



## Stakeholder Engagement in Ghana's Pharmaceutical Policy for Supply Chain Sustainability

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**Abstract: Background:** Limited empirical research exists on sustainable supply chain management in underdeveloped nations. This study focuses on pharmaceutical companies in southern Ghana, aiming to address the lack of practical information on environmentally friendly practices in meeting global pharmaceutical demand. **Aim:** This study examines the degree and form of stakeholder engagement in Ghana's Pharmaceutical Policy for Supply Chain Sustainability. **Setting:** The study focused on top executives in Ghana's pharmaceutical industry and government institutions overseeing pharmaceutical regulations. **Method:** This qualitative study explores the policy framework of upstream pharmaceutical sustainable supply chain management in Ghana. Targeting top managers in the pharmaceutical industry, 18 purposively sampled interviewees provided data. Thematic analysis revealed insights through collaboration on the issue of sustainable supply chain management policy framework. **Result:** The study identified global bodies like World Health Organization (WHO) and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) shaping global pharmaceutical sustainability policies. In Ghana, implemented policies encompass green procurement, healthcare waste management, and recycling. Challenges include transparency gaps, supplier engagement, regulatory complexity, limited resources, and stakeholder collaboration. **Conclusion:** The adoption of sustainable supply chain practices is crucial for the pharmaceutical industry in Ghana. Collaboration and inclusion of stakeholders are essential for the adoption of sustainable practices. Pharmaceutical companies in Ghana should collaborate with their suppliers, customers, regulators, and

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civil society organizations to promote sustainable practices throughout the supply chain. **Contribution:** The study suggests PMAG fosters robust collaboration and stakeholder involvement to advance sustainable supply chain practices in Ghana's upstream pharmaceutical industry.

**Keywords:** Collaboration; Pharmaceutical; Policy Frameworks; Stakeholder Engagement; Stakeholders; Supply Chain Management; Supply Chain Sustainability

## 1. Introduction

Key to ensuring that there is compliance to policy framework is the inclusion of key stakeholder even at the policy design state (Lemke & Harris-Wai, 2015; Masefield, et. al, 2021). Evidently, the engagement of stakeholders in pharmaceutical policy design within developing countries is still at its nascent stage. A policy framework is understood to be a document that outlines a set of guidelines or objectives that may be used in negotiations or decision-making to direct the creation of a more comprehensive collection of policies or to direct ongoing policy maintenance for an organization (Rogge & Reichardt, 2016; Ayamga, et. al, 2021). In other words, a policy framework may be thought of as a logical framework that is developed to gather and categorize policy material.

The adoption of policy framework within the pharmaceutical industry seeks to be a prudent step to consolidating the attainment of sustainable supply chain management practices within developed and developing countries (Rogge & Reichardt, 2016; Lee & Ha, 2021). The pharmaceutical industry is in charge of producing and distributing medications all over the world (Ding, 2018; Doumbia, et. al, 2021; Aulakh, Settanni & Srail, 2022). A common goal of the pharmaceutical value chain's components is ensuring that patients and consumers receive the right medication at the right time and from a convenient source. A complicated value chain, which includes the production of the drug, distribution to the dispensing point, and dispensing to the end-user, is necessary to ensure the achievement of these three key components (Bhaskaran & Venkatesh, 2019; Hoffman & Bowditch, 2020; Tobinco Pharmaceuticals Limited, 2022). Therefore, policy design frameworks should include stakeholders at the production level, the distributors, and the ultimate end-users or beneficiaries. As sustainability is pivoted on three thematic pillars (that is society, economic, and environment), ignoring end-users who are within the society will bring about the future challenge of adoption and implementation (Koberg & Longoni, 2019; Shan, Li & Shi, 2020).

The upstream pharmaceutical industry in Ghana is the main subject of this study. Manufacturers who create medicines are part of the pharmaceutical sector, together

with wholesalers, distributors, retailers, and customers. There is growing societal expectations on companies to protect the environment is becoming more intense and complex given the rise in several global pandemic and crisis. Demand for drugs during pandemics has increased from business-to-business level and business to customer demand (Hussain, et. al, 2020; Ammassari, et. al, 2021; Farhoudian, et. al, 2021). Pharmaceutical companies are therefore under intense pressure to produce and supply drugs on time to customers, while at the same time operate within a designed industry policy framework.

Previous research has shown that adoption of sustainable supply chain solutions in the upstream pharmaceutical sector is still low and occasionally voluntary (Thorlakson, De Zegher & Lambin, 2018; Muñoz-Torres, et al, 2020). Empirical studies on upstream sustainable supply chain management policy framework have been lacking even though there are some efforts to assess SSCM practices within Ghana (Baah & Jin, 2019). A study by Adegoke et. al. (2021) examined sustainable supply chain management practices in Ghana. Additionally, the study concentrated on suppliers and manufacturers in Accra, the nation's capital. As a result, the Ghanaian pharmaceutical business received little attention. Thus, it appears that the sustainable supply chain for pharmaceuticals in emerging nations has an empirical deficit.

There are not many empirical studies on policy framework on sustainable supply chain management in developing countries. There are very limited actual data available to manufacturing businesses on how to use sustainable techniques to fulfill the demand for pharmaceutical goods throughout the world. Therefore, there is a vacuum in our understanding of how policy framework aligns with sustainable supply chain management approaches within the pharmaceutical business, particularly in developing nations. The current study aims to examine the role of the upstream pharmaceutical policy framework of Ghana on the supply chain sustainability.

## **2. Problem of the Study**

A comprehensive engagement of stakeholders for policy design and implementation within various sectors and industry in developing countries is defeating the attainment of various policy interventions and frameworks (Vicente, et. al, 2019; Sarkar, Omair & Kim, 2020). Stakeholders who are often disregarded and not included in the policy framework often do not actively participate in in the

implementation of the designed policy framework leading to failure of most adopted policy frameworks in developing countries (Scavarda, et. al, 2019; Vicente, et. al, 2019). In the instance of pharmaceutical industry where players are often focused on production and distribution, designing an industry policy framework to directing the efforts of firms towards sustainable supply chain management then becomes a challenge.

In terms of policy that direct the entire drug production and the entire supply chain in Ghana, some efforts were made with the institution of the National Drug Policy (NDP) to include various opinions and knowledge of various stakeholders at the design stage (Ministry of Health, 2004; Yevutsey, et. al, 2017). However, over the elapse of time, and the coming into force of the sustainable development policies and goals, it has become prudent to effectively stimulate the development of policy framework that the supply chain within various industry just like the upstream pharmaceutical supply chain can rely upon.

Again, challenges with implementing adopted policies abound and more so within the supply chain in developing countries (Ding, 2018). The different players within the upstream pharmaceutical industry continually complain of non-inclusion into policy design and therefore hamper policy framework implementation (Ding, 2018; Scavarda, et. al, 2019; Vicente et. al, 2019). The challenge again is that, as policy framework development for sustainability within the pharmaceutical industry is not all inclusive of key players it makes adherence very difficult.

Based on the forgoing issues, and the lack of empirical evidence of policy framework for the adoption and attainment of sustainable supply chain management practices within upstream pharmaceutical industry, this study shall therefore consider the role of the upstream pharmaceutical policy framework of Ghana on the supply chain on sustainability practices in the upstream. The following specific questions are raised:

1. What are the policies that guide supply chain sustainability practices in the pharmaceutical upstream?
2. What issues under the policies guides firms towards the attainment of sustainable supply chain practices?
3. Are there any challenges that firms encounter with existing policies on upstream pharmaceutical sustainable supply chain engagements?

### **3. Literature Review**

#### **3.1. The Pharmaceutical Industry**

The process of providing prescription pharmaceuticals to patients is referred to as the pharmaceutical supply chain (Ding, 2018; Omoush, Mohammad & Faculty, 2020). Before being stocked in retail, mail-order, and other types of pharmacies, pharmaceutical items are made and transported to wholesale distributors (Chen, Yang & Wang, 2019; Papalexi, Bamford & Breen, 2020; Sood, Mulligan & Zhong, 2021). There are several variations on this fundamental architecture due to the fact that the supply chain's players are always changing and that business relationships differ greatly by region, pharmaceutical kind, and other factors (Papalexi, Bamford & Breen, 2020; Ouf, 2021).

Although processing complex information for supply chain effectiveness is challenging due to the unique design of the pharmaceutical supply chain, the advantages are apparent. Lack of efficient information systems may lead to ineffective inventory management methods, which can have an impact on transportation costs (Shree Bhagwati, 2016; Ding, 2018; Papalexi, Bamford & Breen, 2020). Manufacturers manage the transfer of drugs from production facilities to drug wholesalers, and occasionally to retail pharmacy chains, mail-order, and specialty pharmacies, and hospital systems (Shree Bhagwati, 2016; Chen, Yang & Wang, 2019; Sood, Mulligan & Zhong, 2021). The supply chain for the pharmaceutical sector entails direct patient interaction, research and development, manufacturing, packaging, distribution to wholesalers, retailers, and pharmacies.

#### **3.2. Ghanaian Pharmaceutical Industry**

The pharmaceutical industry must be seen to be protecting the environment, society and people engaged in the process of producing the various drugs into the market. In Ghana, the Pharmacy Council plays an important role in regulating the production, distribution and supply of drugs and medical products within the country. Again, access to necessary medications for everyone, quality assurance for all pharmaceuticals on the market, a functioning and efficient supply chain, and sensible use of medicines by professionals and patients are the main aims of Ghana's pharmaceutical policy. In the national health policy, there is also a commitment to enhance the domestic pharmaceutical sector, which is detailed under health industry. The overall legal framework for the pharmaceutical sector is set by the Food and Drugs Law from 1992, amended by Act 523 in 1996. It defines the role of the food

and drugs board as separate entity under control of the Ministry of Health (MOH), responsible for regulating the sector. The Pharmacy Council is a statutory body established by an Act of Parliament, the Health Professions Regulatory Bodies Act (Act 857) to regulate the practice of Pharmacy in Ghana. Therefore, ensuring that pharmaceutical companies comply with operational standards and sustainable measures is the sole responsibility of the Pharmacy Council Ghana as supported by the Ministry of Health and the Ghana Health Service.

SSCM in Ghana's pharmaceutical industry faces several limitations that impact its effectiveness and, consequently, the industry's overall performance and profitability. These limitations stem from a variety of factors, including regulatory challenges, infrastructure deficiencies, and resource constraints (Afum, et. al, 2020; Adegoke, et. al, 2021).

One significant limitation is the complex and evolving regulatory landscape in Ghana. The pharmaceutical industry operates in a heavily regulated environment, which can lead to delays and complications in obtaining permits, licenses, and approvals for sustainable practices. Frequent changes in regulations and bureaucratic hurdles can hinder the industry's ability to adopt and implement sustainable supply chain strategies (Nsowah & Phiri, 2023; Adegoke, et. al, 2021). Infrastructure deficiencies also pose a considerable challenge. Inadequate transportation and logistics infrastructure can lead to delays and disruptions in the supply chain. This impacts the timely delivery of pharmaceutical products, potentially affecting patient access to medicines and creating inefficiencies in the supply chain (Sharma, Gupta & Jha, 2020). Resource constraints, particularly financial limitations, are another significant limitation in Ghana's pharmaceutical SSCM. Sustainable practices often require investments in technology, training, and infrastructure improvements. Smaller pharmaceutical companies may struggle to allocate the necessary resources to implement sustainable supply chain initiatives (Esfahbodi, Zhang & Watson, 2016).

### **3.3. Supply Chain Management**

The management of the flow of products and services is a component of supply chain management (SCM), which encompasses all processes that turn raw materials into completed commodities (LeMay, et. al, 2017; Langley, et. al, 2020). SCM comprises a company's supply-side activities being purposefully simplified in order to increase

customer value and achieve a competitive edge in the market (Copacino, 2019; Mukhamedjanova, 2020).

Supply chain management includes product creation, sourcing, production, logistics, and the information systems needed to coordinate these operations (Mangan & Lalwani, 2016; Mukhamedjanova, 2020; Xu & Zhao, 2022). SCM is carried out to boost customer value and establish a durable competitive advantage (Mukhamedjanova, 2020). SCM is based on the idea that practically all marketed items are the result of the labor of several businesses that are linked together by a supply chain. Supply chains have existed for a very long time, but most companies have only lately realized the value they can offer to their operations (Truong, et. al, 2017; Hong, Zhang & Ding, 2018; Mukhamedjanova, 2020).

#### **3.4. Supply Chain Policy Framework**

A policy framework is a document that outlines a set of guidelines or objectives that may be used in negotiations or decision-making to direct the creation of a more comprehensive collection of policies or to direct ongoing policy maintenance for an organization. Within the supply chain management, the design of policy framework is required to be done with emphasis on collaboration and cooperation among the supply chain players (Mishra, 2010; Fontaine, Medrano Caviedes & Narváez, 2020). Since the 1980s, the literature on SCM has placed a strong emphasis on the necessity of cooperation amongst subsequent players, from primary producers to ultimate consumers, in order to meet customer demand at a reduced cost (Mishra, 2010). The Global Supply Chain Forum defines supply chain management (SCM) as the integration of business processes from the end user to the original suppliers and the provision of goods, services, and information that provide value for clients and stakeholders (Mishra, 2010; Fontaine, Medrano Caviedes & Narváez, 2020). By combining its objectives and operations with those of other companies, SCM aims to improve its own outcomes rather than the chain's performance. SCM is now defined as the integrated planning, coordination, and control of all business processes with a goal of providing the end customer with higher customer value at the lowest possible cost while keeping other stakeholders in mind (Mishra, 2010; Fontaine, Medrano Caviedes & Narváez, 2020; Hsu, Hwang & Chiu, 2021).

Hsu et. al. (2021) in their quest to design a policy framework for sustainable supply chain management advocated for planning, execution, and control as major thematic areas. Particularly, the policy design framework should encompass sustainable

supply chain environment scanning, sustainable supply chain objective formulation, sustainable supply chain strategy implementation, sustainable supply chain performance measurement, and finally on sustainable supply chain feedback.



**Figure 1. Policy Framework for Sustainable Supply Chain Management**

*Source: (Hsu, Hwang and Chiu, 2021)*

Prior to formulating the strategic objectives for a sustainable supply chain as a whole, the objective of the environmental scanning phase for a sustainable supply chain is to first comprehend the opportunities and threats of the external environment, as well as the opportunities and weaknesses of the internal environment (Hsu, Hwang & Chiu, 2021). The design of the objectives for the sustainable supply chain is based on four important categories: time, cost, efficiency, and effectiveness. To get synergistic outcomes while choosing indicators and methods, several criterion decision-making processes are required. The key players in the supply chain might select one or more indicators that are appropriate for their own sectors to build their own strategic goals (Hsu, Hwang & Chiu, 2021).

#### 4. Research Method and Design

This study employs the qualitative research designs with the aim of examining policy framework on upstream pharmaceutical sustainable supply chain management practices in Ghana. The study focuses on upstream pharmaceutical sustainable



supply chain management practices. The entire study took place in the southern region of Ghana, where it is relatively simpler to go about and gather data. Once again, there are several pharmaceutical firms in the southern region of the nation. Those who work directly with procurement and supply chain operations within the various pharmaceutical businesses were included in the research.

#### **4.1. Population and Sampling Techniques**

Non-probability is the typical sampling approach used in qualitative research, mostly because the researcher chooses a sample based on the characteristics of the target population (Zhang, 2019; Ganesh, Pineau & Chakraborty, 2017). These non-probability sampling methods provide researchers with a range of options to choose from, allowing them to tailor their approach to the unique demands of their research design and objectives. Particularly, purposive sampling was employed to identify interviewees, specifically the managing directors and heads of procurement from various pharmaceutical companies. Purposive sampling is grounded in the principle that individuals are included in the sample based on their perceived importance to the research, as elucidated by Taherdoost (2018). This approach allowed the study to focus on key individuals whose insights and perspectives were integral to addressing the research objectives. The sample size 18 participants who consisted of 12 top executives from the pharmaceutical companies and 6 professionals (that is, procurement officers and directors) from state own organizations such as Environmental Protection Agency, Ghana Health Service and Ministry of Health (MOH).

#### **4.2. Instrument**

The researcher conducted a personal interview with experts of the selected pharmaceutical companies so as to obtain first-hand information so as to understand the research problem. The interview instrument was used to collect information during interview sessions for the qualitative aspect. The interview sessions were scheduled at the convenience of the various managers and procurement officials. Face-to-face encounters were used for all interviews. The researcher scheduled appointments for interviews with 12 management staff (top executives) and managers of 6 public officials from state organization to provide their expert opinion on Ghana's pharmaceutical sustainable supply chain practices. Thus, 18 participants were included in this study.

## **5. Data Collection**

The sampled managers who were chosen for the interview received an email containing the interview procedures five days prior to the interview. The interviews in this study were conducted with the agreement of the respondents and recorded using the researcher's mobile phone recorder. Notes were also taken during the interviews. The interviews were conducted with top executives and 6 public officials from state organizations in their respective offices, with no other persons present and no disruptions. Every day, three interviews were done. On average, each interview lasted one hour. Immediately following the conclusion of the interviews for the day, the data gathered for that day was transcribed. It took many hours to transcribe the interviews from each day. Thus, interviews with the remaining participants were held every other day. As a result, the interviews took six days to complete. Due to the small number of respondents, their transcribed notes were delivered to them over WhatsApp so they could confirm that their comments had been accurately captured.

### **5.1. Data Analysis**

The data analysis in this study draws on both content and thematic analysis techniques. Under the content analysis technique, this study made an effort to systematically examine and interpret the content within texts. Leveraging existing data, a careful analysis of issues was presented in the form of tables and images. Particularly, the content analysis helped to examine policies and policy documents that guide supply chain sustainability practices in the pharmaceutical upstream of Ghana, supply chain sustainability policies for the pharmaceutical industry in Africa and Ghana. Deploying the thematic analysis technique, this study was able to discuss issues based on themes and patterns from the interviewees. Policy issues that guide firms towards the attainment sustainable supply chain practices, and challenges encountered by upstream pharmaceutical firms as they strive to adopt the policies on upstream pharmaceutical sustainable supply chain engagements were analyzed using thematic analysis technique. The themes identified were supported by some direct quotations from the interviewees as evidence of how those themes emerged.

## **6. Validity and Reliability**

To ensure that this study attains validity, both construct and internal validity issues were addressed. The study initial and final draft were shared with other researchers

for their peer review and expert appreciation of the issues addressed. Again, the researchers undertook continuous refinement of the research interview guide which ensured that the right questions were asked during the interview session. To ensure internal validity, the researchers employed strategies such as prolonged engagement, where researchers spend substantial time with participants to comprehend their perspectives deeply. Thick description and detailed documentation enable replication and scrutiny of the research process, reinforcing internal validity in this study. Reliability was checked by returning findings to participants for verification, ensuring their perspectives are accurately represented.

## **7. Results and Discussion**

The findings of this study are provided based on the objectives of the study. 18 senior managers of the pharmaceutical companies in Ghana were purposively interviewed. These managers included procurement managers, consultants, environmental health officers, operations managers, among others.

### **7.1. Policies that Guide Supply Chain Sustainability Practices in the Pharmaceutical Upstream of Ghana**

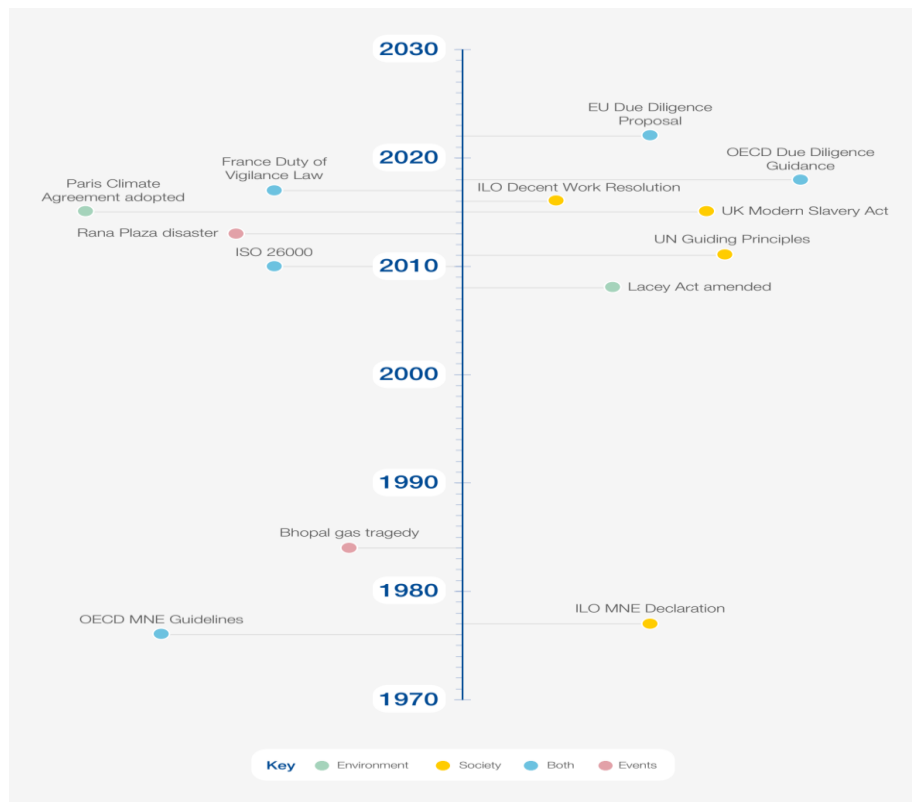
Supply chain sustainability practices in the pharmaceutical industry generally involve ensuring that all parties involved in the supply chain, from the sourcing of raw materials to the delivery of finished products, operate in an environmentally and socially responsible manner. This includes reducing waste and emissions, promoting ethical labor practices, and ensuring product safety and quality.

**Table 1. Some Global Efforts to Ensuring Sustainable Supply Chain**

Continental Examples	Sustainable Supply Chain Policies Adopted	Source
Asia	There are provisions for sustainability in several free trade agreements (FTAs). For instance, the EU has added trade and sustainable development chapters to its FTAs that address environmental protection, combating climate change, labor rights, and other topics since its 2009 FTA with South Korea.	World Economic Forum (2022).
United States of America	Separate chapters on labor and the environment are frequently included in US FTAs. The former frequently include pledges to uphold certain core labor rights, implement labor laws in a fair and lawful manner, and set up channels for consultation and conflict resolution.	World Economic Forum (2022).
Europe	The Carbon Border Adjustment Mechanism (CBAM), put out by the European Union (EU), would impose a carbon price on imports across six sectors that is comparable to the price paid within the single market.	World Economic Forum (2022).

*Source: World Economic Forum (2022)*

Some global efforts to ensuring Sustainable Supply Chain have include EU Due Diligence Proposal, OECD Due Diligence Guidance, France Duty of Vigilance Law, Paris Climate Agreement adopted, ILO Decent Work Resolution, UN Guiding Principles, etc. World Economic Forum (2022).



**Figure 2. Supply Chain Sustainability Through the Years**  
 Source: World Economic Forum (2022)

Policies that guide supply chain sustainability practices in the pharmaceutical industry include regulations and standards set by national and international bodies such as the World Health Organization (WHO) and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH). These policies focus on ensuring the safety, quality, and efficacy of pharmaceutical products while also promoting ethical and sustainable supply chain practices.

In addition to regulations and standards, many pharmaceutical companies have adopted their own internal policies and codes of conduct to ensure that their supply chains operate in a sustainable and ethical manner. These policies may include requirements for suppliers to adhere to certain environmental and social standards, as well as regular audits and assessments of suppliers sustainability practices.

The pharmaceutical industry is a critical sector in Africa, providing essential medicines to millions of people. However, the industry also faces significant sustainability challenges, such as the use of single-use plastics and the disposal of hazardous waste. Here are some examples of supply chain sustainability policies for the pharmaceutical industry in Africa, with references:

1. Reducing plastic waste: Many African countries are implementing policies aimed at reducing plastic waste in the pharmaceutical industry. For example, Kenya has implemented a ban on single-use plastics, which includes plastic packaging used in the pharmaceutical industry. Similarly, South Africa has launched a Plastics Pact, which aims to reduce plastic waste and pollution. The pact includes pharmaceutical companies such as Aspen Pharmacare and Sanofi (Ashraf, et. al, 2020; de Kock, et. al, 2020);
2. Sustainable packaging: In addition to reducing plastic waste, there is growing recognition of the need to promote sustainable packaging in the pharmaceutical industry. For example, the Nigerian pharmaceutical company, Emzor Pharmaceuticals, has implemented a sustainable packaging initiative that includes the use of biodegradable materials and the reduction of plastic waste (Awele, 2021; Ademeso, 2022);
3. Green energy: The use of renewable energy sources such as solar and wind power is a key sustainability policy for the pharmaceutical industry in Africa. For example, in Ghana, the pharmaceutical company, Kinapharma, has installed solar panels at its factory to reduce its reliance on grid electricity (Ware, 2015);
4. Waste management: The disposal of hazardous waste is a significant sustainability challenge for the pharmaceutical industry in Africa. Many African countries are implementing policies aimed at promoting safe and sustainable waste management practices. For example, the South African government has implemented the National Health Care Waste Management Plan, which provides guidelines for the safe disposal of medical waste (Ramodipa, et. al., 2023).

The pharmaceutical industry in Ghana is an important sector that provides essential medicines to the population. However, the industry also faces sustainability challenges related to waste management and energy use. Here are some examples of supply chain sustainability policies for the pharmaceutical industry in Ghana:

1. Sustainable energy: One sustainability policy for the pharmaceutical industry in Ghana is the use of renewable energy sources. The Ghanaian pharmaceutical company, Kinapharma, has installed solar panels at its factory to reduce its reliance

on grid electricity. This has helped to reduce the company's carbon footprint and lower its energy costs;

2. Waste management: The disposal of hazardous waste is a significant sustainability challenge for the pharmaceutical industry in Ghana. The Ghanaian government has implemented the National Health Care Waste Management Plan, which provides guidelines for the safe disposal of medical waste. This policy aims to reduce the environmental and health risks associated with the disposal of hazardous waste from the pharmaceutical industry (Sasu, Kümmerer & Kranert, 2011; Asante, Yanful & Yaokumah, 2013);

3. Green procurement: Another sustainability policy for the pharmaceutical industry in Ghana is green procurement. The Ghanaian government has implemented a green procurement policy that requires public procurement entities to consider environmental criteria when purchasing goods and services. This policy encourages the procurement of sustainable products and services, including those used in the pharmaceutical industry (Sandow Saani, et. al, 2015);

4. Sustainable packaging: The use of sustainable packaging is another important sustainability policy for the pharmaceutical industry in Ghana. The Ghanaian pharmaceutical company, Dannex, has implemented a sustainable packaging initiative that includes the use of biodegradable materials and the reduction of plastic waste. This policy aims to reduce the environmental impact of packaging used in the pharmaceutical industry.

Here are some interviews supporting quotations on policies that guide supply chain sustainability practices in the pharmaceutical industry of Ghana:

“We have implemented a green procurement policy that requires us to consider environmental criteria when purchasing goods and services. This policy encourages us to procure sustainable products and services, including those used in the pharmaceutical industry” - Procurement Manager, Government Official on Procurement.

“As a pharmaceutical company, we recognize the importance of sustainable packaging. We have implemented a sustainable packaging initiative that includes the use of biodegradable materials and the reduction of plastic waste” - Sustainability Manager, Dannex Pharmaceuticals.

“The National Health Care Waste Management Plan provides guidelines for the safe disposal of medical waste. This policy is critical in ensuring that hazardous waste

from the pharmaceutical industry is disposed of safely and sustainably” - Environmental Health Officer, Ghanaian Government.

“We have installed solar panels at our factory to reduce our reliance on grid electricity. This has helped us to reduce our carbon footprint and lower our energy costs” - Operations Manager, Kinapharma.

“Sustainable packaging is a key focus for us as a pharmaceutical company. We have implemented a system that allows us to recycle and reuse packaging materials, reducing the amount of waste we generate” - Supply Chain Manager, Ernest Chemist.

“We have partnered with waste management companies to ensure that our hazardous waste is disposed of safely and sustainably. This partnership has helped us to minimize our environmental impact and comply with regulations”. - Environmental Compliance Officer, Starwin Pharmaceuticals.

“Our sustainability policy focuses on reducing energy consumption and emissions. We have implemented measures such as energy-efficient lighting and equipment, which have helped us to reduce our energy use and operating costs” - Sustainability Coordinator, M&G Pharmaceuticals.

“We have implemented a zero-waste policy, which aims to eliminate waste from our operations. This policy has helped us to improve our environmental performance and reduce our costs” - Operations Manager, Pharmanova Limited.

## **7.2. Policy Issues that (if any) Guide Firms Towards the Attainment Sustainable Supply Chain Practices**

Policies play a critical role in guiding pharmaceutical firms towards the attainment of sustainable supply chain practices in Ghana. These policies are aimed at ensuring that pharmaceutical firms operate in a socially and environmentally responsible manner, while also promoting the safety and quality of their products.

## **7.3. Regulatory Frameworks and Standards**

Regulatory frameworks and standards are a critical component of policies that promote sustainable supply chain practices in the pharmaceutical industry. In Ghana, the Food and Drugs Authority (FDA) is responsible for regulating the pharmaceutical industry and ensuring that all drugs and other medical products on



the market meet established safety and quality standards. The FDA provides guidance to pharmaceutical firms on how to comply with these standards, which often includes requirements for sustainable supply chain practices. For example, the FDA may require pharmaceutical firms to use environmentally friendly manufacturing processes, or to source raw materials from sustainable suppliers.

Here are some supporting statements on policy issues for Regulatory frameworks and standards:

“Regulatory frameworks and standards play a critical role in guiding sustainable supply chain practices in the pharmaceutical industry in Ghana. Our company follows international standards such as ISO 14001 and ISO 9001 to ensure environmental and quality management in our supply chain”. - Quality Assurance Manager, Pharmaceutical Company.

“The Food and Drugs Authority (FDA) in Ghana regulates the pharmaceutical industry and has implemented several policies to ensure the safety, efficacy, and sustainability of pharmaceutical products. The FDA also ensures that pharmaceutical companies comply with international standards and best practices in their supply chain management” - Regulatory Affairs Manager, Pharmaceutical Company.

“The Pharmaceutical Society of Ghana (PSGH) promotes best practices and ethical standards in the pharmaceutical industry, including supply chain sustainability. The PSGH has developed a code of ethics that guides the conduct of pharmacists and pharmaceutical companies in Ghana, including their supply chain practices” - Pharmacy Manager, Pharmaceutical Company.

“The Ghana Standards Authority (GSA) develops and enforces standards for products and services in Ghana, including pharmaceuticals. Compliance with GSA standards is mandatory for pharmaceutical companies operating in Ghana, ensuring that their products and supply chain practices meet minimum quality and safety requirements” - Supply Chain Manager, Pharmaceutical Company.

“The Sustainable Public Procurement policy implemented by the Ghanaian government promotes sustainable supply chain practices in the pharmaceutical industry by requiring public procurement entities to consider environmental and social criteria when procuring goods and services. This policy encourages pharmaceutical companies to adopt sustainable practices in their supply chain management to meet the requirements of public procurement entities” - Procurement Manager, Hospital.

#### 7.4. Incentives

Policies can also promote sustainability by incentivizing pharmaceutical firms to adopt sustainable supply chain practices. For example, Ghana's National Health Insurance Scheme (NHIS) requires pharmaceutical firms to meet certain sustainability criteria in order to qualify for reimbursement for their products. These criteria include factors such as ethical sourcing practices, environmental sustainability, and social responsibility. By offering financial incentives for sustainable practices, the NHIS encourages pharmaceutical firms to make sustainability a priority in their supply chains.

Here are four interview quotations on the use of incentives to promote the adoption of sustainable supply chain in the pharmaceutical industry of Ghana:

“Incentives can be powerful tools for promoting the adoption of sustainable supply chain practices in the pharmaceutical industry in Ghana. For example, our company provides incentives to suppliers who implement sustainable practices such as reducing waste and improving energy efficiency in their operations” - Sustainability Manager, Pharmaceutical Company.

“The government of Ghana can incentivize pharmaceutical companies to adopt sustainable supply chain practices through tax breaks, subsidies, and other financial incentives. These incentives can encourage companies to invest in sustainable practices that have long-term benefits for the environment and society” - Environmental Scientist, Government official.

“Incentives such as certification and recognition for sustainability efforts can motivate pharmaceutical companies to adopt sustainable supply chain practices. Certification schemes such as the Forest Stewardship Council (FSC) and the Roundtable on Sustainable Palm Oil (RSPO) provide recognition for sustainable practices, which can enhance a company's reputation and competitiveness” - Supply Chain Manager, Pharmaceutical Company.

“Collaboration among stakeholders in the pharmaceutical industry can create incentives for sustainable supply chain practices. For example, a group of pharmaceutical companies can come together to establish a sustainability charter that outlines their commitment to sustainable practices. By signing on to the charter, companies can demonstrate their commitment to sustainability and benefit from shared knowledge and resources” - Sustainability Consultant, Pharmaceutical Company.

### **7.5. Reporting Requirements and Transparency Measures**

Reporting requirements and transparency measures are another way that policies can promote sustainable supply chain practices in the pharmaceutical industry. The GRI provides guidance on how pharmaceutical firms can report on their sustainability practices in a transparent and consistent manner. By requiring pharmaceutical firms to report on their sustainability practices, policies can help to hold them accountable and encourage continuous improvement. For example, the NHIS may require pharmaceutical firms to provide detailed reports on their sustainability practices in order to qualify for reimbursement for their products.

Overall, policies play a critical role in guiding pharmaceutical firms towards sustainable supply chain practices in Ghana. By establishing regulatory frameworks, providing incentives, and promoting transparency, policies can help to ensure that pharmaceutical firms operate in a socially and environmentally responsible manner while also promoting the safety and quality of their products.

Here are six interview quotations on reporting requirements and transparency measures to promote the adoption of sustainable supply chain in the pharmaceutical industry of Ghana:

“Reporting requirements and transparency measures are critical in promoting sustainable supply chain practices in the pharmaceutical industry in Ghana. Our company publishes an annual sustainability report that outlines our progress towards our sustainability goals and highlights our supply chain sustainability initiatives” - Sustainability Manager, Pharmaceutical Company.

“Transparency measures such as supply chain mapping can help identify areas of improvement and promote sustainable practices. By mapping our supply chain, we were able to identify suppliers that had poor sustainability practices and work with them to improve their environmental and social performance” - Procurement Manager, Pharmaceutical Company.

“Stakeholder engagement is crucial in promoting supply chain sustainability in the pharmaceutical industry in Ghana. By engaging with stakeholders such as local communities, NGOs, and government agencies, pharmaceutical companies can better understand their sustainability concerns and work towards addressing them through transparent reporting and disclosure” - Corporate Social Responsibility Manager, Pharmaceutical Company.

“Ghana’s national reporting framework for sustainable development, the Ghana National Reporting Platform (GNRP), can serve as a useful tool for promoting sustainable supply chain practices in the pharmaceutical industry. By reporting on their sustainability performance through the GNRP, pharmaceutical companies can demonstrate their commitment to sustainability and contribute to national sustainable development goals” - Sustainability Consultant, Pharmaceutical Company.

“Sustainability certification schemes such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP) provide a standardized framework for reporting on sustainability performance. By participating in these schemes, pharmaceutical companies in Ghana can demonstrate their commitment to sustainability and benchmark their performance against peers” - Environmental Scientist, Pharmaceutical Company.

“Transparency measures such as independent third-party audits can promote sustainable supply chain practices in the pharmaceutical industry in Ghana. By having their supply chains audited by independent third parties, pharmaceutical companies can demonstrate their commitment to transparency and accountability and identify areas of improvement in their sustainability practices” - Compliance Manager, Pharmaceutical Company.

## **7.6. Challenges that Firms Encounter with Existing Policies on Upstream Pharmaceutical Sustainable Supply Chain Engagements**

Pharmaceutical companies are increasingly recognizing the importance of sustainability in their supply chains. Sustainability in the pharmaceutical industry involves the adoption of practices that aim to balance the economic, social, and environmental dimensions of the business. A sustainable supply chain in the pharmaceutical industry should ensure that the products are safe, effective, and available while minimizing the negative impacts on the environment and society.

However, firms encounter several challenges with existing policies on upstream pharmaceutical sustainable supply chain engagements. These challenges include:

### **1. Lack of Transparency and Traceability**

Transparency and traceability are crucial in sustainable supply chain management. Pharmaceutical companies need to be able to track and trace their products throughout the supply chain to ensure that they are produced, handled, and

transported in an ethical and sustainable manner. However, the lack of transparency in the supply chain makes it difficult for companies to identify and address sustainability risks. For instance, pharmaceutical companies may not have visibility into the practices of their suppliers, such as the use of child labor or the discharge of pollutants into the environment. Without transparency and traceability, it becomes difficult for pharmaceutical companies to identify and mitigate sustainability risks.

## **2. Limited Supplier Engagement**

Pharmaceutical companies often have limited engagement with their suppliers, especially those in the upstream supply chain. Limited supplier engagement makes it difficult for companies to understand the sustainability risks associated with their suppliers. For instance, suppliers may not disclose information about their sustainability practices, making it difficult for companies to evaluate their sustainability performance. Moreover, limited engagement makes it difficult for companies to provide support and guidance to their suppliers to improve their sustainability practices.

## **3. Complex Regulatory Environment**

The pharmaceutical industry is highly regulated, and this presents a challenge for sustainable supply chain management. Companies need to comply with numerous regulations and standards related to quality, safety, and environmental performance. Compliance with these regulations requires significant resources, and this can make it challenging for companies to focus on sustainability initiatives. Additionally, regulatory requirements may not be aligned with sustainability goals, making it difficult for companies to balance regulatory compliance and sustainability performance.

## **4. Limited Resources**

Sustainability initiatives require significant resources, including financial, human, and technological resources. Many pharmaceutical companies may not have the resources to invest in sustainability initiatives, especially in the upstream supply chain. Limited resources may also limit the ability of companies to implement sustainable supply chain practices, such as supplier engagement, transparency, and traceability.

## **5. Lack of Stakeholder Collaboration**

Sustainability in the pharmaceutical industry requires collaboration between different stakeholders, including suppliers, customers, regulators, and civil society

organizations. However, the lack of collaboration between stakeholders presents a challenge for sustainable supply chain management. For instance, suppliers may not be willing to disclose information about their sustainability practices, and this can hinder efforts to address sustainability risks. Similarly, customers may not be willing to pay a premium for sustainable products, making it difficult for companies to invest in sustainability initiatives.

In conclusion, sustainable supply chain management is crucial for pharmaceutical companies to ensure that their products are safe, effective, and available while minimizing the negative impacts on the environment and society. However, companies encounter several challenges with existing policies on upstream pharmaceutical sustainable supply chain engagements, including the lack of transparency and traceability, limited supplier engagement, complex regulatory environment, limited resources, and lack of stakeholder collaboration. Companies need to address these challenges to ensure that they can effectively manage their supply chains and achieve their sustainability goals.

## **8. Conclusion and Recommendation**

### **8.1. Conclusion**

Sustainable supply chain practices are crucial in the pharmaceutical industry, and their adoption is becoming increasingly important in today's business environment. Sustainability in the pharmaceutical industry involves balancing the economic, social, and environmental dimensions of the business. The adoption of sustainable supply chain practices is essential for pharmaceutical companies to ensure that their products are safe, effective, and available while minimizing the negative impacts on the environment and society.

In Ghana, the pharmaceutical industry is experiencing rapid growth, and the adoption of sustainable supply chain practices is critical. However, the industry faces several challenges, including limited stakeholder collaboration and the lack of supplier engagement. Addressing these challenges is crucial for the adoption of sustainable supply chain practices in the industry.

Collaboration and inclusion of stakeholders are essential for the adoption of sustainable supply chain practices in the pharmaceutical industry. Stakeholders include suppliers, customers, regulators, and civil society organizations.

Collaboration between these stakeholders is crucial to ensure that sustainable practices are adopted throughout the supply chain.

In conclusion, the adoption of sustainable supply chain practices is crucial for the pharmaceutical industry in Ghana. Collaboration and inclusion of stakeholders are essential for the adoption of sustainable practices. Pharmaceutical companies in Ghana should collaborate with their suppliers, customers, regulators, and civil society organizations to promote sustainable practices throughout the supply chain. Addressing the challenges facing the industry, such as limited stakeholder collaboration and the lack of supplier engagement, is crucial for the adoption of sustainable supply chain practices in the industry. By adopting sustainable practices, the pharmaceutical industry in Ghana can promote economic, social, and environmental sustainability while maintaining its competitiveness in the global market.

## **9. Recommendations**

Based on the findings of this study, several recommendations are postulated for the attention of those in industry and academia.

Firstly, pharmaceutical companies in Ghana should collaborate with their suppliers to promote sustainable practices. Suppliers should be engaged to promote sustainable practices, such as reducing waste and energy consumption, and promoting ethical labor practices. The inclusion of suppliers in sustainability initiatives can be achieved through training programs and other capacity-building activities.

Secondly, collaboration with customers is essential to promote sustainable practices. Pharmaceutical companies should communicate their sustainability initiatives to their customers, highlighting the benefits of sustainable products. Companies can also collaborate with customers to understand their sustainability concerns and tailor their sustainability initiatives to address these concerns.

Thirdly, regulatory bodies play an essential role in promoting sustainable supply chain practices. Pharmaceutical companies should collaborate with regulators to ensure that regulations are aligned with sustainability goals. Additionally, regulatory bodies can provide incentives for sustainable practices, such as tax breaks and other financial incentives.

Fourthly, civil society organizations can play a crucial role in promoting sustainable practices in the pharmaceutical industry. Companies should collaborate with civil society organizations to identify sustainability risks and develop sustainable solutions. Civil society organizations can also provide feedback on sustainability initiatives, helping companies to improve their sustainability performance.

In addition to the recommendation of collaboration and stakeholder inclusion in the promotion of sustainable supply chain practices in the upstream pharmaceutical industry in Ghana, empirical could investigate the impact of regulations on the adoption of sustainable supply chain practices in the pharmaceutical industry in Ghana. This would provide insights into the effectiveness of current regulations and opportunities for improvement. Again, studies could examine the role of technology: Studies can explore the role of technology in promoting sustainable supply chain practices in the pharmaceutical industry in Ghana. This would provide insights into the potential of technology to enhance sustainability performance.

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