology, organizational goals, and vision statements (Zhang, 2020). The internal structure of a firm is significantly influenced by factors such as production capacity, marketing strategy, management, age of the business, owner/manager experience, and organizational culture (Al-Swidi, 2021). Since it is directly related to an organization's success, staff strength is a crucial internal business component. Devoted, enthusiastic, and well-trained employees significantly contribute to the business's success. Taking cognizance of the influence of an organization's internal dynamics, the following hypothesis is proposed:

H1a – Government policy has positive significant effect on green supply chain management.

2.1.5.2. Suppliers as Determinant of Green Supply Chain Management

A business's GSCM initiatives may be impacted by its suppliers. Suppliers must adhere to environmental regulations, which calls on them to have an approved environmental management system. Environmental purchasing can be used by the buying company if suppliers comply with environmental regulations (Zhu, 2005). Green buying, often known as environmental buying, refers to buying from environmentally conscious businesses (Walker and Brammer, 2009). This will make it easier for companies to give suppliers design guidelines so they may include sustainability into their goods (Zhu, 2005). However, due to conflict and misalignment of aims, suppliers might be against environmental collaboration and harm GSCM activities (Diabat and Govindan, 2011). A lack of communication with suppliers can also have a negative effect on GSCM initiatives as goals between the supplying firm and the buying firm can become misaligned and focus on opposing goals.

The suppliers frequently contribute to the improvement of the production of industrial companies while also influencing the environmental consequences through their raw materials. To embrace GSCM processes, the supplier factor is crucial. Mumtaz (2018) looked at whether the choice of GSCM techniques was significantly influenced by the supplier. Since the supplier is in charge of environmental standards in material management and processes, as well as procurement strategies, their involvement in GSCM implementation techniques is positively crucial (Lee, 2018). Collaboration with green suppliers affects an organization's performance in certain circumstances. Achieving social innovation goals and sustainable production targets can be considerably aided by choosing the right supplier for a company (Alavi, 2021). The collaboration between an enterprise and

its suppliers to accomplish environmental goals and adopt GSCM will facilitate better implementation of GSCM practices for sustainable production. Therefore, the following hypothesis is proposed:

H1b – Suppliers have positive significant effect on green supply chain management.

2.1.5.3. Consumers as Determinant of Green Supply Chain Management

The profitability and growth of the business also heavily depend on the consumer. Customers can also significantly influence GSCM initiatives since they can decide what is expected of the business (Feng, 2018). Because better levels of customer happiness are linked to greater levels of customer loyalty, which may translate into higher profitability for the company, customer satisfaction has become an essential part of business strategy (Bowen and Chen, 2001). Lv and Li (2021) investigated how environmentally conscious consumers influenced business green innovation. Customers thus play a crucial role in GSCM. Previous studies have shown that customer participation benefits production and consumption as well as the growth of the business. Aesthetic factors like sustainability of the product, including biodegradable packaging, are used by some consumers in the high-income group to make product selections (Zhu, 2005). Consumers with lesser incomes might choose affordability above sustainability. Therefore, customers can have a direct impact on GSCM activities and sustainable business practices (Lin, 2013). By influencing the adoption of GSCM, which in turn can boost customer satisfaction levels, customers can help develop and promote enterprises. Considering these statements, the following hypothesis is proposed:

H1c – Customers have positive significant effect on green supply chain management.

2.1.5.4. Staff Competence as Determinant of Green Supply Chain Management

According to Wood and Reynolds (2013), an employee's competence can be thought of as the acquired skills and intelligence that an organization and its staff create through time. Effective training, resource development, and ongoing maintenance are necessary for a business to achieve its plans, including sustainable efforts (Wood & Reynolds, 2013:151). For projects to be improved continuously and to make better use of human resources in the future, staff competence is crucial (Dalkir, 2005). As a result, initiatives like GSCM practices can be facilitated by using staff competence as a tool.

Well-trained and experienced human resources help companies create new routines and processes by improving existing ones. They also assist companies in identifying inefficiencies and creating more

effective operating procedures (Kumar, 2012). GSCM efforts profit directly from organizational learning since they depend on the development of tacit skills because they are by their very nature people-intensive. Shared experience acquired through teamwork is the basis for skill development (Kumar, 2012). This means GSCM initiatives are reliant on cross-functional efforts and the pooling of expertise. Based on this, the following hypothesis is proposed:

H1d – Staff competence has positive significant effect on green supply chain management.

2.1.5.5. Management Support as Determinant of Green Supply Chain Management

The acceptance of new initiatives depends heavily on management's backing, which also has a major impact on GSCM initiatives (Lee and Klassen, 2008). The influence of management support for GSCM projects might be favourable or detrimental. GSCM projects can be strongly influenced by high-level management's backing since it inspires workers and unifies sustainable activities from top to bottom with company objectives. Employee demotivation and the failure of GSCM activities in the outset might be caused by a lack of managerial support (Kumar, 2012).

The success of new initiatives, like GSCM processes, might be linked to the top management's backing. Consequently, management commitment is necessary for the effective implementation of GSCM activities. All levels of management, including middle and senior management, must be committed to GSCM processes because they have an impact on the entire company. This is due to the fact that it is a broad-based commercial initiative that calls for cross-functional participation (Kumar, 2012). Thus, it is evident that management support is a crucial element influencing GSCM initiatives. Based on this explanation, the following hypothesis is proposed:

H1e – Management support has positive significant effect on green supply chain management.

2.1.5.6. Organizational Capacity as Determinant of Green Supply Chain Management

The criteria that are used to assess and compare an organization's performance depend on its ability to carry out its strategy. Examples of internal firm elements include human resource management, technology, organizational goals, and vision statements (Zhang, 2020). The internal structure of a firm is significantly influenced by factors such as production capacity, marketing strategy, management, age of the business, owner/manager experience, and organizational culture (Al-Swidi, 2021). Since it is directly related to an organization's success, staff strength is a crucial internal business component. Devoted, enthusiastic, and well-trained employees significantly contribute to

the business's success. Adoption of GSCM is influenced by organizational internal variables. Taking cognizance of the influence of an organization's internal dynamics, the following hypothesis is proposed:

H1f – Organizational capacity has positive significant effect on green supply chain management.

2.2. Empirical Studies Review

The major factors that affect the green supply chain management practices from different industry perspectives are presented as follows:

2.2.1. The Effect of Government Policy

Walker and McBain (2018) interviewed stakeholders from seven business and public sector organizations as part of an exploratory study they carried out in the UK. In both the public and private sectors, they tried to pinpoint the motivators and impediments that organizations face when implementing GSCM programs. They discovered that the primary internal barrier was the flexibility of government policy by looking at a number of specific organizational aspects, including legislation, customers, competitors, and society.

The focus of Tibben-Lembke's (2020) study was on how laws and regulations impact green supply chain management over the course of a product's life cycle. Numerous public policies and practices for managing the pharmaceutical supply chain were found by this investigation. The findings show that market and regulatory pressures affect organizations to perform better in terms of the environment.

Azevedo (2011) was also cited in exploratory research of the Portuguese automotive sector that looked at the connection between GSCM and overall supply chain effectiveness. Five accredited firms were studied using a grounded theory methodology. The researchers came to the conclusion that for a supply chain to be considered green, health ministries' policies must be in place and supported by government policy aimed at reducing waste and using hazardous products less frequently.

Additionally, the adoption of environmental measures for "greening" the supply chain in the Taiwanese IT industry was modelled using qualitative methodologies. The Waste Electrical and Electronic Equipment (WEEE) Directive and the Restriction of Hazardous Substances (RoHS)

Directive, according to Koh, Gunasekaran, and Tseng (2012), have indirect but advantageous effects on forward and reverse supply chains.

2.2.2. *The effect of Suppliers*

In order to gather information from 15 Italian enterprises about the implementation of GSCM methods by third-party logistics (3PLs) companies, Perotti (2012) also used qualitative methodologies. Only a few of the 15 businesses, he discovered, had benefited from the adoption of GSCM techniques as a result of building strong relationships with suppliers and entire sellers. As a result, their findings on whether GSCM adoption can enhance overall financial or operational performance were equivocal.

Waste prevention or reduction was another aspect of Xie and Breen's (2012) examination of the pharmaceutical industry. They used secondary sources and conducted a thorough examination of the pertinent literature to better understand the problems and key players that affected waste management in that sector. Their research emphasized the importance of including all supply chain participants, including producers, distributors, logistical service providers, neighbourhood pharmacies, and consumers.

2.2.3. *The effect of Consumers*

Customers were the main topic of Zailani and Tan's (2012) study on a survey of Malaysian companies with ISO certification. The goal of the study was to find out whether encouraging businesses to adopt eco-designs that improve environmental performance could be accomplished by combining an internal proactive environmental strategy with a number of institutional drives from the outside. Customer pressure had a favourable impact on the usage of eco-design despite no impact being discovered on the firms' economic performance, demonstrating that external drivers can affect the adoption of GSCM principles.

In their 2010 study, Mollenkott and Tate pulled from the literature a number of significant green supply chain (GSC) parameters. They came to the conclusion that there are four key factors that encourage organizations to implement green supply chain practices: lower overall costs, customer satisfaction, and improved risk management, which focuses on the procedures and standards needed to meet environmental goals.

Small businesses are the ones who profit the most from GSCM announcements, according to Bose and Pal (2012), who also confirmed the conclusions revealed in Klassen and McLaughlin's earlier study. Positive customer feedback thus appeared to benefit both large and small businesses by raising exposure.

2.2.4. Staff Competence

Russo's (2017) survey of 243 firms from the Franklin Research and Development Corporation (FRDC) sought to identify a relationship between staff competence and the GSCM performance of the corporation. They concluded that staff skill and knowledge and success of GSCM are positively linked, but that economic benefits are moderated by the different stages of industry growth.

Zhu and Sarkis (2006) looked at the impact of training activities on GSCM performance results in China's manufacturing and industrial sectors. Depending on the degree of GSCM training implementation and the industry it was used in, they reported noticeably differing performance results. For instance, the outcomes varied between various manufacturing sectors that are environmentally sensitive and other industries with comparable degrees of green implementation.

In particular, the power-generating industry achieved inferior performance outcomes compared to other industries, despite the fact that the workers in both the electrical and electronic industries had similar levels of GSCM. The success of the GSCM was not shown to be significantly correlated with employee competence and dedication in Simpson, Power, and Samson's 2007 assessment of automotive suppliers within the Australian automotive industry.

2.2.5. The effect of Management Support

Additionally, Darnall, Jolley, and Handfield's (2018) survey of managers in US manufacturing firms produced conflicting findings. They found that businesses with managerial support outperformed rivals in GSCM procedures. As a result, there was a strong link between management commitment and GSCM procedures. However, this does not always result in increased corporate financial success.

According to Jack, Powers, and Skinner's (2010) analysis of the impact of customer-oriented antecedents of reverse logistics on cost savings mediated by management commitment, increasing reverse logistics capabilities can result in cost savings if managers are engaged.

2.2.6. *The effect of Organizational Capacity*

Eltayeb (2011) investigated how organizational culture and capacity affected the adoption of GSCM in Malaysian pharmaceutical manufacturing firms. The study examined whether green supply chain techniques had a favorable impact on the environment, the economy, or other intangible factors for manufacturing enterprises, but found that the impact varied depending on the organizational size and capability. In this study, adequate organizational capacity and internal performance of a corporation have a significant impact on employee-oriented green supply chain activities.

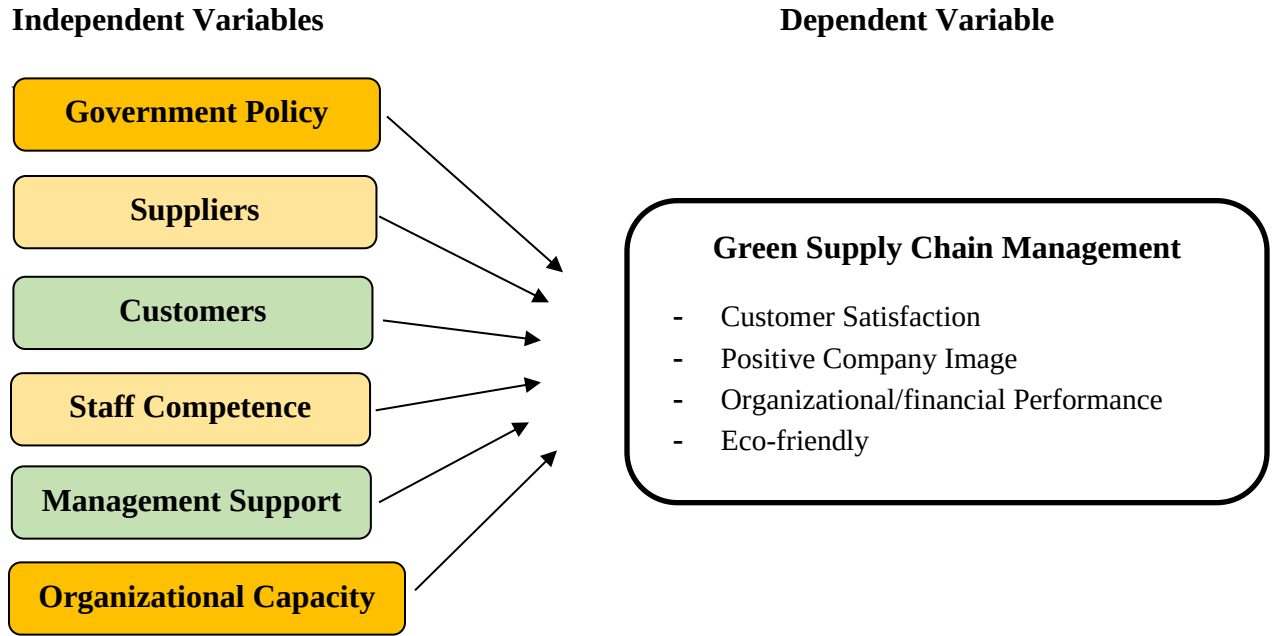
Based on the rates of GSCM adoption, Zhu (2012) conducted a survey of several manufacturers in China and created a typology that includes early adopters, followers, and laggards. When it came to getting a return on their GSCM investment, they discovered that the early adopters outperformed the following and laggards.

intangible performance of businesses depending on proactive and reactive methods in the application of GSCM in Thailand, according to Russo's (2013) study. He looked into ISO14001-certified manufacturing companies and discovered that the effectiveness of GSCM projects is influenced by organizational structure and financial capability.

2.3. Conceptual Framework and Hypothesis

2.3.1. Conceptual Framework

Based on the related literature review, it can be summarized that both internal and external organizational factors affect green supply chain management initiatives. Among the external factors, government policy, supplier flexibility and customer demand have significant and positive influence on GSCM. While, staff competence, management support and organizational capacity are among the internal factors. Based on this understanding, the conceptual framework is set in such a way that government policy, supplier flexibility, customer demand, staff competence, management support and organizational capacity are independent variables. While GSCM initiative is a dependent variable. As depicted in Figure -1, the six factors (independent variables) have direct relationship with GSCM. The framework with some modification, is adopted from the study by Reddy (2019).



(Source: Reddy, 2019).

Figure 1. Conceptual Framework of the Study

2.4. Hypothesis Formulation

Based on the related literature review and the empirical studies, the following hypotheses are proposed as:

H1a – Government policy has positive significant effect on green supply chain management.

H1b – Suppliers have positive significant effect on green supply chain management.

H1c – Consumers have positive significant effect on green supply chain management.

H1d – Management support has positive significant effect on green supply chain management.

H1e – Employee competence has positive significant effect on green supply chain management.

H1f – Organizational capacity has positive significant effect on green supply chain management.

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter refers to the research methodology to attain the objectives. It follows a methodological process to come up with a certain problem's solution. Thus, the methodology used in this study outlines the steps that must be taken in order to gather the data, analyze the data that has been collected, then interpret and report the findings. In the sections, the methodologies used in this survey are described.

3.1. Research Design

The main objective of this study is to examine factors affecting green supply chain management in the case of Ethiopian Pharmaceutical Supply Service in Addis Ababa. In light of this, this study adopted explanatory research design to test the proposed hypotheses to check whether they had significant relationships among the independent and dependent variables. That means, causal analysis is concerned with the study of how one or more variables affect changes in another variable (De Vaus, 2016). For this study, thus, application of explanatory research design is appropriate as it tried to explain and predict the relationship between the study variables (six factors namely government policy, supplier flexibility, customer demand, staff competence, management support and organizational capacity) and green supply chain management.

3.2. Research Approach

Research approach is a strategy of inquiry that provide specific direction for procedure in a research design. Bhattacharjee (2012) classifies scientific research approaches into three namely quantitative, qualitative and mixed research. Among them, for this study, a quantitative research approach was adopted to address the research question raised and test hypotheses posited. Quantitative research was selected for the reason that it is the systematic and scientific investigation of quantitative properties/phenomena along with their relationships. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena (Creswell, 2003). Thus, in this regard, the use of quantitative approach to evaluate/measure perception of employees regarding the factors affecting green supply chain management initiatives is found more appropriate.

3.3. Target Population

A population can be defined as the complete set of subjects that can be studied: people, objects, organizations from which a sample may be obtained (Shao, 2019). As it is defined in the scope, the study investigates the identified six factors and their relationship with GSCN in pharmaceutical industry by taking Ethiopian pharmaceutical Supply Service as a case. Therefore, the target population of the study is the employees of Ethiopian pharmaceutical Supply Service in Addis Ababa. According to the HR Database (2023) of Ethiopian pharmaceutical Supply Service, there are a total of 3,522 active employees assigned in head office and 19 outfit branches throughout the country. Among them, this study considered only the employees working at quantification & market shaping, procurement and logistic departments for the reason that these staff are believed to have more relevant information and understanding about the supply chain management than other functions. The total number of staff in these three functions (both head office and 19 branches) counted 1,053 of which 638 employees are located in the city.

3.4. Sampling Technique

There are three sampling strategies in use to select the targeted respondents from the sample frame. There are probability, non-probability and multistage sampling method (Creswell, 2009). The probability sampling applies a random (equal chance) selection, while the non-probability is subjective and relies on the researcher's decision or reasoning. In this study, mixed (multistage) sampling technique was applied to select the departments and their respective staffs.

First, to choose the departments, a non-probability purposive judgment sampling was employed. With this method of selection, no component of a population has an equal chance of being picked as a sample subject because the research only requires data from a small number of individuals. When sampling is limited to particular groups of persons who can give the researcher the necessary information, non-probability purposive sampling is utilized (Saunders, 2010). Only certain categories of people are included in the sampling because they alone have the data needed for the study. Judgment sampling was, thus, the kind of purposive sample utilized in this investigation.

Second, to choose the targeted respondents from each department, a stratified random sampling techniques for ease of accessibility of the complete name list of the targeted respondents from each selected 3 departments. The list all staff from the selected 3 functions was readily available. This

makes probability sampling practical, and make it more appropriate to generalize the findings to the larger population.

3.5. Sample Size

Sampling is the process of selecting a number of study units from a defined study population (Saunders, 2010). Determining sample size is very important issue because samples that are too large are uneconomical while too small samples may lead to inaccurate results. Here in this study, sampling is required as the targeted population accounts for a total of 638 professionals from 3 selected departments namely quantification & market shaping, procurement and logistics, and since the size is substantially larger in number to conduct census, taking a representative sample respondent is more economical. Thus, a proportionate sample size as computed by using Yamane's proportionate sample size determination formula is:

$$n = \frac{N}{1+Ne^2} = \frac{(638)}{1+(638*0.05^2)} = 246 \text{ respondents.}$$

Thus, the study has taken a sample of 246 respondents to participate in this survey. The distribution of sample respondents from each targeted profession/position in the selected companies is illustrated on Table-1.

Table 1. Sample Distribution

Department	No. of Employees	Proportion	Sample Proportion
Quantification & Market Shaping	35	0.055	13
Procurement	21	0.033	8
Logistics	582	0.912	224
Total	638		246

Source: EPSS's HR Database (2023)

3.6. Type of Data and Data Source

According to Catherine (2017), data may be collected as primary, secondary or both. Primary data are originated by the researcher for the specific purpose of addressing the problem at hand. On the other hand, secondary data contains relevant data that has been collected for a different purpose, but from which the conclusion is valuable for the purpose (Saunders, 2010). In this study, only the

primary source of data from the targeted respondents were collected and used for analysis as there was no secondary data available that matches with the objectives of the study.

3.7. Data Collection Instrument

Questionnaire is used for collection of primary data from targeted respondents. Questionnaire is one of primary data gathering survey instrument where respondents write answers to questions posed by the researcher on a question form (Wilkinson and Birmingham, 2013). It helps to ask or address a number of respondents identical questions in order to gain data to be analyzed. The reason for selecting a questionnaire in this research is because it has a merit of giving adequate time for informants to respond. It is also economical and allows to easily approach respondents.

A structured questionnaire was prepared to collect the data. A structured questionnaire is a questionnaire in which there are definite, concrete and pre-determined questions. The questions are presented with exactly the same wording and in the same order to all respondents. Resort is taken to this sort of standardization to ensure that all respondents replied to the same set of questions (Kombo, 2011). Thus, a structured questionnaire was adopted from previous similar study by Reddy (2019) to collect quantitative data to address the objectives of this study.

The questionnaire has two parts. Part One refers to the personal information of the targeted respondents. While Part Two includes a total of 33 statements, of which 28 items intended for measuring six factors affecting GSCM, while 5 statements for GSCM initiative. Specifically:

Factors Affecting Green Supply Chain Management (Independent Variables) are:

- Government Policy (5 statements),
- Suppliers' Flexibility (5 statements);
- Customers Demand (5 statements),
- Staff Competence (5 statements), and
- Management Support (4 statements); and
- Organizational Capacity (4 statements).

Green Supply Chain Management (Dependent Variable) is:

- Reputation Improvement (2 statements)
- Innovation Improvement (1 statement)
- Efficiency Improvement (2 statements).

A 5-point Likert-scale based questionnaire is used as a major instrument of data collection. The questionnaire is used to convert the qualitative data to quantitative data by using Likert scale ranges from 1- for "Strongly disagreed" to 5- for "strongly agreed". Likert scale is one of known measuring scale for categorical data (Saunders, 2010).

3.8. Data Collection Procedure

After the instrument is developed the next steps was distributing the questionnaires and collecting the data back in accordance with the sampling procedure and technique stated in the previous part. In line with this, the consent of PR and HR managers of EPSS were asked regarding their willingness towards conducting the survey in the premise. After having their approval, once again the consent of the respondents was also requested. Since they agreed, the questionnaires were distributed to the respondents during their tea break and other convenient time without affecting their operations. As an option, the respondents were also contacted through their email and telegram accounts and were reminded continuously to check and respond in time.

3.9. Data Analysis Method

Data in this study was analyzed using both descriptive and inferential statistics. Descriptive statistics is used to interpret data in general and for testing hypothesis and investigating research objectives inferential method is used using statistical package for social science (SPSS) version 22. Descriptive statistics was applied to interpret demographic variables of the respondents, mean and standard deviations of each study variables; whereas inferential statistics was used for testing hypothesis, correlation and multi-regression analysis. Tables and graphs were also used to present analysis results pictorially.

Model Specification – for this study, a regression model is proposed based on the identified independent (factors affecting GSCM) and dependent (GSCM imitative) variables. It is intended to examine their relationship using multiple linear regression method. Multiple linear regression is made to define the relationship and to evaluate the most dominant factors affecting GSCM implementation. The mode is specified as:

- **Independent variables** – Six factors namely government policy, supplier flexibility, customer demand, staff competence, management support and organizational capacity):
- **Dependent Variable** - Green Supply Chain Management.

In order to investigate the relationship between the six independent variables with a dependent variable, a multi-regression analysis model specification is designed as follows:

$$GSCM = \beta_0 + \beta_1 GOV + \beta_2 SUP + \beta_3 CUS + \beta_4 STA + \beta_5 MCO + \beta_6 ORG + e$$

Where:

GSCM	- Green Supply Chain Management
GOV	- Government Policy
SUP	- Supplier Flexibility,
CUS	- Customer Demand,
STA	- Staff Competence,
MCO	- Management Support and
ORG	- Organizational Capacity
β_0	- Constant;
$\beta_{1,2,3}$	- Coefficients of Predictors.

3.10. Validity and Reliability Test

To test the appropriateness, a pilot study was conducted on a population similar to the target population in two stages to confirm the validity and reliability of the questionnaire as well as the language used in the data-gathering tool (Mulusa, 2018). A total of 30 questionnaires had been distributed to EPSS staff in Addis Ababa. The pilot test was conducted on the same company for the reason that EPSS is the sole supplier of pharmaceuticals to public hospitals and health enter. Therefore, the respondents those who participated in the pilot test were intentionally excluded from the main study (survey).

3.10.1. Validity Test

Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). The relevant and suitable interpretation of the data obtained from the measuring device as a result of the analysis determines validity. Despite researchers must decide for themselves which validity to be tested in line with their needs and purposes. However, if the researcher does not develop a new scale and uses one that has been previously created and tested for Validity and Reliability in the local language of the country in which the original research was conducted, it is sufficient to test the content and construct validity (Whiston, 2012).

Thus, a total of 26 out of 30 staff took part in the pilot study by filling questionnaires that were personally administered by the student researcher. After, the respondents had completed filling the questionnaires, each item was discussed with them. This was aimed at establishing whether each item had been correctly worded and therefore free from misinterpretation when administered to the respondents in the main study. The results obtained from the main study indicated that the instrument was free from ambiguity and misinterpretation. On top of consulting the research advisor of this thesis, the student researcher also consulted pharmaceutical supply chain experts from EPSS which indicates that the scale was fit for soliciting the required information from the field.

3.10.2. Reliability Test

Reliability is another important test of sound measurement. Reliability estimates the consistency of the measurements or more simply, the degree of uniformity of the results obtained from repeated measurements. A measuring instrument is reliable if it provides consistent results. For this purpose, the quality of data was measured, evaluated and guaranteed using appropriate techniques. The data quality has been assured and measured through internal validity instrument in to correct research instruments application for accurately measuring the variables during the data collection procedures. Besides, data consistency was checked using reliability test (Cronbach's Alpha methods).

Table 2. Results of Reliability Test

Variables	No. of Items	Cronbach's Alpha Coefficients
Government Policy	5	.863
Supplier Flexibility	5	.747
Customer Demand	5	.905
Staff Competence	5	.730
Management Support	4	.882
Organizational Capacity	4	.800
Green Supply Chain Management	5	.891
Total Reliability	33	.905

(Source: Own Survey, 2023)

The distributed questionnaire was analyzed for internal validity by Pearson Correlation Coefficient and the correlation coefficient for each domain paragraph was significant at $\alpha \leq 0.05$. The values of Cronbach's Alpha for each field of the questionnaire and the entire questionnaire of this study were

in the range of 0.730 and 0.905. According to Sekaran (2010), reliability less than 0.6 are considered to be poor, those in the 0.7 range, acceptable, and those above 0.8 are good. The closer the reliability coefficient gets to 1.0, the better. Thus, the measuring instrument of this study can be taken as reliable instrument.

3.1. Ethical Considerations

In order to keep the confidentiality of the data given by respondents, the respondents were not required to write their names and be assured that their responses were treated with strict confidentiality. The purpose of the study has already been disclosed in the introductory part of the questionnaire. Furthermore, the researcher tried to avoid misleading or deceptive statements in the questionnaire. Lastly, the links of questionnaires were sent only to voluntary participants after having their full consents, those who were not willing wouldn't be contacted.

CHAPTER FOUR

4. RESULTS, DISCUSSION AND INTERPRETTIONS

This study aimed to investigate the relationship among organizational culture, leadership and employee performance. To address the research objectives, the collected data are presented, analyzed, interpreted, and discussed accordingly. The chapter mainly constitutes demographic information of the respondents, descriptive and inferential analyses of the collected data.

A total of 246 questionnaires were distributed to the targeted respondents. As the results in Table 3 indicates 236 questionnaires were filled and returned which accounted for a 95.9% response rate. Then, screened the collected questionnaires for missing data and other inconsistencies and found a total of 228 (92.7%) valid and usable responses for statistical analysis. The responses are further screened for error correction and then encoded accordingly to make them suitable for data analysis. After carrying out all the required data preparation, the multiple regression model analysis has been carried out with the help of SPSS 22.0 to test a set of factors simultaneously. Finally, the proposed hypotheses were statistically tested. Based on the findings from the multiple linear regression analysis, the results are discussed for each specific objective as presented below.

Table 3. Response Rate

Questionnaires	Frequency	Percentage (%)
Total distributed	246	100.0%
Returned questionnaires	236	95.9%
Unreturned questionnaires	10	4.1%
Response errors	8	3.3%
Total valid and usable	228	92.7%

Source: Own Survey, 2023

4.1. General Information about the Respondents

It is necessary to analyze some demographic characteristics of the respondents to see the extent to which samples were representative of the population from which they were drawn. Variation in such characteristics may influence relationships between indicators. Demographically sex, age, education, position and tenure characteristics of respondents were considered.

Table 4. Demographic Characteristics of Respondents

Category	N	(%)
Sex		
Male	90	39.5
Female	138	60.5
Total	228	
Age		
21 – 30 years	79	34.6
31 – 40 years	91	39.9
41 – 50 years	35	15.4
51 – 60 years	23	10.1
Total	228	
Education		
Highschool	12	5.3
Diploma	33	14.5
First Degree	150	65.8
Masters & above	33	14.5
Total	228	
Department		
Quantification & Market Shaping	22	9.6
Procurement	15	6.6
Logistics	191	83.8
Total	228	
Position		
Manager	11	4.8
Supervisor	34	14.9
Senior (> 3 years)	114	50.0
Junior	69	30.3
Total	228	
Service Year		
1 – 5 years	104	45.6
6 - 10 Years	70	30.7
Above 10 Years	54	23.7
Total	228	

Source: Own Survey, 2023

Referring Table 3, in terms of sex statistics, the results revealed that 138(60.5%) of the respondents were females while the male respondents were 90(39.5%). This is an indication that female staff participated in this survey counted almost two third of the participants. This merely indicates the sampling diversity of more female staff compared to male counterparts but, with the scope and the sample size of this study, it would be hard to reach conclusive remarks as to what this gender discrepancy means. Conceivably, further investigation with a specific emphasis on gender might examine this issue from a gender-related perspective.

As far as the age characteristics is concerned, the distribution showed that 79(34.6%) were found to be within the age range of 21 – 30 years, 91(39.9%) within 31 - 40 years, 35(15.4%) within 41 – 50 years, and the rest 23(10.1%) elderlies above 50 years old. This indicates that the respondents were from different age groups, younger up to elderlies, which could be taken as a positive implication as responses from diversified age groups; it would have the probability to get a clear picture of the relationship among the six factors (study variables) and green supply chain management. However, it would be interesting to cross-reference this finding with findings of other variables and see if there's valuable insight to arrive at.

The other influentially relevant demographic characteristics is education, because a level of education tends to influence the performance of employees in all fields but could be much influential on the performance of the pharmaceutical supply chain. The statistics from own survey shows that first degree holders accounted 150(65.8%) while both second degree (and above) and diploma holders held 33(20.6%). Other qualification (high school certified) counted only 12(5.3%) respectively. This indicates that about 90 percent of the respondents were well-educated. It is expected to have more educated staff as the nature of the pharmaceutical industry that requires high competence workforce.

Same vein, regarding to their current department, 22(9.6%) of the respondents were from planning; while 15(6.6%) and 191(83.8%) from procurement and logistics departments. More of logistics and procurement staff are expected in the population of workforce in EPSS's operation as logistics and procurement are the core of the pharmaceutical supply industry.

Regarding to their job positions, staffs at junior, senior and supervisory level accounted for 69(30.3%), 114(50.0%) and 34(14.9%) respectively. While managerial level staffs represented the rest 11(4.8%). It has an implication that majority of the respondent's lower or non-managerial level staff and this phenomenon is also expected from service-based organizations.

Referring to their work experience, those respondents who have served in their current position for less than <5 years accounted 104(45.6%). While 70(30.7%) served their organization from 5 - 9 years and the rest 54(23.7%) for more than 10 years. This implies that majority of the respondents had relatively less stay in EPSS. However, having staff from both short and long service years would be taken as a good opportunity to get different perspective regarding the understanding of the factors affecting green supply chain management practices of the company.

4.2. Factors Affecting GSCM Practices

Under the description of study variables, the responses collected from the sample respondents are presented, described and interpreted. The description of the study variables includes government policy, supplier flexibility, customer demand, staff competence, management support, organizational capacity and green supply chain management. The perception of the respondents towards these variables is evaluated with a five-point Likert scale. According to Best (1987), the scale is set in such a way that respondents strongly disagreed if the mean scored value is in the range of 1.01 – 1.80; disagreed within 1.81 – 2.60; neither agreed nor disagreed within 2.81 - 3.40; agreed if it is in the range of 3.41 – 4.20; while strongly agreed when it falls within 4.21 – 5.00. In addition, standard deviation shows the variability of an observed response, i.e., if the deviation is higher than 1.000, then there is high variability of stand among the respondents.

4.2.1. The Role Governmental Policy in Determining GSCM Practices

Table 5. Description of Governmental Policy (N = 228)

The Role of Government Policy	Mean	Std.
The government provides technical support to adopt green supply management.	4.21	1.426
The government facilitates training opportunities.	4.26	1.411
The government allocates sufficient budget to support green supply management.	3.68	1.660
The government amends its legislation on environmental issues continuously	3.67	1.585
The government sets flexible/innovative policies that support green supply.	3.63	1.550
Grand Mean	3.89	1.070

Source: Own Survey, 2023

The respondents were asked about their level of agreement on government policy. The results in Table 5 show that the government policy would highly affect the GSCM practices of the EPSS with a mean value of 3.89 (std. 1.070.) Despite their positive perception, their level of agreement on each attribute

show high variability in stand as the standard deviations were found above the threshold (Std. = 1.000). Specifically, they strongly believed that the government facilitates training opportunities (mean 4.26; std. 1.411), and provides technical support to adopt green supply management (mean = 4.21; std. 1.426). However, they slightly agreed that the government sets flexible/innovative policies that support green supply (mean 3.63; std. 1.550); amends its legislation on environmental issues continuously (mean 3.67; std. 1.585); and allocates sufficient budget to support green supply management (mean 3.68; std. 1.660). This implies that setting flexible policies, allocating sufficient budget, training and technical support influences the perception of the respondents towards green supply chain management of EPSS.

4.2.2. The Role Supplier's Flexibility in Determining GSCM Practices

Table 6. Description of Supplier's Flexibility (N = 228)

The role of Supplier Flexibility	Mean	Std
EPSS has good relationship with suppliers	4.21	1.436
The suppliers usually offer medicines with less impact on the environment.	3.71	1.774
The suppliers have green supply chain management initiatives.	4.23	1.463
The suppliers are proactive in managing returned unwanted medications.	3.48	1.777
The suppliers consider environmental standards while selling their products.	3.56	1.910
Grand Mean	3.84	1.185

Source: Own Survey, 2023

The respondents were also asked about the supplier's flexibility in supplying pharmaceutical products to EPSS. The results in Table 6 illustrate that the respondents strongly agreed that the EPSS has good relationship with suppliers (mean = 4.21; std. 1.436) and they also had green supply chain management initiatives (mean = 4.23, std. 1.463). They believed that the suppliers usually offer medicines with less impact on the environment (mean = 3.71, std. 1.774). However, they also had doubts on whether they consider environmental standards while selling their products (mean = 3.56; std. 1.910), or suppliers are proactive in managing returned unwanted medications (mean = 3.48; std. 1.777). Overall, the pharmaceutical suppliers' flexibility would highly affect GSCM practices of EPSS with mean value 3.84 with std. 1.072. The deviation also indicates they had extreme stands in regards to suppliers' proactiveness, environmental concern, offering medicines with less impact and

reverse logistics. This implies that the respondents had extreme stands regarding the suppliers' flexibility in supporting green supply chain management initiatives of buyers.

4.2.3. The Role Customer Demand in Determining GSCM Practices

Table 7. Description of Customer Demand (N = 228)

The Role of Customer Demand	Mean	Std.
The customers have better awareness regarding the medication's impact on their environment.	4.17	1.335
Customers pressurize suppliers to deliver environment-friendly medicines.	3.43	1.484
The customers have the habit to return unused or unwanted medicines to certified waste disposal companies.	3.49	1.613
The customers have positive image to EPSS's reputation.	3.52	1.563
The customers often dispose unused medicines properly.	2.91	1.737
Average Mean	3.50	1.072

Source: Own Survey, 2023

Referring the results in Table 7, the respondents agreed that the customers have better awareness regarding the medication's impact on their environment (mean = 4.17; std. 1.335). Nonetheless, the respondents showed their slight level of agreement regarding the customers' pressurizing suppliers to deliver environment-friendly medicines (mean = 3.43; std. 1.484); consumer's habit of returning unused or unwanted medicines to certified waste disposal companies (mean = 3.49; std. 1.613); and the customers have positive image to EPSS's reputation (mean = 3.52; std. 1.563). The customers often dispose unused medicines properly (mean = 2.91; std. 1.737) is among the attributes that the respondents had neutral stand. Overall, the customer's demand of environment-friendly supply of pharmaceuticals was also found to be one of the factors affecting GSCM practices of EPSS with mean = 3.50, Std. 1.072. This also implies that disposal of unused/unwanted medicines, and seeking environment-friendly pharmaceuticals affected their perception towards the green supply chain management initiative.

4.2.4. The Role Staff Competence in Determining GSCM Practices

Referring the results in Table 9, the majority of the respondents were slightly agreed staff have knowledge regarding green supply chain management (mean = 3.69; std. 1.508) and usually they take appropriate training on green supply chain management (mean = 3.74; std. 1.633). They also admitted

that the staff are less committed in reducing unnecessary cost due to poor operation (mean = 3.62; std. 1.584), and grasp the green supply strategy of EPSS (Mean = 3.52; std. 1.566). The staff usually facilitates smooth operation to escalate their goals of service quality level (mean = 3.70; std. 1.508).

Table 8. Description of Staff Competence (N = 228)

The Role of Staff Competence	Mean	Std
The staff usually facilitates smooth operation to escalate service quality level	3.70	1.508
The staff have good knowledge regarding green supply chain management.	3.69	1.374
The staff usually take appropriate training on green supply chain management.	3.74	1.653
The staff are committed in reducing unnecessary cost due to poor operation.	3.62	1.584
The staff fully grasp the green supply management strategy of EPSS.	3.52	1.566
Average Mean	3.65	1.054

Source: Own Survey, 2023

The overall staff competence of EPSS was perceived as a factor affecting GSCM practices of EPSS with mean = 3.65. A high variation (std. = 1.054) in their stand was also observed as the standard deviation was above the threshold value (std = 1.000). This also indicates that staff competence in terms of understanding the initiative, reducing operational cost, acquiring relevant training, and ambition to escalate the level of service quality affects the perception of the respondents towards green supply chain management initiative of EPSS.

4.2.5. The Role Management Support in Determining GSCM Practices

Table 9. Description of Management Support (N = 228)

The Role Management Support	Mean	Std
Managers promote staff empowerment through support at management level	3.48	1.864
Managers facilitate employee involvement through culture shifts	3.50	1.745
Managers institutes reward incentive systems which affect staff performance	3.54	1.734
Managers provide training to increase communication to promote teamwork	3.56	1.685
Average Mean	3.52	1.278

Source: Own Survey, 2023

Referring Table 9, the results show the perception of the respondents towards the management support. The majority of the respondents slightly agreed with managers promote staff empowerment through support at management level (mean = 3.48; std. 1.864); facilitate employee involvement

through culture shifts (mean = 3.50; std. 1.745); institutes reward incentive systems which affect staff performance (mean = 3.54; std. 1.734); and provide training to increase communication to promote teamwork (mean = 3.56; std. 1.685). The overall management support at EPSS was also found to be the factor that would highly affect GSCM practices of the company with mean 3.52 with std. 1.278. The deviation still indicates the high variation of perception towards the attributes of the management support. This implies that the staff didn't have common understanding regarding the managements' effort to promote empowerment, involvement, incentivize and promoting teamwork despite they affected their perception.

4.2.6. The Role Organizational Capacity in Determining GSCM Practices

Table 10. Description of Organizational Capacity (N = 228)

The Role organizational capacity	Mean	Std.
The current organizational structure supports green supply initiatives	3.99	1.571
EPSS has good organizational structure capable of executing its strategy	3.47	1.566
The current organizational structure accommodates sufficient human resource for the implementation of the green supply chain management.	3.42	1.750
The structure promotes decentralized management system to facilitate operations	3.61	1.813
Average Mean	3.62	1.219

Source: Own Survey, 2023

The respondents were asked about how the managers empowered their staff. The results in Table 10 shows that the current organizational structure supports green supply initiatives (mean 3.99, std. 1.571) and the structure promotes decentralized management system to facilitate operations (mean 3.61, std. 1.813). Nonetheless, the respondents slightly agreed that the current organizational structure accommodates sufficient human resource for the implementation of the green supply chain management (mean 3.42, std. 1.750) and EPSS has good organizational structure capable of executing its strategy (mean 3.47, std. 1.566). The overall organizational capacity of EPSS was also found to be the factor affecting GSCM practices of the company as the mean value scored 3.62 with std. 1.219. The respondents' perception towards the organizational capacity had a high variance as the deviation was found over the threshold (std. = 1.000). It has an implication that having the capability to support the initiative, execute the strategy, assure availability of sufficient human resource affected their perception towards the initiative.

4.2.7. Overall Green Supply Chain Management Practices

Table 11. Description of Green Supply Chain Management (N = 228)

Overall GSCM Practices	Mean	Std
Green supply chain management has brought more customer satisfaction	3.42	1.350
The green supply chain management promotes the image of EPSS.	4.21	.974
The implementation of the green supply chain management improves financial performance of EPSS by utilizing budget effectively.	4.23	.866
The green supply chain management contributes for eco-friendly operation.	3.41	1.362
Overall, the green supply chain management initiative improves the profitability of EPSS.	3.46	.776
Average Mean	3.75	.845

Source: Own Survey, 2023

Based on results of green supply chain management as shown in Table -11, on average, the respondents agreed that the green supply chain management initiative of EPSS is perceived positive as the average mean value scored 3.75 with std. .845. Specifically, the respondents strongly felt the green supply chain management promotes the image of EPSS (mean = 4.21; std. 1.350) and the implementation of the green supply chain management improves financial performance of EPSS by utilizing budget effectively (mean = 4.23; std. .866). Nonetheless, they slightly agreed with the initiative contributes for eco-friendly operation (mean = 3.41; std. 1.362); has brought more customer satisfaction (mean = 3.42; std. 1.350); and the overall initiative improves the profitability of EPSS. In general, the respondents had moderate positive perception towards the green supply chain management initiatives of EPSS which requires further attention of the management for better improvement in the future.

4.3. Inferential Analysis

Inferential statistics can help to provide explanations for a situation or phenomenon. It allows researchers to draw conclusions based on extrapolations and is thus fundamentally different from descriptive statistics, which simply summarize the data that has been measured (Hair, 2010). In this study, inferential statistics are adopted to examine the relationship among factors affecting green supply chain management. To do so, correlation tests, the assumption for regression model tests, and

finally multi-regression analysis in terms of model summary, ANOVA test, and beta coefficient determination were performed to address the study objectives.

4.3.1. Correlation Test

A correlation coefficient is a useful tool for summarizing the relationship between variables with a single number ranging from -1.0 to 1.0 (Hair, 2010). It relies on correlation to assess the direction and strength of the relationship between variables. If the correlation coefficient falls between 0.1 and 1.0, the coefficient (r) is weak at 0.29; moderate at 0.3 to 0.49; and strong at >0.5 relationship between variables. In this study, Pearson correlation coefficient was calculated to determine the relationship between the variables, statistical significance at the level of 95% confidence interval and significance at $p < .05$. Pearson correlation test is more appropriate for examining the relationship among categorical/ ordinal data.

Table 12. Spearman rho Correlation Matrix

	ORG	SUP	STA	CUS	MCO	GOV	GSCM
Organizational Capacity - ORG	1						
Suppliers' Flexibility - SUP	.250**	1					
Staff Competence - STA	.343**	.132*	1				
Customer's Demand - CUS	.189**	.315**	.459**	1			
Management Support - MCO	.430**	.500**	.226**	.266**	1		
Government Policy - GOV	.196**	.344**	.329**	.307**	.345**	1	
Green Supply Chain Mgmt. - GSCM	.482**	.436**	.568**	.508**	.557**	.459**	1
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source, Own Survey, 2023

The results of the correlation test in Table 12 show the relationship among government policy, supplier flexibility, customer demand, staff competence, management support, organizational capacity and green supply chain management. The six factors, specifically, organizational capacity ($r = .482$) and supplier flexibility ($r = .436$) had positive moderate relationship with GSCM while staff competence ($r = .568$), customer demand ($r = .508$) and management support ($r = .557$) showed positive strong relationship with GSCM. There is also a positive moderate relationship between government policy and GSCM ($r = .459$). This implies that any change in the six factors ends up with direct and proportionate changes in GSCM initiative of EPSS. These variables can be taken as good predictors of GSCM initiative.

4.3.2. The Assumptions for Testing Regression Analysis

The test of assumptions should be done because violations of the assumptions affect consequent use of multivariate statistical methods (Hair, 2010). There are many assumptions to consider but the researcher focused on the major ones that are easily tested with SPSS.

4.3.2.1. Multicollinearity

In regression, multi-collinearity occurs when independent variables in the regression model are more highly correlated with each other than with the dependent variable. Hair (2010) argued that correlation coefficient below 0.90 may not cause serious multi-collinearity problem. But also, Tabachnick and Fidell (1996) suggests that the correlation coefficient should not be below 0.7 for a better inference from the study. Correlations were examined by means of the bivariate correlation measure in SPSS and all the coefficients of correlation are below 0.8. Multi-collinearity can also be detected using tolerance value and variance inflator factor (VIF) value.

Table 13: Collinearity Statistics

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Government Policy	.771	1.298
	Supplier Flexibility	.683	1.465
	Customer Demand	.713	1.403
	Staff Competence	.683	1.465
	Management Support	.627	1.595
	Organizational Capacity	.748	1.337
a. Dependent Variable: GSCM			

Source: SPSS output, 2023

Thus, as revealed from table 13, the multi-collinearity does not exist among all the independent variables provided that the tolerance value of all the independent variables is greater than 0.1 and the VIF values of all the independent variables are less than 10.

4.3.2.2. Test of Normality

Test of normality is another assumption to be tested before running regression. The normal distribution is detected based on skewness and kurtosis statistics. As proposed by George and Mallery (2010), the acceptable range for normality for both statistics is between -2 and +2.

Table 14: Normality of Distribution Using Descriptive Statistics (Skewness and Kurtosis)

Descriptive Statistics					
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Government Policy	228	-.877	.161	-.113	.321
Supplier's Flexibility	228	-.691	.161	-.781	.321
Customer Demand	228	-.338	.161	-.913	.321
Staff Competence	228	-.353	.161	-1.060	.321
Management Support	228	-.577	.161	-1.043	.321
Organizational Capacity	228	-.581	.161	-.726	.321
Green Supply Chain Management	228	.038	.161	-1.264	.321
Valid N (listwise)	228				

Source: SPSS output, 2023

Therefore, as depicted in table 14, all variables 'values of kurtosis and skewness are almost within the acceptable range for normality. So, this implies that all items show close to normal distribution considering the criteria of skewness and kurtosis values between -2 and 2. Therefore, the data used in this study could be assumed to be normally distributed. In addition to the Skewedness and Kurtosis, the normality probability plots were plotted to assess normality. The P-P plots showed in figure 2 were approximately a straight line instead of a curve.

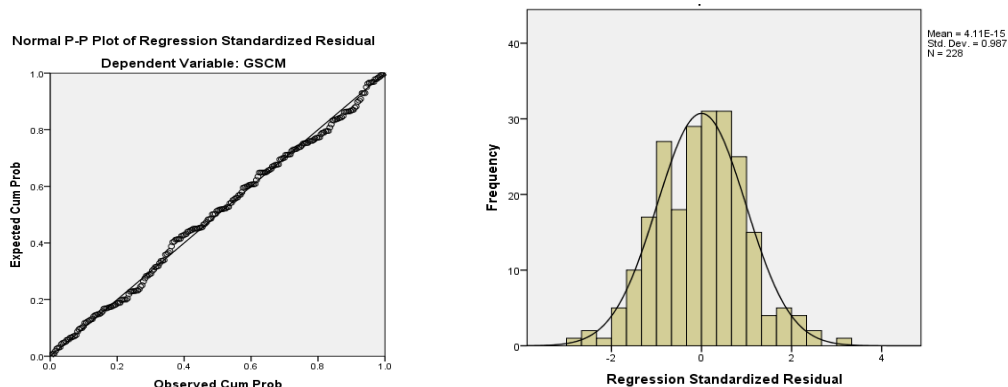


Figure 2: Point Plot and Frequency Distribution of Standardized Residuals

4.3.2.3. Linearity

The linearity assumption can easily be checked using scatterplots or residual plots: plots of the residuals vs. either the predicted values of the dependent variable or against (one of) the independent variable(s). The scatter plots of standardized residuals versus the fitted values for the regression models were visually inspected from figure 3.

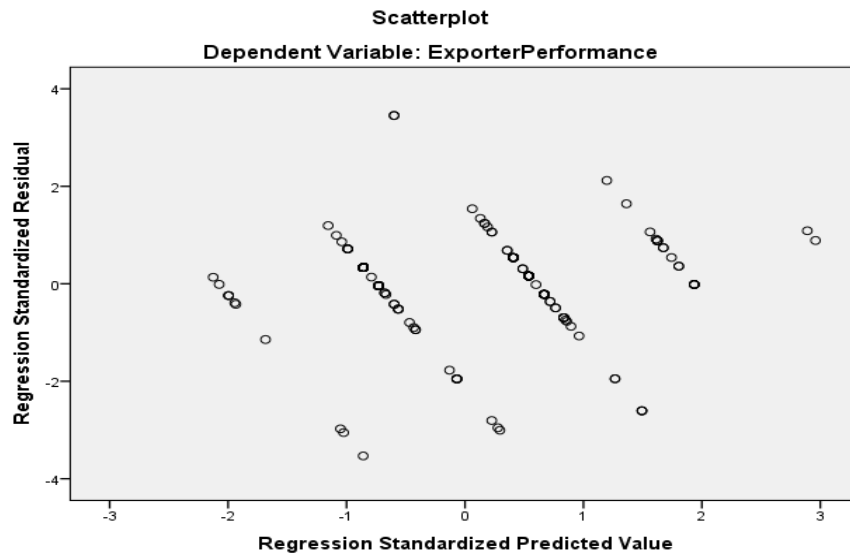


Figure 3: Frequency Distribution of Standardized Residuals

4.3.3. Multiple Linear Regression Analysis

Multiple linear regression model was used in order to determine the explanatory power of the independent variables (government policy, supplier flexibility, customer demand, staff competence, management support, organizational capacity) on dependent variable (green supply chain management).

Table 15. Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.781 ^a	.610	.599	.53517

a. Dependent Variable: GSCM

b. Predictors: (Constant), ORG, MCO, STA, CUS, SUP, GOV

The value of R indicates the value of the multiple correlation coefficients between the independent and the dependent variable, with a range from 0 to 1, a larger value indicating a larger correlation and 1 representing an equation that perfectly predicts the observed value. Thus, from the model summary (R=.781) indicated that, the linear combination of the six independent variables strongly predicted the GSCM. Likewise, the value of the R-Square indicates the proportion of variance that can be explained in the dependent variable by the linear combination of the independent variables. In another word, R^2 (.610) is a measure of how much of the variability in the outcome is accounted for by the predictors. Therefore, as indicated in the table 16, the linear combination of independent variables predictors' i.e., government policy, supplier flexibility, customer demand, staff competence, management support, and organizational capacity explains 61% of the variance in GSCM and the remaining 40% is explained by extraneous variables, which have not been included in this model.

Table 16: ANOVA Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.910	6	16.485	57.558	.000 ^b
	Residual	63.296	221	.286		
	Total	162.206	227			
a. Dependent Variable: GSCM						
b. Predictors: (Constant), ORG, MCO, STA, CUS, SUP, GOV						

Source: SPSS output, 2023

The ANOVA table shows the overall significance/ acceptability of the model from a statistical perspective. The output of the ANOVA analysis (F-value = 57.558) shows whether there is a statistically significant difference between the group means. It can be seen that the significance value is 0.000 (i.e., $p = .000$), which is below 0.05. Therefore, there is a statistically significant relationship between the variables which indicates the variation explained by the model is not due to chance. So, it shows that the acceptability of the model.

Table 17: Regression analysis of independent and dependent variable

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.554	.184		3.009	.003
	Government policy	.110	.038	.139	2.900	.004
	Suppliers Flexibility	.083	.036	.117	2.292	.023
	Customers Demand	.149	.039	.189	3.789	.000
	Staff competence	.242	.041	.301	5.924	.000
	Management support	.170	.035	.257	4.848	.000
	Organizational capacity	.122	.034	.176	3.627	.000
a. Dependent Variable: GSCM						

Source: SPSS output, 2023

Table 17 revealed that the relationship between dependent and independent variables. Accordingly, it shows the constant beta value (β) and the p-value of the variables to examine the significance of the hypothesis. The significance level of each variable (P-value) for all independent variables were below 0.05, and their standardized coefficients of government policy, supplier flexibility, customer demand, staff competence, management support, and organizational capacity value are 0.139, 0.117, 0.189, 0.301, 0.257 and .176 respectively. The p-value of all the independent variables below 0.05 implies that the independent variables have a significant relationship with the dependent variable.

Based on these results, the regression equation that predicts GSCM based on the linear combination of government policy, supplier flexibility, customer demand, staff competence, management support, and organizational capacity is as follows:

$$GSCM = 0.554 + 0.139GOV + 0.117SUP + 0.189CUS + 0.301STA + 0.257MCO + 0.176ORG$$

Where:

GSCM	- Green Supply Chain Management;	GOV	- Government Policy;
SUP	- Supplier Flexibility;	CUS	- Customer Demand,
STA	- Staff Competence;	MCO	- Management Support and
ORG	- Organizational Capacity	e	= error term;

β_0 = constant, term; $\beta_{1,2,3,4,5}$ = coefficient terms.

From the Multiple Linear Regression equation, the interpretation as follows. The constant 0.554 shows no effect of the six variables on GSCM. It means that, in a condition where all independent variables are zero, GSCM as dependent variable is predicted to be 0.554. In condition where other variables are constant, if government policy, supplier flexibility, customer demand, staff competence, management support, and organizational capacity is predicted to be increased by 0.139, 0.117, 0.189, 0.301, 0.257 and .176 units respectively. These imply that the six factors are good predictors of GSCM. On summary, based on these results, all the six proposed hypotheses (H1 – H6) are supported.

Table 18. Summary of the Research Hypothesis Test Result

	Alternate Hypothesis	Result
H1a	Government policy has positive significant effect on green supply chain management.	Supported
H1b	Suppliers have positive significant effect on green supply chain management.	Supported
H1c	Consumers have positive significant effect on green supply chain management.	Supported
H1d	Management support has positive significant effect on green supply chain management.	Supported
H1e	Employee competence has positive significant effect on green supply chain management.	Supported
H1f	Organizational capacity has positive significant effect on green supply chain management	Supported

Source: SPSS output, 2023

CHAPTER FIVE

4. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the summary of major findings, their respective conclusions and possible recommendations are presented.

5.1. Summary of Major Findings

In this study, mainly investigated the relationship among the six factors namely government policy, supplier flexibility, customer demand, staff competence, management support, organizational capacity and green supply chain management. Based on the data analyses, major findings of the results are summarized as follows:

1st objective – the effect of government policy on GSCM

- The government facilitates training opportunities (mean 4.26), and provides technical support to adopt green supply management (mean = 4.21). However, authorities set less flexible/innovative policies that support green supply chain management (mean 3.63).
- It was found that there is a positive moderate relationship between government policy GSCM ($r = .459$), but the least contribution to GSCM ($Beta = 0.139$ at $p < .05$).

2nd Objective – the effect of supplier's flexibility on GSM

- The EPSS has good relationship (mean = 4.21) with suppliers, but they had doubts on whether they consider environmental standards while selling their products (mean = 3.56), and suppliers are proactive in managing returned unwanted medications (mean = 3.48).
- Supplier's flexibility had also a positive moderate relationship ($r = .436$). Nonetheless, in this case, it had the least effect on GSCM ($B = 0.117$).

3rd Objective – the effect of customer demand on GSCM

- The customers had poor habit of returning unused or unwanted medicines to certified waste disposal companies (mean = 3.49) and they had positive image to EPSS's reputation (mean = 3.52).
- Consumer's demand showed relatively the positive strongest relationship with ($r = .508$); and had also relatively the highest statistically significant effect on GSCM ($B = .189$), next to management support and staff competence.

4th Objectives – the effect of staff competence on GSCM

- The staff usually facilitates smooth operation to escalate their goals of service quality (mean = 3.70) but less committed in reducing unnecessary cost due to poor operation (mean = 3.62),
- It was also found that staff competence also had a positive strong relationship with ($r = .568$) and also had the highest effect on GSCM ($B = 0.301$).

5th Objective – the effect of management support on GSCM

- The managers less facilitate employee's involvement through GSCM (mean = 3.50) and institutes reward incentive systems to promote staff performance (mean = 3.54).
- Management support had also positive strong relationship ($r = .557$) as well as the highest effect ($B = .257$) with GSCM, next to staff competence.

6th Objectives - the effect of organizational capacity on GSCM

- The current organizational structure promotes decentralized management system to facilitate operations (mean 3.61). Nonetheless, it accommodates insufficient human resource for the implementation of the green supply chain management (mean 3.42).
- Organizational capacity has positive moderate relationship with ($r = .459$), and it had relatively less significant effect on GSCM ($B = .176$ at $p < .05$).

5.2. Conclusions

The environmental deterioration demands business organizations for responding proactively to sustain their business along with contributing positively to the betterment of the eco-system. The sensitivity of the pharmaceutical industry makes the initiative more difficult as medical stuffs need extra precaution and safety results in prompt delivery. Access to medicine is a priority concern for citizens. It needs to be available at all times in adequate amounts, in appropriate dosage and quality with affordable price for individuals and communities. To ensure the people to have access to essential and quality medicines, a functioning and sustainable supply chain is mandatory. In this regard, green supply chain management (GSCM) practices are important for firms because they help in increasing profitability by reducing environmental and health risks, which are major customer concerns, and make a firm more sustainable and resilient. However, the implementation is complicated which suffers from a number of internal and external factors like government policy, supplier flexibility, customer demand, staff competence, management support, and organizational capacity. The aim of this study is thus to examine the individual effect of these factors on GSCM imitative of EPSS.

The results of the findings revealed that staff competence, management support, and customer demand had relatively the highest contribution to the effective implementation of the GSCM initiative. The findings from this research also establish that the organizational factor is the most important factor influencing the adoption of GSCM. Having high caliber workforce easily understand the importance of green initiative and exert efforts to reduce costs due to unnecessary workflows. Skilled and knowledgeable employees can promote the adoption of GSCM by improving working processes and labor productivity. Management support and commitment in regards to utilizing innovative technologies as well as allotting sufficient budget to the initiative plays significant role on the betterment of the environment as well as sustainability of the business. The government plays also important role in setting flexible and innovative policies and procedures to facilitate cost effect pharmaceutical supplies to the society to address the demand of consumers along with continuous awareness creation on appropriate disposal of unwanted/unused medicines.

On the other hand, factors related to government policy, supplier flexibility and organizational capacity had relatively less contribution on GSCM initiative of EPSS. The monopolization of the pharmaceutical supplies by the government hinders its appetite for competition with other strategic

suppliers. However, innovative policies stimulate the success rate of the initiative. Same vein, supplier flexibility also contributed less to the betterment of the green initiative which might arise from giving less attention to the pharmaceutical supply third-world countries, a place where environmental degradation is not a hot issue. The capacity of EPSS to handle its both business strategies and the requirement of green supply chain imitative would be sufficient but effective allocation and utilization of budget and human resource adversely affect the business sustainability of EPSS as well as the wellness of the environment as a result. It can be concluded that the adoption of GSCM initiative has gained contemporary research significance in the context of Ethiopian pharmaceutical Supply Service. Environment, governmental, organizational and individual factors play significant contribution to the improvement of the environment and the business sustainability well as.

5.3. Recommendations

Based on the major findings and conclusions, the following possible recommendations are suggested:

- The influence of government policy on GSCM practices of EPSS was examined. It was found that government policy had positive and significant effect on GSCM. The government officials in the health sector are advised to intervene by setting flexible and workable environmental policies to support green and smooth flow of inbound logistic as the country is more import-dependent.
- The relationship between suppliers' flexibility and GSCM practices was also investigated. It was found that supplier's flexibility had a positive and significant effect on GSCM practices. In this regard, EPSS has good relationship with suppliers who had poor reputation in considering environmental standards of the buyer country. The management of the EPSS should liaison with prominent pharmaceutical suppliers with proactive in managing returned unwanted medications as well.
- The effect of customer's demand affordable and safe pharmaceutical products was also assessed to examine whether it has a positive significant effect on GSCM practices. It was found that customer demand had positive significant contribution to the GSCM practices of EPSS. However, customers had poor habit of returning unused or unwanted medicines to certified waste disposal companies. The management of the EPSS should cooperate with waste management companies in Addis Ababa to collect and dispose unused/unwanted medicines from every household.
- The influence of staff competency on GSCM practices of EPSS was also investigated. Employees competency has also positive and significant contribution. Despite employees usually try to facilitate smooth operation, they are less committed in reducing unnecessary operational costs. Thus, the managers of quantification & market shaping, logistics and operation departments should implement business re-engineering system by incorporating KPI and/or BPR performance evaluation systems to mitigate loss of unnecessary costs. The appraisal should be accompanied with reward/incentives along with developing their capacity.
- The effect of organizational capacity on GSCM practices of EPSS was also examined. It was found that organizational capacity influenced the GSCM practices positively and

significantly. In this regard, current organizational structure promotes decentralized management system to facilitate operations. Nonetheless, it accommodates insufficient human resource for the implementation of the green supply chain management. HR managers of EPSS should revise the current organizational structure in line with GSCM imitative.

5.4. Limitations and Suggestion for Future Study

This study provides insight into the factors affecting GSCM initiatives at Ethiopian Pharmaceutical Supply Service in Addis Ababa. However, the study is not without its limitations: among the majors, the results cannot be generalized to other companies in the pharmaceutical industry as the results are unique to EPSS. Second, the results on the factors affecting GSCM are limited to three departments within EPSS, therefore it does not give the holistic view of the entire organization. Third, it cannot be generalized to EPSS as a whole and only EPSS's quantification & market shaping, procurement and logistics departments, on which the aim of this study focused. There are a number of factors that affect GSCM like stakeholder engagement, technology adoption and environmental related factors. Thus, further study is required which includes the aforementioned factors so as to understand the bigger picture of the green supply chain management initiative.

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APPENDICES

Appendix – I Survey Questionnaire

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

Questionnaire to be filled by Ethiopian Pharmaceutical Supply Service's Employees

Dear Participant,

My name is Eden Adam Tekeste, a prospective graduate student of Logistics and Supply Chain Management at School of Commerce, Addis Ababa University, Addis Ababa, Ethiopia. I am currently conducting my research entitled “Factors Affecting Green Supply Chain Management in the case of Ethiopian Pharmaceutical Supply Service in Addis Ababa.” The purpose of this questionnaire is to investigate the major factors that affect the green supply chain management initiative of Ethiopian Pharmaceutical Supply Service. Identifying and examining their positive or negative effect on the implementation of green pharmaceutical supplies in the country is very important to assure on-time delivery of medicines and medical equipment to the needy. Your valuable feedback that the student researcher is going to use to examine the role of the six factors namely government policy, supplier flexibility, customer demand, staff competence, management support and organizational capacity on green supply chain management of the organization. As a result, the student researcher recommends valuable suggestions for the improvement of green pharmaceutical supply management in the field of pharmaceutical industry. The study is purely for academic purposes and thus does not affect you in any case. Your genuine, frank, timely response is vital for the success of the study. Therefore, I kindly request you to respond to each question carefully and oblige.

Note: - No need of writing your name. Where alternative answers are given, encircle your choice and put “x” mark where necessary; and please return the completed questionnaire in time.

Thank you in advance for your cooperation and timely response.

EDEN ADAM TEKESTE

Mobile: +251900830616

e-mail: eden16adam@gmail.com

General Information

Your Participation is Voluntary

Do not write your name on the Questionnaire

1. Demographic Profile of Respondents

Direction: The following statements are about your personal information. Please write the necessary information on the blank space provided and, in the optional items, indicate your answer by putting a “x” mark in the box.

1. Sex ☐ Male ☐ Female
2. Age (Years) ☐ 21 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60
3. Education ☐ High School ☐ Diploma ☐ Degree ☐ Masters +
☐ Other, please specify
4. Department ☐ Planning ☐ Procurement ☐ Logistics
5. Position ☐ Manager ☐ Supervisor ☐ Senior (≥ 3 years) ☐ Junior
6. Service year ☐ 1- 5 ☐ 6 - 10 ☐ Above 10

Part – II Questions related to factors affecting green supply chain management.

Kindly rate the following statements below as to the extent to which you agreed or disagreed with the statements described under each attribute based on your perception. Using the scale of 1 up to 5, tick in the appropriate box as to the extent of your agreement or disagreement with the statements given. Where: Scale 1= strongly disagreed; 2= disagreed; 3= Neither agreed nor disagreed; 4= agreed; 5= strongly agreed.

1. Factors	Likert Scale				
1.1 Government Policy	1	2	3	4	5
The government provides technical support to adopt green supply management.					
The government facilitates training opportunities.					
The government allocates sufficient budget to support green supply management.					

The government amends its legislation on environmental issues continuously					
The government sets flexible/innovative policies that support green supply.					
1.2 Supplier Flexibility	1	2	3	4	5
EPSS has good relationship with suppliers					
The suppliers usually offer medicines with less impact on the environment.					
The suppliers have green supply chain management initiatives.					
The suppliers are proactive in managing returned unwanted medications.					
The suppliers consider environmental standards while selling their products.					
1.3 Customer Demand	1	2	3	4	5
The customers have better awareness regarding the medication's impact on their environment.					
Customers pressurize suppliers to deliver environment-friendly medicines.					
The customers have the habit to return unused or unwanted medicines to certified waste disposal companies.					
The customers have positive image to EPSS's reputation.					
The customers often dispose unused medicines properly.					
1.4 Staff Competence	1	2	3	4	5
The staff usually facilitates smooth operation to escalate service quality level					
The staff have good knowledge regarding green supply chain management.					
The staff usually take appropriate training on green supply chain management.					
The staff are committed in reducing unnecessary cost due to poor operation.					
The staff fully grasp the green supply management strategy of EPSS.					
1.5 Management Support	1	2	3	4	5
Managers promote staff empowerment through support at management level					
Managers facilitate employee involvement through culture shifts					
Managers institutes reward incentive systems which affect staff performance					

Managers provide training to increase communication to promote teamwork					
1.6 Organizational Capacity	1	2	3	4	5
The current organizational structure supports green supply initiatives					
EPSS has good organizational structure capable of executing its strategy					
The current organizational structure accommodates sufficient human resource for the implementation of the green supply chain management.					
The structure promotes decentralized management system to facilitate operations					
The current organizational structure supports green supply initiatives					
2. Green Supply Chain Management	1	2	3	4	5
Green supply chain management has brought more customer satisfaction					
The green supply chain management promotes the image of EPSS.					
The implementation of the green supply chain management improves financial performance of EPSS by utilizing budget effectively.					
The green supply chain management contributes for eco-friendly operation.					
Overall, the green supply chain management initiative improves the profitability of EPSS.					

Many Thanks for Your Valued Time!!!

Appendix – II SPSS Output

		Correlations						
		GOP	SUF	CUD	STC	MGS	ORC	GSCM
GOP	Pearson Correlation	1	.344**	.307**	.329**	.345**	.196**	.459**
	Sig. (2-tailed)		.000	.000	.000	.000	.003	.000
	N	228	228	228	228	228	228	228
SUF	Pearson Correlation	.344**	1	.315**	.132*	.500**	.250**	.436**
	Sig. (2-tailed)	.000		.000	.046	.000	.000	.000
	N	228	228	228	228	228	228	228
CUD	Pearson Correlation	.307**	.315**	1	.459**	.266**	.189**	.508**
	Sig. (2-tailed)	.000	.000		.000	.000	.004	.000
	N	228	228	228	228	228	228	228
STC	Pearson Correlation	.329**	.132*	.459**	1	.226**	.343**	.568**
	Sig. (2-tailed)	.000	.046	.000		.001	.000	.000
	N	228	228	228	228	228	228	228
MGS	Pearson Correlation	.345**	.500**	.266**	.226**	1	.430**	.557**
	Sig. (2-tailed)	.000	.000	.000	.001		.000	.000
	N	228	228	228	228	228	228	228
ORC	Pearson Correlation	.196**	.250**	.189**	.343**	.430**	1	.482**
	Sig. (2-tailed)	.003	.000	.004	.000	.000		.000
	N	228	228	228	228	228	228	228
GSCM	Pearson Correlation	.459**	.436**	.508**	.568**	.557**	.482**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	228	228	228	228	228	228	228

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	GOP	.771	1.298
	SUF	.683	1.465
	CUD	.713	1.403

STC	.683	1.465
MGS	.627	1.595
ORC	.748	1.337

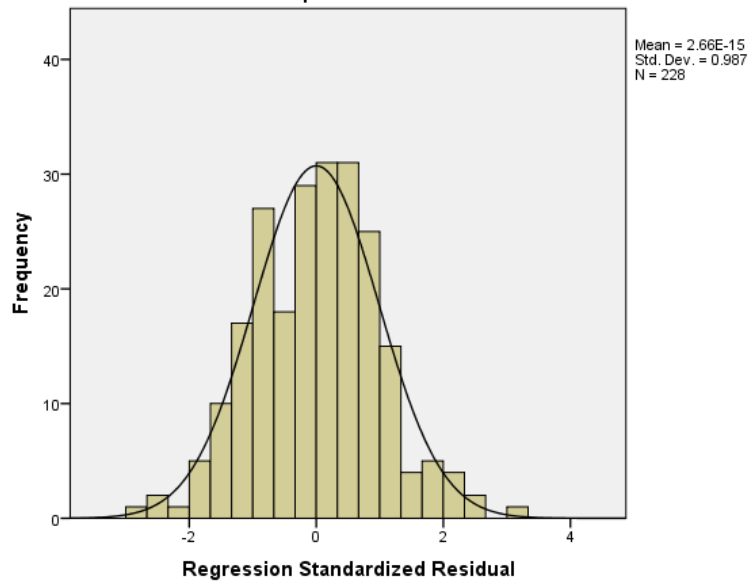
a. Dependent Variable: GSCM

Descriptive Statistics

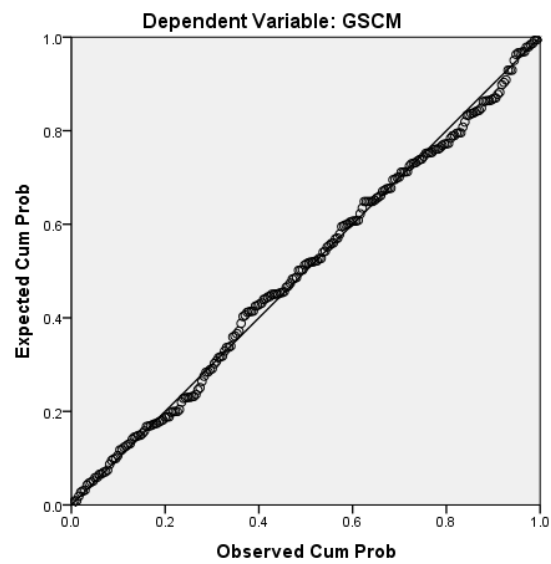
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
GOP	228	-.877	.161	-.113	.321
SUF	228	-.691	.161	-.781	.321
CUD	228	-.338	.161	-.913	.321
STC	228	-.353	.161	-1.060	.321
MGS	228	-.577	.161	-1.043	.321
ORC	228	-.581	.161	-.726	.321
GSCM	228	.038	.161	-1.264	.321
Valid N (listwise)	228				

Histogram

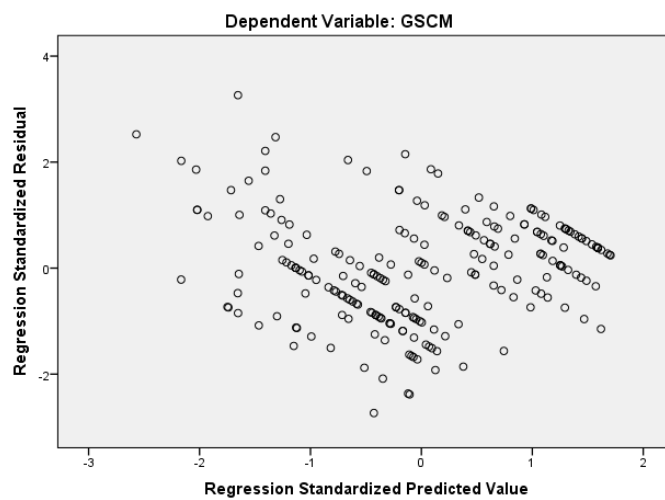
Dependent Variable: GSCM



Normal P-P Plot of Regression Standardized Residual



Scatterplot



Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.781 ^a	.610	.599	.53517

a. Predictors: (Constant), ORC, CUD, GOP, SUF, STC, MGS

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.910	6	16.485	57.558	.000 ^b
	Residual	63.296	221	.286		
	Total	162.206	227			

a. Dependent Variable: GSCM

b. Predictors: (Constant), ORC, CUD, GOP, SUF, STC, MGS

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.554	.184		3.009	.003
	GOP	.110	.038	.139	2.900	.004
	SUF	.083	.036	.117	2.292	.023
	CUD	.149	.039	.189	3.789	.000
	STC	.242	.041	.301	5.924	.000
	MGS	.170	.035	.257	4.848	.000
	ORC	.122	.034	.176	3.627	.000

a. Dependent Variable: GSCM

