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CHALLENGES OF GLOBAL PHARMACEUTICAL SUPPLY CHAIN MANAGMENT: IN THE CASE OF SELECTED PRIVATE PHARMACEUTICAL IMPORTERS IN ADDIS ABABA ETHIOPIA

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JUNE, 2022

ADDIS ABABA, ETHIOPIA

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COLLEGE OF BUSINESS AND ECONOMICS

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LOGISTICS AND SUPPLY CHAIN MANAGEMENT PROGRAM UNIT

CHALLENGES OF GLOBAL PHARMACEUTICAL SUPPLY CHAIN MANAGMENT: IN THE CASE OF SELECTED PRIVATE PHARMACEUTICAL IMPORTERS IN ADDIS ABABA

A thesis submitted to Addis Ababa University, college of business and economics school of commerce for the partial fulfillment of the requirements for the degree of Master of Arts in logistics and supply chain management

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JUNE, 2022

ADDIS ABABA, ETHIOPIA

DECLARATION

I, the undersigned, hereby declare that the work which is being presented in this thesis entitled "Challenges of Global Pharmaceutical Supply Chain Management: in the Case of Selected private pharmaceutical importers in Addis Ababa Ethiopia" is original work of my own has not been presented in any of other university and that all sources of material used for the thesis have been duly acknowledged.

FENTAHUN TEGEGNE

ID No. GSE/0206/12

Signature: _____ Date: _____

CERTIFICATION

This is to certify that FENTAHUN TEGEGNE DESTA has conducted this research work on the topic entitled “Challenges of Global Pharmaceutical Supply Chain Management: in the Case of Selected private pharmaceutical importers in Addis Ababa Ethiopia” under my supervision. This work is original in nature and it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Arts in Logistics and Supply Chain Management.

Tariku Jebena (PhD)

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Date: _____

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THESIS APPROVAL

This is to certify that the thesis carried out by Fentahun Tegegne Desta entitled “challenges of global pharmaceutical supply chain Management: in the case of selected private pharmaceutical importers in Addis Ababa Ethiopia” and submitted in partial fulfillment of the requirements for the degree of master of arts in logistics and supply chain management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Approved by Board of Examiners

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LIST OF ACRONYMS & ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
EPSA	Ethiopia Pharmaceuticals Supply Agency
EFDA	Ethiopian Food and Drug Administration
FMHACA	Food, Medicine and health care Administration and Control Authority
EPI	Expanded Program of Immunization
FDRE	Federal Democratic Republic Of Ethiopia
FDA	Food Drug Administration
GSCM	Global Supply Chain Management
GPOS	Group Purchasing Organization
HIV	Human Immune Virus
IPLS	Integrated Pharmaceuticals Logistics System
IFPMA	International Federation of Pharmaceutical Manufacturers & Associations
MCH	Maternal and Child Health
NGO	Non-Governmental Organization
NPPL	National Pharmaceuticals Procurement List
OTC	Over- The- Counter
PSC	Pharmaceutical Supply Chain
PLMP	Pharmaceuticals Logistics Master Plan
PFSA	Pharmaceuticals Fund and Supply Agency
R & D	Research and Development
TB	Tuberculosis

ABSTRACT

The purpose of the study is to assess the challenges of global pharmaceutical supply chain in the case of private pharmaceutical importers, in Addis Ababa Ethiopia, the largest metropolitan in Ethiopia. A mixed method of quantitative and qualitative research designs was employed. A non-probability purposive sampling procedure were used for the reason of not losing pharmaceutical importers that have enormous active participation in the global pharmaceutical supply chain and importing a vast variety of items. Primary data were collected and analyzed using descriptive and inferential statistics such as mean, correlation, and regression by using SPSS version 20 as statistical tool the data for the study was collected from 65 active private pharmaceutical importers via well-organized questionnaires in order to identify the major bottlenecks in the system. This was followed by semi-structured in-depth interviews of 15 key informants in order to gain further insight into the underlying causes of the challenges. The research discovered that multiple challenges related to each of major stakeholders involved. Long duration of time for quality test approval of pharmaceuticals that comes from foreign countries, delays in pharmaceutical product registration, lack of motivation for work, lack of transparency, unable to give market authorization paper on time, shortage of skilled manpower and weak collaboration between regulatory bodies were the main challenges discussed in relation to regulators

Private pharmaceutical importers' challenges with respect to access of foreign hard currency, shortage of financial capacity & working capital and unavailability of market data for proper demand forecasting are investigated. Private pharmaceutical importers' challenges regarding high cost of storage, high fright cost & the time permission that is allowed for storage is short at terminal, delaying of shipment due to lack of containers, long lead time of products due to transportation, Product expiration & loading & unloading problems were the main challenges discussed in relation to customs.

Finally it is recommended that the Ethiopian government shall simplify the regulatory procedures and introduce advanced registration software technologies to facilitate the registration process and other related problems observed in the global pharmaceutical supply chain management.

Key words: challenges, Addis Ababa, pharmaceuticals, Global pharmaceutical supply chain, private importers

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The supply chain is the network created among different companies that produce, handle, and distribute a specific product (Susarla & Karimi, 2012); in the current study, the product being investigated is pharmaceutical medicine. The supply chain is essential to getting medicine to market and generating revenue from the process. There was a knowledge gap about effective Supply Chain Management (SCM) in third world countries with a high incidence of medical need. In a global marketplace, managing the supply chain was a significant challenge, because of continually changing demands of shorter product lifecycles, industry consolidations, variable conditions on the ground (Assey, 2012). SCM is vital for companies, as a successful SCM strategy can lower expenses and increase sales for the company. SCM practices enable the world's leading organizations to realign their supply chain to the distinct set of concepts by providing functioning solutions for enterprise needs in supply and demand planning and forecasting, sourcing and procurement, and supply chain execution (Susarla & Karimi, 2012). The connections and nodes in a supply chain achieve functions that contribute to the value of the goods transported through the chain (Assey, 2012). Any connection that does not work well reduces the overall effectiveness of the whole supply chain (Assey, 2012). Effective and efficient supply chain processes are vital to reduce the product cost while maintaining quality and ensure the availability of inventory. To succeed, companies that distribute medicine must practice effective SCM to ensure their competitiveness in the market.

The pharmaceutical supply chain (PSC) is the means through which prescription medicines are manufactured and delivered to patients. But the supply chain network is actually very complex, requiring a number of steps that must be taken to ensure medications are available and accessible to patients. In such a complex process, the stakes are high for pharmaceutical companies. Drugs that are distributed incorrectly affect the company’s reputation and customer satisfaction, as well as potential profit. An ineffective supply chain could also disrupt the healing processes of patients and produce negative effects on public health.

The pharmaceutical supply chain is vital for patients to receive the medications they need without having to deal with stress or roadblocks along the way. Although the supply chain faces various challenges, companies can take the necessary steps to ensure a smooth process from manufacturing of products to delivery to patients.

Improving pharmaceutical supply chain has been a challenging task for many companies. Pharmaceutical companies globally, are facing challenges meeting global quality standards, adhering to new health care reforms, and increased service requirements. To address such challenges, pharmaceutical firms must reduce costs, increase agility, and improve speed to market. They need to define key issues such as process development, capacity planning, and logistics management since they play an important role in pharmaceutical supply chain. Increasing the efficiency pharmaceutical supply chain requires correct analysis of the latest trends and changes in the market. (Vivek Sikaria, 2019)

Pharmaceutical products considered as a strategic commodity in health systems, and availability of them is vital for the countries; otherwise, it may cause severe health, economic, and political crisis. Pharmaceutical supply chain management in governmental sectors especially in developing countries is an important determinant of increasing public access to the medications. Pharmaceuticals providers divided into three layers, the first one is producers or importers, in the second layer there are a few distributors and wholesale customers in which providers can sell their productions to these customers, or stock them directly in warehouses. The final layer consists of three final categories of customers including pharmacies, clinics and hospitals, and end users or patients. Unexpected demand, cold supply chain, and direct governmental supervision are the specific conditions of the pharmaceutical supply chain. The quality of supply chain management has a notable influence on the overall cost and quality of outcomes. The inevitable relationship between medications and health, the high social cost of pharmaceutical shortage, the necessity of high-quality health services, and the importance of correct pharmaceutical inventory management indicates importance of accurate planning and precise control system. Supply chain management optimizes this flow and reduces the costs caused by the intermediary loops. Pharmaceuticals have a fundamental role in an appropriate health service performance. The majority of curative and preventive services are related to the medications. Access to the medication considered as a quality indicator of health services by patients.

Furthermore, the country's pharmaceutical system, which consists of production process, importing, dispensing, prescribing, and delivering medications to users and finally taking medications by patients, is considered as the most important health-care chains. The ultimate goal of this system is maintaining and promoting public health. Based on that, this system should be continuously evaluated and reformed to solve its potential problems and to open up new ways to reach its goals. Against these emphases on the importance of pharmaceutical supply chain, the present situation of the country encounters some inevitable national and international challenges. (Yaser Sarikhani, 2019).

The pharmaceutical industry supply chain according to Whewell (2010) covers drug research, development, manufacture; distribution and application through a range of healthcare services, together with all the ancillary businesses that help these different stages function effectively. There are occasions where international trade can have direct health and safety impacts on poor individuals; impacts that can be beneficial or detrimental. Perhaps most importantly, improving the health outcomes of poor people usually involves imports of medical products. It is simply not possible for a small, developing country like Ethiopia to produce the entire range of even some of the more basic medical supplies, no less more advanced medical equipment and pharmaceuticals (Reinert, 2005). Firms internationalize the upstream side of their supply chain to have access to lower priced goods, higher quality goods, and worldwide technology and to benefit from delivery and reliability improvements (Monczka & Trent, 1991, pp 2-8). Firms also internationalize their downstream operations so that they are able to sell their products in new geographical markets (Kuemmerle, 2005, pp. 42-49). However, the international dimension has introduced complexity in the supply chain. In fact, the global supply chains poses more challenges (i.e., new and more suppliers, variable exchange rates and the change of local policies) than domestic supply chains (Dornier, Ernst, Fender, & Kouvelis, 1998). These challenges comprise, for instance, an increase on transportation costs, lead times and inventories. Moreover, infrastructural deficiencies in developing countries (e.g. transportation and telecommunications, inadequate worker skills, supplier availability, supplier quality, etc.) create challenges that are normally not experienced in developed countries. Furthermore, global supply chains carry specific risks such as variability and uncertainty in currency exchange rates, economic and political instability, and changes in the regulatory environment. All the above mentioned challenges can lead to difficulties in getting the benefits associated with

internationalization. Taking into account that supply chains are becoming more and more global, the study of challenges and strategies to overcome them is of great importance for the management world. Ethiopia is a landlocked country; poor transportation infrastructure is a major geographical challenge in the pharmaceutical supply chain system (Kim & Shigha, 2010).

Medicines Supply is one of the major priorities in developing countries. Therefore efficient pharmaceutical supply chain management is of high importance. The efficient pharmaceutical supply chain supplies medicines in the right quantity, and to the customers with the acceptable quality, at the proper time and with optimum price to produce benefits for all the stakeholders. The pharmaceutical supply chain is a significant component of the health scheme which includes all procedures, information, resources and players such as suppliers, manufacturers, intermediaries, third-party service providers, logistics activities, merchandising and sales activities, finance and information technology. Pharmaceutical companies play an important role in supplying medicines, particularly in countries where the volume is supplied by local companies (Mona Jaberidoost, 2015).

Ethiopia is a landlocked country; poor transportation infrastructure is a major geographical challenge in the pharmaceutical supply chain system (Kim & Shigha, 2010). The other major challenge in the import and distribution channel in Ethiopia is shortage of foreign currency.

The pharmaceutical sector of Ethiopia is regulated by Food, medicine and Health care Administration and control Authority (EFMHACA) based on proclamation No.661/2009 (FNG, 2009) established under council of ministers Regulation No.189/2010 (FNG, 2010). Ethiopian pharmaceuticals market is increasing from time to time. Most of the pharmaceuticals (75%) are sourced from global suppliers. However 25% of the Pharmaceuticals are manufactured in Ethiopia (PFSA, 2016). In addition, International Federation of Pharmaceutical Manufacturers & Associations states that Ethiopia had imported $309.77 Million worthy pharmaceuticals and exported pharmaceuticals having value of $2.02 Million (IFPMA, 2017).Currently there are more than 300 registered pharmaceutical importers in Ethiopia (EFMHACA, 2021). These importers distribute different kinds of pharmaceuticals sourcing from different global suppliers located in different countries. Even though most of pharmaceutical products are sourced and imported by Pharmaceuticals Fund and supply agency (PFSA) from global suppliers via invitation to redundant international competitive bids, in terms of global supply chain

management, private pharmaceutical companies are found to be good examples for establishing effective buyer-supplier relationship for mutual benefit and cooperation.

In general, Pharmaceutical supply chain is the overall activities involved with the manufacturing of pharmaceuticals to delivery of products to the end user through supply chain management system. The activities include, sourcing of row material, manufacturing, transportation, storage and delivery to end user. Four main components of the supply chain includes: producers, purchasers, providers, and patients (Brian, 2011).

1.2. Statement of the problem

The pharmaceutical supply chain is complex and unique by itself since it operates with the availability of valuable and lifesaving pharmaceuticals and medical supplies. Moreover, it involves many organizations that play differing roles. In Supply chain performance measurement the main purpose is to get information for top management to decision making, evaluate the level of service provided and customer satisfaction. In 2004 Gunasekaran et al introduced six metrics for measuring SCM capability and performance. Metrics are based on the following SCM processes: plan, source, make/assemble and delivery/customer (Gunasekaran et al, 2004).

Challenges within the pharmaceutical supply chain comprise additional peculiarities. These include an increase in transportation costs, lead times, and inventories (Moosivand et al., 2019; Arikan et al., 2017). Infrastructural deficiencies in developing countries may also embrace transportation and telecommunications, inadequate worker skills, supplier availability, and supplier quality (Cogliano et al., 2008). Yet, global supply chain management (GSCM) carries specific risks such as variability and uncertainty in currency exchange rates, economic and political instability, and changes in the regulatory environment (Msimangira & Tesha, 2014; Meixell & Gargeya, 2005). The challenges in the sector fall at the supply chain design (capacity) and operational (responsiveness) stages (Shah, 2004). All the aforementioned challenges can lead to difficulties in realizing the benefits associated with internationalization. Taking into account that supply chains are becoming more and more global, the study of challenges and placing approaches to overcome them is of great importance in the area.

Availability of essential drugs is the building block of the pharmaceutical supply chain management. The components of pharmaceutical supply chain management are selection,

quantification, procurement, and inventory management and a failure in one part of the component leads to the failure of the whole pharmaceutical management process. Lack of effective pharmaceutical supply chain not only affects the availability of essential drugs but also significantly affects efficiency. Ineffectiveness in selection, quantification, procurement, and inventory management, as well as high prices, poor quality, theft, expiration of drugs, irrational prescribing and incorrect use of medicines by patients increase the health expenditures (MSH, 2012). A supply chain disruption occurs when supply fall severely short of supply. Such disruptions take place when either the nominal supply capacity of a business process is greatly reduced for some period of time, or a sudden increase in demand, or both. Disruptions in pharmaceuticals/ healthcare contexts disturb the continuity of providing for patient needs, and can have particularly severe consequences (Gravesa, 2009). Disruption in supply of pharmaceutical products in private pharmaceutical importers results in repeated stock outs, interruption of services.The pharmaceutical supply chain faces its own set of challenges, including supply chain visibility, drug counterfeiting, cold-chain shipping, and raising prescription drug prices, which can significantly increase out-of-pocket costs for patients. (Samantha McGrail, 2020)

According to Mentzer, Stank & Myers (2007a), the complexities of cross-border operations are exponentially greater than in a single country, and the ability to compete in the global environment often depends on understanding the subtleties that emerge only in cross-border trade - that is, in GSCM. The operation in a GSCM is based on the development of capabilities to integrate different companies, from different countries, languages and cultures and different economic and technological level. Modern supply chains are very complex, with many parallel physical, financial and information flows occurring in order to ensure that products are delivered in the right quantities, to the right place in a cost-effective manner. It has also been suggested that the drive towards more efficient supply chains during recent years has resulted in the supply chains becoming more vulnerable to disruption and prone to challenges (Christopher & Lee, 2004, pp 388-96). The pharmaceutical industry supply chain covers drug research, development, manufacture; distribution and application through a range of healthcare services, together with all the ancillary businesses that help these different stages function effectively (Amegashie & Nikoi, 2014). It is also globally heavily regulated and used by everyone in life. Changes in one area impact upon the others and environmental factors such as pricing, regulatory change or

actions by competitors, impact the whole supply chain in ways that are not easily understood or properly managed (Whewell, 2010). The IBM Global Business Services report (2010) argues that pharmaceutical supply chains are ill-placed to cope with all the issues that face it these days. These supply chains are under enormous financial and competition strains. The biggest threat to the pharmaceutical industry, however, comes from issues it has with its customers concerning quality issues. Currently the policy used to face such challenges is adding more tests throughout the supply chain.

According to Ministry of Health of Ethiopia report, the annual pharmaceutical market in Ethiopia is estimated to be worth $ 400 to $ 500 million and growing at an impressive rate of 25% per annum. A 2012 estimate by Frost and Sullivan suggests the Ethiopian pharmaceutical market could witness growth rates of "slightly over 14%" to reach an approximate value of just under $ 1 billion by 2018 (MOH, 2015). This report states that there are approximately 300 importers of pharmaceutical products and medical consumables in Ethiopia. More than 75% of the pharmaceuticals are sourced from global suppliers however 25% of the Pharmaceuticals are manufactured in Ethiopia (PFSA, 2016). Taking into account that pharmaceutical supply chains are becoming more and more global, the study of challenges and strategies to overcome them is of great importance for those who manage these operations.

In Ethiopia, the pharmaceutical supply chain suffers from a lack of inventory management and poor network design, as well as a weak distribution system and weak management. Overstocking, under stocking, and product expiration, are major pharmaceutical challenges among others.

There was a research conducted in the topic of global pharmaceutical supply chain management challenges of pharmaceutical importers which focused on a single organization. The study did not include other importers that are found in Addis Ababa as a result it was not representative. Therefore in order to fill the above mentioned literature research gap this study was conducted in all private pharmaceutical importers that are found in Addis Ababa to generate a more representative conclusion and recommendations in the study area.

1.3. Research Questions

The thesis has been undertaken to seek answers to the following questions:

1. What are the quality controls issues challenging global pharmaceutical supply chain management by the private importers in Addis Ababa?

2. What is the foreign exchange/currency issues challenging global pharmaceutical supply chain management by the private importers in Addis Ababa?

3. What are the suppliers related issues constraining the global pharmaceutical supply chain management by the private importers in Addis Ababa?

4. What are the government and regulatory requirements related challenges as perceived by the private importers in Addis Ababa while managing their global pharmaceutical supply chain?

5. What are the unstable economic and political climates challenging global pharmaceutical supply chain management by the private importers in Addis Ababa?

6. What are the inbound logistics related challenges influencing the global pharmaceutical supply chain management by the private importers in Addis Ababa?

1.4. Objectives of the study

1.4.1. General Objective

The general objective of the study is to assess the challenges of global pharmaceuticals supply chain management in the case of selected private importers in Addis Ababa

1.4.2. Specific objectives

The specific objectives of the study are:-

1. To assess quality controls issues challenging global pharmaceutical supply chain management by the private importers in Addis Ababa

2. To reveal foreign exchange/currency issues constraining the global pharmaceutical supply chain management by the private importers in Addis Ababa

3. To describe suppliers related issues influencing the global pharmaceutical supply chain management by the private importers in Addis Ababa

4. To highlight government and regulatory requirements related challenges as perceived by the private importers in Addis Ababa while managing their global pharmaceutical supply chain

5. To assess unstable economic and political climate challenging global pharmaceutical supply chain management by the private importers in Addis Ababa

6. To portray the inbound logistics related challenges influencing the global pharmaceutical supply chain management by the private importers in Addis Ababa

1.5. Significance of the Study

This research has a great deal of importance and significance for the pharmaceutical mangers, Researchers, pharmaceutical professionals and stakeholders of private pharmaceutical importers and distributers because it provides information about the service the company is providing to its customers from the point of view of the customers. It helps them to know whether the company is delivering its promise to the customers and also it provides them insight about the gap between customer's perception and expectation of service and ways to improve them. In addition it gives information for the government regulatory authority about the challenges in pharmaceutical supply chain system.

1.6. Scope of the Study

In this study, the researcher tried to assess the challenges of global pharmaceuticals supply chain. Although the availability of a number of issues related to supply chain, this research delimited itself only on the practice of pharmaceuticals supply chain of Addis Ababa, Ethiopia. The scope of the research covered challenges of pharmaceutical supply chains taking selected private pharmaceutical importers in Addis Ababa city. Do not address all issues of pharmaceutical challenges of the city, due to shortage of resources and time. The research covered only very small number of pharmaceutical importers in the city.

1.7. Limitation of the study

Due to personal attitudes, individual values and organizational policies, practitioners' in the medical profession keep most of their undertaking secret. The researcher received minimal cooperation from some respondents. The unavailability of target respondents due to their busy schedules was a major challenge. Resource constraints also posed a great limitation; with constrained finances and very busy schedules therefore having limited time to carry out the

research and restricting the research areas in the city and due to short time of data collecting time no cover all selected private pharmaceutical importers.

1.8. Operational Definition of key Concepts and Terms

1. Global supply chain: Global supply chain is an international system that businesses use to produce and distribute goods and services. This network starts with raw materials and ends when the final product or service is delivered to customers.

2. Pharmaceuticals: Pharmaceuticals are substances used for treatment, prevention, mitigation and diagnoses of diseases. It includes drugs, medical supplies and equipment, and laboratory reagents.

3. Importer: importer is an individual, firm or legal entity that brings articles of trade from a foreign source in to a domestic market in the course of trade and also a party responsible for customs clearance of imported

4. Cold-supply chain: Cold supply chain, also called a temperature-controlled supply chain, is a logistics and supply system that provides a series of facilities for maintaining ideal conditions for goods within a given temperature range, from the point of origin to the point of consumption.

1.9. Organization of the Study

This thesis is organized into five chapters. Chapter one covers the introduction part that describe over all introducing the research back ground of the study ,statement of the problem, research question, research objective, specific research objective, significance of the study, scope of the study, limitation of the study, definition of terms and organization of the study. The second chapter is review of related literature which consist review concepts and theories, empirical literature review and conceptual framework. Chapter three includes research methodological perspective of this study, Description of the study area, Research approach, Research design, Population and sample, Data source and type, Data collecting procedure, Ethical consideration and Data analysis. Chapter four describes data analysis it includes result of the research ,discussion depending on the result of research and what limitation are happened during activities

of the research done and Chapter five concludes the research summary, conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter briefly introd0uces and provides a systematic literature review on the works of various scholars in the area of Challenges of Global Pharmaceutical Supply. Both conceptual and empirical literature related to the topic of the study has been reviewed. Based on the experiences of these reviews, a conceptual framework for the present study is formulated.

2.1. Theoretical Literature Review

2.1.1. Pharmaceutical Supply Chain

A supply chain is the arrangement of organizations, their facilities, acts, and activities; that are involved in manufacturing and giving a product or service. A supply chain is a set of facilities and distribution options that functions to procure materials, transform these materials into intermediate and finished products, and distribute these finished products to customers (Parmata, B., & B., 2016).

The Pharmaceutical supply chain represents the path through which essential pharmaceutical products are distributed to the end-users at the right quality, at the right place and at the right time (Mehralian, Rajabzadeh, Morakabati & Vatanpour, 2012).

Pharmaceutical supply chain is very complicated and greatly responsible to ensure that the appropriate drug, reaches the right people at the right time and in the right situation to fight against sickness and sufferings. This is a highly sensitive supply chain that everything less than 100% customer service level is unacceptable as it directly influence the health and safety (Chandrasekaran & Kumar, 2003).

A typical Pharmaceutical supply chain consists of the following members: initially manufacturing, secondary producing, market warehouse/distribution centers, wholesalers, retails/hospitals and patients (Shah, 2004). Among Pharmaceutical supply chain components, it has been argued that delivery of medicines has substantial effect on customers‟ satisfaction (Rossetti, Handfield & Dooley, 2011). Supply chain encompasses all stages involved in fulfilling a customer request from product development to customer service, and parties involved in the

supply chain include manufacturers, suppliers, transporters, distributors, retailers and customers (Lambert et al., 1998).

Supply chain integration within the organization and across the network of interdependent organizations that comprise the supply chain can improve a company's competitive advantage by providing customer satisfaction at the lowest total cost (Aitken, Childerhouse, Christopher & Towill, 2005; Lambert, Cooper & Pagh, 1998; Simchi-levi, Kaminsky & Simchi-levi, 2004).

The pharmaceutical distributors play a significant role in the medical and health system, so that they can shape a suitable bridge between retailers and pharmaceutical companies. Considering this intermediate role, they can easily transfer information between them. As result, continuous flow of drugs to patients at optimal price, with minimal delays and few shortages would be possible (HDMA, 2009).

Pharmaceutical supply chain plays an extremely important role in preserving the health of people, and unlike other goods and services, access to health care services and products is often considered a personal right. The Pharmaceutical supply chain plays a major role in ensuring the right drug, reaches the right people, timely and accurately (Parmata, B., B. & N, 2014).

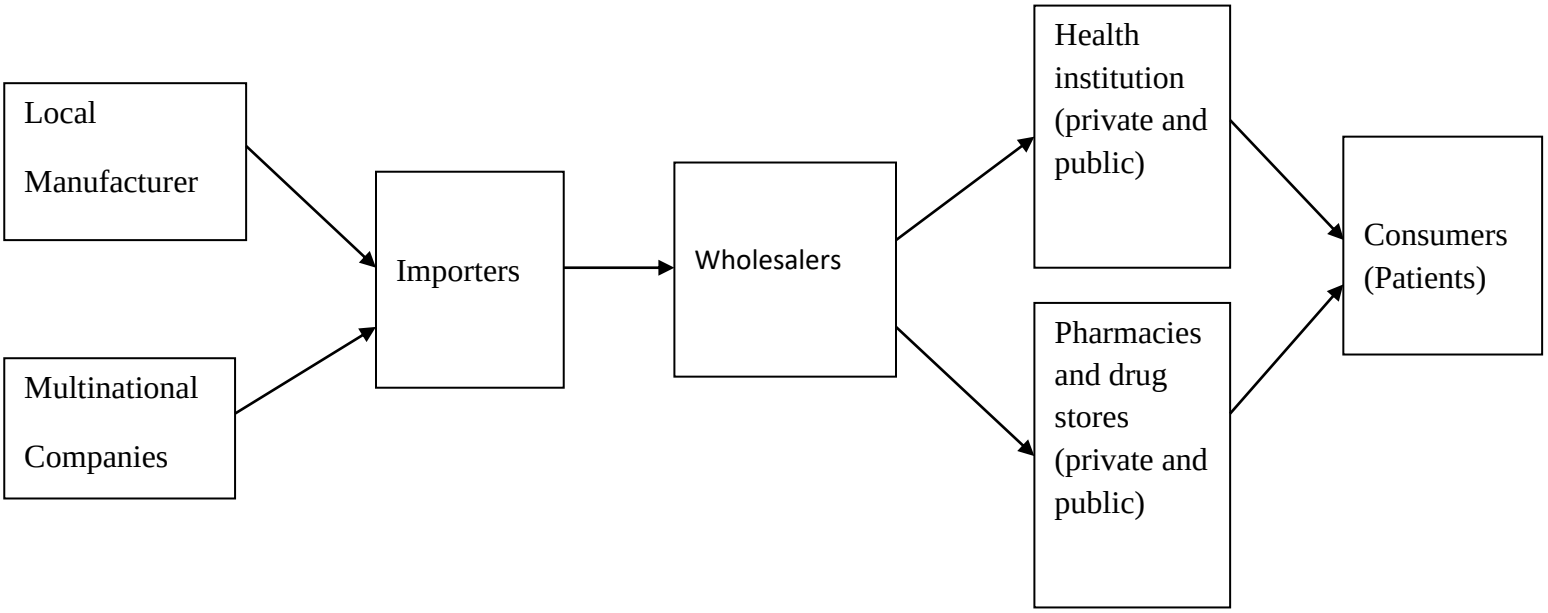

Figure 2.1.1: Main Simplified Route of Private Sector Pharmaceutical Supply Chain adapted from Mehralian et al., 2012

Porter (1990) characterizes the industrial structure of pharmaceuticals with high entry barriers (the need for huge fixed research and development costs and economies of scale in selling to physicians), slow development of substitutes, low price sensitivity of buyers, limited clout of suppliers providing mostly commodities, moderate rivalries which focuses on R&D rather than price, with patent protection slowing competitive imitation. This has supported the high profitability of the industry. In this conventional environment, the major source of competitive advantage has been differentiation by product innovation rather than cost leadership. Gassmann, Gerrit, &Maximilian (2007), stated that this structure is undergoing substantial changes. Contrary to the Porter (1990), the development of substitutes is becoming faster. This intensifies rivalries, including competition over prices, and can have a negative impact on company profits. Past experiences in this sector show that second entrants can overtake the market share of the "first-in-class" with improved features and intensive marketing effort; i.e. the first-mover advantage for the pioneer product is considerable but not insurmountable as stated in the work of Berndt, Linda, David, & Glen (1996). Hadfield, Nichols, &Ernest (1999) defined pharmaceutical supply chain as 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. It is the integration of all activities involved in medicines selection, quantification, procurement, warehousing, distribution and use (MSH, 2012) and is the means of delivering medicines to patients by coordinating and collaborating the processes, operations and organizations involved in the product development, manufacturing, marketing and logistics of medicines (Shah, 2004). Specifically, the pharmaceutical supply chain originates from raw material suppliers, to manufacturing sites, to wholesale distributors, to pharmacies/hospitals, and ultimately to patients (Health Strategies Consultancy LLC, 2005). According to Shah (2004) and Pedroso and Nakano (2009), a typical PSC includes, but is not limited to, the following parties: manufacturers, intermediaries, healthcare providers, and customers.

The Pharmaceutical supply chain is the means through which prescription medicines are delivered to patients. Pharmaceuticals originate in manufacturing plants are transferred to distributors; stocked at retail and ultimately distributed to consumers. Logistics in the Pharmaceutical supply chain is critical for providing the right medicine to the right patient at the right time and most importantly at the right price (Parmata et al., 2014).

Over the years, the pharmaceutical industry has evolved to address old and emerging diseases using latest knowledge and technology. As the industry has been changing in terms of its indispensable role to address diseases, it has also developed in the dimension of business. In addition, the pharmaceutical companies have gone through a noticeable structural reorganization (Kelle, Woosley, & Schneider, 2012). Some of the essential elements of this organization include drug discovery, delivery mechanisms, launching and marketing, and distribution and production. Trends show that the periods before the 1990s experienced greater stability in the industry (Kelle et al., 2012). Various pharmaceutical companies dominated the industry and had uncontested success for a period of almost a century.

After a drug is launched, a completely different set of objectives, drivers, and constraints become dominant. The key stakeholders in Main Issues Related to Pharmaceutical Supply Chain final product, The Pharmaceutical Supply Chain this supply chain include multiple government agencies, hospitals, clinics, drug manufacturers, drug distributors, pharmacy chains, retailers, research organizations, and the FDA. To compound matters further, the same supply chain is responsible for the distribution of prescription drugs, over-the-counter (OTC) medicines, generics, as well as biologics having different handling needs and operational objectives. Indeed, there are numerous other organizations, such as insurance companies, healthcare management organizations, and GPOs, that further increase the complexity. Due to very different business objectives, these organizations make the task of managing supply chain all the more difficult. Furthermore, due to the regulatory nature of the industry and numerous merger and acquisitions to acquire more R&D expertise, many pharmaceutical supply networks have grown in an uncontrolled fashion rather than being planned for optimal performance.

2.1.2. Importance of efficient supply chain distribution.

Perhaps the most important consideration in assessing the impact of the pharmaceutical supply chain processes on an organization's operational costs is the simulation and the dynamics involved. Gjerdrum, Papageorgiou, and Shah (2012) developed a standard approach for modeling the dynamics of supply chain and for testing it on different pharmaceutical processes. The model incorporates both the physical and business processes. Pharmaceutical physical processes include manufacturing, distribution and warehousing. The business processes include decision makers, methods, tools for decision making, and levels of decision making. The model

suggested non-invasive ways of improving the operation of the supply chain (Gjerdrum et al., 2012). The proponents of this model suggested that the improvement of the operation of a supply chain requires making changes in different parameters and business processes. The pharmaceutical supply chain brings together many agents with different objectives (Ripin et al., 2014). The internal dynamics of these agents can work against organizational performance. For example, if miscommunication among the agents occurs, a negative impact on the result might ensue. This underscores the role of collaboration of the agents in forecasting, inventory management, and planning. Agents must coordinate their activities across the supply chain (Saberi, Nookabadi, & Hejazi, 2012). Larger scale operations, in terms of geographical spans and different activities, account for the current practice that is highly distributed (Saberi et al., 2012). A collaborative planning activity requires the support of scheduling tools and the multisite planning. The efficiency of a supply chain process depends on the quality of inventory management and coordination (Haq & Boddu, 2015). The cycle time of the overall supply chain distribution processes is critical. Reducing the supply chain cycle time can add to the efficiency of the supply chain that will consequently affect the organization's operational costs. In other words, when companies reduce the time span for a supply chain cycle, making it shorter, the operational costs will be cheaper. To reduce the total cost of delivering a product to the consumer pharmaceutical organizations are going beyond the walls of their organization and working with suppliers and customers implementing the best SCM practices such as make-to-stock or make-to-order strategies. Pharmaceutical organizations have changed from the historical emphasis on supply chain that only involves manufacturing and distribution of goods to the value chain supply chain model that manages the innovation and development processes from capacity to production planning (Wood & Cronley, 2014). The current focus was to identify innovative ways of exploiting other benefits from the supply chain. Improvements in strategic-making processes accompany these changes to allow for responsive supply chains. The ultimate result of such improvements is an efficient supply chain process that is less capital intensive and, consequently, reduces an organization's operational costs.

2.1.3. Difference between Developed and Developing Countries Supply Chain

The pharmaceutical supply chains in developing and developed countries vary in terms of their organization, financing, function, and ideal characteristics of the best performing supply chains (Choi, Narasimhan, & Kim, 2012). Other dimensions of differences between supply chains are

the use of technology and stock levels. Overall, developed countries have distinct regulatory bodies that regulate the distribution of pharmaceutical products in the market. Medical practitioners from developed countries prescribe but third-party players have a role through reimbursement policies (Cameron, Mantel-Teeuwisse, Leufkens, & Laing, 2012). On the other hand, developing countries have limited ability to enforce regulations and policies on the distribution of pharmaceuticals in the markets, while the manufacturers do forecast in developed countries with a focus on planning for production, procurers, guided by demand (Cameron et al., 2012). The pharmaceutical supply chains in developing countries have low and poor visibility compared to those in developed countries. In terms of alignment of incentives and objectives, supply chains in developed countries identify with high-level competition and routine monitoring (Ellram, Tate, & Feitzinger, 2013). On the other hand, supply chains in developing countries are difficult to align, and the absence of performance data hinder the role of incentives. The role and responsibilities of agents involved in the supply chains of developed countries are systematized because they are well trained (Zhu, Sarkis, & Lai, 2012). Supply chain practices in developing countries are weak; roles are unclear, and there is a high staff turnover compounding difficulties in the supply chains, the responsibilities for many individuals, and the entities losing focus (Zhu et al., 2012). The expiration of medicine in the supply chain is a serious threat to the already constrained access to medicines in developing countries. Privett and Gonsalvez (2014) explained that medicines used for vertical programs, donated, and manufactured by small revenue producers are prone to expiry. In addition, they suggested considering lean supply and stock rotation methods to help in reducing the drug expiry issue.

2.1.4. Supply Chain Challenges and Opportunities

The practice of drug counterfeiting is escalating worldwide. Advances in technology, intermediary proliferation, high prices, excess demand, and a lack of regulatory intervention drive the escalation of counterfeiting in the pharmaceutical industry. (Wertheimer, Santella, Chaney, 2004). The counterfeit drugs continue to proliferate in existing pharmaceutical supply chains; the introduction of these counterfeit drugs taints the quality, effectiveness, and safety of the drug supply. Drug counterfeiting estimates range from “8% of the total drug supply in the United States and other industrialized nations, and as high as 60% in poor countries” (Wertheimer, Santella, Chaney, 2004). Counterfeiting results in lost revenues, profits and lives. The economic impact of counterfeit drugs extends and multiplies worldwide. Counterfeit drugs

cause substantial losses in revenue and profit. The faux products also tarnish reputations; cause costly lawsuits from adverse drug reactions; and create expensive recalls and reverse logistics expenses. Indirectly, the counterfeit products can increase regulatory and political involvement in the industry which creates lengthened product approval times and costs. The end result: law suits, insurance costs and injuries, create higher prices for the end consumer and lower profit margins for pharmaceutical companies.

One of the future challenges for the pharmaceutical industry involves the combat of counterfeiting. The FDA has recognized that RFID (Radio Frequency Identification) technology possesses potential to reduce the threat of counterfeit drug introduction. The FDA believes, "Modern electronic technology is rapidly approaching the state at which it can reliably and affordably provide much greater assurances that a drug product was manufactured safely and distributed under conditions that did not compromise its potency" (Fda.gov 2004). As the FDA continues to examine alternatives to act against the counterfeiting pandemic, "Radiofrequency Identification (RFID) tagging of products by manufacturers, wholesalers, and retailers appears to be the most promising approach to reliable product tracking and tracing." (Fda.gov 2004) Additionally, "Authentication technologies for pharmaceuticals have been sufficiently perfected that they can now serve as a critical component of any strategy to protect products against counterfeiting." (Fda.gov 2004) If the FDA imposed mandatory implementation of RFID, the industry on a whole could experience vast changes in the cost basis for supply chains. Although the pharmaceutical industry would take a significant cost hit to implement the new technology, the end result, if counterfeiting were reduced, would create substantial savings and additional profit. The cost of the infrastructure to implement RFID would be a onetime sunk cost; however the benefits would continue to contribute to the bottom line. Even if the cost of the RFID tags, which is where the main portion of the cost exists, remained high at $.20 /tag, the benefits would still show significant increases in profit from the reduction in counterfeit products. The benefits of RFID implementation far outweigh the costs (Lagasse 2003).In addition to the quantitative losses suffered by the pharmaceutical industry, the world also experiences immeasurable humanitarian losses as a result of counterfeit drug introduction (Wertheimer, Santella, Chaney 2004).

2.1.5. Importance of Transportation in Supply Chain

Transportation refers to the movement of products from one location to another, as the products are rarely produced and consumed in the same location (Tsao & Lu, 2012). Transportation is a significant part of the supply chain because it delivers the product from the production location to the consumption location. In addition, transportation represents one of the essential elements of the cost experienced by most supply chains. In global supply chains, especially in the pharmaceutical supply chain, the role of transportation is even more crucial (Tsao & Lu, 2012). Transportation is also the physical connection of all manufacturing plants involved in the supply chain (Chan & Zhang, 2011). The locations in a supply chain network are referred as nodes, and the connections are referred as links. When one group sells the product to another, transportation provides the delivery of that product. A disruption in the supply chain has an effect on all stakeholders. Transportation is a vital function in any of the supply chains in the world. Supply chains use responsive transportation to reduce the storage cost by centralizing the inventory. In order to understand the role of transportation in the supply chain, it is important to consider the perspectives of the parties involved, carriers and shippers. The carriers make investment decisions regarding transportation equipment in order to maximize the return on investment of the assets. They decide whether to use trucks, airplanes or other modes of transportation. On the other hand, shippers use transportation to minimize the total costs of operation (e.g., transportation, inventory, facility). Shippers also provide an appropriate level of responsiveness to customers. Supply chain uses a mixture of various modes of transportation such as air, package, trucks, carriers, rails, water, and many more modes to be able to move products from one place to another.

2.1.6. Supplier selection model in pharmaceutical supply chain

Supplier selection is one of the most important activities for most enterprises and has a substantial impact on the efficiency and effectiveness of the entire supply chain. It is likely that the manufacturer allocates more than 60% of its total sales on purchased services and materials. Furthermore, material cost is up to 70% of the finished product expenses. Therefore, selecting the appropriate suppliers can result in reduced purchasing cost, decreased supplying risk and improved product quality. When it comes to select a suitable supplier, various criteria need to be contemplated. However, it would not be appropriate to recommend and sometimes even it would

not be possible to take into account all the criteria upon final decision making due to the diversity of strategies among the industries concerning the supply chain regarding the product's characteristics. Typically in dealing with the supplier selection discussion, two kinds of problems are propounded: First, the supplier is the one (natural or legal entity) who satisfies all the purchasers' requirements (single sourcing); in this type of supplier selection, the management should make the only decision to determine the best supplier. Second, there is no single supplier to meet all the purchasers' needs (multiple sourcing). Many companies encounter some disruption or inadequate supply capacity on the part of the supplier. Adopting the second model, which is the 'multiple sourcing' the purchasing company meanwhile using the business process, can resolve the unpredicted delay of supply by one of the numerous other suppliers. It would not be convenient for the DM to choose suitable suppliers who can fulfill all the firms' demands based on different criteria. Another point to consider is that as a multiple criteria decision-making (MCDM) problem, the supplier selection would lie under the effect of many qualitative and quantitative contradictory factors. In order to maintain equilibrium among such conflicting criteria, many studies have proposed various models, encompassing single to hybrid approaches. (Forghani A, Sadjadi SJ, Farhang Moghadam B 2018)

Supplier selection is the process of choosing which prospective vendor or supplier should an organization get into business with. One of the primary goals of supplier selection is to establish a mutually-beneficial business-to-business relationship with a reliable supplier that provides the most value for money. Supplier selection is an important process that sets a foundation for a long-term business-to-business partnership with suppliers that can greatly contribute to the success or failure of a business. Done right, supplier selection can help bring about the most value for money for a business that aims to maximize its resources and efficiently operate in order to optimize profitably.

Supplier selection is a process that needs to follow a strategy in order for a business to end up with its ideal supplier. Here are 5 stages of an effective supplier selection process:

Stage 1: Identify Business Needs

Identify what your business needs in order to produce its products or provide the services that it offers. Determine also if there are industry standards that you need to meet or regulations that

your business must comply with. If you are in the business of manufacturing goods or providing services, be aware that your business partners and your customers may also expect your own suppliers to comply with the same standards that they require of you in order to maintain the acceptable level of quality across a product's life cycle.

Stage 2: List Potential Suppliers

Come up with a list of your potential suppliers after you have identified your business needs. One of the easiest ways to find potential suppliers is by going through your personal and business networks. You can also check advertisements, industry publications, as well as attend trade shows and business forums to find potential suppliers.

Harness the power of the internet and search for online forums that cater to your type of industry and check business-to-business marketplace where you may find suppliers available in your area. The internet, just like your networks, is also a wonderful avenue where you can look for information regarding supplier reputation.

Stage 3: Determine your Supplier Selection Criteria

Create a list that spells out what you want and what the business expects from a supplier in order to help narrow down your supplier choices. This can also aid in determining the differences between suppliers and can help make the selection process easier and more objective.

What are the supplier selection criteria?

A supplier selection criterion is a list of things that you prioritize and will help you decide which supplier or vendor you are going to select. Here are some supplier selections criteria that you may want to think about when looking for suppliers:

- Quality and safety of products – this is the very basic and non-negotiable for your business when looking for a supplier and something that your supplier should be consistent with.
- Flexibility – the supplier's ability to adapt to your (possible) changing business needs may come in handy should you require some changes to your orders in the future.

- Delivery – a supplier, at the very least, is expected to deliver on time all the time and be reliable enough to inform you if there are going to be any foreseen delays.
- Reliability – a reliable supplier is a business partner that can greatly contribute to your business' success while, on the flip side, an unreliable and unpredictable supplier can spell trouble for your business.
- Cost – make sure that the supplier's cost is within budget. Ensure also that savings made on lower costs will not compromise the quality and safety of the supplier's products. Another thing to consider is if there is a type of payment arrangement that's going to be ideal or agreeable to both parties in case your business needs to do this in the future.
- Quality of service – the kind of service your supplier provides can make them stand out among their competitors and can make doing business with them a good experience for you.

Knowing what you want from a supplier at this point can help you make a shortlist of suppliers that you can meet during your selection process.

Stage 4: Meet the Suppliers

Once you have made a shortlist, arrange a meeting with the potential suppliers and ask if they can do a presentation of their products and demo how they supply their customers. Meeting the suppliers is an opportunity to gauge how they operate and if they might be ideal for your business.

Meeting the suppliers can also come in the form of a supplier site visit. Ask if you can conduct a supplier audit, using a supplier audit checklist with weighted criteria, which will help better determine if their operations and their supplies are in line with regulations and compliant with industry standards expected of your business.

Conduct supplier audits and meet as many suppliers as you can on the shortlist before you finally select your supplier and proceed with negotiating a contract.

Stage 5: Draft, Negotiate, and Sign the Contract

This is the conclusion of your supplier selection process that began with identifying your business needs from suppliers, getting to know suppliers, and selecting from a shortlist of potential suppliers. At this stage, you can draft a contract that clearly details your expectations

and review them with the supplier. Be prepared and expect a negotiation that will cover important information such as the amount of compensation for the corresponding supplier deliverables as well as the frequency of payment, due dates, expected delivery dates, and point persons, among others.

The contract should also include other important information such as the agreed date for end of contract, possible renewal of contract, and, this should be very clear for both parties, grounds for early termination of contract. (Erick Brent Francisco, 2021)

Selection Process Model:

The selection process model helps to rank and make a rational decision in the selection process for a long-term partnership. The first step to pre-qualification process is to search and compile a comprehensive list of eligible suppliers that may be able to meet the company requirements. After that is completed, we will need to narrow down the list of suppliers which we request more information from. Next, trial period begins for testing the supplier's ability to meet company and product requirements from smaller sample to larger ordering. After this trial period is completed, we would apply the Factor Rating Method in selecting the best suppliers among the qualified suppliers. (Kaya O. llkiz, 2014)

2.1.7. Challenges of global sourcing

As we move into a more modern and technologically advanced world, the global borders have, in a way, changed in dimensions. With increased trade between countries, the strategic sourcing process has become an integral part of international business.

But along with opportunities, it has also brought some challenges with it
Quality Control

Governance is always an issue when you are sourcing globally. The onus of governance falls in the hands of the locals because they will be present on the ground. Lack of third-party governance might encourage suppliers to cut corners and provide sub-standard quality to increase their profits. Frequent quality defects and lack of confidence in international suppliers lead to additional quality inspection within the supply chain and adds cost and lead time.

Communication

Communication is the key to the success of any relationship including trade and business. Non-verbal clues, which play an important part in effective communication, are absent when communicating over the phone or via emails and amplifies challenges due to language barrier and cultural differences. The meaning of certain words and phrases could vary across different cultures and thus a misplaced word can mean something entirely different from what one actually meant to say. Varying time zones and national holidays can add to the complexity and cause delays in critical communication.

Government relations and regulatory requirements

The challenge here is for companies to adapt to different regulatory and compliance requirements of each country that it does business with. In effect, a company is expected to understand and adhere to the local laws and government regulations. Lack of such knowledge can lead to regulatory fines and inability to extract maximum value from international supply chains.

Logistics and warehousing

With businesses going global, products and services are moved from one location to another, which can be as far as thousands of miles, increasing the risks associated with logistics and warehousing. Unforeseen events such as natural disasters, political unrest, theft, loading/unloading accidents, transit supply shortages, etc. can lead to delays and increase in overall logistics costs.

In-house resistance

In-house resistance can negatively impact the chances of successfully developing suppliers internationally. Lack of trust, fear of losing jobs, risk of sharing proprietary information and quality concerns may prevent internal stakeholders from sharing vital information with suppliers. Full support of internal stakeholders from different function groups such as procurement, quality, shipping and receiving, process control, engineering, etc. is critical prior to engaging with suppliers.

Foreign exchange fluctuations

As global sourcing deals with the exchange of trade and services between different nationalities, there is always a degree of foreign exchange fluctuations. There can be several reasons for this, including political unrest, stock market movements and others.

Connecting with the right suppliers

The internet and aggregation platforms have indeed provided visibility to many suppliers across the world. But this solves just the first piece of the puzzle. Additional vetting and conducting quality audits require time, money and resources. Choosing the right supplier is like finding a needle in a haystack. It can be risky and costly if you choose the wrong supplier to develop.

Unstable economic and political climate

Local and regional economic environment can be a primary risk factor for global sourcing. Due to the cheap-labor and other factors, developing countries may be experiencing uncertain economic situation (Cook, 2006). A pronounced financial crisis happened in 1999 leading to a decline in almost every Asian economy and currency decreased sharply over one weekend. Plenty of banks and companies went bankrupt in Asian countries. Even as late as 2006, although many Asian countries have seen their economies revived, some still have not totally recovered. Many European and American companies were financially stricken by this horrible occurrence. Many U.S. companies are not willing to invest in an overseas factory in Latin American and Africa because of the uncertainty of local economic environment (Cook, 2006). Therefore many strong enterprises engage experts to inspect local economies where they plan to source. The economic risks are more severe for the medium and small companies; they must find reliable way to cover this risk. There are also some problems caused by political factors in global sourcing. For instance, events in the Middle East and North African show that local politics can dominate how companies set up commercial relationship with the companies in these countries (Cook, 2006). According the study of Thomas A. Cook, there are more than 50 countries around the world where the political environment is not conducive to deals with local businesses. Undoubtedly, global sourcing offers a lot of challenges that need to be tackled timely and responsibly. (Sourcex, 2020)

2.1.8. The Global Pharmaceutical Industry

The global pharmaceutical industry is perhaps one of the most complex and research-intensive industries. This is because innovation has long served as the backbone and the foundation that has been powering up this industry (Dunlap, Kotabe, & Mudambi, 2010). Some of the most common examples of companies and firms that operate in the pharmaceutical industry include independent drug and drug services research and development firms, drug manufacturers, and developers of medical and healthcare devices. The goal of the pharmaceutical industry, at large, is to lead the discovery, development, production, and marketing processes in relation to drugs and other products that can be used as and for medication (Kolb & Sharpless, 2003). It is worth noting that while the pharmaceutical industry has its own internal checking and balancing measures, it is still subject to the often harsh scrutiny of the government regulatory agencies. This is the case since faulty and improperly monitored and regulated drugs, medications, and other pharmaceutical products, just like food, can have an adverse effect on the health of entire populations. Such types of adverse effects, as a result of policy miscalculations, can lead to the generation of unnecessary costs for the government (Dunlap, Kotabe, & Mudambi, 2010). Mishaps in the pharmaceutical industry are not that uncommon and so far, the governments, especially those that are in developing countries, have already learned their lesson about the importance of subjecting the pharmaceutical industry to heavy scrutiny. This is the main reason that it is now subject to a highly diverse set of regulations, laws, and policies. Some of the processes that government agencies, departments, and authorities tend to pay particular attention to include patenting, new drug development, testing, licensing, and marketing (Dunlap, Kotabe, & Mudambi, 2010). There are numerous ways in which drugs and other pharmaceutical products can be allowed or not allowed to enter the market. A review of the recent trends would show that the regulations which the pharmaceutical firms and the broader pharmaceutical industry face are increasing both in terms of number and individual complexity. This can be considered as a double-edged sword, mainly because it (the trend) can affect both the very people that the laws and regulations are trying to protect and the organizations that it is trying to restrict, both in positive and negative ways (Guler & Nerkar, 2012). As an example, pharmaceutical firms get positively affected by the heavy regulation schemes being implemented by the government because it practically forces them to innovate and 21 remain competitive; the people who are the target consumers of a newly developed drugs, on the other hand, would benefit from the access

to safe, effective, and affordable drugs for medication purposes. Focusing on the negative side, on the other hand, the increasing level of laws and regulations that the government imposes on pharmaceutical firms makes it harder for companies that develop drugs and medical devices to provide much needed products and services for people who need it (Guler & Nerkar, 2012). Patients with medical conditions that are harder to treat, for example, would find it more difficult to procure needed medicines because of the difficulty of the companies that are developing the drugs and medical devices to be granted the access to their target markets. From an economic perspective, this creates a deficit situation where the population of people whose medical and healthcare needs fail to be satisfied significantly increases. This only goes to show that the process of regulating the pharmaceutical industry can work both ways (Itami & Nishino, 2010).

2.1.9. Challenges of custom clearance in Ethiopia

Trade facilitation operation is performed at different environments. The efficiency of these environments significantly either retards or hastens the movement of border crossing goods. Countries those attempted to improve the environments where trade facilitation can undertake significantly benefited from the movement of border crossing goods (Wilson, Mann & Otsuki, 2005).The impact of the environments where the movement of global goods clearance time significantly affected timely getting of the goods from the point of production to their final consumers. Among these environments, customs is the most significant environment whose operation significantly impacts the clearance process of goods entering and leaving the border of any country. Trade facilitation is aimed at ensuring the movement and clearance of the goods that cross the borders among countries within minimum cost and time. The more time to process the facilitation of trade across the borders significantly slows the easy flow of border crossing goods of imports and exports(Martincus, 2013).Customs are expected to satisfy the wants of both the government and border crossing traders without compromising the balance between trade facilitation and control through maintain regulations and laws that govern the movement of international goods. Both trade facilitation operation and control has been given optimum attention by the customs to satisfy the expectation of both customs and government by ensuring the compliance of border traded goods with the regulations of regulatory bodies those involved in the movement of border crossing goods and the time to process border goods has to be minimum as much as possible. World customs organization (WCO, 2011) indicated that the effectiveness of the operational procedures of customs have a

great influence in the movement of border crossing goods across the globe. So that customs have to be in position to revise their operational procedures to optimize trade facilitation and control. According to the WCO (2015), excessive delay is a serious challenge for business that significantly depress them because of the inefficient coordination and cooperation among customs within and between themselves, and other governmental agencies that inspect the same goods more than three and above as a result the shipment wait for a longer time to clear the customs and these delays are associated with attendant cost that can significantly affect the competitive position of the trading community. Burdensome procedures of trade, regulations related with customs and trade are often mentioned as the major obstacles to both small and medium sized enterprises' exports and imports of developing countries . This is because large firms of these countries are better organized in financial and technical information about border crossing goods to navigate complex regulatory environment. But, even large firms in Ethiopia have been challenged to import and export goods trade internationally because of the Inefficiency customs procedures and complexity of regulations related with customs and trade of goods crossing borders of that country. It takes up to 44 days to comply with all procedures needed to import or export at cost of USA$2380 and USA$2960 per container (Business Doing – World Bank, 2015). The time spent to comply with customs procedures for importers of Ethiopia was 203 hours and the cost associated with processing of customs procedures and regulations was USA$750 but, it took 160 hours to process customs procedures for those importers of Sub-Saharan countries and these importers spent a cost of USA$351 to comply all customs procedures and regulations that govern the flow of international goods (World Bank, 2016).

2.1.10. Pharmaceutical Supply Chain in Ethiopian Context

The provision of complete health care requires the availability of safe, effective and affordable pharmaceuticals of the required quality, in adequate quantity at all times. Despite this fact, in the past, the pharmaceutical supply chain management system of Ethiopia had several problems including non-availability, unaffordability, poor storage conditions and stock management and irrational use.

To solve these problems in public health facilities, Pharmaceuticals Fund and Supply Agency (PFSA) was established in 2007 by Proclamation No. 553/2007 based on the Pharmaceuticals Logistics Master Plan (PLMP). The Agency is mandated to avail affordable and quality

pharmaceuticals sustainably to all public health facilities and ensure their rational use. So as to execute its mandate in the area of pharmaceuticals supply in an efficient and effective manner, Integrated Pharmaceuticals Logistics System (IPLS) was developed and it is under implementation, currently. IPLS is the term applied to the single pharmaceuticals reporting and distribution system based on the overall mandate and scope of the PFSA. It aims to ensure that patients always get pharmaceuticals they need. To be successful, the system must fulfill the six rights of supply chain management by ensuring the right products, in the right quantity, of the right quality, at the right place, at the right time and for the right cost. The IPLS integrates the management of essential pharmaceuticals including the following pharmaceuticals that were used to be managed vertically: HIV/AIDS, Malaria, TB and Leprosy, EPI, MCH and purchased essential drugs. It is the primary mechanism through which all public health facilities obtain essential and vital pharmaceuticals. Products included on the National pharmaceuticals procurement List (NPPL) are supplied and managed through the IPLS (PFSA, 2015).

2.2 Empirical Literature Review

A review of literature reveals that a lot of research on the Challenges of Global Pharmaceutical Supply Chain management has been undertaken in developed countries context and their applicability in the developing countries such as Ethiopia is yet to be explored. Developing countries in Asian and African continent have carried some studies on Challenges of Global Pharmaceutical Supply Chain management while in Ethiopia some studies have focused on Logistics Gaps Analysis and Mitigating activities. Therefore, it is imperative to do a research on the Challenges of Global Pharmaceutical Supply Chain management in Ethiopia.

According to research done on Iran, a study showed that a well-adapted pharmaceutical supply chain in Iran should improve some indicators the same as coordination, resource planning logistics management, knowledge and financial management, customer relationship management and medical insurance system Another study indicated that to improve pharmaceutical supply chain especially in the hospitals must emphasize on proper training to employees, using the fixed-rate shopping system, and providing facilities to patients are recommended. According to what was said and due to the shortage of researchers in this field, this study aims to determine challenges in the pharmaceutical supply chain in Shiraz, as the largest metropolitan and the main

referral system in health care in the Southeast of Iran using a qualitative approach. Results of this study would be beneficial for health-care managers and policymakers. (Yaser Sarikhani, 2019).

According to Sutton and Kellow (2010), and different experts the pharmaceutical supply chain of Ethiopia have two wings. The first is addressing those of the public health facilities through PFSA. The second is addressing the private health facilities through different importers, wholesalers and also PFSA to some extent. PFSA was established in 2007 based on pharmaceutical logistics master plans implementations designed by FMOH. The mandate of PFSA is; it is a sole provider of forecasting, procurement, storage, inventory management and distribution of pharmaceuticals to the public health sector in Ethiopia. PFSA's current supply chain starts with the import of most drugs via the port of Djibouti and purchasing from local manufactures. These products are then trucked into central PFSA based in Addis Ababa, before being distributed to the various distribution centers (Hubs) and on to the hospitals and health centers. Recently PFSA has established pull system known as integrated pharmaceutical logistics system primarily using the essential data items reported from health facilities regularly every other month. Using its distribution centers (Hubs), PFSA will distribute drugs and supplies to public health facilities throughout the country (PFSA, 2012)

According to IBM global chief supply chain management officer study 2009, the key supply chain management challenges for life sciences supply chains include supply chain visibility, increasing customer demands, risk management, globalization and cost containment. According to Wilfried et al. (2009), the competitiveness of a supply chain is determined by many different factors and a resource based view of the firm, with attention to networks, knowledge management and environment. Challenges affect a supply chain by affecting one or more of its components. These components are either internal or external to the supply chain, and can be classified as belonging to the following realms or contributors to the functioning of the supply chain: Transportation, Utilities/Equipment, Communication, Suppliers, Customers, Labor and Finance (Stecke and Kumar, 2009).

2.3. Conceptual Frame Work

Based on the existing literature conceptual frame work is developed to show the different constructs/dimensions/aspects of the global pharmaceutical supply chain management

challenges. Conceptual frame work provides a network of inter linking concepts that together provide a comprehensive understanding of phenomena. Conceptual frame work is a set of broad ideas used to explain the relationship between the objective of the research and variables used or factors. Conceptual frame work is a structure of concepts which are put together as a map for the study and it shows the relationship of research variable. Conceptual frame work provides the link between the research title, the objectives, methodology and literature review. Based on the literatures conducted in the study area of global pharmaceutical supply chain management the under listed six variables (Quality Control Issues, Foreign exchange/Currency Issues, Supplier Related Issues, Government relations and regulatory requirements, Unstable and political climate, inbound logistics challenges) were found to be relevant to global supply chain management of pharmaceutical importers in Addis Ababa.

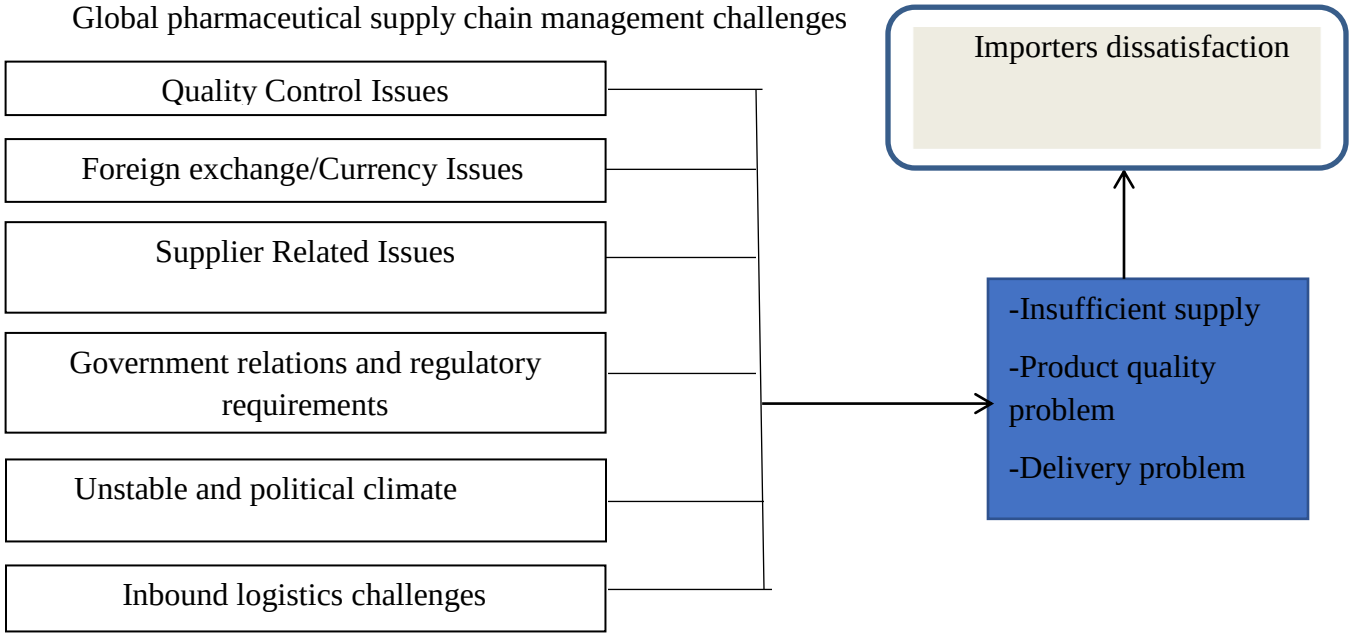

Figure 2.2.1: Conceptual framework of Global pharmaceutical supply chain management challenges

Source: Developed by student researcher based on literature (2022)

CHAPTER THREE

RESEARCH METHODOLOGY

This section presents the research methodology adopted during the implementation of the study. Researches are done by having an adequate data collected from a research area. This third chapter of the study provides readers clear information on the data and data related activities. In the beginning description of the study area then after followed by the research approach applied to gather information. The research design is also explained here. To conduct this research, data should be collected and hence the source of data, the population and sample for the data, data collection procedures and the method used to analyze the data collected are discussed well.

3.1. Description of the study Area

The study is conducted in Addis Ababa city in selected private pharmaceutical importers. Addis Ababa is the capital and largest city of Ethiopia. The city is administratively divided in to 11 sub cities and 116 woredas. Addis Ababa is located on a well-watered plateau surrounded by hills and mountains, in the geographic center of the country. Addis Ababa is the educational and administrative center of Ethiopia.

Addis Ababa is also the largest city in the country by population; with a total population of 5,005,524 this capital city holds 527 square kilometers of area in Ethiopia. The population density is estimated to be near 5,165 individuals per square kilometer available.

Addis Ababa is the educational and administrative center of Ethiopia. It is the site of Addis Ababa University (1950) and contains several teacher-training colleges and technical schools. Also located in the city are the Museum of the Institute of Ethiopian Studies and the Yared School of Music, both of which are operated by the university; the National Library and Archives; palaces of former emperors; and government ministries. Several international organizations have their headquarters in the city, notably the African Union and the United Nations Economic Commission for Africa, the latter of which is located in Africa Hall.

The bulk of the export and import trade of Ethiopia is channeled through Addis Ababa on its way to or from the ports of Djibouti, on the Gulf of Aden, or Asseb, Eritrea, on the Red Sea. The city

is also the collection and distribution Centre for much of the country's internal trade. The Mercato, located in the western part of the city, is one of the largest open-air markets in Africa. The Piazza in the central city and Bole Road to the southeast feature more expensive European-style shopping centers.

Addis Ababa is the hub of the nation's transportation network. Several roads connect it to other major cities; the only railway runs to Djibouti. The city is served by an international airport.

Per the population recorded at the last census, the city of Addis Ababa has a higher population of female residents than male residents. Almost one-quarter of all people in Ethiopia that live in urban areas live in the capital city.

Addis Ababa Population in the near future is expected to grow to exceed 6.5 million residents. The annual growth rate of the city has been estimated in recent years to be 3.8%. In prior years, growth has been as much as 8%. The city is a thriving urban area in Ethiopia, and the jobs available in Addis Ababa, the availability of clean drinking water and plumbing, and the many shops and businesses ensure that growth will continue to be steady in this capital city well into the future (Amy Tikkanen , 2021)

3.2. Research Approach

As stated by John, Hafiz, Robert & David (2007), research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. The selection of a research approach is also based on the nature of the research problem or issue being addressed, the researchers‟ personal experiences, and the audiences for the study. There are three basic approaches to research (a) qualitative (b) quantitative (c) mixed methods. Quantitative survey is the most appropriate one to use if the purpose of an investigation is to describe the degree of relationship which exists between the variables. In general, quantitative research is the systematic and scientific investigation of quantitative properties and phenomena and relationships (Bhattacherjee, 2012). The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena. It usually starts a general statement proposing a general relationship between variables. Quantitative researchers favor methods such as surveys and

experiments, and will attempt to test hypotheses or statements with a view to infer from the particular to the general (Bhattacherjee, 2012). Quantitative and qualitative (mixed) research approach is employed to assess the challenges of global pharmaceutical supply chain taking Private Pharmaceutical Importers in Addis Ababa, Ethiopia. Quantitative research approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. On the other hand, Qualitative research, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind

3.3. Research design

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data (Kothari, 2004).

Singh stated that research design is essentially a statement of the object of the inquiry and the strategies for collecting the evidence, analyzing the evidences and reporting the findings. There are different types of scientific research namely exploratory research, descriptive research and explanatory research (Bhattacherjee, 2012).

Accordingly, this research is conducted using both descriptive and explanatory research design

3.4. Population and sample

3.4.1. Population of the Study

The source population of the study consists of all private pharmaceutical importers having a valid license given by Ethiopian Food, Medicine and Health care Administration and Control Authority (EFDA)

According to Hair et al. (2010), target population is said to be a specified group of people or object for which questions can be asked or observed to develop required data structures and information. Therefore, for this study, the target populations were selected private pharmaceutical importers in Addis Ababa city. General Managers, Technical Managers Regulatory Affairs, Finance Managers, Experts, professionals in the field those with education level, diploma, bachelor degree holder and above and who are familiar with global pharmaceutical supply chain were involved in responding to self-administered questionnaire.

3.4.2 Sample Size and Sampling techniques

The researcher employed non- probability purposive sampling procedure for the reason of not losing pharmaceutical importers that have enormous active participation in the global pharmaceutical supply chain and importing a vast Varity of products so that the research will be representative. Respondents were selected on the basis of their involvement in pharmaceutical supply chain activities and being able to provide adequate information on the topics being analyzed. The respondents involved in the study by representing their respective organization.

Sample size was calculated according to the guide for conducting supply chain assessments using the LIAT (USAID | DELIVER, 2011). A confidence level of 95% with a margin of error of 5% was used. The sample size was then calculated using formula for calculating sample sizes in finite population bases. With this formula, sample size of 72 private pharmaceutical importers was obtained.

The general formula for calculating a sample size is:

n= z 2 *p (1-p) / m2

n= (1.96) 2x0.5 (1-0.5) / (0.1) 2

n=96

Where: n = required sample size

Z = Z value (e.g. 1.96 for 95% confidence level)

p = estimated prevalence of the indicator (The product of p and [1-p] is maximized when p = 0.5).

Therefore, when prevalence is unknown, 0.5 should be used.

m = margin of error you wish to allow in estimating the prevalence at 5 percent, m =0.1 However, there is a predetermined population (e.g., total number of private pharmaceutical importers in Addis Ababa 300), the sample size generated from the above equation needs to be multiplied by the Finite Population Correction (FPC) factor. For our purposes, the formula can be expressed as:

New n= n /1+ [(n−1)/N]

Where: New n = the adjusted new sample size N = the population size n = the sample size obtained from the general formula

New n= 96/ 1+ [(96−1)/300]

New n= 72 private pharmaceutical importers.

A total of 300 private pharmaceutical importers that are providing pharmaceuticals were used as a study population from which 72 selected private pharmaceutical importers were drawn.

3.5. Data sources and types

There are two kinds of sources for data collection and these are primary and secondary sources of data. Primary data are those which are collected afresh and for the first time and thus happen to be original in the character; from the field by the researcher which is subject to the topic under study (Kothari, 2004). Both primary and secondary data were collected from various sources using data gathering instruments to make the study complete and achieve its predetermined objectives. In this study both primary and secondary sources were used in gathering information for the study. The researcher used a structured questionnaire as source of primary data. The researcher obtained secondary data from various source of information from journal, books and internet that contains relevant information for the study. These are sources containing data,

which are collected and computed for other purpose but also they helped the researcher in this study

3.6. Data collection procedures

Data collection was conducted by a self-administered questionnaire. The questionnaires were carefully adopted in a way that used to investigate and describe the challenges of global pharmaceutical supply chain management. This self-administered questionnaire was developed with a five point Likert scale. Close and open ended questions included in the questionnaire. The type of questions, form, wording and sequences also considered carefully. The general advantage of the questionnaire method is that, it allows collection of large amount of data from suitable population in a highly economical way. Questionnaire method has the following advantages: time and money saving; good for respondents who cannot offer audience to the researcher; it is free from the bias of the interviewee; answers are in respondents words; respondents have adequate time to give well thought out answers and respondents who are not easily approachable can also be reached conveniently (Kothari, 2004). On other hand this method has the following disadvantages; it doesn't work if respondents do not know how to read and write; low rate of return of the duly filled in questionnaires; no supplementary information was collected and some respondents do not respond a situation which may affect the quality of the study and this method is likely to be the slowest of all (Kothari, 2004). The primary data for this study was collected through self-administered questionnaire with five point likert scale. The questionnaires were distributed to each selected customer (pharmaceutical importer) in person where they were available. After the questionnaires are retuned back, the researcher checked for the completeness.

3.7. Validity and Reliability

Reliability is the degree to which the measure of a construct is consistent or dependable. In other words, if we use this scale to measure the same construct multiple times we get pretty much the same result every time, assuming there is no change in underlying phenomenon. According to (Bhattacherjee, 2012), internal consistency reliability is a measure of consistency between different items of the same construct (Bhattacherjee, 2012). The Cronbach Alpha (α) coefficient was statistically calculated to determine the reliability of the data. Cronbach's alpha determines

the internal consistency or average correlation of items in a survey instrument to gauge its reliability (Bryman & Bell, 2014). An acceptable level of reliability is usually implied by a result of 0.8 and above, although most researchers accept an alpha coefficient of 0.7 as acceptably (Bryman & Bell, 2014). The minimum Alpha coefficient for this research was thus set at $\alpha \geq 0.70$

Reliabilities of the scales were checked after coding and entry of data into SPSS version 20.0. Cronbach‟s alpha coefficients were computed for each scale to determine the internal consistency reliability of the instruments used in the study. According to Malhotra & Birks (2007), the value of 0.60 is considered as in the lower limit of acceptability for Cronbach‟s alpha.

Table 3.1: Summary of Reliability Statistics

No	Variables	Number of items	Cronbach Alpha
1	Quality Control Issues	3	0.744
2	Foreign exchange/Currency Issues	5	0.777
3	Supplier Related Issues	12	0.737
4	Government relations and regulatory requirements	5	0.705
5	Economic and macro level factors	3	0.770
6	Inbound logistics challenges	4	0.739

Source: Survey Result (June, 2022)

As shown on table above, all variables have Cronbach‟s alpha value above 0.70 and the overall alpha value is 0.745 which shows the acceptability of the measurement scales used.

Cronbach's Alpha	No. of items(N)
.745	6

Source: (own survey, 2022) Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer the Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale and a value greater than 0.7 is acceptable (George & Mallery, 2003). As indicated in table above, Cronbach's alpha test indicated that the instrument was found to be reliable as 0.745 value is in the acceptable range.

Validity

Validity often called construct validity refers to the extent to which a measure adequately represents the underlying construct that it is supposed to measure (Bhattacherjee, 2012). Validity is concerned with how well the concept is defined by the measure. According to Bhattacherjee (2012) there are two assessments of validity theoretical or translational validity and empirical or criterion-related validity which includes Content validity, Predictive Validity, Convergent validity and Concurrent validity. Content validity is an assessment of how well a set of scale items matches with the relevant content domain of which a measure relates to (or converges on) the construct that it is purported to measure, Predictive validity is the degree to which a measure successfully predicts a future outcome that it is theoretically expected to predict. Concurrent validity examines how well one measure relates to other concrete criterion that is presumed to occur simultaneously. The study applied content validity because it assess how well a set of scale items matches with the relevant content domain of the construct that it is trying to assess construct that it is trying to measure. Convergent validity refers to the closeness with which a measure relates to (or converges on) the construct that it is purported to measure, Predictive validity is the degree to which a measure successfully predicts a future outcome that it is theoretically expected to predict. Concurrent validity examines how well one measure relates to other concrete criterion that is presumed to occur simultaneously.

In this study, a pilot test was conducted distributing 6 questionnaires to technical managers, business managers, and finance managers of private pharmaceutical importers which were out of the researcher population. Feedback and necessary correction like grammatical errors were made

to improve the validity of the research. The reliability of the instruments was established following a pre-test procedure of the instruments before their use with actual research respondents.

3.8. Data analysis Techniques

After collecting the required data, the researcher coded and entered the collected data for electronic processing using the software Statistical Package for Social Sciences software (IBM SPSS Statistics 20 Version). The researcher used both descriptive and inferential statistics to analyze the data using SPSS 20 as a statistical tool. The descriptive statistics such as frequencies, percentages, means, standard deviations, tabular, and graphic representations were used to summarize and present the data. In addition, correlation analysis using Pearson correlation coefficient was used to show and assess the relationship between independent variables and dependent variables of the study. Furthermore, multiple linear regression analysis was used to examine the influence of the independent variables on the dependent variable and test the proposed hypotheses. Multiple regression analysis is adopted when there is one dependent variable which is presumed to be a function of two or more independent variables with the objective of making a prediction about the dependent variable based on its covariance with all the concerned independent variables (Kothari, 2004). Multiple linear regression analysis was used to assess the extent of effect of the independent study variables on dependent variables. The multiple regression equation was used to describe the relationship between independent variables and dependent variables.

3.9. Ethical consideration

The relevant ethical issues have been given special attention through all phases of the research process. Respondents informed clearly about the purpose of the study, the right to participate voluntarily, the right to ask questions including personal address of the researcher, the right to get the copy of the study, and the right to have their privacy respected; the right not to respond to question that they didn't want to respond. The information provided by participants will not be disclosed in any way. In addition, the researcher acknowledged all materials and sources of data used in this research. Supporting letter were received from AAU school of commerce and presented to the pharmaceutical importers. Before data collection, the research has received

consents of participial Names, phone numbers, addresses and other details are not included in the questionnaire to ensure confidentiality. During the study period the researcher maintained the highest standards of research ethics and good academic behavior to ensure that the study is credible, more specifically, honesty & integrity and expert-reviewer.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents the data analysis, results, and interpretation of the findings on the challenges of global pharmaceutical supply chain taking private pharmaceutical importers in Addis Ababa Ethiopia. The findings were based on data collected by the use of questionnaire in order to assess the challenges of Global pharmaceutical supply chain activities at private pharmaceutical importers in Addis Ababa Ethiopia. The analysis was performed around the objective of the study; however, other relevant details were added for better presentation of findings. A total of 72 experts, professionals in private pharmaceutical importers were participated in the study. However, 7 participants had not returned and appropriately filled the questionnaire thus excluded from the analysis. During data editing, the collected questionnaires were checked for errors and were found to be valid and used for the final analysis, which represented 90.28% valid response rate.

According to Mugenda(1999), a response rate of 70% and above is excellent. Based on the assertion, the response rate of this study was considered to be excellent. Descriptive and inferential statistics were used to analyze the data using IBM SPSS Version 20 as a statistical tool.

4.2. Demographic profile of the respondents

Before starting the analysis of the data, background information such as demographic data, is useful in order to make the analysis more meaningful for the readers. The samples of this study have been classified according to background information collected during the survey. The purpose of the demographic analysis in this research was to describe the characteristics of the sample with respect to proportion of males and females, range of age, educational background and work position. The frequency distributions of demographic variables presented below on table

Table 4.2.1: Demographic Characteristics of the respondents

	Major information on respondents		Frequency	Percent (%)	Valid percent	Cumulative percent
1	Gender	Male	53	81.5	81.5	81.5
		Female	12	18.5	18.5	100.0
		Total	65	100.0	100.0	
2	Age range in year	20-30	8	12.3	12.3	12.3
		31-40	38	58.5	58.5	70.8
		41-50	11	16.9	16.9	87.7
		51-59	7	10.8	10.8	98.5
		≥60	1	1.5	1.5	100.0
		Total	65	100.0	100.0	
3	Educational Level	Diploma	-	-	-	-
		First Degree	36	55.4	55.4	55.4
		Master's Degree	29	44.6	44.6	100.0
		PhD	-	-	-	-
		Total	65	100.0	100.0	
4	Work Position in the organization	General Manager	13	20.0	20.0	20.0
		Technical Manager	41	63.1	63.1	83.1
		General Manager & owner	5	7.7	7.7	90.8
		Business manager	6	9.2	9.2	100.0
		Total	65	100.0	100.0	

Source: Survey Result (own survey, 2022)

As shown on Table 4.2.1, out of 65 respondents, the male respondents constituted the highest percentage 53 (81.5%) while their female counterparts only constituted 12 (18.5%) of the respondents. This implied that the majority of organization activities and decision making in the private pharmaceutical importers were carried out by males. This also showed that the managerial positions of private pharmaceutical importers were occupied by males. Regarding

age, 8(12.3%) of the respondents were in the age group of 20-30 years, 38(58.5%) were in the age group of 31-40 years, 11(16.9%) were in the age group of 41-50 years while only 7 (10.8%) and 1(1.5%) were in the age group of 51-59 and ≥60 years respectively. This implies that most of the respondents were young and adults. According to the finding of the study, majority 36(55.4%) of the respondents have a bachelor's degree, while 29(44.6%) have a master's degree. Regarding work position in the organization, majority of the respondents 41 (63.1%) were technical managers, 6(9.2%) were Business managers, 5(7.7%) respondents were General Manager & owners, 13(20%) were General Managers. The research paper tried to find out the specific characteristics of pharmaceutical importers with respect to ownership, year of service in the market, monthly sales used by the pharmaceutical importers.

Table 4.2.2: Characteristics of the pharmaceutical import

		Response	Frequency	Percent (%)	Valid percent	Cumulative percent
5	Ownership of the pharmaceutical Import	Pharmaceutical Trading	18	27.7	27.7	27.7
		Pharmaceutical PLC	40	61.5	61.5	89.2
		Share Company	4	6.2	6.2	95.4
		Business group	3	4.6	4.6	100.0
		Total	65	100.0	100.0	
6	Years of services of the pharmaceutical import	≤ 1year	3	4.6	4.6	4.6
		2-3Years	11	16.9	16.9	21.5
		4-8 Years	17	26.2	26.2	47.7
		9-12 years	11	16.9	16.9	64.6
		≥ 13 years	23	35.4	35.4	100.0
		Total	65	100.0	100.0	
7	Monthly sale of the pharmaceutical Import	≤400, 0000birr	4	6.2	6.2	6.2
		400,001-1,000, 000 birr	13	20.0	20.0	26.2
		1,000, 001-5,000,000birr	17	26.2	26.2	52.3
		5, 000, 001-10,000,000bir	7	10.8	10.8	63.1
		>10,000,000birr	24	36.9	36.9	100.0

		Total	65	100.0	100.0	

Source: Survey Result (own survey, 2022)

According to the finding shown on table 4.2.2, 18(27.7%) of the pharmaceutical imports are owned by pharmaceutical trading, 40(61.5%) are Pharmaceutical PLC, while 4(6.2%) of the pharmaceutical import are share companies. 3(4.6%) are owned by business group this implies that majority of the pharmaceutical imports are owned by Private Limited Company (PLC) & more than one person. The finding of the study also showed that 3(4.6%) of the pharmaceutical imports were in the market ≤1 year, 11(16.9%) were 2-3 years, 17(26.2%) were 4-8 years 11(16.9%) were 9-12 years and 22(33.8%) were serving for ≥ 13 years. This implies that majority of the pharmaceutical imports are in the market for greater than 13 years.

Regarding the monthly sales of the pharmaceutical import, the results showed that 4(6.2%) have ≤ 400,000 ETB, 13(20.0%) have 400,001 to 1,000,000 ETB, 17(26.2%) have 1,000,001 to 5,000,000 ETB, 7(10.8%) have 5,000,000- 10,000,000 ETB and 24(36.9%) have a monthly sales of >10 Million ETB.

4.3. The Challenges of Global Pharmaceutical Supply Chain Management in Addis Ababa: Perceptions of Importers and Other Stakeholders

Table 4.3.1: Quality Control related challenges

Statistics

	What are the major challenges in the private pharmaceutical importers in Addis Ababa Ethiopia that impact availability of quality medicines?	What are the major challenges pharmaceutical organizations face during importing of global items?	Which are the most important competitive factors in the Pharmaceuticals industry?

N	Valid	65	65	65
	Missing	0	0	0
Mean		1.8769	2.0154	2.6769
Std. Deviation		1.53610	1.05315	1.82951

What are the major challenges in the private pharmaceutical importers in Addis Ababa Ethiopia that impact availability of quality medicines?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Shortage of foreign exchange rate	46	70.8	70.8	70.8
	Buyers financial capacity problem	5	7.7	7.7	78.5
	Regulatory problem	4	6.2	6.2	84.6
	all of them are answers	10	15.4	15.4	100.0
	Total	65	100.0	100.0	

What are the major challenges pharmaceutical organizations face during importing of global items?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Substandard quality of products	25	38.5	38.5	38.5
	Expiration of items	22	33.8	33.8	72.3
	Pharmaceuticals Damage, breakage and leakage	12	18.5	18.5	90.8
	Loss of pharmaceuticals	4	6.2	6.2	96.9
	all of them are answers	2	3.1	3.1	100.0
	Total	65	100.0	100.0	

Which are the most important competitive factors in the Pharmaceuticals industry?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cost	31	47.7	47.7	47.7

	Quality	7	10.8	10.8	58.5
	Time and Speed	6	9.2	9.2	67.7
	all of them are answers	21	32.3	32.3	100.0
	Total	65	100.0	100.0	

In this part of the study report, analysis was conducted on data gathered to assess challenges of global pharmaceuticals supply chain at 72 selected private pharmaceutical importers. Descriptive statistics was used to analyze the data collected via self-administered questionnaires.

The researcher wanted to know whether quality of pharmaceuticals is a challenge for private pharmaceutical importers in Addis Ababa Ethiopia. Respondents were asked to answer three questions pertaining to this issue. The first question was to know the major challenges in the private pharmaceutical importers in Addis Ababa that impact availability of quality medicines as indicated in table 4.3.1 above, among the respondents, almost three-fourth of the respondents 46(70.8%) replied that shortage of foreign exchange is a big challenge that impact availability of quality medicines 5(7.7%) responded that buyers financial capacity problem and finally the rest 4(6.2%) responded that regulatory problems. This clearly indicated that due to shortage of foreign currency in the country Addis Ababa, Ethiopia private pharmaceutical importers are unable to pay & resist house rent & employees' salary payment as a result of this a number of private pharmaceutical importers have shut down their organization

Respondents were asked to answer whether they faced challenges or not during importing of global items. Among the respondents 25(38.5%) answered that sub-standard quality of products are the major challenges importers faced during importing of global items, one-third of the respondents 22(33.8%) replied that expiration of items 12(18.5%) responded that pharmaceutical damage, breakage & leakage and finally the rest 4(6.2%) answered that loss of pharmaceuticals.

The researcher wanted to know whether competitive factors in the Pharmaceutical industry have challenge in importers or not. Out of 65 respondents almost half of 31(47.7%) respondents answered that cost is the highest competitive factor in the Pharmaceutical industry 7(10.8%) replied that quality 6(9.2%) answered that time and speed.

During the interview asked to give answer for the question of the proliferation of substandard and falsified pharmaceuticals (like medicines, medical supplies, medical equipment, laboratory

testing reagents) are raising & increasing from time to time in developing countries including Ethiopia so what should be done on the governmental Regulator body level in order to control & address poor quality of pharmaceutical challenges

General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that:-The regulatory body in Ethiopia should have advanced quality control medical laboratory & should be strengthened with full laboratory capacity, Post marketing inspection & surveillance should regularly be conducted as well as batch number analysis should be carried out when the item is imported to Ethiopia. The regulatory body has to work together with border shared countries in order not to smuggle poor quality & fake products, serious law enforcement has to be implemented for those who are found guilty of sub-standard & falsified pharmaceuticals. The regulatory body should work in collaboration with the military & police department, The regulatory authority of Ethiopia should be staffed with competent and motivated staff that can address substandard & falsified pharmaceuticals issue, High standard and advanced software technology that can help EFDA in identifying, detecting & checking whether the pharmaceuticals are correct or fake products has to be installed & implemented, Ethiopian Regulatory system has to be harmonized with other African Countries and closely working with supplier regulatory body, The public should be educated about genuine and fake pharmaceuticals difference & put in place stringent Regulatory Procedures, Promoting electronic system to control medicines by Barcode.

Table 4.3.2: Foreign exchange/ currency issues

Statistics

		What are the possible reasons for stock out of medicines at private pharmaceutical importers in Addis Ababa Ethiopia?	Does your organization face the risk of fluctuation in currency exchange rates during global sourcing?	Does your pharmaceutical import encounter shortage of foreign exchange which affects your organization performance?	Does your pharmaceutical import face any supply delay due to lack of foreign exchange permit?	If pharmaceutical products are out of stock and unavailable from the market what should be the consequences and results
N	Valid	65	65	65	65	65
	Missing	0	0	0	0	0
Mean		2.1077	3.4769	4.1538	3.8154	3.0769
Std. Deviation		1.61171	1.21331	.95575	1.21053	1.77929
Skewness		.952	-.242	-1.426	-.778	-.154
Std. Error of Skewness		.297	.297	.297	.297	.297
Kurtosis		-.916	-1.211	2.349	-.449	-1.837
Std. Error of Kurtosis		.586	.586	.586	.586	.586
Range		4.00	4.00	4.00	4.00	4.00
Minimum		1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00

What are the possible reasons for stock out of medicines at private pharmaceutical importers in Addis Ababa Ethiopia?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Shortage of foreign exchange rate	41	63.1	63.1	63.1
	Buyers financial capacity problem	5	7.7	7.7	70.8
	Regulatory problem	9	13.8	13.8	84.6
	all of them are answers	10	15.4	15.4	100.0
	Total	65	100.0	100.0	

Does your organization face the risk of fluctuation in currency exchange rates during global sourcing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	2	3.1	3.1	3.1
	Yes, but very rarely	17	26.2	26.2	29.2
	Yes, but occasionally	10	15.4	15.4	44.6
	Yes and frequently	20	30.8	30.8	75.4
	yes and always	16	24.6	24.6	100.0
	Total	65	100.0	100.0	

Does your organization face the risk of fluctuation in currency exchange rates during global sourcing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	2	3.1	3.1	3.1
	Yes, but very rarely	17	26.2	26.2	29.2
	Yes, but occasionally	10	15.4	15.4	44.6
	Yes and frequently	20	30.8	30.8	75.4
	yes and always	16	24.6	24.6	100.0
	Total	65	100.0	100.0	

Does your pharmaceutical import encounter shortage of foreign exchange which affects your organization performance?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	2	3.1	3.1	3.1
	Yes, but very rarely	2	3.1	3.1	6.2
	Yes, but occasionally	7	10.8	10.8	16.9
	Yes and frequently	27	41.5	41.5	58.5
	yes and always	27	41.5	41.5	100.0
	Total	65	100.0	100.0	

Does your pharmaceutical import face any supply delay due to lack of foreign exchange permit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	3	4.6	4.6	4.6
	Yes, but very rarely	9	13.8	13.8	18.5
	Yes, but occasionally	9	13.8	13.8	32.3
	Yes and frequently	20	30.8	30.8	63.1
	yes and always	24	36.9	36.9	100.0
	Total	65	100.0	100.0	

If pharmaceutical products are out of stock and unavailable from the market what should be the consequences and results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Severe health crisis	24	36.9	36.9	36.9
	Severe Economic crisis	5	7.7	7.7	44.6
	Morbidity & Mortality	14	21.5	21.5	66.2
	all of them are answers	22	33.8	33.8	100.0
	Total	65	100.0	100.0	

Respondents asked to answer the possible reasons for stock out of medicines at private pharmaceutical importers in Addis Ababa Ethiopia 41(63.1%) answered that shortage of foreign exchange 5(7.7%) responded that buyers financial problem 9(13.8%) replied that regulatory problem. getting foreign currency permit is the basis to start and keep sustainable relationship in a global supply chain. Respondents were asked to respond on related multiple choice questions under this topic. The first question was prepared to know whether private Pharmaceutical importers faced any challenge of the risk of fluctuation in currency exchange which affects its global pharmaceutical supply chain activities. Among 65 respondents, 2(3.1%) answered that no and by-no-means 17(26.2%) answered that yes, but very rarely 10(15.4%) replied that yes, but occasionally 20(30.8%) responded that yes and frequently and finally 16(24.6%) answered that yes and always. The next question was intended to know whether shortage of foreign exchange affected private pharmaceutical importers in relation with its suppliers or not. Out of 65

respondents 2(3.1%) answered that no and by-no-means & yes, but very rarely 7(10.8%) replied that yes, but occasionally 27(41.5%) responded that yes and frequently & yes and always.

Private pharmaceutical importers asked to give a response whether they face any supply delay due to lack of foreign exchange permit or not. They answered that among 65 valid responses 3(4.6%) no and by-no-means 9(13.8%) yes, but very rarely & yes, but occasionally 20(30.8%) yes and frequently 24(36.9%) yes and always. The next question was to assess the consequences of out of stock of pharmaceutical products out of 65 respondents 24(36.9%) answered that severe health crisis 5(7.7%) severe economic crisis 16 & finally 14(21.5%) replied that morbidity and mortality. During the interview asked to give answer for the question of foreign exchange fluctuation challenges which affect global pharmaceutical supply chain activities

General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that:-Foreign exchange fluctuation greatly affects the globe pharmaceutical supply chain by creating market instability and by damaging good relationship that exists among stake holders, The foreign exchange fluctuation happening this time is due to the global chaos: war conflict, Pandemics, Absence of foreign exchange reserve and plus the expansion of the uncontrollable black market has led to situation where there is a significant price variation & rise to products, The major challenge for foreign exchange fluctuation is the ever increasing inflation and the banks regulation, The foreign exchange fluctuation caused delay product distribution & customer dissatisfaction, Starting from 2018 the foreign currency fluctuation in shortage has been affecting the industry in obvious way:- many multinational companies has left the business, many importers unless working on export has no access to import the medicine, The solution for foreign exchange fluctuation is reconciliation in the political atmosphere, increase productivity, prioritize allocation of foreign currency usage & ultimately encourage export to earn more hard currency & as a result reduce inflation

Table 4.3.3: Suppliers related issues

What is the benefit and objective of selecting appropriate global pharmaceutical suppliers?

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Overall value maximization to the purchaser	7	10.8	10.8	10.8
	Purchase Risk reduction	6	9.2	9.2	20.0
	Product quality improvement	16	24.6	24.6	44.6
	To develop closeness and long-term relationships between buyers and suppliers	14	21.5	21.5	66.2
	all of them are answers	22	33.8	33.8	100.0
	Total	65	100.0	100.0	

When did your company transfer from a domestic supplier to an international supplier for the pharmaceuticals you require?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Before 30 years ago	5	7.7	7.7	7.7
	16 to 30 years ago	12	18.5	18.5	26.2
	1 to 15 years ago	30	46.2	46.2	72.3
	Just now	3	4.6	4.6	76.9
	Not yet	15	23.1	23.1	100.0
	Total	65	100.0	100.0	

Have you ever faced significant problems on quality issues with pharmaceuticals shipped to you from global suppliers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	28	43.1	43.1	43.1
	Yes, but very rarely	29	44.6	44.6	87.7
	Yes, but occasionally	8	12.3	12.3	100.0
	Total	65	100.0	100.0	

If you have suppliers from foreign countries, what are the relationships between your organization and the foreign suppliers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	We do not have suppliers from foreign countries	4	6.2	6.2	6.2
	Long term relationship	56	86.2	86.2	92.3
	Short term relationship	5	7.7	7.7	100.0
	Total	65	100.0	100.0	

What is the most priority when you select a foreign supplier?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High quality of pharmaceuticals	21	32.3	32.3	32.3
	Low price of medicines	9	13.8	13.8	46.2
	sustainable relationship between buyers and suppliers	15	23.1	23.1	69.2
	all of them are answers	20	30.8	30.8	100.0
	Total	65	100.0	100.0	

Has a miscommunication with a foreign supplier ever led to a conflict with that supplier?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	33	50.8	50.8	50.8
	Yes, but very rarely	27	41.5	41.5	92.3
	Yes, but occasionally	5	7.7	7.7	100.0
	Total	65	100.0	100.0	

Has your pharmaceutical import engaged in global supplier selection process?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, it has	64	98.5	98.5	98.5
	No, it hasn't	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

If "yes", what are the sources of your information to get Global suppliers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Trade fairs	11	16.9	16.9	16.9
	Global Suppliers' websites	22	33.8	33.8	50.8
	Recommendation by others	11	16.9	16.9	67.7
	Global Suppliers' representative	8	12.3	12.3	80.0
	all of them are answers	13	20.0	20.0	100.0
	Total	65	100.0	100.0	

Does your pharmaceutical import have documented global supplier's selection criteria?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, it does	31	47.7	47.7	47.7
	No, it does not	23	35.4	35.4	83.1
	It is under development	11	16.9	16.9	100.0
	Total	65	100.0	100.0	

Have you ever faced the problem of finding qualified foreign suppliers when you want to import pharmaceuticals?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	27	41.5	41.5	41.5
	Yes, but very rarely	23	35.4	35.4	76.9
	Yes, but occasionally	12	18.5	18.5	95.4
	Yes and frequently	2	3.1	3.1	98.5
	Yes and always	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

What kind of Pharmaceuticals your organization mainly purchase from global suppliers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Medicines	36	55.4	55.4	55.4
	Medical Supplies	7	10.8	10.8	66.2
	Medical Equipment	5	7.7	7.7	73.8
	all of them are answers	17	26.2	26.2	100.0
	Total	65	100.0	100.0	

Does your organization receive your consignments on time as per you schedule when you import from Global suppliers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	8	12.3	12.3	12.3
	Yes, but very rarely	18	27.7	27.7	40.0
	Yes, but occasionally	9	13.8	13.8	53.8
	Yes and frequently	21	32.3	32.3	86.2
	Yes and always	9	13.8	13.8	100.0
	Total	65	100.0	100.0	

The researcher wanted to know whether global suppliers' selection process is a challenge for private pharmaceutical importers in Addis Ababa Ethiopia in its global pharmaceuticals supply chain operations. Respondents were asked to answer twelve questions connecting to this issue. The first question was to know the benefit & objective of selecting appropriate global pharmaceutical suppliers. Among the respondents 7(10.8%) replied Overall value maximization to the purchaser 6(9.2%) answered Purchase Risk reduction 16(24.6%) responded Product quality improvement & the rest 14(21.5%) answered that to develop closeness & long-term relationships between buyers and suppliers. The second question was intended to know when the company was transferred from Local supplier to global supplier for the pharmaceuticals they required. In this regard most of the private pharmaceutical importers 30(46.2%) responded that 1 to 15 years ago. The next question was prepared to know whether importers faced significant problems on quality issues with pharmaceuticals or not. Out of 65 respondents 28(43.1%) answered no and by-no-means 29(44.6%) replied yes, but very rarely 8(12.3%) responded yes, but occasionally the fourth question was focused to know the relationship between

pharmaceutical buyers & global suppliers. Among the respondents, most of private pharmaceutical organization 56(86.2%) answered that long term relationship. Another question which was forwarded to respondents regarding supplier selection challenge was to know the criteria of priority in suppliers' selection process. Among 65 respondents, 21(32.3%) responded that high quality of pharmaceuticals 9(13.8%) answered that Low price of medicines 15(23.1%) replied sustainable relationship between buyers and suppliers. The sixth question in this category was delivered to know if any miscommunication with suppliers ever led to conflict with private pharmaceutical importers or not. Among 65 respondents 33(50.8%) answered that no and by-no-means 27(41.5%) replied that yes, but very rarely the rest 5(7.7%) responded that yes, but occasionally the seventh question was emphasized to know whether private pharmaceutical importers in Addis Ababa are engaged in the suppliers' selection process or not. Out of 65 respondents, 64(98.5%) involved in supplier selection processes. The rest 1(1.5%) responded that they were not involved in supplier' selection. This shows that almost all of the respondents were aware of challenges in suppliers' selection Process.

The eighth question was aimed to know the information source to find suppliers. Trade fairs, suppliers' website, recommendation by others and suppliers' representative were mentioned as alternative choices. Among the 65 respondents who were involved in supplier selection process, 11 (16.9%) chose trade fairs 22(33.8%) preferred global suppliers website 11(16.9%) chose recommendation by others 7(10.8%) preferred Global Suppliers' representative. The ninth question emphasized to know whether private pharmaceutical importers have documented supplier selection criteria or not. Almost half of the respondents answered that they have a documented supplier selection criteria whereas 23(35.4%) responded as there is no document in their pharmaceutical import and the rest 11(16.9%) answered they are under development.

The tenth question was about the challenges of finding qualified foreign suppliers when private organizations import pharmaceuticals. Out of 65 respondents 27(41.5%) answered as they did not face such challenge at all 23(35.4%) answered they faced the challenge with very rarely 12(18.5%) replied they encountered the challenge with occasional occurrence 2(3.1%) & 1(1.5%) answered yes and frequently and yes and always respectively. The eleventh question was prepared to identify what kind of Pharmaceuticals private pharmaceutical importers mainly purchase from global suppliers. Among 65 respondents 36(55.4%) answered that medicines

7(10.8%) responded that medical supplies 5(7.7%) medical equipment. The last question was focused to know whether private pharmaceutical importers receive their consignments on time as per their schedule or not. Out of 65 respondents 8(12.3%) answered that no and by-no-means 18(27.7%) responded that yes, but very rarely 9(13.8%) replied that yes, but occasionally 21(32.3%) answered that yes and frequently 9(13.8%) answered that yes and always.

During the interview asked to give response for the question of how many global pharmaceutical suppliers your organization has presently, what kind of pharmaceuticals they supply, where these suppliers located are. General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that:-According to Private Pharmaceutical managers responses, they explained some of the pharmaceutical imports have only 1 global supplier connection, some have 6 global suppliers some imports have 10 global suppliers, some have 20 suppliers & some imports have 30 global suppliers connection the least global supplier connection is 1 and the highest global suppler connection is 30. The type of pharmaceuticals supplied is Medicine, Medical Supplies, medical Equipment & laboratory testing agents. According to the response given by managers, Chain and India are the most & main pharmaceutical sources for private pharmaceutical importers in Addis Ababa although Italy, Malaysia, Thailand, Bangladesh, Middle East, Europe, USA, Asia, Indonesia, Egypt, contribute to some extent.

Table 4.3.4: Government and regulatory requirements related challenges

Statistics

		Does the existence of different standards between different countries affect the processes of global sourcing in your company?	Do any regulations such as customs duties affect the processes of global sourcing in your organization?	Which regulator standards of Ethiopia affect your Global Pharmaceuticals supply chain practice?	Do the different regulatory standards between your suppliers' countries and Ethiopia affect the processes of global pharmaceuticals market Authorization in Ethiopia?	What are the challenges that Ethiopian private pharmaceutical importers are unable address in order to import pharmaceuticals in the right quantity and at the right time?
N	Valid	65	65	65	65	65
	Missing	0	0	0	0	0
Mean		2.6154	2.7692	3.6769	2.6000	1.7846
Std. Error of Mean		.14658	.14995	.17280	.13481	.16625
Median		3.0000	3.0000	4.0000	2.0000	1.0000
Mode		3.00	2.00	5.00	2.00	1.00
Std. Deviation		1.18179	1.20894	1.39315	1.08685	1.34039
Variance		1.397	1.462	1.941	1.181	1.797
Skewness		.213	.078	-.575	.338	1.573
Std. Error of Skewness		.297	.297	.297	.297	.297
Kurtosis		-.790	-1.099	-1.233	-.554	1.002
Std. Error of Kurtosis		.586	.586	.586	.586	.586
Range		4.00	4.00	4.00	4.00	4.00
Minimum		1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00
Sum		170.00	180.00	239.00	169.00	116.00

Does the existence of different standards between different countries affect the processes of global sourcing in your company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	14	21.5	21.5	21.5
	Yes, but very rarely	16	24.6	24.6	46.2
	Yes, but occasionally	20	30.8	30.8	76.9
	Yes and frequently	11	16.9	16.9	93.8

	Yes and always	4	6.2	6.2	100.0
	Total	65	100.0	100.0	

Do any regulations such as customs duties affect the processes of global sourcing in your organization?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	11	16.9	16.9	16.9
	Yes, but very rarely	19	29.2	29.2	46.2
	Yes, but occasionally	13	20.0	20.0	66.2
	Yes and frequently	18	27.7	27.7	93.8
	Yes and always	4	6.2	6.2	100.0
	Total	65	100.0	100.0	

Which regulator standards of Ethiopia affect your Global Pharmaceuticals supply chain practice?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pharmaceuticals Market Authorization	4	6.2	6.2	6.2
	Foreign exchange permits directives	17	26.2	26.2	32.3
	Ethiopian multi- modal transport laws	1	1.5	1.5	33.8
	pharmaceuticals Registration authorization	17	26.2	26.2	60.0
	all of them are answers	26	40.0	40.0	100.0
	Total	65	100.0	100.0	

Do the different regulatory standards between your suppliers' countries and Ethiopia affect the processes of global pharmaceuticals market Authorization in Ethiopia?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	10	15.4	15.4	15.4

	Yes, but very rarely	23	35.4	35.4	50.8
	Yes, but occasionally	18	27.7	27.7	78.5
	Yes and frequently	11	16.9	16.9	95.4
	Yes and always	3	4.6	4.6	100.0
	Total	65	100.0	100.0	

What are the challenges that Ethiopian private pharmaceutical importers are unable address in order to import pharmaceuticals in the right quantity and at the right time?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Shortage of foreign exchange rate	43	66.2	66.2	66.2
	Legality and authority issue	10	15.4	15.4	81.5
	Commercial and marketing issue	1	1.5	1.5	83.1
	Poor transportation and telecommunication system	5	7.7	7.7	90.8
	all of them are answers	6	9.2	9.2	100.0
	Total	65	100.0	100.0	

The researcher wants to know whether the existence of different standards between different countries affect the processes of global sourcing or not. Among 65 respondents 14(21.5%) responded that no and by-no-means almost one-fourth of the respondents answered that yes the problem exists but the occurrence is very rare 20(30.8%) replied that yes, but occasionally 11(16.9%) responded that yes and frequently and rest 4(6.2%) answered that yes and always.

The second question in this topic was designed to know the perception of respondents whether customs duties affect the processes of global sourcing or not. Out of 65 respondents, 11(16.9%) answered that no and by-no-means 19(29.2%) responded that yes, but very rarely. one-fifth of the respondents answered that yes custom duties affects global sourcing but the occurrence is occasional 18(27.7%) responded that yes and frequently 4(6.2%) answered that yes and always.

The third question was stressed to investigate the regulator standards of Ethiopia that affect private importers of Global Pharmaceuticals supply chain practice among 65 respondents 4(6.2%) replied that Pharmaceuticals Market Authorization 17(26.2%) answered that Foreign

exchange permits directives 1(1.5%) responded that Ethiopian multi- modal transport laws 17(26.2%) said that pharmaceuticals Registration authorization. The forth question in this subtopic was designed to know the perception of respondents whether different regulatory standards between the global suppliers' countries and Ethiopia affected the processes of pharmaceuticals Market Authorization process. Among 65 respondents, 10(15.4%) answered difference in regulatory standards between the global suppliers' country and Ethiopia didn't affect the pharmaceuticals market Authorization process. 23(35.4%) of respondents responded that the difference affected the market Authorization process in a very rare extent. Of the respondents, 18(27.7%) answered yes the effect is occasional. 11(16.9%) responded that yes and the effect happened frequently and the rest 3(4.6%) replied that yes and the effect existed always.

The fifth question emphasized to identify the challenges that Ethiopian private pharmaceutical importers are unable to address in order to import pharmaceuticals in the right quantity and at the right time. Among the 65 respondents 43(66.2%) answered that the challenge happened due to Shortage of foreign currency 10(15.4%) responded that legality and authority issue 1(1.5%) replied that Commercial and marketing issue 5(7.7%) said that Poor transportation and telecommunication system. During the interview asked to give responses for the question of the major challenges at Ethiopian government pharmaceutical Authority body i.e. at EFDA while your organization is importing pharmaceuticals from global sources?

General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that:- EFDA has a big problem of long duration of time for quality test approval of pharmaceuticals that comes from foreign countries, the registration process of EFDA takes very long time, EFDA is unable to give market authorization paper on time, obtaining registration certificate is a major problem, Lack of transparency, Poor motivation for work, Shortage of trained personnel in EFDA leads to affect the pharmaceutical import business,EFDA has problems on addressing importers request on time. There have been delays on inspection and giving clearance papers from EFDA when items arrived at port and there is still a problem to get import permit for spare parts of medical equipment and consumables.

Table 4.3.5: Economic and macro level factors

Statistics

		Does your pharmaceutical import face any supply delay due to political crisis in your suppliers' country?	Do you have any cultural issue between you and the vendor or potential vendor led to instability of the relationship?	Have you ever encountered the risk of a supply interruption from a foreign source of critically required pharmaceuticals ?
N	Valid	65	65	65
	Missing	0	0	0
Mean		1.7077	1.1538	1.8308
Std. Error of Mean		.12153	.05473	.11513
Median		1.0000	1.0000	2.0000
Mode		1.00	1.00	1.00
Std. Deviation		.97984	.44126	.92819
Variance		.960	.195	.862
Skewness		1.243	3.004	.954
Std. Error of Skewness		.297	.297	.297
Kurtosis		.872	8.777	.634
Std. Error of Kurtosis		.586	.586	.586
Range		4.00	2.00	4.00
Minimum		1.00	1.00	1.00
Maximum		5.00	3.00	5.00
Sum		111.00	75.00	119.00

Does your pharmaceutical import face any supply delay due to political crisis in your suppliers' country?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	38	58.5	58.5	58.5
	Yes, but very rarely	12	18.5	18.5	76.9
	Yes, but occasionally	12	18.5	18.5	95.4
	Yes and frequently	2	3.1	3.1	98.5
	Yes and always	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

Do you have any cultural issue between you and the vendor or potential vendor led to instability of the relationship?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	57	87.7	87.7	87.7
	Yes, but very rarely	6	9.2	9.2	96.9
	Yes, but occasionally	2	3.1	3.1	100.0
	Total	65	100.0	100.0	

Have you ever encountered the risk of a supply interruption from a foreign source of critically required pharmaceuticals?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	30	46.2	46.2	46.2
	Yes, but very rarely	19	29.2	29.2	75.4
	Yes, but occasionally	14	21.5	21.5	96.9
	Yes and frequently	1	1.5	1.5	98.5
	Yes and always	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

The researcher wants to know whether the private pharmaceutical importers faced supply delay of critically required pharmaceuticals due to unstable political and economic situation in the suppliers' country or not. Among 65 respondents, beyond half of the respondents 38(58.5) responded they did not face a supply delay at all 12(18.5%) confirmed they faced a supply delay due to political crisis in the suppliers' country but in a very rare degree while other 2(3.1%) answered they faced frequently. The second question was intended to know whether cultural differences are challenges of private Pharmaceuticals importers in managing its relationship with its suppliers. It was designed to know the presence of cultural issue between the supplier and private pharmaceutical importers in Addis Ababa which affects the relationship. Majority of the respondents 57(87.7%) answered that there was no such cultural issue which created instability of relationship. Other 6(9.2%) accepted the problem but the occurrence was very rare. The last question was prepared to identify whether a supply interruption from a foreign source of critically required pharmaceuticals existed or not. Among 65 respondents 30(46.2%) answered

that supply interruption did not exist at all 19(29.2%) replied that yes a supply interruption exist but the occurrence is very rare 1(1.5%) responded that yes and frequently. During the interview asked to give responses for the question unstable economic & political crisis were existed in the reform time in 2018 in Ethiopia. Pharmaceutical sectors have been severely harmed & damaged. What were the major challenges your Pharmaceutical import faced in global supply chain activities due to the political crisis happened in Ethiopia.

General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that:-there was delay in the import & delivery process in most government & regulatory and banking areas, huge shortage of hard currencies in the countries so that importers are unable to import what the market needs, Local transportation problems especially in peripheral regions & cities, lack of Foreign exchange & lack of essential supplies due to covid 19, Lack of market

Table 4.3.6: inbound logistics challenges

Statistics

		Have you ever faced the challenge of logistics problems during global sourcing?	Does your organization utilize a Third party logistics providers (like Freight forwarders and custom clearance, shippers and transporters) when you import pharmaceuticals from other countries?	Does your organization face difficulties in clearing Pharmaceuticals from customs upon arrival?	If yes, which challenges does your organization face?
N	Valid	65	65	65	65
	Missing	0	0	0	0
Mean		2.5692	3.2615	1.3231	3.8615
Std. Error of Mean		.11801	.19024	.05846	.11367

Median	3.0000	4.0000	1.0000	4.0000
Mode	2.00	5.00	1.00	3.00
Std. Deviation	.95147	1.53375	.47129	.91646
Variance	.905	2.352	.222	.840
Skewness	.188	-.216	.775	.031
Std. Error of Skewness	.297	.297	.297	.297
Kurtosis	-.453	-1.548	-1.445	-1.355
Std. Error of Kurtosis	.586	.586	.586	.586
Range	4.00	4.00	1.00	3.00
Minimum	1.00	1.00	1.00	2.00
Maximum	5.00	5.00	2.00	5.00
Sum	167.00	212.00	86.00	251.00

Have you ever faced the challenge of logistics problems during global sourcing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	8	12.3	12.3	12.3
	Yes, but very rarely	24	36.9	36.9	49.2
	Yes, but occasionally	22	33.8	33.8	83.1
	Yes and frequently	10	15.4	15.4	98.5
	Yes and always	1	1.5	1.5	100.0
	Total	65	100.0	100.0	

Does your organization utilize a Third party logistics providers (like Freight forwarders and custom clearance, shippers and transporters) when you import pharmaceuticals from other countries?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No and by-no-means	11	16.9	16.9	16.9
	Yes, but very rarely	16	24.6	24.6	41.5
	Yes, but occasionally	3	4.6	4.6	46.2
	Yes and frequently	15	23.1	23.1	69.2
	Yes and always	20	30.8	30.8	100.0
	Total	65	100.0	100.0	

Does your organization face difficulties in clearing Pharmaceuticals from customs upon arrival?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, it does	44	67.7	67.7	67.7
	No, it doesn't	21	32.3	32.3	100.0
	Total	65	100.0	100.0	

Does your organization face difficulties in clearing Pharmaceuticals from customs upon arrival?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, it does	44	67.7	67.7	67.7
	No, it doesn't	21	32.3	32.3	100.0
	Total	65	100.0	100.0	

If yes, which challenges does your organization face?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Loss of pharmaceuticals	2	3.1	3.1	3.1
	Unpredictable government tax	26	40.0	40.0	43.1
	Pharmaceuticals unnecessary delay	16	24.6	24.6	67.7
	non of them are answers	21	32.3	32.3	100.0
	Total	65	100.0	100.0	

Under the topic of logistics and warehousing challenge, the researcher wants to know whether logistics problems during global sourcing are challenges for private pharmaceutical importers or not. Among the 65 respondents 8(12.3%) responded that logistics problems didn't exist totally during global sourcing of pharmaceuticals 24(36.9%) answered that yes the problem of logistics existed but the occurrence is very rare. almost one-third of the respondents answered that yes the problem exist but it happened occasionally.10(15.4%) said that they faced the problem frequently. The second question was prepared to identify whether pharmaceutical importers

utilize a Third Party Logistics providers when they import pharmaceuticals from other countries. Of the respondents 11(16.9%) answered that they never utilize service of 3PL (Third Party Logistics Service Provider) when they source pharmaceuticals from foreign suppliers. Another 16(24.6%) answered that yes but they employed the service of 3PL very rarely. one-fourth of the respondents answered that yes they used Third Party Logistics Service Provider frequently. Respondents were asked to answer whether they faced difficulties when they clearing Pharmaceuticals from customs upon arrival. Among 65 respondents 44(67.7%) answered they faced such problems but other 21(32.3%) responded that there was no such challenge. The last question was prepared to identify the challenges of pharmaceutical importers faced. The following points were presented as a choice for respondents to give their answers. Damage of pharmaceuticals, Loss of pharmaceuticals, Unpredictable government tax & Pharmaceutical unnecessary delay were presented. Among 65 respondents 26(40.0%) answered that unpredictable government tax. 16(24.6%) replied that they faced the challenge of Pharmaceutical unnecessary delay. During the interview asked to give responses for the question of the main logistics and warehousing challenges pharmaceutical importers faced in global pharmaceutical supply chain activities.

General Managers, Technical managers, Business managers, Finance Managers, Marketing Managers & Regulatory Affairs in different private pharmaceutical importers explained & elaborated in detail the following point that there is:- High cost of storage, High cost of fright & the time permission that is allowed for storage is short at terminal, delaying of shipment due to lack of containers, a very high cost due to delayed clearance at customs, the requirements to stick to the Ethiopian shipping lines to frights coming by sea, Foreign & Local Transportation fright costs have increased significantly which have direct impact on the selling price of the commodities, Cost of warehousing has increased in alarming rate, products are not cleared as quick as possible due to new regulations of custom clearance, Long lead time of products, Product delivery delay & loading & unloading problems.

Descriptive statistics on comparison of challenges of global pharmaceutical supply chain at private pharmaceutical importers in Addis Ababa Ethiopia

Table 4.3.7: comparison of Global supply chain challenges

The Quality Levels and Defects in pharmaceuticals is a serious concern

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.5	1.5	1.5
	Disagree	10	15.4	15.4	16.9
	Not sure	2	3.1	3.1	20.0
	Agree	12	18.5	18.5	38.5
	Strongly agree	40	61.5	61.5	100.0
	Total	65	100.0	100.0	

Fluctuation of currency exchange Rate is a threat to global pharmaceutical.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.5	1.5	1.5
	Not sure	2	3.1	3.1	4.6
	Agree	13	20.0	20.0	24.6
	Strongly Agree	49	75.4	75.4	100.0
	Total	65	100.0	100.0	

The Global Supplier selection is complex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	18	27.7	27.7	27.7
	Not sure	18	27.7	27.7	55.4
	Agree	20	30.8	30.8	86.2
	Strongly agree	9	13.8	13.8	100.0
	Total	65	100.0	100.0	

The Different standards and regulatory laws is a problem in global pharmaceutical supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.5	1.5	1.5

	Disagree	11	16.9	16.9	18.5
	Not sure	7	10.8	10.8	29.2
	Agree	33	50.8	50.8	80.0
	Strongly agree	13	20.0	20.0	100.0
	Total	65	100.0	100.0	

The economic and political environment is volatile in global pharmaceutical sourcing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	10.8	10.8	10.8
	Not sure	12	18.5	18.5	29.2
	Agree	30	46.2	46.2	75.4
	Strongly agree	16	24.6	24.6	100.0
	Total	65	100.0	100.0	

The logistics in global pharmaceutical sourcing is complicated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.5	1.5	1.5
	Disagree	15	23.1	23.1	24.6
	Not sure	13	20.0	20.0	44.6
	Agree	27	41.5	41.5	86.2
	Strongly agree	9	13.8	13.8	100.0
	Total	65	100.0	100.0	

There is Pharmaceutical supply chain disruption

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	3.1	3.1	3.1
	Disagree	11	16.9	16.9	20.0
	Not sure	21	32.3	32.3	52.3
	Agree	23	35.4	35.4	87.7

	Strongly agree	8	12.3	12.3	100.0
	Total	65	100.0	100.0	

Increasing fright prices is a concern in the global pharmaceutical supply.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.5	1.5	1.5
	Not sure	3	4.6	4.6	6.2
	Agree	21	32.3	32.3	38.5
	Strongly agree	40	61.5	61.5	100.0
	Total	65	100.0	100.0	

The difference in time zones is a challenge in the global pharmaceuticals supply.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	7.7	7.7	7.7
	Disagree	23	35.4	35.4	43.1
	Not sure	22	33.8	33.8	76.9
	Agree	10	15.4	15.4	92.3
	Strongly agree	5	7.7	7.7	100.0
	Total	65	100.0	100.0	

There is accountability problem in the global pharmaceuticals supply.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	6.2	6.2	6.2
	Disagree	25	38.5	38.5	44.6
	Not sure	15	23.1	23.1	67.7
	Agree	16	24.6	24.6	92.3
	Strongly agree	5	7.7	7.7	100.0
	Total	65	100.0	100.0	

There is Longer Lead Time to receive pharmaceuticals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	10.8	10.8	10.8
	Not sure	5	7.7	7.7	18.5
	Agree	39	60.0	60.0	78.5
	Strongly Agree	14	21.5	21.5	100.0
	Total	65	100.0	100.0	

There is delay in Pharmaceuticals supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	7.7	7.7	7.7
	Not sure	4	6.2	6.2	13.8
	Agree	41	63.1	63.1	76.9
	Strongly agree	15	23.1	23.1	100.0
	Total	65	100.0	100.0	

Pharmaceuticals are Exposed to Risk

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.5	1.5	1.5
	Disagree	11	16.9	16.9	18.5
	Not sure	15	23.1	23.1	41.5
	Agree	23	35.4	35.4	76.9
	Strongly agree	15	23.1	23.1	100.0
	Total	65	100.0	100.0	

On time clearance in customs is a challenge in the global pharmaceuticals supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	7.7	7.7	7.7
	Not sure	11	16.9	16.9	24.6

Agree	30	46.2	46.2	70.8
Strongly agree	19	29.2	29.2	100.0
Total	65	100.0	100.0	

Table 4.3.8 challenges of global pharmaceutical supply chain

	Challenge	Response	Mean	Standard deviation	Rank
1	The Quality Levels & Defects in pharmaceuticals is a serious concern	65	4.2308	1.16952	3
2	Fluctuation of currency exchange rate is a threat to global pharmaceutical.	65	4.6769	.68711	1
3	The Global Supplier selection is complex	65	3.3077	1.02961	12
4	The Different standards and regulatory laws is a problem in global pharmaceutical supply	65	3.7077	1.02657	8
5	The economic and political environment is volatile in global pharmaceutical sourcing.	65	3.8462	.92248	7
6	The logistics in global pharmaceutical sourcing is complicated	65	3.4308	1.04537	10
7	There is Pharmaceutical supply chain disruption	65	3.3692	1.00886	11
8	Increasing fright prices is a concern in the global pharmaceutical supply	65	4.5385	.66325	2
9	The difference in time zones is a challenge in the global pharmaceuticals supply.	65	2.8000	1.04881	14
10	There is accountability problem in the global pharmaceuticals supply.	65	2.8923	1.09149	13
11	There is Longer Lead Time to receive pharmaceuticals	65	3.9231	.85344	6

12	There is delay in Pharmaceuticals supply	65	4.0154	.78047	4
13	Pharmaceuticals are exposed to risk	65	3.6154	1.07081	9
14	On time clearance in customs is a challenge in the global pharmaceuticals supply	65	3.9692	.88334	5

Most of the issues are connected to fluctuation of currency, differences in regulatory standards, the quality levels & defects in pharmaceuticals and supplier selection challenge, but logistics & warehousing challenge, cultural differences, economic & macro factors have their own effect on the global supply chain practice, this does not necessary mean that all issue have equal influence on global supply chain operation. Thus the table 4.3.8 above rank the level of influence of the major issue discussed before. As it can be observed from the table 4.3.8 above, fluctuation of currency exchange, fright prices increment, the quality levels & defects in pharmaceuticals, delay in Pharmaceuticals supply has very high influence on private pharmaceutical importers activities respectively. Other critical challenges identified are on time clearance in customs, longer lead time to receive pharmaceuticals, volatile economic and political environment, the different standards and regulatory laws, Pharmaceuticals are exposed to risk, complicated global pharmaceutical sourcing, Pharmaceutical supply chain disruption, and complicated global supplier selection accordingly. Accountability problem in the global pharmaceuticals supply, the difference in time zones scored low value from respondents of self-administered questionnaire and interviews. To summarize, comparison is made among perceived challenges and fluctuation of currency exchange (Mean=4.6769) is found to be the most challenging issue. Followed by fright prices increment (Mean=4.5385) and the quality levels & defects in pharmaceuticals (Mean=4.2308).

4.4. Discussions of the Results

Challenges of global pharmaceutical supply chain management activities in private pharmaceutical importers in Addis Ababa

Demographic profile of the respondents

In demographic characteristics, among 65 respondents, the male respondents constituted the highest percentage 53 (81.5%) while their female counterparts only constituted 12 (18.5%) of the respondents. This implied that the majority of organization activities and decision making in the private pharmaceutical importers were carried out by males. This also showed that the managerial positions of private pharmaceutical importers were occupied by males. Regarding age, almost 75 %(58.5%+16.9%) of the respondents were young and adults. According to the finding of the study, majority 35(53.8%) of the respondents have a bachelor's degree, while 29(44.6%) have a master's degree. Regarding work position in the organization 41 (63.1%) were technical managers, regarding imports, majority of the pharmaceutical imports 40(61.5%) are owned by Private Limited Company & more than one person.

Private pharmaceutical importers have faced the following big challenges. According to the findings of the results the under listed are key out comes of the study:-

1. Shortage of hard currency, foreign exchange

According to the study respondents asked about major challenges in the private pharmaceutical importers in Addis Ababa that impact availability of quality medicines. Among 65 respondents, almost three-fourth of the respondents 46(70.8%) replied that shortage of foreign exchange is a big challenge that impact availability of quality medicines. Respondents asked to answer the possible reasons for stock out of medicines at private pharmaceutical importers in Addis Ababa Ethiopia 41(63.1%) answered that shortage of foreign exchange is the big challenge for stock out of medicines. Respondents asked to answer whether shortage of foreign exchange affected private pharmaceutical importers in relation with its Global suppliers or not. Out of 65 respondents 83 %(41.5%+41.5%) responded that yes shortage of foreign exchange frequently affected the relations with its suppliers. This clearly showed that how far foreign exchange is Indispensable for private pharmaceutical importers.

2. Problem of Regulatory affairs EFDA

Long duration of time for quality test approval of pharmaceuticals that comes from foreign countries, delays in pharmaceutical product registration, delays on inspection and giving clearance papers when items arrived at port of entry, lack of motivation for work, lack of

transparency, unable to give market authorization paper on time, shortage of skilled manpower and weak collaboration between regulatory bodies were the main challenges discussed in relation to regulators.

3. Problems of Customs Authority

high cost of storage, high fright cost & the time permission that is allowed for storage is short at terminal, delaying of shipment due to lack of containers, long lead time of products due to transportation, Product expiration, loading & unloading problems, products are not cleared as quick as possible due to new regulations of custom Authorities were the main challenges discussed in relation to customs.

4. Suppliers related issues

According to respondents in connection with challenges of suppliers related issues, selection of genuine global pharmaceutical suppliers has the benefit of obtaining quality product, good pharmaceuticals and sustainable and long term relationship between buyers and suppliers. High quality product with affordable price is the most priority for pharmaceutical importers to select a foreign supplier. According to the finding of this study Medicine, Medical Supplies, medical Equipment & laboratory testing agents are products mainly supplied by global suppliers. A question was prepared to identify what kind of Pharmaceuticals private pharmaceutical importers mainly purchase from global suppliers. Among 65 respondents, beyond half 36(55.4%) answered that medicines. Chain and India are the most & main pharmaceutical sources for private pharmaceutical importers in Addis Ababa. During interview, managers expressed that foreign exchange fluctuation greatly affects the globe pharmaceutical supply chain activities by creating market instability and by damaging good relationship that exists among stake holders, the foreign exchange fluctuation happening this time is due to the global chaos: war, conflict, Pandemics. Absence of foreign exchange reserved and the expansion of the uncontrollable black market has led to situation where there is a significant price variation & rise to products, the major challenge for foreign exchange fluctuation is the ever increasing inflation and the banks regulation. The foreign exchange fluctuation caused delay product distribution & customer dissatisfaction. Starting from 2018 the foreign currency fluctuation shortage has been affecting the industry in

obvious way. Many multinational companies have left the business, many importers unless working on export has no access to import the medicine. The solution for foreign exchange fluctuation is reconciliation in the political atmosphere in Globe, even in Ethiopia, increasing productivity, prioritizing allocation of foreign currency usage & ultimately encouraging export are the ways to earn more hard currency.

5. Outcome of previous findings

When this thesis result (challenges of global pharmaceutical supply chain management in the case of private pharmaceutical importers in Addis Ababa) compared with the result of previous findings that is studied in Chinese: the findings are

Based on the investigation of several Chinese manufacturers, the risk of a fluctuating currency is not a major problem for Chinese manufacturers. Five out of six of the companies surveyed reported that they suffered increase risk because of currency fluctuations, but they also reported that the risk was minor. Perhaps more telling is that only two companies reported switching suppliers due to currency fluctuations, and this occurred infrequently. The important driving force for Chinese manufacturers is improving technology instead of cost-savings. On the contrary, the fluctuation of exchange rates is driving them to do further global sourcing. According to the investigation of the apparel manufacturer, they are preparing to increase the importation of eiderdown from America because of the appreciation of Chinese Yuan. Hence, owing to the appreciation of Chinese currency, it is beneficial for Chinese manufacturers to pursue global sourcing. According to the investigation of Chinese manufacturers the problems emanating from logistics do not annoy Chinese manufacturers very much. Three of the six manufacturers who responded said that logistics was not a problem at all and the other three reported that it was only a minor problem. The managers from Chinese manufacturers mentioned the significance of supplier selection in global sourcing. Moreover, from the questionnaire we can conclude the selection of suppliers in global sourcing is a great challenge for Chinese manufacturers. Four out of six reported that supplier selection was a serious problem, another reported that it was a minor problem and the toy manufacturer, which does not source overseas, reported that it was not a problem at all. Two companies surveyed reported that they suffered a serious risk of supply interruption from a foreign supplier, and three reported that there was some

degree of risk. First, Chinese manufacturers lack a systematic method for selecting foreign suppliers. Second, Chinese manufacturers prefer to select suppliers by 'Guanxi' (Personal relationship), which is an obstacle for them to obtain a real appropriate and qualified supplier in global sourcing where relationships are impersonal. Third, after all, most Chinese manufacturers are beginners in global sourcing strategy and the lack of experience makes it hard for them to select a qualified, international partner. As the theoretical portion of this thesis has shown, many international business organizations are striving to unitize different standards in order to facilitate international cooperation. Existing industrial standards which are not synchronized with international standards or expectations still can cause costly troubles and even the failure of global sourcing. However, according to our investigation and analysis, the problems of standards and regulations are far more serious when Chinese manufacturers export goods abroad as compared to when they import. Because this manufacturer normally procures high-tech materials or products from developed countries, they consider the standards of these goods as their model. Hence the problems from standards are not obstacles for Chinese manufacturers in global sourcing.

6. Among the six characteristics of conceptual frame works (quality control issues, foreign exchange/ currency issues, supplier related issues, government and regulatory requirement related issues, unstable economic and political climates, logistics and warehousing challenges) foreign exchange shortage and government and regulatory requirement related issues are negatively and significantly affected pharmaceutical supply chain management.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of key data findings, conclusions draws from the findings highlighted and recommendations for the readers and further researcher on challenges of global pharmaceutical supply chain areas. The conclusion and recommendation drawn focused on the assessment on the challenges of global supply chain in private pharmaceutical importers.

5.2 Summary of Finding

The objective of the study was to assess the challenges of global pharmaceutical supply chain taking private pharmaceutical importers in Addis Ababa.

The result of the background information of the respondents indicated that the male respondents constituted the highest percentage (81.54%) while their female counterparts only constituted (18.46%) of the respondents. This implies that the majority of organization activities and decision making in the private pharmaceutical importers were carried out by males. This also showed that the managerial positions of private pharmaceutical importers were occupied by males. Majority of the respondents answered that shortage of foreign currency is major challenges in the private pharmaceutical importers in Addis Ababa that impact availability of quality medicines. Expiration of items is major challenges pharmaceutical organizations faced during importing of global item. Cost, quality & time and speed were found to have the most important competitive factors in the Pharmaceuticals industry. Shortage of foreign exchange & regulatory problems are the reasons for stock out of medicines at pharmaceutical importers and the risk of fluctuation in currency exchange during global sourcing is found to be a big challenging issue that is repeatedly observed. Different managers expressed that foreign exchange fluctuation greatly affects the globe pharmaceutical supply chain activities by creating market instability and by damaging good relationship that exists among stake holders. The foreign exchange fluctuation happening this time is due to the global chaos: war conflict,

Pandemics. Absence of foreign exchange reserved and the expansion of the uncontrollable black market has led to situation where there is a significant price variation & rise to products. The solution for foreign exchange fluctuation is reconciliation in the political atmosphere in Globe, even in Ethiopia, increase productivity, prioritize allocation of foreign currency usage & ultimately encourage export to earn more hard currency.

Medicine, Medical Supplies, medical Equipment & laboratory testing agents are products mainly supplied by global suppliers Chain and India are the most & main pharmaceutical sources for private pharmaceutical importers in Addis Ababa although Italy, Malaysia, Thailand, Bangladesh, Middle East, Europe, USA, Asia, Indonesia, Egypt, contribute to some extent.

5.3. Conclusion

This study aims assessing the challenges of global pharmaceuticals supply chain in private pharmaceutical importers of Addis Ababa. The study utilized mixed research approach by using structured questionnaire and interview guide. Descriptive statistics was used to analyze the data with SPSS version 20. Based on the results of the study obtained and summary of findings the following conclusions are given.

Foreign exchange shortage & regulatory problems are identified to be one of the important challenges in pharmaceutical supply chain for stock out of medicines, medical supplies, medical equipment & laboratory testing reagents at private pharmaceutical importers.

Lack of adequate well trained manpower and advanced software technology in the regulatory body of EFDA is the major challenges for private pharmaceutical importers to tolerate & keep long duration of time for quality test approval of pharmaceuticals that comes from foreign countries, long time of registration, the problem of market authorization paper on time,

The global pharmaceutical industry is perhaps one of the most complex and research-intensive industries. This is because innovation has long served as the backbone and the foundation that has been powering up this industry. Some of the most common examples of companies and firms that operate in the pharmaceutical industry include independent drug and drug services research and development firms, drug manufacturers, and developers of medical and healthcare devices. The goal of the pharmaceutical industry, at large, is to lead the discovery, development,

production, and marketing processes in relation to drugs and other products that can be used as and for medication. There are numerous ways in which drugs and other pharmaceutical products can be allowed or not allowed to enter the market. A review of the recent trends would show that the regulations which the pharmaceutical firms and the broader pharmaceutical industry face are increasing both in terms of number and individual complexity. This can be considered as a double-edged sword, mainly because it (the trend) can affect both the very people that the laws and regulations are trying to protect and the organizations that it is trying to restrict, both in positive and negative ways. As an example, pharmaceutical firms get positively affected by the heavy regulation schemes being implemented by the government because it practically forces them to innovate and remain competitive; the people who are the target consumers of newly developed drugs, on the other hand, would benefit from the access to safe, effective, and affordable drugs for medication purposes. Focusing on the negative side, on the other hand, the increasing level of laws and regulations that the government imposes on pharmaceutical firms makes it harder for companies that develop drugs and medical devices to provide much needed products and services for people who need it.

5.4. Recommendations

On the basis of the findings and conclusions of this study, the researcher forwards the following recommendations to the management of private and government banks, Ethiopian pharmaceutical regulatory body EFDA.

Private pharmaceutical importers are dissatisfied with banks treatment in connection with foreign exchange & hard currency problems, Due to hard currency problems in the country Addis Ababa, a number of private pharmaceutical importers are shutting down their organization there are importers more than three years opening LC so far unable to get hard currencies from banks paying house rent, employees' salary. Private and government banks need to focus, plan and work in order to improve the quality of foreign exchange service provided and strive for improving the satisfaction level which helps them. It would be better the regulatory body of Ethiopia EFDA use high advanced registration Software Technologies to facilitate complicated & long registration process and other aforementioned problems. It is recommended for the customs authority to frequently identify private pharmaceutical importers complain, especially

high cost of storage, high cost of fright due to delayed clearance at customs & the time permission that is allowed for storage is short at terminal, delaying of shipment due to lack of containers, products are not cleared due to new regulations of custom clearance the authority should work on its weakness. It is recommended for the authority body EFDA to promote "Radiofrequency Identification (RFID) tagging of products by manufacturers, wholesalers, and retailers appears to be the most promising approach to reliable product tracking and tracing."

5.5. Suggestion for further study

This study only includes respondents from Addis Ababa. Therefore; the researcher suggests that for future research to include all private pharmaceutical importers outside of Addis Ababa in order to make a better generalization of the results based on the acquired data from the entire country.

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ANNEX I: QUESTIONNAIRE

First of all I would like to thank all of you for your willingness to participate in the responding of questions of the research.

Dear Participant,

My Name is Fentahun Tegegne a final year Master of Arts in Logistics and supply chain management (MA LSCM) Student at Addis Ababa University College of Business and Economics school of commerce department of Logistics and Supply Chain Management Graduate Program. I am conducting a research on my final thesis entitled “challenges of Global pharmaceutical Supply Chain in the case of selected private pharmaceutical importers in Addis Ababa Ethiopia.” The purpose of this study is to investigate the challenges of the global pharmaceutical supply chain of your organization. Since you are experienced of your institution, your ideas, thoughts and information are crucial for the research. The information you are giving will be used for the partial fulfillment for the Master’s thesis.

Enclosed with this letter is a brief questionnaire that asks a variety of close and open ended questions about your experience towards Global pharmaceutical supply chain and challenges in your respected Organization.

I kindly request your cooperation to look into the questionnaire carefully and answer so as to help me to analyze, conclude and recommend on this topic

Please do not write your name on the questionnaire. Your responses will not be identified with you personally.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me at 0911910842/0924257512 or with the following E-mail address: fentahuntegegne8@gmail.com

Thank you in advance for your cooperation!

PART ONE: GENERAL INFORMATION OF THE ORGANIZATION

A) Name of the organization_____
B) Sub-city you are currently based_____
C) Major services provided by your organization_____
D) Major kinds of products supplied by your organization_____
E) Total number of staffs_____

PART TWO: BACKGROUND INFORMATION OF RESPONDENTS

PLEASE MAKE A TICK MARK (X)

1. Gender: A) Male B) Female

2. Age range: A) 20-30 B) 31-40 C) 41-50 D) 51-59 E) ≥60

3. Educational Level A) Diploma B) First Degree C) Master Degree D) PhD E) if any other please specify_____

4. Work position in the organization

A) General Manager B) Technical Manager C) General Manager and Owner of the organization D) Business Manager E) if any other please specify_____

5. Ownership of the pharmaceutical Import

A) Pharmaceutical Trading B) Pharmaceutical PLC C) Share Company D) business group E) if any other please specify_____

6. Years of services of the pharmaceutical import

A) ≤ 1year B) 2-3Years C) 4-8 Years D) 9-12 years E) ≥ 13 years

7. Monthly sale of the pharmaceutical Import

A) ≤400, 0000birr B) 400,001-1,000, 000 birr C) 1,000, 001-5,000,000birr
D) 5, 000, 001-10,000,000birr E) >10,000,000birr

PART THREE: GLOBAL PHARMACEUTICAL SUPPLY CHAIN CHALLENGES PLEASE ENCIRCLE YOUR ANSWER.

A. QUALITY CONTROL

1. What are the major challenges in the private pharmaceutical importers in Addis Ababa Ethiopia that impact availability of quality medicines?

A) Shortage of foreign exchange rate B) Buyers financial capacity problem C) Global Suppliers problem D) Regulatory problem E) all of them are answers

2. What are the major challenges pharmaceutical organizations face during importing of global items?

A) Substandard quality of products B) Expiration of items C) Pharmaceuticals Damage, breakage and leakage D) Loss of pharmaceuticals E) all of them are answers

3. Which are the most important competitive factors in the Pharmaceuticals industry?

A) Cost B) Quality C) Flexibility D) Time and Speed E) all of them are answers

B. FOREIGN EXCHANGE/CURRENCY ISSUES

1. What are the possible reasons for stock out of medicines at private pharmaceutical importers in Addis Ababa Ethiopia?

A) Shortage of foreign exchange rate B) Buyers financial capacity problem C) Global Suppliers problem D) Regulatory problem E) all of them are answers

2. Does your organization face the risk of fluctuation in currency exchange rates during global sourcing?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) yes and always

3. Does your pharmaceutical import encounter shortage of foreign exchange which affects your organization performance?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) yes and always

4. Does your pharmaceutical import face any supply delay due to lack of foreign exchange permit?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) yes and always

5. If pharmaceutical products are out of stock and unavailable from the market what should be the consequences and results

A) Severe health crisis B) Severe Economic crisis C) Severe Political crisis D) Morbidity & Mortality E) all of them are answers

C. SUPPLIERS RELATED ISSUES

1. What is the benefit and objective of selecting appropriate global pharmaceutical suppliers?

A) Overall value maximization to the purchaser B) Purchase Risk reduction C) Product quality improvement D) To develop closeness and long-term relationships between buyers and suppliers E) all of them are answers

2. When did your company transfer from a domestic supplier to an international supplier for the pharmaceuticals you require?

A) 30 years ago B) 16 to 30 years ago C) 1 to 15 years ago D) Just now E) Not yet

3. Have you ever faced significant problems on quality issues with pharmaceuticals shipped to you from global suppliers?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) yes and always

4. If you have suppliers from foreign countries, what are the relationships between your organization and the foreign suppliers?

A. We do not have suppliers from foreign countries B. Sister Company C. Long term relationship D. Short term relationship E. if any other please specify_____

5. What is the most priority when you select a foreign supplier?

A. High quality of pharmaceuticals B. Low price of medicines C. High technology

D. sustainable relationship between buyers and suppliers

E. all of them are answers

6. Has a miscommunication with a foreign supplier ever led to a conflict with that supplier?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) yes and always

7. Has your pharmaceutical import engaged in global supplier selection process? A. Yes, it has B. No, it hasn't

8. If "yes", what are the sources of your information to get Global suppliers?

A. Trade fairs B. Global Suppliers' websites C. Recommendation by others D. Global Suppliers' representative E. if any other Please specify_____

9. Does your pharmaceutical import have documented global supplier's selection criteria? A. Yes, it does B. No, it does not C. It is under development

10. Have you ever faced the problem of finding qualified foreign suppliers when you want to import pharmaceuticals?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

11. What kind of Pharmaceuticals your organization mainly purchase from global suppliers?

A. Medicines B. Medical Supplies C. Medical Equipment D. Laboratory Testing Reagents

E. all of them are answers

12. Does your organization face the problem of receiving your consignments on time as per you schedule when you import from Global suppliers? A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

D. GOVERNMENT AND REGULATORY REQUIREMENT RELATED ISSUES

1. Does the existence of different standards between different countries affect the processes of global sourcing in your company?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

2. Do any regulations such as customs duties affect the processes of global sourcing in your organization?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

3. Which regulator standards of Ethiopia affect your Global Pharmaceuticals supply chain practice? A. Pharmaceuticals Market Authorization B. Foreign exchange permits directives C. Ethiopian multi- modal transport laws D. pharmaceuticals Registration authorization E. if any other please specify_____

4. Do the different regulatory standards between your suppliers' countries and Ethiopia affect the processes of global pharmaceuticals market Authorization in Ethiopia?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

5. What are the challenges that Ethiopian private pharmaceutical importers are unable address in order to import pharmaceuticals in the right quantity and at the right time?

A) Shortage of foreign exchange rate B) Legality and authority issue C) Commercial and marketing issue D) Poor transportation and telecommunication system E) all of them are answers

E. ECONOMIC AND POLITICAL CLIMATE CHALLENGES

1. Does your pharmaceutical import face any supply delay due to political crisis in your suppliers' country?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

2. Do you have any cultural issue between you and the vendor or potential vendor led to instability of the relationship?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

3. Have you ever encountered the risk of a supply interruption from a foreign source of critically required pharmaceuticals?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

F. LOGISTICS AND WAREHOUSING CHALLENGES

1. Have you ever faced the challenge of logistics problems during global sourcing?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

2. Does your organization utilize a Third party logistics providers (like Freight forwarders and custom clearance, shippers and transporters) when you import pharmaceuticals from other countries?

A. No and by-no-means B. Yes, but very rarely C. Yes, but occasionally D. Yes and frequently E) Yes and always

3. Does your organization face difficulties in clearing Pharmaceuticals from customs upon arrival? A. Yes, it does B. No, it doesn't

4. If yes, which challenges does your organization face? A. Damage of pharmaceuticals B. Loss of pharmaceuticals C. Unpredictable government tax D. Pharmaceuticals unnecessary delay E. all of them are answers

PART FOUR: LIKERT SCALE ITEMS ON THE CHALLENGES OF GLOBAL SOURCING OF PHARMACEUTICALS

Pertaining to the following challenges of global sourcing activities of the private pharmaceutical importer organizations in Addis Ababa, please rate your degree of agreement/disagreement.

Where SA= strongly agree, A= Agree, NS= Not sure, D= Disagree, SD= strongly disagree

	Challenges	Strongly agree (5)	Agree (4)	Not sure (3)	Disagree (2)	Strongly disagree (1)
1	The quality levels and defects in pharmaceuticals is a serious concern					
2	Fluctuation of currency exchange Rate is a threat to global pharmaceutical.					
3	The global supplier selection is complex					
4	The different standards and regulatory laws is a problem in global pharmaceutical supply					
5	The economic and political environment is volatile in global pharmaceutical sourcing.					
6	The logistics in global pharmaceutical sourcing is complicated					
7	There is Pharmaceutical supply chain disruption					
8	Increasing fright prices is a concern in the global pharmaceutical supply.					
9	The difference in time zones is a challenge in the global pharmaceuticals supply.					
10	There is accountability problem in the global pharmaceuticals supply.					

11	There is longer lead Time to receive pharmaceuticals					
12	There is delay in Pharmaceuticals supply					
13	Pharmaceuticals are exposed to risk					
14	On time clearance in customs is a challenge in the global pharmaceuticals supply					

PART FIVE: OPEN ENDED QUESTIONS

OPEN ENDED QUESTIONS ON CHALLENGES OF GLOBAL PHARMACEUTICAL SUPPLY CHAIN (FOR MANAGERS IN RELATED TO GLOBAL PHARMACEUTICAL SUPPLY CHAIN OPERATIONS)

1.The proliferation of substandard and falsified pharmaceuticals(like medicines, medical supplies, medical equipment, laboratory testing reagents etc.) are raising & increasing from time to time in developing countries including Ethiopia so what should be done on the governmental Regulator body level in order to control & address poor quality of pharmaceutical challenges?

2. Could you please mention and suggest the foreign exchange fluctuation challenges which affect global pharmaceutical supply chain activities? How?

3. How many global pharmaceutical suppliers your organization has presently?

- What kind of pharmaceuticals they supply?
- Where are these suppliers located?

4. What are the major challenges at Ethiopian government pharmaceutical Authority body i.e. at EFDA while your organization is importing pharmaceuticals from global sources?

5. As you remember in Ethiopia unstable economic & political crisis were existed in the reform time in 2018. Pharmaceutical sectors have been severely harmed & damaged. What were the

major challenges your organization faced in global supply chain activities due to the political crisis happened in Ethiopia?

6. What are the main logistics and warehousing challenges your organization faced in global pharmaceutical supply chain activities?

7. What is your opinion about Global pharmaceutical supply chain activities and key challenges?

Thank you very much in advance for your cooperation and dedication of your precious time!!!