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SCHOOL OF COMMERCE

LOGISTIC AND SUPPLY CHAIN MANAGEMENT

THE EFFECT OF SUPPLIERS RELATIONSHIP MANAGEMENT ON PHARMACEUTICAL SUPPLY CHAIN PERFORMANCE: THE CASE OF ETHIOPIAN PHARMACEUTICAL SUPPLY SERVICES, HEAD OFFICE, ADDIS ABABA, ETHIOPIA

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The Effect of Suppliers Relationship Management on Pharmaceutical Supply Chain Performance: The Case of Ethiopian Pharmaceutical Supply Services, Head Office, Addis Ababa, Ethiopia.

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DECLARATION

I hereby declare that this study entitled 'The Effect of Supplier Relationship management on Pharmaceuticals supply chain Performance: The Case of Ethiopia Pharmaceutical Supply Service' is my own work. All information in this research project has been gotten and displayed with scholastic rules and ethical conduct.

Name of the Student researcher : Shentema Adugna_____

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Date:_____

STATEMENT OF CERTIFICATION

This is to certify that Shentema Adugna has carried out his research work on the topic entitled "The Effect of Supplier Relationship management on Pharmaceuticals supply chain Performance: The Case of Ethiopia Pharmaceutical Supply Service''. The work is original in nature and is suitable for submission for the award of Master Degree in Logistics and Supply Chain Management (M.A in LSCM)

Advisor: Zelalem Bayisa (Ph.D)

Signature _____

Date_____

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LIST OF ABBREVIATIONS AND ACRONYMS

- EPSS----------Ethiopian Pharmaceutical Supply Service
- EPSA----------Ethiopian Pharmaceutical Supply Agency
- PFSA----------Pharmaceuticals Fund and Supply Agency
- FPPPA----------Federal Public Procurement and Property Agency
- AAU SOC----------Addis Ababa University School of Commerce
- SOPs----------Standard Operating Procedures
- WHO----------World Health Organization
- e-GP ----------Electronic Government Procurement of Ethiopia
- UNDP/CIPS----------United Nations Development Program/Chartered Institute of Procurement and Supply
- PO----------Purchase Order
- DDG ----------Deputy Director General
- EFDA----------Ethiopian Food and Drug Authority
- QMS----------Quality Management System
- MA----------Manufacturer Authorization
- CMD----------Contract management directorate
- TMD----------Tender management directorate
- QMSD----------Quantification and market shaping directorate
- DDG----------Deputy director general
- PSTP-II ----------Pharmaceuticals strategic transformation plan
- HSTP-II----------Health sector transformation plan
- HR----------Human Resources
- SBD----------Standard Bidding Document
- KPI----------key performance indicators
- SRM----------Supplier relationship management

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ABSTRACT

The main goal of the Supplier relationship management aims to make the supply chain work better by improving communication, coordination, and collaboration with suppliers to improve the quality of products and services, reduce costs, and accelerate idealization and innovation. This study was aimed at filling the gaps on how supplier relationship management impacts or effects the pharmaceuticals supply chain performance of the EPSS Head office, Ethiopia. The study was guided by the main research objectives: to examine the effect of suppliers relationship management on supply chain performance of the organization.

Therefore, the study was adopted both quantitative and qualitative method and the relationships proposed in the framework were tested using explanatory research method. The primary data was collected from 69 employees of EPSS by census sampling technique. The collected data were analyzed using descriptive and inferential statistics using SPSS version 21. Further, the researcher concludes that effective communication and strong collaborative relationships with suppliers were the most factors affecting supply chain performance with statistical significance level of 0.000, ($p < 0.01$).

The study's conclusions suggested that EPSS might build a more robust, effective, and efficient supply chain by enhancing performance measurement and monitoring, choosing and evaluating suppliers strategically, and fostering better communication and teamwork. The results suggested that establishing a comprehensive strategy that incorporates these three crucial areas is necessary to improve the overall performance of the supply chain.

Key words: *Supplier relationship management, EPSS, collaboration, supply chain performance*.

CHAPTER ONE

1. Background of the study

This chapter includes the study's background, problem statement, research questions, and objectives; it also defines key terms, delimits the study, and organizes the information throughout the article.

Supplier Relationship Management (SRM) originated in 1983 when McKinsey consultant Peter Kraljic advocated for proactive supply management by corporate buyers. Kraljic emphasized the importance of understanding the impact of risk and profitability within different categories and developing supplier management strategies accordingly. For instance, while stationery supplies have minimal impact on profitability and risk, a shutdown at Foxconn, a major technology manufacturer, poses significant risks to the operations of big-name brands like Apple. The close relationship between Foxconn and Apple is considered a strategic alliance, requiring extensive commitment, executive sponsorship, cross-planning, and numerous meetings. Managing such relationships demands considerably more effort than handling stationery contracts (Al-Rewashed et al., 2023).

Supplier relationship management aims to enhance the supply chain by improving communication, coordination, and collaboration with suppliers, leading to improved product and service quality, cost reduction, and accelerated innovation. Supply chain management (SCM) is a multifunctional activity that encompasses various operations, from demand creation to order fulfillment, with the objective of ensuring seamless flow of goods, data, and finance among channel partners, resulting in increased productivity, efficiency, and reduced costs. In the healthcare sector, pharmaceutical supply chain management (PSCM) focuses on stakeholders, systems, and processes involved in the pharmaceutical flow from manufacturers to patient care, ensuring availability of appropriate goods in the right quantities and locations (Chopra, 2020; MTaps fact sheets, 2022).

Supplier Relationship Management (SRM) is a strategic approach to managing an organization's interactions with its suppliers, aiming to obtain the best value for money by developing and maintaining effective, sustainable partnerships. It involves more than just managing relationships; it requires a mutual commitment from both buyers and suppliers to achieve common goals and deliver predictable results through structured collaboration. This approach emphasizes creating long-term partnerships rather than adversarial relationships, ensuring that suppliers' activities are aligned with the organization's objectives (SRM strategy, EPSS, 2023/24-2025/26).

The pharmaceutical supply chain in Ethiopia is vital for ensuring the availability and accessibility of essential medicines and healthcare products. Ethiopia's healthcare system has seen significant improvements, with a mix of public and private providers serving both urban and rural areas. The government is committed to expanding healthcare access and improving health outcomes nationwide. The developing pharmaceutical industry includes local manufacturers, importers, distributors, and retailers, all regulated by the Ethiopian Food and Drug Authority (EFDA) to ensure quality standards and compliance. Distribution involves multiple stakeholders aiming to make medicines accessible even in remote areas, though challenges such as infrastructure, transportation, and logistics persist, especially in rural regions (PSTP II-2020/21 - 2029/30).

In the dynamic landscape of healthcare, effective Supply Chain Management (SCM) plays a pivotal role in ensuring the seamless flow of goods and services. One crucial aspect of SCM that often goes underestimated is Supplier Relationship Management. Supplier Relationship Management (SRM) plays a crucial role in the overall performance of the pharmaceutical supply chain, and this holds true for the case of Ethiopian Pharmaceutical Supply Services as well. SRM encompasses the strategies, processes, and activities involved in managing relationships with suppliers to optimize supply chain efficiency, reduce costs, ensure quality, and foster collaboration. Pharmaceuticals supply chain performance is one of a core supply chain activity that is influenced by buyer supplier relationship. Effective supplier relationship management can

lead to securing a competitive advantage and improving performance for a firm. This is because supply chain management has become one of the defining factors in achieving superior organizational performance. The government of Ethiopia is focusing to increase the availability of essential health commodities, pharmaceuticals, at public health institutions to at least 90 percent according to the five years pharmaceuticals supply transformation plan of the federal ministry of health of Ethiopia and one of the ways to achieve this objective is through effective & efficient supply chain management of those commodities and effective strategic supplier relationship management system (Webb, 2017).

The Pharmaceutical Sector Transformation Plan (PSTP-II) recommended developing and implementing a Supplier Relationship Management (SRM) system as a methodology to structure and support relationships with suppliers that will assist in reducing procurement and inventory costs, supporting a customer-centred business that delivers product/ service customization and quality in the desired time frame and continuously improving supply processes. In line with this supplier relationship management Strategy document is expected to guide and improve the overall relationship of EPSS with its suppliers. The strategy also help EPSS to be "the first-choice partner for its suppliers. In the context of the Ethiopian pharmaceutical supply service, SRM can have several key benefits: supplier selection and evaluation, improved supplier performance,enhanced supply chain collaboration, risk management, cost optimization, bench marking and best practice, compliance and quality assurance, demand-supply alignment and achieve operational excellence.

Ethiopia has been working to develop its local pharmaceutical manufacturing capacity to reduce dependence on imported medicines and promote self-sufficiency. The government has implemented policies to encourage local production and attract investment in the pharmaceutical sector. Local manufacturers produce a range of pharmaceutical products, including generics, to meet domestic demand. Supplier relationship management involves bench marking supplier performance against industry standards and identifying best practices. Ethiopian Pharmaceutical Supply Services can compare its supplier performance metrics with industry benchmarks to assess its competitiveness and identify areas for improvement. By adopting and implementing best practices from leading organizations, Ethiopian Pharmaceutical Supply Services can

enhance its SRM strategies and drive better outcomes. By effectively implementing SRM practices, Ethiopian Pharmaceutical Supply Services can strengthen its supplier relationships, optimize supply chain performance, reduce costs, mitigate risks, and improve the availability and quality of pharmaceutical products in Ethiopia (Supplier base Analysis report, EPSS, 2022).

1.2. Statement of the problem

The research problem, therefore, revolves around investigating the specific role and effect of SRM in enhancing the performance of the pharmaceutical supply chain in Ethiopian Pharmaceutical Supply Services. This involves understanding how SRM practices, such as supplier selection, collaboration, communication, contract management, and leveraging technology, influencing key performance indicators, including supply chain efficiency, quality, responsiveness, and reliability. In the context of the EPSS, the pharmaceutical supply chain is a critical component that ensures the timely and efficient distribution of medicines and healthcare products. However, the performance of this supply chain can be significantly influenced by the quality of SRM practices. Effective SRM can lead to improved procurement performance, supply chain resilience (SCR), and competitive advantage, while poor SRM practices may result in supply chain disruptions, increased costs, and reduced service quality (Kosgei, &Gitau,2016).

The pharmaceutical supply chain in Ethiopia, especially within the Ethiopian Pharmaceutical Supply Services (EPSS), faces numerous challenges that impact its performance, particularly in managing relationships with suppliers. There is a lack of comprehensive understanding of how Supplier Relationship Management (SRM) practices affect the supply chain's effectiveness. Key challenges identified include a limited supplier base, restricted access to information, inadequate infrastructure, quality assurance and regulatory compliance issues, limited resources and financial constraints, insufficient access to ICT, volatile market conditions and demand variability, political and economic barriers, and difficulties in supplier development and localization to meet quality standards and capacity demands. These challenges hinder SRM practices and the overall performance of the pharmaceutical supply chain (Suppliers performance evaluation report, EPSS, 2021).

In its effort to improve the relationship with the suppliers, EPSS has initiated a permanent international supplier forum since 2021. The forums were able to disclose the Ethiopian pharmaceuticals landscape in general and the potential for investing in the market. In addition, the supply base analysis findings and market volume for priority products were presented and bottlenecks raised by suppliers to register their products were discussed. During the conference, some suppliers expressed their interest to register their products. Based on action points from the consecutive International Suppliers Conference, EFDA and EPSS leaders made a targeted outreach to potential suppliers, particularly suppliers from India and China encouraged registering their products in Ethiopia. Additional efforts like engaging Ethiopian Embassies located in countries, where the potential suppliers are located should be initiated as a supplementary strategy to attract more suppliers from 2023 G.C on wards and the progress needs to be monitored accordingly. Furthermore to implement SRM strategy successfully and to widen the supplier base up to the expected level, EPSS and EFDA need to identify other potential suppliers outreach mechanisms (International supplier's conference report, EPSS, 2021).

The finding shows that regularly suppliers' conference is not conducted to demonstrate ways to improve and share future plans of the EPSS. Moreover, agency does not monitor the health of the relationships with supplier. In relating to this finding, qualitative analysis of this particular study shows that some suppliers do not submit the required documents as per requirement. Sending incomplete, incorrect shipping document and failing to deliver as per signed contract are some of the challenge of the EPSS from supplier sides. To sum up, supplier relationship management practice of the agency has its own strength and weakness. Some strength like existence of commitment, trust and establishing long term commercial relationship with some suppliers are appreciated. But, there are unacceptable suppliers relationship practices are observed which inhibit the procurement process to be effective and efficient (Seifu, 2020).

In EPSS, contract management directorate (CMD) faces the following major supplier-buyer related risks such as; supply risks due to failure of the supplier in fulfilling their contractual obligation, supply risks due to natural disasters, political turmoil, pandemic and war, foreign exchange shortage and fluctuation, unethical behavior practiced by both parties, product quality risk, and cultural difference (barrier) risk and also delayed delivery from the suppliers which

leads to an expiry of Letter of Credit (LC) and extending this will cost extra. Again according to the reports of the half 2017 year, it showed that there was a cancellation of contracts with a supplier because of the supplier‘s inability to deliver the products at the right time (EPSS Supplier performance evaluation report, 2021 & 2022).

Despite these challenges, Ethiopian pharmaceutical supply services can address them through proactive measures. This can include strengthening regulatory compliance, investing in infrastructure development, enhancing information-sharing mechanisms, providing training and capacity-building support, strategic planning, and continuous improvement in SRM practices, and fostering collaboration between various stakeholders in the supply chain. Ethiopian Pharmaceutical Supply Services can also explore strategies such as expanding supplier networks, leveraging technology for supply chain visibility, and fostering cross-cultural understanding and collaboration. Overcoming these challenges can contribute to more effective supplier relationships, improved supply chain performance, and better healthcare outcomes for the Ethiopian population (Lintukangas, 2019).

Hailu et al. (2023), findings revealed that supply chain practices and ICT implementation impacted the EPSS supply chain performance positively and significantly. The ICT implementation practice in the EPSS posited a significant positive partial mediating role between supply chain practice and operational performance. Thus, if the EPSS focuses on the automation and integration of customer relationship management and the practice of information exchange, the essential supply chain practices, it can further improve operational performance.

1.3. Research Questions

The research problem seeks to address the following objectives questions:-

- To what extent does strategic supplier selection and evaluation affects the pharmaceuticals supply chain performance of EPSS?
- To what extent does the supplier performance measurement and monitoring influence the pharmaceuticals supply chain performance of EPSS?

- To what extent does the supplier collaboration and communication impacts the pharmaceuticals supply chain performance of EPSS?

1.4. Objectives of the study

1.4.1. General objective

The General objective of this study is to examine the effect of supplier's relationship management on pharmaceutical supply chain performance of the Ethiopian pharmaceutical supply services, Head office, Addis Ababa.

1.4.2. Specific objectives

- To examine the effect of strategic supplier selection and evaluation on the pharmaceuticals supply chain performance of EPSS.
- To examine the effect of supplier performance measurement and monitoring on the pharmaceuticals supply chain performance of EPSS.
- To evaluate the effect of supplier collaboration and communication on the pharmaceuticals supply chain performance of EPSS.

1.5. Scope of the study

The study was focused specifically on the Ethiopian context and the operations of Ethiopian Pharmaceutical Supply Services, head office. It examines the pharmaceutical supply chain management performance within Ethiopia pharmaceuticals supply service(buyer side), including the Demand planning or quantification, procurement, and receiving of pharmaceutical products.The study investigates the various dimensions of SRM effects and practices employed by EPSS. This includes supplier selection and evaluation processes, collaboration and communication strategies, contract management approaches(performance measurement and monitoring) to enhance SRM effectiveness and assesses the impact of SRM practices on key performance indicators (KPIs) within the pharmaceutical supply chain of the EPSS. These indicators may include but are not limited to supply chain efficiency, product quality, responsiveness, reliability, cost-effectiveness, customer satisfaction, and patient outcomes.

Based on the research findings, the study was provided recommendations and interventions to improve SRM practices in Ethiopian Pharmaceutical Supply Services. These recommendations may encompass strategies to address the identified challenges, enhance supplier selection processes, foster collaboration and communication, optimize contract management, and leverage technology for improved SRM outcomes. The study was incorporated the perspectives of key stakeholders involved in the pharmaceutical supply chain, including supply chain managers,technical advisors and experts in EPSS. Their insights and experiences contribute to a comprehensive understanding of SRM practices and their impacts on pharmaceuticals supply chain performance of EPSS (PSTP-II, 2020/21-2029/30).

Many researches on the supplier relationship management have used many parameters to define the variables for the supplier relationship management on the supply chain performance of the organizations. Handfield & Bechtel, (2020) used trust, contracts, site-specific assets, buyer-dependency, human- specific assets and responsiveness as the independent variables.

Oyango et al. (2019) used joint decision making and communication as the independent variables for the strategic supplier relationship management . Kidist F. (2018) used collaboration and technology for strategic SRM as independent variables. Based on literature's this study was focused on strategic supplier selection and evaluation, performance measurement and monitoring, collaboration and communication as the independent variables to know the effect on the dependent variables measuring the supply chain performance of the EPSS.

1.6. Delimitation of the study

The boundaries and scope of the research are established by the delimitation of Supplier Relationship Management (SRM) in the pharmaceutical supply chain performance within the framework of Ethiopian Pharmaceutical Supply Services, which may be defined by several of factors. Here is some delimitation to consider:-

Geographical Scope: The study specifically focuses on the Ethiopian Pharmaceutical Supply Services, which includes the pharmaceutical supply chain activities within Ethiopia. The findings and conclusions may not directly apply to other countries or regions.

Pharmaceutical Industry Focus: The study concentrates on the pharmaceutical industry within Ethiopia, including the quantification, procurement, manufacturing, distribution, and retailing of pharmaceutical products. It may exclude other sectors or industries within the broader supply chain.

Supplier Perspective: The research delimits the scope to the relationships between Ethiopian Pharmaceutical Supply Services and their suppliers. It may explore supplier selection, evaluation, collaboration, and performance measurement practices, as well as the impact of these relationships on supply chain performance.

Regulatory Environment: The research takes into account the regulatory framework and compliance requirements specific to the Ethiopian pharmaceutical industry. It may examine how regulatory factors influence SRM practices and their impact on supply chain performance.

Time frame: The study focuses on a specific time-frame or period, which may vary depending on the research design and objectives. The findings may reflect the state of SRM practices and effect on the supply chain performance within a particular time frame, limiting the generalization of results to other time periods.

It is important to note that this delimitation's are not exhaustive and may vary based on the specific research objectives, scope, and methodology chosen for the study. Researchers conducting a study on SRM in the Ethiopian Pharmaceutical Supply Services should clearly define these delimitation's to ensure the study's focus and facilitate the interpretation of findings within the specified context.

1.7. Limitation of the study

The study was also acknowledges any limitations in terms of data availability and accessibility, sample size and representatives, possibility of response bias during surveys, external factors and contextual Influences, time constraints or generalization of findings. It provides a clear delineation of the research scope and context, ensuring that the findings and recommendations are relevant primarily to Ethiopian Pharmaceutical Supply Services while considering their

potential applicability in similar contexts and focused on buyer side not on seller perspective.. It was crucial for researchers to acknowledge and discuss these limitations transparently to provide a balanced and realistic assessment of study's findings and implications.

1.8. Significance of the study

The findings were guides decision-making, inform policy development, and contribute to the improvement of SRM practices, ultimately leading to a more efficient, reliable, and quality-oriented pharmaceutical supply chain in Ethiopia. By maintaining strict quality assurance practices and fostering strong relationships with suppliers, Ethiopian pharmaceutical supply services can enhance the quality, cost effectiveness and safety of pharmaceutical products, which ultimately improves supply chain performance.

Addressing these challenges requires a proactive approach, strategic planning, and continuous improvement in SRM practices. Ethiopian Pharmaceutical Supply Services can explore strategies such as expanding supplier networks/bases, improving infrastructure, enhancing quality assurance mechanisms, leveraging technology for supply chain visibility, investing in staff training, and fostering cross-cultural understanding and collaboration. Finally overcoming these challenges can lead to enhanced supplier relationships, better supply chain efficiency, and better healthcare results for the Ethiopian populations.

1.9. Operational terms /definitions

Recognizing that there may be multiple interpretations for the terms listed below, they are defined as follow for the purposes of this thesis as conceptual definitions.

Supplier Relationship Management (SRM): refers to the systematic approach and set of activities undertaken by Ethiopian Pharmaceutical Supply Services to effectively manage their relationships with suppliers in the pharmaceutical supply chain. It involves strategies, processes, and practices designed to optimize supplier selection, collaboration, performance evaluation, and continuous improvement (EPSS,Supplier Relationship Management strategy,2023/24-2025/26).

Pharmaceuticals: means any substance or mixture of substances used in the diagnosis, treatment, mitigation or prevention of a disease, and include medical instruments and medical supplies (Proclamation No 553/2007).

Pharmaceutical Supply Chain Performance: refers to the overall effectiveness and efficiency of the supply chain activities within Ethiopian Pharmaceutical Supply Services. It encompasses various dimensions, including cost, efficiency, quality, delivery time, inventory management, customer satisfaction, and regulatory compliance (Bereket,2018).

Supplier Selection: refers to the process of identifying and evaluating potential suppliers to meet the procurement needs of Ethiopian Pharmaceutical Supply Services. It involves assessing supplier capabilities, capacity, reliability, product quality, pricing, and adherence to regulatory requirements (Walta,2022).

Supplier Performance Evaluation: It involves the systematic assessment of supplier performance against predefined criteria and key performance indicators (KPIs). It includes measuring and monitoring supplier performance in areas such as product quality, delivery reliability, responsiveness, cost-effectiveness, and compliance with contractual obligations (EPSS,Supplier Relationship Management strategy,2023/24-2025/26).

Supplier Development: in SRM it involves actively engaging with suppliers to foster their development and improvement. Ethiopian Pharmaceutical Supply Services can collaborate with suppliers to enhance their capabilities, quality standards, and operational efficiency. This may include providing training, sharing best practices, and facilitating knowledge transfer to improve supplier performance and overall supply chain performance (Teketel,2021).

Performance Measurement and Key Performance Indicators (KPIs): SRM involves the establishment of performance metrics and KPIs to evaluate supplier performance and monitor supply chain performance. Ethiopian Pharmaceutical Supply Services can define and track KPIs such as on-time delivery, lead times, quality metrics, cost savings, and customer satisfaction. Regular performance reviews and feedback mechanisms enable continuous improvement and

accountability among suppliers(EPSS,Supplier Relationship Management strategy,2023/24-2025/26).

1.10. Organization of the study

The study was arranged into five chapters, with an appendix at the end of each page: The first chapter includes an introduction that covers the study's background, the research problem, its objectives, its scope and significance, as well as its limitations. The review of relevant literature is the main topic of the second chapter. The study's research methods were given in the third chapter. The data analysis, interpretation, and presentation are covered in the fourth chapter, and the findings, conclusion, and recommendation are outlined in the final chapter five.

CHAPTER TWO

LITERATURE REVIEW

The outline of literature pertaining to thoughts or ideas about the impact of supplier relationship management on the performance of the pharmaceutical supply chain was supplied for this section of the study. This chapter included an examination of the pertinent theoretical, empirical, and conceptual concerns pertaining to the study's topic as well as the presentation of the chosen conceptual framework.

2.1. Theoretical literature review

2.1.1. Supplier relationship management and supply chain performance.

Supplier relationship management is process of managing an organization interaction with the firm that avail goods, works and services for it uses. The goal of supplier relationship management is to achieve more effective and efficient form of interface between buyer and its suppliers. Supplier involvement in product development allows firm to make better use of their supplier’s capabilities and technology to deliver competitive products. Coordinating operational activities through joint planning also results improve product quality and reducing supply uncertainty (Nyamasege and Biraori, 2022).

The key stakeholders in pharmaceutical supply chain include multiple government agencies, health facilities, drug manufacturers, drug suppliers, drug distributors, pharmacies, research organizations, and authorities. Again, there are numerous other organizations, such as insurance companies and healthcare management organizations that further increase the complexity. They have different business objectives which result in managing pharmaceutical supply chain more difficult. And it is stated that the regulatory nature of the industry and numerous merger and acquisitions to acquire more research and development expertise, many pharmaceutical supply networks have grown in an uncontrolled fashion rather than being planned for optimal performance (Kapoor*et al*., 2018).

Supplier relationship management is a concept rooted in the field of supply chain management and procurement. It involves the strategic management of relationships with suppliers to optimize performance, foster collaboration, and achieve mutual benefits. A theoretical review of SRM encompasses various theoretical perspectives and frameworks that underpin its principles and practices. These concepts and practices underline the strategic nature of SRM and its significance in achieving operational excellence, reducing costs, mitigating risks, and gaining a competitive edge in the pharmaceutical supply chain and other industries. By adopting effective SRM strategies, organizations can build strong, collaborative partnerships with suppliers, enhance supply chain performance, and drive overall business success (**1**). Here are some key theoretical perspectives relevant to SRM:

2.1.2. Strategic Supplier Segmentation/selection and evaluation

SRM involves segmenting suppliers based on their strategic importance to the organization. This component involves the identification, assessment, and selection of suppliers based on predefined criteria. Organizations need to evaluate potential suppliers' capabilities, quality standards, financial stability, delivery performance, and other relevant factors to ensure they align with the organization's strategic objectives and requirements. This segmentation helps allocate resources and efforts effectively. Suppliers can be categorized into strategic, preferred, and transactional segments based on factors such as their impact on product quality, innovation potential, reliability, and overall value they bring to the organization. SRM can play a significant role in selecting and evaluating pharmaceutical suppliers in Ethiopia. This involves assessing potential suppliers based on their capability to meet quality standards, regulatory compliance, pricing, delivery reliability, and other relevant criteria. By carefully selecting reliable and qualified suppliers, the pharmaceutical supply services can enhance the overall performance of the supply chain. Supplier segmentation is one of supplier relationship management strategy which involves differentiating suppliers into groups, preparing supplier segmentation groups, appraising the groups, detecting prospects with suppliers as well as developing service level agreements based on a well-defined set of criteria (Muema, 2016, Pp.37).

2.1.3. Contract and Relationship Development

Once suppliers are selected, this component focuses on establishing formal agreements and contracts that outline the rights, obligations, and expectations of both parties. The contract should cover aspects such as pricing, delivery schedules, quality standards, performance metrics, and dispute resolution mechanisms. SRM emphasizes the importance of collaboration between buyers and suppliers. Collaborative relationships go beyond transactional interactions and involve jointly working towards common goals, sharing information, and engaging in joint problem-solving. Collaboration strengthens trust, improves communication, and enables both parties to leverage their expertise and resources for mutual benefit. Open and transparent communication channels can improve information sharing, facilitate joint decision-making, and enable timely responses to supply chain challenges. Strong collaboration can lead to better coordination, reduced lead times, and improved overall supply chain performance (Kosgei, &Gitau, 2019).

2.1.4. Supplier Performance Measurement and monitoring

This component involves the ongoing monitoring and measurement of supplier performance against predetermined metrics and targets. Key performance indicators (KPIs) may include delivery reliability, product quality, responsiveness, cost-effectiveness, and innovation. Regular performance reviews and feedback mechanisms help identify areas for improvement and facilitate continuous supplier development. It also involves measuring and evaluating supplier performance to identify areas of improvement and ensure alignment with organizational goals. Regular performance reviews and scorecards facilitate data-driven decision-making and foster continuous improvement.

2.1.5. Collaboration and Communication

Effective collaboration and communication are crucial for successful SRM. Organizations need to establish open lines of communication with suppliers to facilitate the exchange of information, resolve issues, and align goals. Collaborative activities, such as joint product development,

sharing of demand forecasts, and process improvement initiatives, can enhance overall supply chain performance and create mutual benefits.

2.1.6. Supplier Development

SRM recognizes the importance of developing supplier capabilities to enhance overall supply chain performance. Supplier development initiatives can include training programs, process improvement initiatives, knowledge sharing, and joint innovation projects. By investing in supplier development, organizations can improve the capabilities of their suppliers, strengthen relationships, and achieve better supply chain outcomes.

2.1.7. Risk Management

SRM encompasses proactive measures for the identification and management of risks associated with supplier relationships. This includes assessing supplier financial stability, evaluating geopolitical risks, monitoring supplier compliance with regulations and ethical standards, and developing contingency plans to mitigate potential disruptions to the supply chain. Effective risk management strategies help ensures continuity, resilience, and sustainability in supplier relationships.

2.1.8. Technology Enablement

SRM can be supported by technology solutions designed to enhance collaboration, streamline communication, and improve information sharing between buyers and suppliers. Supplier portals, electronic data interchange (EDI), and supply chain management systems enable real-time visibility, automate transactional processes, and facilitate efficient supplier relationship management.

2.1.9. Continuous Improvement

SRM involves an ongoing process of continuous improvement. It requires organizations to regularly review and update their SRM strategies, adapt to changing market conditions, and incorporate feedback from suppliers and internal stakeholders. Continuous improvement efforts

focus on identifying areas for optimization, enhancing collaboration, conducting supplier's conference and fostering innovation in supplier relationships.

2.1.10. Supply chain performance

It emphasizes the need to evaluate supply chain performance holistically, considering the interactions and inter dependencies among its various elements. This perspective highlights the importance of understanding the dynamics and behavior of the entire supply chain system, rather than focusing solely on individual components or functions. Supply chain performance can be evaluated based on the concepts of efficiency and effectiveness. Efficiency refers to achieving the desired output with minimum resource utilization or cost. Effectiveness or responsiveness refers to the extent to which the supply chain achieves its intended objectives and meets customer requirements. Theoretical perspectives related to efficiency and effectiveness, such as operations management theories (e.g., Lean, Six Sigma) and performance measurement frameworks (e.g., Balanced Scorecard), offer insights into evaluating and improving supply chain performance.

According to Beamon, 2020, Supply chain models have predominantly utilized two different Performance measures: Cost and a combination of cost and customer responsiveness. Costs may include inventory costs and operating costs. Customer responsiveness measures include lead time, stock out probability, and fill rate. These theoretical perspectives provide a foundation for understanding and evaluating supply chain performance from different angles. Organizations can draw on these theories to develop performance measurement frameworks, align performance measures with strategic objectives, and identify areas for improvement and innovation in their supply chains. By considering these perspectives, organizations can enhance their understanding of supply chain performance and develop strategies to achieve competitive advantage and operational excellence.

2.2. Empirical literature review

Supply chain management (SCM) is a rapidly evolving area of interest to academics and business management practitioners alike. As a result most of the industries innovations in

improving efficiency and reduce cost targeted innovations on key functions including logistics (Charu&Swatantra, 2019). The aspects of marketing, supplier relationship management, economics, logistics and organizational behavior are all important for developing insights into how and why different SCM arrangements emerge and for understanding the consequences of these arrangements for industry efficiency and competitiveness (Jill & Hobbs, 2019).

The National Health Service (NHS) in the UK has implemented SRM to enhance its pharmaceutical supply services and also established collaborative partnerships with suppliers, focusing on long-term relationships and joint planning. By working closely with suppliers, the NHS has improved the availability of critical medicines, reduced lead times, and achieved cost savings through effective contract management and supplier collaboration. The NHS employs various mechanisms to monitor the performance of its suppliers and ensure adherence to quality standards. For example; Key Performance Indicators (KPIs): The NHS establishes a set of KPIs that reflect the desired performance outcomes from its suppliers. These KPIs can include metrics such as on-time delivery, product quality, lead times, customer service responsiveness, and compliance with regulatory requirements. Suppliers are regularly evaluated against these KPIs to assess their performance and identify areas for improvement.

The NHS conducts regular performance reviews and audits to evaluate the performance of its suppliers. These reviews involve site visits, inspections, and assessments of manufacturing facilities, quality control processes, and adherence to regulatory standards. Performances audits help identify any non-compliance issues, quality gaps, or areas of improvement that need to be addressed. The NHS actively seeks feedback from healthcare providers and end-users regarding the performance of suppliers. This feedback can include product quality issues, delivery delays, or customer service concerns. By capturing and addressing feedback and complaints, the NHS can identify any recurring performance issues and work with suppliers to find effective solutions (Shelby & Oakley, 2024).

Supplier relationships have become one of the key interest areas of strategic supply management. The focus has changed from transactional and short-term relationships to collaborative and long-term relations, where the mutual intention is to increase flexibility and create value through

cooperation. The objectives of SRM are defined to be: i) minimization of transaction costs, ii) value creation through internal capabilities and resources, iii) gaining competitive advantage from cooperative relationships, iv) reducing the risks of supply dependence and availability, and v) diffusion of supplier information between business units. The firms with organizational capability to manage supplier relationships are committed to develop their supplier relationships in a collaborative way, have ability to coordinate their supply chains effectively, aim to trustful relations, communicate actively with their suppliers, and follow valid supply processes (Lintukangas, 2020, Pp.1-2).

As it is constructed by Ibrahim & Hamid (2022), Strategic Supplier partnership is defined as the long term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits. A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts. Such strategic partnerships are entered into to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets.

A study revealed that buyer supplier joint decisions and supplier` communication management have positive effect on internal operational performance of manufacturing firms in Kenya. The study further revealed that the effect was statistically significant. This implies that organizations that have well managed supplier communication systems, implement buyer supplier joint decisions and that have improved customer relations are likely to enjoy improved internal operational performance. Improved supplier relations enhance supplier performance which in turn enhances internal operations performance. Similarly, effective communication system improves flow of information between the organizations and suppliers improving operational performance. The study therefore recommends that management of manufacturing organizations enhance communication systems and develop lasting relations with suppliers. A dedicated information system may be used to provide real time flow of information as well as achieve enhanced relations between the suppliers and the organization (Onyango, Kiruri, &Karanja, 2022).

Strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. Suppliers participating early in the product-design process can offer more cost effective design choices, help select the best components and technologies, and help in design assessment. Strategically aligned organizations can work closely together and eliminate wasteful time and effort. An effective supplier partnership can be a critical component of a leading edge supply chain. Strategic partners in supply chain must realize that the purchasing function is critical link between the source of supply chain and organization itself, with the support coming from the overlapping activities to enhance manufacture ability for both the customer and suppliers (Tan, 2020).

The effect of supplier Collaboration on the supply chain performance of the EPSS shown by a mean of 3.26 and standard deviation of 0.76. The extent for the establishment of quick ordering system is again moderate with a mean of 3.17 and standard deviation of 0.851. With a mean of 3.23 and a standard deviation of 0.82 is stable procurement through network. The extent for the flexibility to market change especially in market demand is to a small extent with a mean of 2.9 and a standard deviation of 0.783, which shows the research findings indicated that by adopting collaborative relationship and technology with their supplier contribute to enhanced supply chain performance (Kidist, 2018).

Supplier Relationship Management (SRM) plays an important role in the reduction of costs and the optimization of performance in industrial enterprises. Despite enormous investments in innovation, the health care sector has not experienced fundamental change yet. However, increased market dynamics and the implementation of economic principles will force health service providers to optimize cost structures as well as effectiveness and efficiency of business relationships. SRM is understood as the sourcing policy-based design of strategic and operational procurement processes as well as the configuration of the supplier management. Supplier relationship management is the process that defines how a company interacts with its suppliers. As the name suggests, this is a mirror image of customer relationship management (CRM). Just as a company needs to develop relationships with its customers, it also needs to foster

relationships with its suppliers. The desired outcome is a win-win relationship where both parties benefit (Tobias and Peter, April 2019).

Pharmaceutical supply Chain management practices, performance and challenges in different industry of Ethiopia were studied in different dissertations. The results of different researches in the practices of SCM in different commercial sectors of Ethiopia are poor and also the practice of SCM in Ethiopian pharmaceutical companies. It was found that, SCM practices in Ethiopian pharmaceutical firms are weak and not considering SRM as a strategic tool for competition (Sisay, 2022).The goal of SRM is for members in the organizations to integrate, work together, and build a partnership with each other to increase the competitive advantage of the supply chain as a whole (Gabriel , 2017).

The Ethiopian government places a strong emphasis on the availability of essential medicines, which are considered vital for addressing the country's healthcare needs. The Essential Medicines List (EML) of Ethiopia provides guidance on the selection, procurement, and use of essential medicines in the healthcare system. Efforts are made to ensure the affordability, quality, and availability of essential medicines throughout the supply chain. The procurement and supply chain management of pharmaceutical products in Ethiopia are primarily coordinated by the Ethiopian Pharmaceutical Supply service (EPSS) and responsible for the centralized procurement, storage, and distribution of medicines and medical supplies to public health facilities across the country. It works in collaboration with regional health bureaus and other stakeholders to ensure efficient supply chain operations (EML, 2020).

The Ethiopian government, in collaboration with international organizations and development partners, has undertaken various initiatives to strengthen the pharmaceutical supply chain. These initiatives focus on improving infrastructure, enhancing supply chain management systems, building technical capacity, and combating counterfeit medicines. Partnerships with organizations such as the World Health Organization (WHO) and the Global Fund have contributed to these efforts. The pharmaceutical supply chain in Ethiopia is continuously evolving to meet the healthcare needs of the population. Efforts are being made to improve supply chain efficiency, supplier relationship, enhance quality assurance, promote local

manufacturing, and ensure the availability of essential medicines throughout the country (HSTP II, 2020/21 - 2024/25 G.C).

2.3. Identified literature gap

Operational performance and supply chain management metrics differ from company to company, but they are fundamental to any organization's successful management. Theoretical positions that have been studied provide a foundation for understanding and assessing the role of supply chain management (SRM) in performance. Scholars and professionals in the business can use these concepts to develop research models, theoretical frameworks, and practical approaches that enhance supplier relationships, expedite supply chain operations, and offer sustained competitive advantage.

The true difficulty for managers in this new enterprise context is to create appropriate metrics and performance measurements so they can make the proper choices that will improve the organization's operational performance, competitiveness, and supply chain procedures. A subset of empirical studies exclusively concentrates on the lower level supply chain, or the customers, while others solely address the top tier supply chain. Certain studies (e.g., Karimi and Raffie, 2016; Addis, 2015; Mutuerandu, 2022; Suhong et al., 2023; and Mustefa, 2016) concentrate on both suppliers and customers; however, the variables that are used to assess the impact of supply relationship management on the performance of the pharmaceutical supply chain vary based on the study's chosen by organization.

On the other hand, there are incomplete agreements regarding the supplier relationship management variable and how it affects the organization's supply chain performance. The majority of the literature review demonstrates and makes recommendations for further studies on the chosen subject that highlight the causes and effects of supplier relationship management. Researchers can advance knowledge of the function of supplier relationship management in improving supply chain performance by filling up this knowledge vacuum in the literature. The results of this study can help practitioners create plans and put into practice efficient supply chain management techniques.

2.4. Conceptual framework of the study

The Ethiopian Pharmaceutical Supply Service (EPSS) Head Office's suppliers relationship management's effect on the performance of the pharmaceutical supply chain is outlined in the study framework. The conceptual framework below was created using the literature review mentioned above as a basis.

Supplier Relationship Management effect (SRM)

Supply Chain Performance

Independent Variables **Dependent Variables**

Fig: 2.1 Conceptual framework

(Source: adopted from Walta ,2022)

Overall, the conceptual framework offers an organized method for comprehending and evaluating the part SRM plays in the effectiveness,cost reduction ,responsiveness and lead time minimization of the pharmaceutical supply chain. In the Ethiopian pharmaceutical supply service or pharmaceutical industry, it would assist researchers and practitioners in identifying the essential elements and their inter dependencies, allowing for a thorough evaluation of how effective SRM practices can improve supply chain performance, compliance, and patient safety.

It should also take into account industry-specific contextual elements including product quality standards, legal restrictions, and the accessibility of essential pharmaceuticals. The framework can be used to guide future research and practical implementations in the sector while also helping to understand and analyze the influence of SRM on pharmaceutical performance.

CHAPTER THREE

METHODOLOGY OF THE STUDY

This chapter presented the research design and methods used to achieve the research objectives. It includes the research design, study population, sampling technique and sample size, methods and instruments of data collection, data analysis and presentation, reliability and validity assessments, and ethical considerations.

3.1 Description of the study area

The Ethiopian Pharmaceuticals Supply Service (EPSS), formerly known as the Pharmaceuticals Fund and Supply Agency (PFSA), was established in 2007 under Proclamation No. 553/2007. EPSS is the sole public sector pharmaceutical procurement organization in Ethiopia. Its mission is to ensure the availability of quality-assured essential pharmaceutical products at affordable prices for over 4200 public health facilities across the country. EPSS operates through 19 hubs, sourcing from national and international suppliers. The head office is located in Addis Ababa. EPSS is structured into three Deputy Directorates (Finance, Quality Management System, System Strengthening and Human Resources, Inbound Logistics, and Outbound Logistics) and twenty functional directorates. These units oversee various aspects, including quantification, tender management, contract management, warehouse operations, distribution, quality management, and research[10].

The study was conducted within the inbound logistics unit, focuses on pharmaceutical procurement processes. As part of the Pharmaceuticals Supply Transformation Plan II (PSTP II), the Ethiopian Pharmaceuticals Supply Service (EPSS) aims to implement a Supplier Relationship Management (SRM) system. The SRM vision targets becoming Africa’s leading supplier partner by 2025, emphasizing sustainable partnerships through efficient processes and

effective communication. The 2023/24–2025/26 SRM strategy emphasizes excellence in supplier relationships, development, financial efficiency, and leadership. Key objectives include enhancing supplier evaluation, communication, negotiation, and local pharmaceutical manufacturing capacity. The strategy, with an estimated budget of ETB 18,514,825.00, aims to enhance overall supplier management for better health facility service.

3.2 Research design

Survey research is another kind of quantitative research design that uses a sample of the public to describe trends, attitudes, and views in the population in a quantitative or numerical manner. In order to generalize findings from a sample to the community, it will comprise cross-sectional research that collects data using structured interviews or questionnaires (creswell,2022).

Therefore, the research designs that were used in this study was cross-sectional explanatory research designs, which use surveys to gather data about a large group of elements known as a population.

Explanatory research design is an approach used to discover details about why something occurs and it can serve as a starting point for more in-depth studies as well as to examine the effect of buyer supplier relationship on pharmaceutical supply chain performance in Ethiopian Pharmaceuticals Supply service because it analyses the cause-effect relationship between two or more variables. Regressions were utilized to illustrate the cause-and-effect relationship between the dependent and independent variables, and also correlation was also performed to look into the associations between the variables. The rationale behind selection of this method is to get an accurate representation of characteristics of a particular situation and group.

A survey has three characteristics: first, it should produce quantitative descriptions of some aspects of the study population, which in this case is concerned with either relationships between variables or projecting findings descriptively to a predefined population; second, it should collect data from a target population, in this case, the employees of EPSS, Head Quarters the department of tender management, quantification and market shaping, and Contract Management Directorate.

And third one is data collection was done by asking target population structured and predefined questions.

Quantitative analysis was conducted by utilizing the respondents' responses from the surveys questionnaires. The researcher was able to better explain the relationship between between supply chain performances (dependent variables) and supplier relationship management (independent variables) with the use of this quantitative study.

3.3 Research approach

In this study, both qualitative and quantitative research approaches were used. Quantitative Self-administered questionnaires were used to collect primary data; as well as annual performance results, and previous research projects were also used to provide qualitative and quantitative data that helped researchers understand people's attitudes, beliefs, and behaviors within a particular context.

To fulfill the study's aims, both qualitative and quantitative data were combined and examined. Integrating quantitative and qualitative techniques facilitates the acquisition of a thorough comprehension of the effect of supplier relationship management (SRM) on pharmaceutical supply chain performance. For example, surveys used to collect quantitative data on SRM practices and supply chain performance.

3.4 Population and Sampling techniques

3.4.1 Target Population

As per the EPSS human resource directorate data base of March, 2024, there are around 700 employees at head quarter and there was 98 employees working in the inbound logistics operation unit. This included all staffs (officers, supportive staffs, team leaders, technical advisors, and directors) who are involved either directly or indirectly in managing supplier relationship of the organization from the three directorates (i.e.; quantification and market-shaping, tender management, and contract management directorate).

Quantification & Market Shaping Directorate (QMSD) staff members manage the procurement process starting from demand forecasting and quantification till procurement request (pre-purchasing steps). Tender management directorate staffs precede the process from procurement request steps to contract signing (Purchasing steps). Finally, contract management directorate manage and follow up the remaining process till the products deliver to warehouse of the EPSS (post purchasing steps). These three directorates are interrelated each other and work closely to facilitate the process of national or international procurement and supplier relationship management as a result of better supply chain performance. EPSS staffs members are working at these directorates are the right candidate to express, explain and narrate supplier relationship management practices and existing challenges in the process.

An experienced and technical employee of three directorates was the right candidate to explain and clarify the effect of the supplier relationship management on Pharmaceuticals supply chain performance. In general, from a total of 98 employees in the inbound logistics unit, and purposely from the three directorates ,only 72 actual participants were considered as a target or case.

Table 3.1: Sampling frame

Respondents category	**Target population**
Quantification and Market shaping Directorate	20 (27.78%)
Tender management Directorate	18 (25.0%)
Contract management Directorate	15 (20.83%)
Others (Advisors)	19 (26.39%)
Total	72

Source: from the EPSS HRM,data base,march,2024.

3.4.2 Sampling Technique

In this study, to get respondents with the appropriate knowledge, exposure, and experience about the research area, the study population was selected using a stratified sampling strategy from the total EPSS head office employees. Additionally, all members of the tender management, contract management, quantification, and market shaping directorate were selected purposively to get the actual number of participants fit for the study by census sampling techniques. All individuals under these directorates, except non-technical staff and those with less than one year of experience, were candidates for this study.

Census was the chosen method of sample size determination, where the entire population was selected as the target population. This approach was used because of the specific nature of the study, which required technical and experienced individuals in supplier relationship management. Additionally, given that the total population was small, with fewer than 100 individuals, the census method was appropriate for gathering the necessary quantitative data.

3.5. Data source and type

Primary and secondary data was used for the analysis of this study. The primary data were gathered using survey questionnaire from the selected sample respondents/employees of EPSS, head office and secondary data were collected from annual performance reports official reports of 2020, 2022,2023,2024 or assessment findings and SRM strategic documents as well as websites of the company and journals.

3.6. Data collection procedures and tools

As the measuring instrument, close-ended Likert scale type questionnaires were used. This questionnaire type is selected because it is easy to administer to groups of people simultaneously; it is less costly and less time consuming than other measuring instruments. Likert five point scale was a widely used rating scale which requires the respondents to indicate a degree of agreement or disagreement with each of a series of statements or questions i.e. from (1) strongly disagree to (5) strongly agree. The questionnaires were also including some questions about educational

back ground of respondents, employee level of the respondents, and experience of the respondents at their current position. The questionnaire has two parts. Part I - personal data, Part II - Likert five points rating scale questions related to supplier relationship management effects on pharmaceuticals supply chain performance of EPSS.

3.7. Method of data analysis and presentation

Before analyzing, the data has been collected using questionnaire were cross checked for its completeness and consistency. The data was arranged and analyzed systematically and rigorously. Statistical Package for Social Science (SPSS) version 21.0 was used to code and analyze and to present the collected and cleaned data. Then, descriptive statistics, numbers, percentage, mean and Standard deviations have been used in order to analyze the data.

Finally correlation and regression model was used to see the effect of the independent variables to dependent Variables. Based on discoveries of the study conclusions and recommendation were proposed. Linear regression assumes a linear relationship between the dependent variable (response) and one or more independent variables (predictors).The theoretical foundation lies in the concept of minimizing the sum of squared differences between observed data points and the predicted values.It draws from statistical principles, including the method of least squares and the normal distribution.Assumptions include linearity, independence of errors, ~~homoscedasticity,~~ and normally distributed residuals.The mathematical aspects of these model was involved quantitative modeling, optimization, and statistical analysis, while the theoretical aspects consider organizational behavior, economics, and strategic management.

In summary, regression models combine theoretical concepts (such as linearity, assumptions, and functional forms) with mathematical techniques (parameter estimation, optimization) as well as correlation models bridge theory and mathematics to quantify relationships between variables.The multiple linear regression model which extends to multiple predictors was used follows:

$$\mathbf{Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \varepsilon,}$$

Where: Y = Supply chain performance

β0= the intercept of the model

X1= Extent to which strategic Supplier selection and evaluation are adopted by the organization

X2 = Extent to which performance measurement and monitoring were done by the organization

X3= Extent to which collaboration and communication with suppliers are adopted by the organization.

ε = Error term

β1, β2, β3= coefficients of the model

3.8 Validity and Reliability test

3.8.1 Validity test

In the validation process of this study, questionnaires was developed on the bases of previous studies and review of related literature and copies of the questionnaire and research questions were given to the three experts from each directorate. Pre testing was conducted to determine the applicability of the tools and seeing how the questionnaire was acceptable to the respondent's. The comments of the experts were included to refine and make smart questionnaires. Based on the comments provided by experts the required amendment and correction was done to address the objective and to make it responsive as well as self-explanatory.

3.8.2 Reliability test

Using SPSS version 21, Cronbach's Alpha statistics were used to assess the validity of a series of questions intended to test the 5-point Likert scale. With an appropriate coefficient of "0.7," Cronbach's alpha is utilized to determine the correlation between the scale's constituent variables. The higher the Cronbach's alpha coefficient, the more trustworthy the data.If the reliability statistics for the dependent and independent variables of the Cronbach's Alpha is over 0.70, it shows high consistency among the variables (Robert & Richard, 2018, P.419). Thus, Cronbach's alpha for this data was 0.836, which shows the data was at excellent reliable level.

Table 3.2: The Cronbach alpha coefficient of the data collection tool administered in EPSS, Ethiopia, 2024.

Reliability Statistics		
Variables	Coefficient of Cronbach's Alpha	Number of items
Strategic supplier selection and evaluation	0.800	9
Performance measurement and monitoring	0.817	7
Collaboration and communication	0.839	12
Supply chain performance	0.886	11
Average mean	0.836	39

Source, own survey, 2024

3.9 Ethical Considerations

Prior to beginning data collection, Supportive letter was written to EPSS head office to get permission for data collection and to request their willingness by Addis Ababa University school of commerce to conduct the research. Before disseminating the research instrument, some participants' permission was seen before they are enrolled as respondents in the study. All the necessary information obtained from participants was handled ethically, without distorting the individuals' initial concerns, and kept confidential. Respondents also assured that any information gathered throughout the course of the study was kept private. To ensure the confidentiality of the respondents the researcher did not include their name in the questionnaire for the aspects of a research task, to kept their privacy and confidentiality.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter presents the data presentations, analysis and result interpretation part of the research. In order to presents the findings of this research on the effect of supply relationship management on the pharmaceuticals supply chain performance, the collected data using quantitative method tabulated and analyzed using descriptive analysis statistical tools. The information made available for this purpose was collected using data collection techniques of semi structured questionnaires. Besides, different secondary sources were accessed.

4.1. Response Rate

In the course of conducting the study, only 69 questionnaires were collected out of 72 distributed questionnaires to the selected actual respondents by Google form through their Email address that make 96% response rate and 4% non-response rate. However, in order to reduce the possible errors in the data administration, immediately after the collection of data the researcher has cleanses the outlier, missing values and discrepancies. Finally, 69 complete respondents' data was used for the survey analysis. A 50% response rate for online data collection would generally be considered very high, especially for surveys distributed to a general audience. Achieving such a high response rate usually indicates that the survey is particularly well-designed, targeted to a highly engaged audience, or that strong incentives were provided for participation.

4.2. Demographic Characteristics of the Respondents

The overall population qualities of the respondents in this research were to evaluate who can give the necessary data for the survey. Under this section, demographic information of the respondents who participated on quantitative data was presented in different form based on their characteristics and suitability. The questionnaire requested a limited amount of information

related to personnel and professional characteristics of respondents like gender, profession, age, current educational level, current position, years of experience, and directorate where respondents currently working.

According to table 4.1, respondents background information analysis summary 25 (36.2%) of the respondents are officers, 10 (14.5%) are experts, 15 (21.7%) as team leaders and advisors, and 4 (5.6%) are directors with MSC/MA 38 (55.1%), 30 (43.5%), and 1 (1.4%) as their highest level of education. This suggests that the majority of respondents have excellent educational backgrounds and EPSS subject-matter positions.

Table 4.1: Demographic and general information of respondent's analysis

Demographic and general information of respondents			
Variables	**Categories**	**Respondent category analysis result**	
		Frequency	**Percent**
Gender	Male	60	87
	Female	9	13
	Total	**69**	**100**
Age of the respondents	20-30	20	29
	31-40	39	56.5
	41-50	9	13
	Above 50	1	1.4
	Total	**69**	**100**
Educational back ground of the respondents	Degree	30	43.5
	MA/MSC	38	55.1
	PhD	1	1.4
	Total	**69**	**100**
Experience of respondents	>=1year	6	8.7
	2-5 years	20	29
	6-10 years	29	42
	Above 10 years	14	20.3
	Total	**69**	**100**
Directorates where the respondents	QMSD	15	21.7

work	TMD	18	26.1
	CMD	17	24.6
	Others	19	27.5
	Total	**69**	**100**
Position of respondents	Officer	25	36.2
	Expert	10	14.5
	Team leader	15	21.7
	Advisor	15	21.7
	Director	4	5.8
	Total	**69**	**100**

Source: Own survey,2024

4.3. Descriptive Analysis

In this part of analysis, the researcher has divided and describes it in to two parts. The first part focuses on the demographic information of the respondents so frequencies and percentage used for the analysis. The second part focused on the basic questions which are intended to acquire the effect of SRM on the pharmaceuticals supply chain performance i.e. Strategic supplier selection and evaluation, performance measurement and monitoring, collaboration and coordination in the EPSS depending on the provided likert scale (strongly disagree, disagree, neutral, agree and strongly agree) and also focuses on the perceptions of the employees towards the operational performance of the company.

This study used descriptive, correlation and regression analysis to identify the effect of supply relationship management on the pharmaceuticals supply chain performance, in the case of EPSS, Head office Addis Ababa. The aim of the descriptive analysis was to elucidate the influence of supplier relationship management within the EPSS by notwithstanding its limitations. Using responses from staff members in various departments, the researcher examined the effects of supplier relationship management in the EPSS and their corresponding sub impacts. The results were presented in tables and the analysis was done using the mean and standard deviation to describe the findings.

4.3.1. Strategic Supplier Selection and Evaluation

Strategic supplier selection and evaluation involve identifying and assessing suppliers based on specific criteria and strategic goals. It is crucial for organizations to choose the right suppliers who can meet their requirements, provide quality products or services, ensure reliability, and contribute to the success of the supply chain.

The organization respondents reflected that there is consistent provision of quality products is a major strength, reflecting positively on the suppliers' ability to meet EPSS standards reliably with a highest mean score of 3.67. This indicates that the organization has a strong culture of obtaining pharmaceuticals in accordance with the established standards in order to maintain positive supplier- buyer relationships. Effective communication is seen as strength with a second highest mean score of 3.61, showing that suppliers are good at keeping EPSS informed about issues or changes. It is still the most important criterion, and the company is placing a decent amount of emphasis on responding to communications and any changes that occur when choosing the supplier. This suggests that there was improved contact with suppliers when adjustments were made during the agreement time.

Suppliers are perceived as having the necessary expertise and knowledge, which is a significant strength and indicates that they are well-equipped to meet EPSS requirements with a third highest mean score of the 3.59. Competitive pricing without quality compromise is a notable strength, with a mean score of 3.55, indicating suppliers' ability to balance cost and quality effectively and followed by adaptability and responsiveness to feedback and market demands are perceived as strengths, reflecting suppliers’ flexibility with mean score of 3.42. As indicated by respondents the majority of suppliers, in general, communicate well when things change and demonstrate their knowledge of the EPSS criteria by providing competitive prices when quotes for their pharmaceuticals, which demonstrates their flexibility and readiness to meet the market's demands for the EPSS.

According to the respondents opinion of the EPSS, timely delivery of products is perceived as a weakness with a least mean score of 3.0, indicating issues with punctuality and reliability in

meeting delivery schedules, which had an effect on the availability of pharmaceuticals and the overall supply chain performance. Risk management is seen as a weakness with a second least mean score of 3.12, indicating a need for suppliers to improve their strategies for handling potential disruptions. There is a perceived weakness in sustainability practices with a mean score of 3.20, indicating a need for improvement in aligning suppliers' practices with EPSS sustainability values followed by moderate commitment with a mean score of 3.23 to innovation and continuous improvement which still an area with potential for further enhancement and impacts negatively the organization supply chain performance.

Generally, the overall weighted average mean score of 3.38 with a standard deviation of 0.85 suggests a generally positive perception of supplier performance, with certain areas performing better than others. Key strengths include suppliers' expertise, quality of products, effective communication, competitive pricing, and adaptability. However, there are notable areas for improvement, particularly in timely delivery, sustainability practices, risk management, and innovation. Addressing these weaknesses could enhance the overall effectiveness and reliability of the supply chain for the Ethiopian Pharmaceuticals Supply Service (EPSS).

The following table shows the extent of the relationship between strategic supplier selection and evaluation on the Pharmaceuticals supply chain performance of the EPSS based on the opinion of the respondents (5= strongly agree 4= Agree 3= Neutral 2= Disagree 1= strongly disagree).

Table 4. 2. Descriptive analysis of strategic Supplier selection and evaluation.

S/N	Key questions /statements	N	Mean	SD
1	EPSS suppliers has the necessary expertise and knowledge to meet its requirements.	**69**	**3.59**	**0.754**
2	Suppliers provided quality products consistently that meets EPSS standards.	**69**	**3.67**	**0.78**
3	The supplier delivers products on time as per the agreed schedule.	**69**	**3**	**1**
4	The supplier communicates effectively and keeps informed EPSS about any issues or changes.	**69**	**3.61**	**0.808**

5	The supplier has sustainable practices and policies that align with our company's values.	**69**	**3.2**	**0.867**
6	The supplier offers competitive pricing without compromising on quality of the products.	**69**	**3.55**	**0.85**
7	The supplier is adaptable and willing to make changes based on our feedback and market demands.	**69**	**3.42**	**0.83**
8	The supplier has effective risk management strategies in place to handle potential supply chain disruptions.	**69**	**3.12**	**0.867**
9	The supplier demonstrates a commitment to innovation and continuous improvement in their operations.	**69**	**3.23**	**0.86**
Aggregate			**30.39**	**7.616**
Weighted Average			**3.38**	**0.85**

Source: own survey, 2024

4.3.2. Performance measurement and monitoring

Performance measurement and monitoring involve tracking and evaluating key performance indicators (KPI) to assess the effectiveness and efficiency of the supply chain. It helps organizations to identify areas for improvement, measure progress towards goals, and make data driven decisions.

According to the respondent's response, the suppliers are perceived as having relatively low consistency in meeting delivery schedules or KPI of EPSS with a least mean score of 3.06. This indicates a need for improvement in punctuality and reliability of deliveries. Suppliers are seen as having a low proactive approach to risk management and communication with a mean score of 3.09, which suggesting the need for better risk identification and more effective communication strategies. The contribution to innovation by suppliers is seen as low with a mean score of 3.10, suggesting that there is room for suppliers to play a more active role in innovating supply chain processes to foster effective relationship with EPSS. There is a low

alignment of suppliers' strategic goals with EPSS long-term objectives, indicating potential misalignment in strategic visions and goals with a mean score of 3.16.

Suppliers are perceived to be highly flexible and adaptive to changing requirements, with a highest mean score of 3.54, which is a significant positive aspect of their performance. Competitive pricing and cost management are perceived as strengths of the suppliers with a second highest mean score of 3.45, indicating their effectiveness in helping EPSS manage expenses and adherence to sustainability practices is perceived as high with a mean score of 3.26, which reflecting positively on suppliers' commitment to sustainable practices that align with EPSS values.

The overall weighted average mean score of 3.23 with a standard deviation of 0.89 suggests a moderate level of performance across all evaluated aspects. The highest perceived strengths of the suppliers are their flexibility and competitive pricing, while the areas identified for improvement include consistency in delivery, risk management, innovation, and alignment of strategic goals. Sustainability practices are a noted strength, reflecting positively on the suppliers' commitment to environmental and social responsibility.

The following table shows the effect of Performance measurement and monitoring on the supply chain performance of the EPSS based on the opinion of the respondents (5= strongly agree 4= Agree 3= Neutral 2= Disagree 1= strongly disagree).

Table 4.3: Descriptive analysis of Performance measurement and monitoring

S/N	Key questions /statements	N	Mean	SD
1	The suppliers consistently meet the EPSS delivery schedules or suppliers delivers on time against predetermined metrics and targets (KPI).	**69**	**3.06**	**0.938**
2	The suppliers proactively identify risks and communicate effectively also resolve issue promptly when they arise.	**69**	**3.09**	**0.836**
3	The supplier maintains competitive pricing and helps	**69**		

	EPSS to manage costs.		**3.43**	**0.882**
4	The supplier contributes to innovation in EPSS supply chain processes.	**69**	**3.1**	**0.91**
5	The supplier shows flexibility and adapts to changes in EPSS requirements.	**69**	**3.54**	**0.815**
6	The supplier's strategic goals align with EPSS and also support long-term objectives.	**69**	**3.16**	**0.964**
7	The supplier adheres to sustainability practices that match EPSS organizational values.	**69**	**3.26**	**0.918**
		Aggregate	**22.64**	**6.263**
		Weighted Average	**3.23**	**0.89**

Source, own survey, 2024

4.3.3. Collaboration and communication

Collaboration and communication play a crucial role in the effectiveness and efficiency of supply chain management.Effective collaboration and communication among stakeholders, such as suppliers, manufacturers, distributors, and customers, can lead to better coordination, reduced lead times, improved decision-making, and enhanced overall supply chain performance.

The SRM strategy is highly perceived by the respondents with a highest mean score of 4.07, indicating a strong emphasis on improving communication and collaboration to enhance the supply chain performance with suppliers. Regular strategic meetings are perceived as second highest mean score of 3.99, which is highly effective and leading to positive outcomes for both EPSS and its suppliers.Responsiveness to communications and inquiries is perceived as high, with the mean score of 3.68, that indicating efficient communication practices.

Constructive conflict resolution is perceived as high by mean score of 3.58, reflecting positively on the ability to manage disagreements effectively. Openness to feedback and collaboration on continuous improvement is perceived as high with mean score of 3.57, indicating a positive

attitude towards ongoing enhancements. Suppliers are actively involved in joint problem-solving with mean score of 3.55, indicating a collaborative approach to addressing issues, followed by open and transparent communication is perceived as high, reflecting positively on the relationship with a mean score of 3.51.

According to the opinion of the respondents frequent training for suppliers is perceived as very low with the least mean score of 2.26, suggesting a significant area for improvement to enhance supplier relationships and performance. Sharing common goals is perceived as low with the second lowest mean score of 3.12, indicating potential misalignment in objectives between EPSS and its suppliers which did not foster collaborative environment for pharmaceuticals supply chain performance. Trust levels and regular sharing of demand forecast information are perceived as low with mean score of 3.13, indicating an area for improvement in building trust with timely data sharing to strengthen relationships with suppliers followed by willingness to share critical information is perceived as low with mean score of 3.32, suggesting a need for more open information sharing for mutual success.

The overall weighted average mean score of 3.41 with a standard deviation of 0.88 suggests a generally positive perception of EPSS supplier relationship management (SRM) strategy, with certain areas performing better than others. Key strengths include the effectiveness of the SRM strategy, joint problem-solving, communication, responsiveness, and constructive conflict resolution. However, there are notable areas for improvement, particularly in sharing demand forecast information, providing training for suppliers, aligning common goals, sharing critical information, and building trust. Addressing these weaknesses could enhance the overall effectiveness and reliability of the supply chain for the EPSS.

The following table 4.4 shows the effect of Collaboration and communication on the supply chain performance of the EPSS based on the opinion of the participants (5= strongly agree, 4= Agree ,3= Neutral , 2= Disagree, 1= strongly disagree).

Table 4.4: Descriptive analysis of Collaboration and communication.

S/N	Key questions /statements	N	Mean	SD
1	EPSS Supplier relationship management strategy aims to make the supply chain work better by improving communication and collaboration with its suppliers.	**69**	**4.07**	**0.773**
2	EPSS regularly shares the demand forecast information/data for its suppliers timely to strengthen long term relationship.	**69**	**3.13**	**1.056**
3	When issues arise, the suppliers actively engage in joint problem-solving with EPSS.	**69**	**3.55**	**0.697**
4	EPSS provides frequent training for its suppliers for better relationships that positively impacts pharmaceuticals supply chain performance.	**69**	**2.26**	**0.949**
5	The supplier's shares common goals with EPSS, for fostering a collaborative environment of a pharmaceuticals supply chain management.	**69**	**3.12**	**0.9**
6	There is open and transparent communication between EPSS and the suppliers.	**69**	**3.51**	**0.98**
7	The suppliers were responsive to EPSS communications and inquiries.	**69**	**3.68**	**0.717**
8	The suppliers willingly shares information that is critical to EPSS mutual success.	**69**	**3.32**	**0.899**
9	There is a high level of trust in the relationship with the suppliers.	**69**	**3.13**	**0.922**
10	Conflicts and disagreements with the suppliers are resolved in a constructive manner.	**69**	**3.58**	**0.775**
11	The suppliers are open to feedback and works with EPSS on continuous improvement initiatives.	**69**	**3.57**	**0.866**
12	Regular strategic meetings with the suppliers lead to positive outcomes for both parties.	**69**	**3.99**	**0.978**
		Aggregate	**40.91**	**10.512**
		Weighted Average	**3.41**	**0.88**

Source: own survey, 2024.

From Table 4.5; it can be observed that SRM had significant effect on supply chain performance which have been to appreciable levels as shown "Collaboration and communication" has the highest average mean of 3.41 and is ranked first, indicating that it is perceived as the most important factor in enhancing supply chain performance. This suggests that effective communication and strong collaborative relationships with suppliers are critical for optimizing supply chain operations.

"Strategic supplier selection and evaluation" is ranked second most important factor with average mean score of 3.38, this implies that carefully choosing and regularly assessing suppliers can significantly impact the efficiency and effectiveness of the supply chain. While still important, performance measurement and monitoring are ranked last with average mean score of 3.23 among the listed predictors, this suggests that tracking and assessing performance is crucial, it might not be as highly prioritized as direct collaboration and strategic supplier selection in the context of this study by respondent's opinion and perception. This information can be useful for organizations looking to prioritize their efforts in improving supply chain performance through SRM practices.

Table 4. 5: Analysis the effect of supplier relationship management on pharmaceuticals supply chain performance.

Variables	Mean	Standard deviation	Rank
Collaboration and communication	**3.41**	**0.88**	**1**
Strategic supplier selection and evaluation	**3.38**	**0.85**	**2**
Performance measurement and monitoring	**3.23**	**0.89**	**3**

Source: own survey,2024.

4.3.4. Supply chain performance of the EPSS.

Evaluating and improving the performance of the pharmaceutical supply chain is essential to ensure the availability, affordability, and quality of pharmaceutical products. According to the responses to the questions under supply chain performance, the majority of respondents agreed that presence of evaluation metrics is regarded as the highest mean score of 4.01, indicating that EPSS effectively monitors and assesses supplier performance. Supply chain Performance was used as a dependent variable in these study as well as Collaborative relationships and design of the supply chain network are highly regarded with the second highest mean score of 3.51, indicating effective partnership and mutual benefit between EPSS and its suppliers with the effective planning and procurement processes. Flexibility in adapting to changes is perceived as high with a mean score of 3.45, showing that the supply chain can adapt well to varying demands and supplies.

According to respondents perceptions, speed of supply chain processes is perceived as low with the least mean score of 2.91, indicating a need for faster processes to meet time-sensitive pharmaceutical needs; supply chain resilience and response to sudden changes or disruptions is perceived as low with a second least mean score of 3.13, highlighting a need for stronger resilience and better disruption management practices as well as the need for EPSS to develop more efficient and quicker response mechanisms. IT systems support is perceived as low with a mean score of 3.26, suggesting that improvements in technology could significantly enhance supply chain operations; Resource adequacy is perceived as low with a mean score of 3.28, suggesting that additional resources might be needed for more efficient management; Supply chain visibility is perceived as low by the mean score of 3.33, indicating a need for EPSS to enhance transparency and proactive management within its supply chain; risk identification and mitigation are perceived as low, suggesting that EPSS needs to improve its strategies to better manage supplier risks with a mean score of 3.35.

Generally, the overall weighted average mean score of 3.35 with a standard deviation of 0.96 suggests a moderate perception of EPSS supply chain performance. Key strengths include the presence of evaluation metrics for supplier performance, flexibility in adapting to changes,

strong collaborative relationships, and an optimally designed supply chain network. However, significant areas for improvement include the speed of supply chain processes, resilience against disruptions, visibility into the supply chain, and the effectiveness of IT systems and resources. Addressing these weaknesses could enhance the overall efficiency and reliability of the supply chain for the EPSS.

Table 4.6 presents descriptive analysis for operational performance of the EPSS by using opinion of the respondents based on the opinion of the respondents (5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree).

Table 4.6: Descriptive analysis of Pharmaceutical supply chain performance of the EPSS.

S/N	Supply chain performance	N	Mean	SD
1	EPSS have evaluation metrics to evaluate the supplier's performance	**69**	**4.01**	**0.675**
2	EPSS pharmaceutical supply chain system effectively identifies and mitigates potential supplier's risks.	**69**	**3.35**	**0.855**
3	EPSS have high visibility into its supply chain, allowing for proactive management of pharmaceuticals.	**69**	**3.33**	**0.965**
4	EPSS supply chain system demonstrates flexibility in adapting to changes in demand and supply for pharmaceuticals.	**69**	**3.45**	**0.883**
5	EPSS supply chain system responds quickly to sudden changes or disruptions in the pharmaceutical market from its suppliers.	**69**	**3.13**	**0.999**
6	EPSS maintain strong collaborative relationships with its pharmaceutical suppliers for mutual benefit.	**69**	**3.51**	**0.933**
7	EPSS information technology systems effectively support its pharmaceutical supply chain operations in case of SRM.	**69**	**3.26**	**1.038**

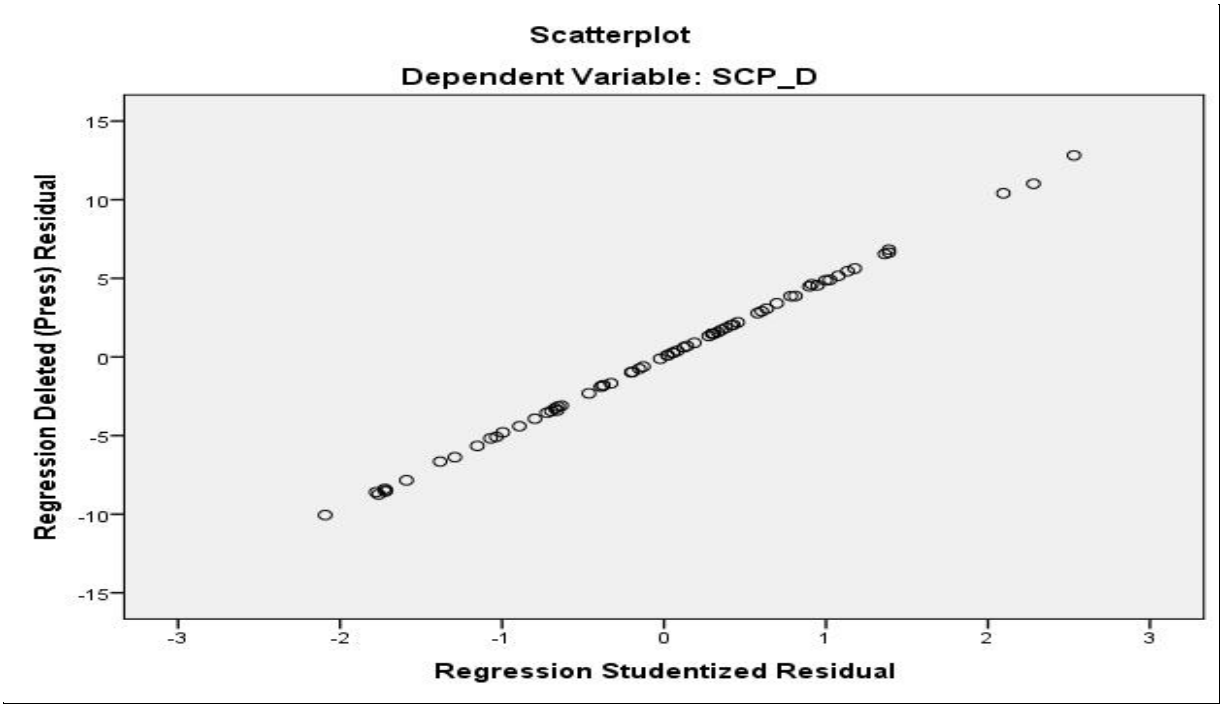
8	EPSS supply chain network is optimally designed to support from the demand planning to procurement and receiving of pharmaceuticals from its suppliers.	**69**	**3.51**	**0.918**
9	EPSS have adequate resources (human power and budget) to manage the pharmaceutical supply chain management efficiently.	**69**	**3.28**	**1.149**
10	The speed of EPSS supply chain processes meets the time-sensitive needs of pharmaceutical availability and accessibility.	**69**	**2.91**	**1.067**
11	EPSS pharmaceutical supply chain is resilient and capable of withstanding various types of disruptions which arise from its suppliers especially by the supplier relationship management practice.	**69**	**3.13**	**1.083**
		Aggregate	**36.87**	**10.565**
		Weighted Average	**3.35**	**0.96**

Source: own survey,2024.

4.4. Linearity test

As indicate in the figure, it aims to examine the scatter plot to see if the relationship between the variables appears linear. The points should form a pattern that resembles a straight line. The scatter-plot shows that the residuals align closely with the diagonal line, supporting the assumption of linearity between the dependent variable and independent variables.There are no clear patterns or deviations from the line, suggesting that the linearity assumption was also met.

Figure 4.1. Scatter-plot for Supply chain performance (SCP-D).



Source: Own survey,2024.

4.5. Normality test

As indicated in the table 4.7 , the normality tests for the supply chain performance are as follows:-i.e.The Kolmogorov-Smirnov test suggests that the distribution of supply chain performance(SCP-D) was normal since the p-value is greater than 0.05.

The Shapiro-Wilk test indicates a slight deviation from normality since the p-value is less than 0.05.This slight deviation might not be problematic for many statistical analyses, especially with a sample size of 69.

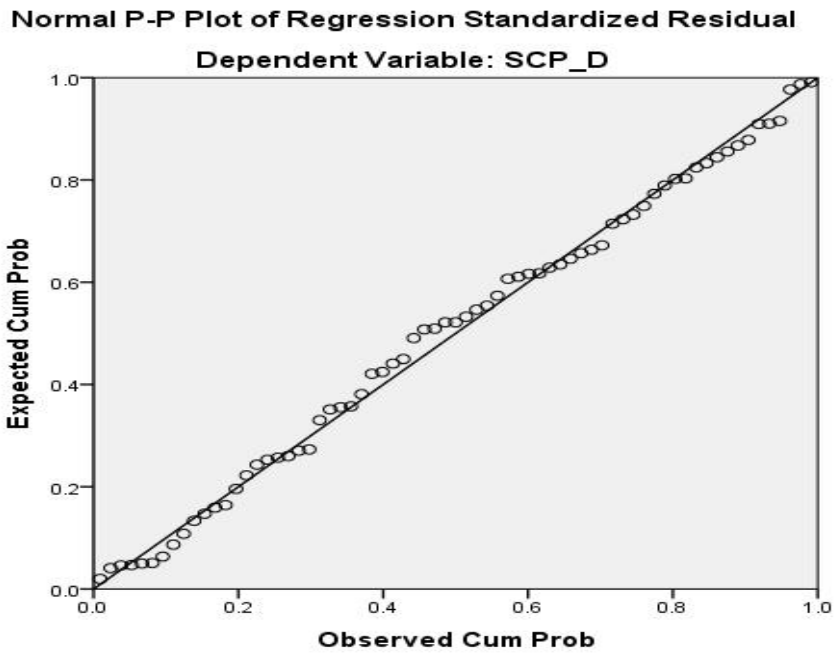
Table 4.7: shows the normality test of supply chain performance (dependent variable).

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Supply chain performance	.093	69	.200*	.965	69	.049
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Soucre: own survey,2024.

As indicated in the below figure 4.2, it shows the overall, these visual and statistical assessments collectively support that the residuals of supply chain performance (SCP-D) are reasonably normally distributed, meeting the assumption required for regression analysis. Additionally,P-P Plot (Scatter plot) points lie close to the diagonal, supporting the assumption of normality.The points lie very close to the diagonal line, indicating that the residuals are normally distributed.

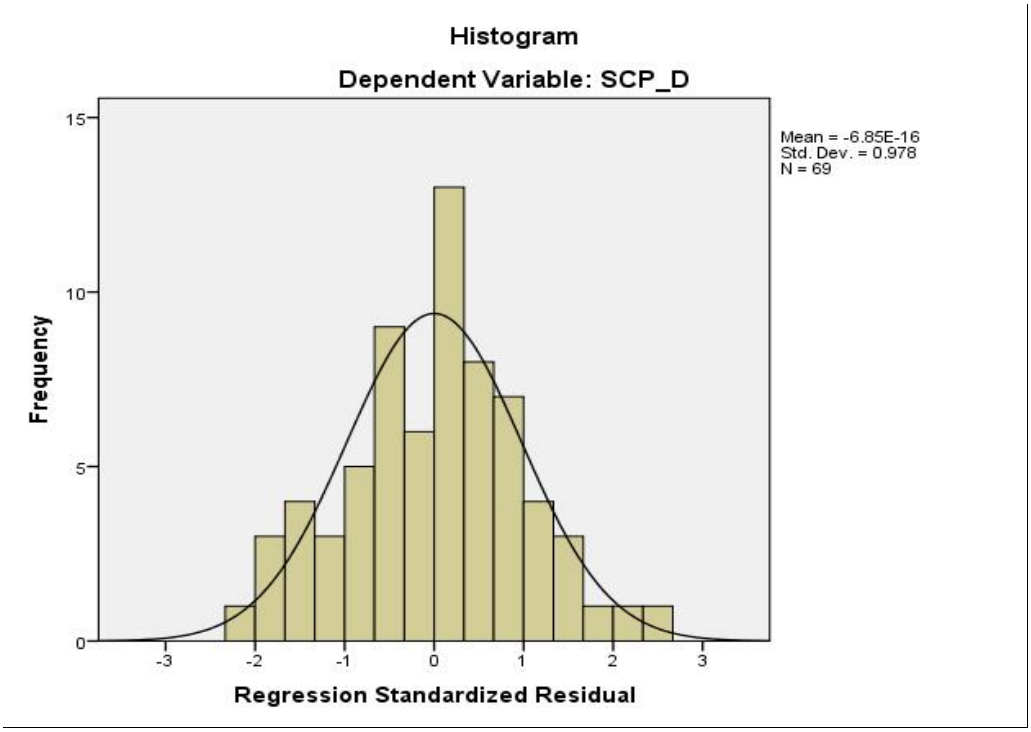
Figure: 4.2. P-P plot



Source: Own survey,2024.

As indicate in the below histogram, the bell-shaped curve suggests that the residuals are normally distributed, which is a good sign for regression analysis. Overall, the results suggest that the regression model is well-fitted to the data, as the residuals (differences between observed and expected values) are randomly distributed and follow a normal distribution. This is an important assumption for the validity of a regression analysis.

Figure 4.3 :Histogram



Source: Own survey,2024.

4.6. Correlation Analysis

The measure of the linear relationship between two or more variables is a correlation. According to Kothari (2020), the value of 'r' for a coefficient of correlation is between 0 and 1. Positive ‘r ‘values imply a positive relationship between the two variables, whereas negative ‘r’ values suggest a negative relationship. There is no correlation between the two variables if the 'r-value is zero.

Table 4.8: Correlation analysis of SRM effect on supply chain performance

Correlations					
		Strategic supplier selection and evaluation	**Performance measurement and monitoring**	**Collaboration and communication**	**Supply chain performance**
Strategic supplier selection and evaluation	**Pearson Correlation**	**1**	**.791****	**.681****	**.600****
	Sig. (2-tailed)		**0**	**0**	**0**
	N	**69**	**69**	**69**	**69**
Performance measurement and monitoring	**Pearson Correlation**	**.791****	**1**	**.714****	**.637****
	Sig. (2-tailed)	**0**		**0**	**0**
	N	**69**	**69**	**69**	**69**
Collaboration and communication	**Pearson Correlation**	**.681****	**.714****	**1**	**.763****
	Sig. (2-tailed)	**0**	**0**		**0**
	N	**69**	**69**	**69**	**69**
Supply chain performance	**Pearson Correlation**	**.600****	**.637****	**.763****	**1**
	Sig. (2-tailed)	**0**	**0**	**0**	
	N	**69**	**69**	**69**	**69**
****. Correlation is significant at the 0.01 level (2-tailed).**					

Source:own survey,2024.

4.7. Regression Analysis

The most common form of regression is linear regression, which finds the line (or a more complex linear combination) that best fits the data according to a specific mathematical criterion. It allows researchers to estimate the conditional expectation (or average value) of the dependent

variable based on given values of the independent variables. In addition to descriptive and correlation analyses, the researcher used linear regression analysis to explain effect of supply relationship management on the pharmaceuticals supply chain performance. This section of the study presents the results and discussions of the linear regression analysis.

4.7.1 Model summary

As stated in the model summary table 4.9 below, the correlation coefficient (R) of 0.776 indicates a strong positive correlation between the predictors and the outcome variable. This means that as the predictors increase, the outcome variable tends to increase as well.

Table 4.9.Regression analysis

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	**0.776[A]**	**0.602**	**0.583**	**4.73177**
A. Predictors: (constant), Collaboration and communication, Strategic supplier selection and evaluation, Performance measurement and monitoring.				
Dependent/outcome variables: Supply chain performance				

Source; own survey SPSS Regression model output

The R Square value of 0.602 means that approximately 60.2% of the variability in the outcome variable can be explained by the predictors in the model. This indicates a good fit, showing that a significant portion of the variance in the dependent variable is accounted for by the independent variables. The remaining 39.8% of EPSS supply chain performance was affected by the unknown variables that were not considered in this study.

The Adjusted R Square value of 0.583 is slightly lower than the R Square value. This adjustment is made to account for the number of predictors in the model and provides a more accurate measure of the goodness of fit. An adjusted R Square of 0.583 indicates that about 58.3% of the

variability in the outcome variable is explained by the model, adjusting for the number of predictors.

Overall, the model shows a strong positive relationship between the predictors and the outcome variable, with 60.2% of the variability explained by the model (R Square). The adjusted R Square indicates a slightly lower but still substantial explanation of the variance (58.3%), taking into account the number of predictors. The standard error of the estimate suggests a reasonable level of precision in the model's predictions. This implies that the predictors collectively provide a good explanation of the outcome variable's behavior.

4.7.2. ANOVA test

In the regression model, variance analysis (ANOVA) provides information about the regression variability. In this study, ANOVA test used to determine the effects of independent variables efficiency of service delivery (dependent variable). The results of AVOVA test illustrated in the table below.

Table.4.10 ANOVA test

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2198.501	3	732.834	32.731	.000[b]
	Residual	1455.325	65	22.39		
	Total	3653.826	68			
a. Dependent Variable: Supply chain performance						
b. Predictors: (Constant), Collaboration and communication, Strategic supplier selection and evaluation, Performance measurement and monitoring.						

Source; own survey, SPSS ANOVA test

The provided ANOVA table 4.10, for the regression analysis gives insights into the significance and overall fit of the model.

The ANOVA table indicates that the regression model is significant:

- **F-Statistic**: The F-statistic of 32.731 is quite high, indicating that the model explains a significant portion of the variance in the supply chain performance.
- **P-value**: The significance level (p-value) of .000 is well below the common alpha level of 0.05, confirming that the predictors (Collaboration and communication, Strategic supplier selection and evaluation, Performance measurement and monitoring) significantly contribute to the model.

Overall, the model is statistically significant, implying that the predictors together have a significant impact on supply chain performance.

The coefficients in the table 4.11, provides detailed information on the contribution of each predictor variable to the model and their statistical significance. Here is the interpretation:

Table 4.11: Table of coefficients

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	**(Constant)**	**-1.073**	**4.114**		**-0.261**	**0.795**
	Strategic Supplier selection and	**0.103**	**0.206**	**0.067**	**0.501**	**0.618**

	evaluation					
	Performance measurement and monitoring	**0.249**	**0.236**	**0.147**	**1.055**	**0.296**
	Collaboration and communication	**0.714**	**0.135**	**0.613**	**5.28**	**0.000**
a. Dependent Variable: Supply chain performance						

Source: own survey, 2024

Therefore the researcher identified the effect of supplier relationship management on supply chain performance by using multiple regression models. The independent variables used to identify effect of supplier relationship management are Strategic Supplier selection and evaluation, Performance measurement and monitoring, and Collaboration and communication. This study was conducted with an objective of explaining the effect of supplier relationship management on supply chain performance of an organization in the case of EPSS.

Depending on the results that illustrated in the regression coefficient test; Constant: The intercept of -1.073 is not statistically significant ($p = .795$), indicating it does not significantly contribute to the model. Strategic Supplier Selection and Evaluation: This predictor has a positive as well as significant effect on supply chain performance ($p = .618$). Performance Measurement and Monitoring: This predictor has also a moderate positive and significant effect on supply chain performance ($p = .296$). Collaboration and Communication: This predictor has a strong positive and significant effect on supply chain performance ($p < .001$).

These findings concluded that "collaboration and communication" is perceived as the most important factor in enhancing supply chain performance ($\beta 1 = 0.613$, $p = 0.000$). These results

align with Kidist (2018), who found that collaboration has a statistically significant positive effect on operational performance ($\beta 1 = 0.287$, $p = 0.000$), with the significance value being less than 1 % level ($p<0.01$).

According to AWOL (2020), there is positive relationship between SRM and operational performance with coefficient of 0.642 and significance level of 1%. This implies that the partnership with the SRM is highly contributing to operational performance of the organization by increasing the effectiveness of the organization and also,the study found that SRM has a significant positive effect on the operational performance of the organization by selecting a few but very important suppliers, which makes the process cost-effective.

According to Teketel (2021), it was concluded that trust and communication have no significant effect on procurement performance of EPSS with the ($\beta 1 = -0.028$, $p = 0.870$) which shows very low degree of importance in affecting procurement performance, which is opposite these findings and also he recommends,in relation to communication, there is need for EPSS to give attention for publicizing its annual demand for supplier and provide all necessary information to them by communication means and to have clear communication channel for suppliers.

The findings demonstrate that "performance measurement and monitoring" has a moderate positive but non-significant effect on supply chain performance ($\beta 1 = 0.147$, $p = 0.296$). These results differ from those of Walta (2022), who concluded that supplier performance evaluation has a positive and high influence on procurement performance ($\beta 1 = 0.246$, $p = 0.000$), which was statistically significant at the 1% level ($p < 0.01$). Additionally, the findings are not consistent with Odhiambo (2015), who found a substantial relationship between supplier performance evaluation and procurement performance.

Generally, among the predictors, Collaboration and Communication has the most significant and substantial positive impact on supply chain performance. The other predictors shows moderately statistically significant contributions to the model. This suggests that enhancing collaboration and communication with suppliers is crucial for improving supply chain performance in the Ethiopian Pharmaceuticals Supply Service (EPSS).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter provides summary of the study findings, conclusions that were drawn from the result of the study that was discussed so far at chapter four, based on the conclusion, recommendations were forward to concerned body for future improvement and betterment.

5.1. Summary of Findings

This study was conducted with objective of examining the effect of supplier relationship management on the pharmaceuticals supply chain performance of organization in the case of EPSS, Head office which encompass three independent variables, such as strategic supplier selection and evaluation, Performance measurement and monitoring, as well as collaboration and communication. Majority of EPSS employees (respondents) are male 60 (87%) having master's degree holders constituting 38 (55%) of the total EPSS staff profile. About 29(42%) of the respondents have 6-10 years of experience.

Generally, the pharmaceuticals supply chain performance of the EPSS was positively rated with all of the three indicators. The result indicates that the company is better in terms of collaboration and communication (M=3.41) ,which indicating that it is perceived as the most important factor in enhancing supply chain performance and this suggests that effective communication and strong collaborative relationships with suppliers are critical for optimizing supply chain operations.Strategic supplier selection and evaluation (M=3.38) is ranked second most important factor,which implies that carefully choosing and regularly assessing suppliers can significantly impact the efficiency and effectiveness of the supply chain.

While still important, performance measurement and monitoring are ranked last with (M= 3.23) among the listed predictors, this suggests that tracking and assessing performance is crucial, it might not be as highly prioritized as direct collaboration and strategic supplier selection in the context of this study by respondents opinion and perception. This information can be useful for

organizations looking to prioritize their efforts in improving supply chain performance through SRM practices.

This study found that SRM has significant positive effect on supply chain performance of the EPSS through key strengths include the effectiveness of the SRM strategy, joint problem-solving, communication, responsiveness, and constructive conflict resolution. In addition to this, EPSS has Key strengths include the presence of evaluation metrics for supplier performance, flexibility in adapting to changes, strong collaborative relationships, and an optimally designed supply chain network that positively and significantly affects operational supply chain performance of the company by creating greater customer loyalty, repeat purchase and willing to pay additional prices for new product forms that will guaranty in increasing market share.

The highest perceived strengths of the suppliers are their flexibility and competitive pricing, while the areas identified for improvement include consistency in delivery, risk management, innovation, and alignment of strategic goals. Sustainability practices are a noted strength, reflecting positively on the suppliers' commitment to environmental and social responsibility.

From this study Strategic supplier selection and evaluation has significant positive effect on supply chain performance of the EPSS through Key strengths include suppliers' expertise, quality of products, effective communication, competitive pricing, and adaptability.

The model is fit at the significance level (p-value) of 0.00 is well below the common alpha level of 0.05, that is, the variables used in the study were appropriate to estimate supply chain performance. The result which is measured by R-Squared = 0.602 indicates that 60.2% of variations in operational performance of the organization is explained by the three independent variables (Collaboration and communication, Strategic supplier selection and evaluation, Performance measurement and monitoring). Overall, the model is statistically significant, implying that the predictors together have a significant impact on the pharmaceuticals supply chain performance of the EPSS.

Individually (from coefficients table) collaboration and communication is strongly related to supply chain performance (beta= .613) and has a strong positive and significant effect on supply

chain performance ($p < .001$), followed by performance measurement and monitoring (beta= .147), while the variables strategic supplier selection and evaluation are moderately related to supply chain performance with beta= .067.

5.2. Conclusion

Generally, among the predictors, Collaboration and Communication has the most significant and substantial positive impact on supply chain performance. The other predictors,moderately shows statistically significant contributions to the operational performance. This suggests that enhancing collaboration and communication with suppliers is crucial for improving supply chain performance in the EPSS. Efficient supply chain management helps an organization to achieve better operational performance by practicing better supply chain management.

Generally, ESPS is performing better in terms of SRM & pharmaceuticals Supply chain performance. One of the reasons could be higher profile of its staff in terms of qualification and experience as shown in the findings of this study. Supplier relationship management effect in general is positively and significantly related to operational performance of the organization. That is, increase in SRM is found to be strongly associated with higher operational performance of an organization.

5.3. Recommendations

Based on the findings and conclusions, the researcher forwards the following recommendations:

- Enhance and maintain Collaboration and Communication regularly to ensure continuous and open communication channels with suppliers to promptly address issues
- Update and refine the criteria for supplier selection to ensure that only those suppliers who meet the strategic needs of EPSS are chosen.
- Establish and standardize performance metrics that cover all critical aspects of the supply chain. This can include delivery reliability, quality of goods, cost management, and innovation capabilities.

- Implement regular and comprehensive evaluations of suppliers based on performance metrics. Use these evaluations to inform future procurement decisions and supplier development initiatives.

- EPSS supply chain system was less responsive to sudden changes or disruptions from suppliers in the pharmaceutical market. Improving responsiveness can help EPSS adapting to market fluctuations and ensure a steady supply of pharmaceuticals.

- EPSS should have to engage in joint planning sessions with key suppliers to align goals and objectives, which can lead to improved synchronization in the supply chain.

- To enhance overall supply chain performance, EPSS should be focusing on improving communication and collaboration, selecting and evaluating suppliers strategically, and strengthening performance measurement and monitoring, and also can create a more responsive, efficient, and effective supply chain. This integrated approach will not only help in addressing current challenges but also position EPSS for future growth and stability in the pharmaceutical supply sector.

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ANNEX-I

SURVEY QUESTIONNAIRE TO BE FILLED BY THE EMPLOYEES OF ETHIOPIAN PHARMACEUTICALS SUPPLY SERVICE, HEAD OFFICE.

Dear respondents, I 'm Shentema Adugna a graduate student at school of commerce, Addis Ababa University, Department of Logistics and supply chain management and now I am conducting a research entitled '*The Effect of supplier relationship management on the pharmaceuticals supply chain performance of the EPSS, head office*'' which is being presented to the University for Partial Fulfillment of the requirements for the MA degree in Logistics and supply chain management. The purpose of this survey is to obtain your opinion on the relationship between supplier relationship management and the pharmaceuticals supply chain performance of the EPSS. You are cordially invited to give your views and required to complete the questionnaire that will provide a valuable input to my research work. Information

pertaining to your answers in this questionnaire will be completely confidential. So you are not required to write your name on the questionnaire.The questionnaires has two parts:- Part I-General information of the respondents, Part-II-Questions related to the effect of the supplier relationship management on pharmaceuticals Supply chain performance of the EPSS.The item have five-point likert type scales, the scales have the following meaning:-

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Thank you for spending your time in advance!

For any inquiry do not hesitate to contact me. (Mobile No: +251-921432668/+251-986783511, Email: 50awdfd@gmail.com.

PART I: DEMOGRAPHIC INFORMATION/BACKGROUND OF THE RESPONDENTS

1. Gender: Male ☐ Female ☐

2. Age: Less than 25☐, 26-34☐, 35- 54☐, Above 55☐

3. Educational Qualification: Certificate☐, Diploma☐, Degree☐, Masters☐, PhD☐.

4. Which directorate you are doing now? QMSD:☐,TMD☐, CMD ☐

5. Year of Experience in EPSS: 2-5 years☐ , 6-10years ☐, above 10 years ☐

6. Job position (Designation): Officer☐, Expert☐, Team leader☐, Director☐, Deputy Director General☐, Advisor ☐

PART II: <u>THE EFFECTS OF SUPPLIER RELATIONSHIP MANAGEMENT</u>

<u>Question 1: Strategic suppliers selection and evaluation</u>

Please indicate the degree to which you agree with the following statements on the strategic supplier's selection and evaluation of the EPSS. The scale below will be applicable: **5= strongly agree 4= Agree 3= Neutral 2= Disagree 1= strongly disagree.**

1	Strategic suppliers selection and evaluation	5	4	3	2	1
1.1	EPSS suppliers has the necessary expertise and knowledge to meet its requirements.					
1.2	Suppliers provided quality products consistently that meets EPSS standards.					
1.3	The supplier delivers products on time as per the agreed schedule.					
1.4	The supplier communicates effectively and keeps informed EPSS about any issues or changes.					
1.5	The suppliers has sustainable practices and policies that align with EPSS company's values.					
1. 6	The supplier offers competitive pricing without compromising on quality of the products.					
1.7	The suppliers was adaptable and willing to make changes based on EPSS feedback and market demands.					
1.8	The suppliers has effective risk management strategies in place to					

	handle potential supply chain disruptions.					
1.9	The supplier demonstrates a commitment to innovation and continuous improvement in their operations.					

Any other? Please state.----------

Question 2: Performance measurement and monitoring

Please indicate the degree to which you agree with the following statements on the performance measurement and monitoring of the EPSS. The scale below was applicable: **5= strongly agree 4= Agree 3= Neutral 2= Disagree 1= strongly disagree.**

2	**Performance measurement and monitoring**	**5**	**4**	**3**	**2**	**1**
2.1	The suppliers consistently meet the EPSS delivery schedules or suppliers delivers on time against predetermined metrics and targets (KPI).					
2.2	The suppliers proactively identify risks and communicate effectively					

	also resolve issue promptly when they arise.					
2.3	The supplier maintains competitive pricing and helps EPSS to manage costs.					
2.4	The suppliers contribute to innovation in EPSS supply chain processes.					
2.5	The supplier show flexibility and adapts to changes in EPSS requirements.					
2.6	The supplier's strategic goals align with EPSS and also support long-term objectives.					
2.7	The suppliers adheres to sustainability practices that match EPSS organizational values.					

Any other? Please state.----------

Question 3: Collaboration and communication

Please indicate the degree to which you agree with the following statements on the collaboration and communication of the EPSS with suppliers. The scale below was applicable: **5= strongly agree 4= Agree 3= Neutral 2= Disagree 1= strongly disagree.**

3	**Collaboration and communication**	**5**	**4**	**3**	**2**	**1**

3.1	EPSS Supplier relationship management strategy aims to make the supply chain work better by improving communication and collaboration with its suppliers.					
3.2	EPSS regularly shares the demand forecast information/data for its suppliers timely to strengthen long term relationship.					
3.3	When issues arise, the supplier actively engages in joint problem-solving with EPSS.					
3.4	EPSS provides frequent training for its suppliers for better relationships that positively impacts pharmaceuticals supply chain performance.					
3.5	The supplier's shares common goals with EPSS, for fostering a collaborative environment of a pharmaceuticals supply chain management.					
3.6	There is open and transparent communication between EPSS and the suppliers.					

3.7	The suppliers were responsive to EPSS communications and inquiries.					
3.8	The suppliers willingly shares information that is critical to EPSS mutual success.					
3.9	There is a high level of trust in the relationship with the suppliers.					
3.1	Conflicts and disagreements with the suppliers are resolved in a constructive manner.					
3.11	The suppliers is open to feedback and works with EPSS on continuous improvement initiatives.					
3.12	Regular strategic meetings with the suppliers lead to positive outcomes for both parties.					

Any other? Please state.----------

Question 4: Supply chain performance

Please indicate the degree to which you agree to the following statements concerning your organization pharmaceuticals supply chain performance with respect to your customers or

suppliers. The scale below was applicable: **5= Strongly Agree 4= Agree 3= Neutral 2= Disagree 1=Strongly Disagree.**

4	**Supply chain performance**	**5**	**4**	**3**	**2**	**1**
4.1	EPSS have evaluation metrics to evaluate the supplier's performance					
4.2	EPSS pharmaceutical supply chain system effectively identifies and mitigates potential supplier's risks.					

4.3	EPSS have high visibility into its supply chain, allowing for proactive management of pharmaceuticals.					
4.4	EPSS supply chain system demonstrates flexibility in adapting to changes in demand and supply for pharmaceuticals.					
4.5	EPSS supply chain system responds quickly to sudden changes or disruptions in the pharmaceutical market from its suppliers.					
4.6	EPSS maintain strong collaborative relationships with its pharmaceutical suppliers for mutual benefit.					
4.7	EPSS information technology systems effectively support its pharmaceutical supply chain operations in case of SRM.					
4.8	EPSS supply chain network is optimally designed to support from the demand planning to procurement and receiving of					

	pharmaceuticals from its suppliers.					
4.9	EPSS have adequate resources (human power and budget) to manage the pharmaceutical supply chain management efficiently.					
4.10	The speed of EPSS supply chain processes meets the time-sensitive needs of pharmaceutical availability and accessibility.					
4.11	EPSS pharmaceutical supply chain is resilient and capable of withstanding various types of disruptions which arise from its suppliers especially by the supplier relationship management practice.					

Any other? Please state.----------