



**ADDIS ABABA UNIVERSITY  
SCHOOL OF COMMERCE**

**THE EFFECTS OF FOREIGN PROCUREMENT ON OPERATIONAL  
PERFORMANCE OF ETHIOPIAN AIRLINES MAINTENANCE,  
REPAIR AND OVERHAUL SERVICE.**

**By**

**YOSEF SAMSON REDA**

**A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY SCHOOL OF  
COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE AWARD OF MASTER OF ARTS DEGREE IN LOGISTICS  
AND SUPPLY CHAIN MANAGEMENT**

**ADVISOR: ZELALEM BAYISA (PH.D.)**

**June, 2024**

**Addis Ababa, Ethiopia**

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## DECLARATION

I hereby declare that this thesis, The Effect of Foreign Procurement on Operational Performance of Ethiopian Airlines MRO Services, which I have submitted to the Addis Ababa University School of Commerce as partial fulfillment of the master's degree in logistics and supply chain management, is entirely original with no previous submissions made to the university or any other organization in order to satisfy requirements for any course of study. I further declare that no chapter of this publication, in whole or in partial, has been taken and integrated into this report from any previous work that I or others have completed.

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**LETTER OF CERTEFICATION**

This is to certify that Yosef Samson's thesis work on "**Effects of Foreign Procurement on Operational Performance of Ethiopian Airlines Maintenance, Repair and Overhaule Services**" which was submitted as a partial fulfillment of the requirements for a master's degree in logistics and supply chain management satisfies accepted standards for originality and quality and complies with university regulations.

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**BY  
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## Abstract

*The primary goal of this study is to examine the effect of foreign procurement on the operational performance of Ethiopian Airlines MRO services, focusing on the dimensions of supplier sourcing, information sharing, inventory management, and supplier relationships. The study was used explanatory research design and quantitative research approaches. The accessible population of the study was employees who work for the Ethiopian airlines MRO shops and PSCM departments. A stratified random sampling technique was used to select appropriate respondents from the accessible population. The primary data were gathered through structure questionnaire and analyzed through descriptive, regression and correlation statistics. The findings reveal a significant and strong correlation between foreign procurement and the company's performance. The study concludes that supplier sourcing, information sharing, and inventory management significantly enhances the operational performance of Ethiopian Airlines MRO services. Effective procurement strategies, robust information exchange, and efficient inventory practices are critical to the success of MRO operations. Despite the traditional emphasis on supplier relationships, this study found that they do not significantly impact on operational performance. Among the factors, information sharing emerged as the most influential on operational performance. Each dimension was found to have a statistically significant influence on the company's performance individually. Based on the findings, the practical implications of this study suggest that to ensure the operational performance of Ethiopian Airlines MRO services, the company should focus on improving inventory level management practices, continue to develop and refine procurement strategies, and invest in continuous training and development programs to enhance skills and knowledge, particularly in areas related to supplier sourcing and inventory management. By addressing these areas, Ethiopian Airlines MRO services can further improve its operational performance and maintain its competitive edge in the aviation industry.*

**Keywords:** Foreign procurement, Operational performance, Ethiopian Airlines.

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## **List of Acronyms/Abbreviations**

AD: Airworthiness Directives  
ANOVA: Analysis of Variance  
AOG: Aircraft on Ground  
CFO: Chief Financial Officer  
DG: Dangerous Goods  
EAG: Ethiopian Airlines Group  
EASA: European Aviation Safety Agency  
ET: Ethiopian Airlines  
FAA: Federal Aviation Administration  
FIFO: First in First Out  
HRM: Human Resource Management  
IM: Inventory Management,  
IS: Indicates Information Sharing  
KPIs: Key Performance Indicators  
MSE: Mean Square Residual  
MSR: Mean Square Regression  
MRO: Ethiopian Maintenance Repair and Overhaul  
OP: Operational Performance  
PSCM: Purchasing and Supply Chain Management  
RFID: Radio-Frequency Identification  
RFPs: Requests for Proposals  
RFQ: Request for Quote  
SaaS: Software as a Service  
SB: Service Bulletins  
SPSS: Statistical Package for Social Science  
SR: Supplier Relationship  
SS: Supplier Sourcing  
TAT: Turnaround Time  
VIF: Variance Inflation Factor

VMI: Vendor Managed Inventory

## CHAPTER ONE: INTRODUCTION

### 1.1. Background of the study

Weele (2010), defined Procurement is finding and accepting terms and conditions to buy products, services, or other tasks from an outside source. Frequently, this involves the use of a tendering or competitive bidding procedure. The word can also apply to a legal duty to "ensure" or "procure" something. As an organizational process, procurement seeks to ensure that the buyer receives goods, services, or labor at the best possible price while taking location, quality, quantity, and time into account. According to Rahim (2008), Organizations spends a significant portion of their operating budget on purchasing goods and services, so making procurement is a very costly and significant business activity.

According to Marijn (2023), in the aviation sector, foreign procurements are intricate and multidimensional process, and involving a wide range of parties, including foreign suppliers, airlines, and regulatory agencies. Foreign procurement processes include contract negotiations, managing suppliers, sourcing and acquiring goods and services, and guaranteeing regulatory compliance. And also, Mohamed (2023), stated that foreign procurement is acquiring goods or services from suppliers located abroad. Several tasks are involved in this process, such as finding possible suppliers, negotiating contracts, and overseeing the supply chain to guarantee prompt and economical delivery of goods.

Ethiopian economy is inextricably intertwined with the economies of its trade partners and cannot be seen separately from the global economy. According to Van et al (2023), Obtaining goods and services from abroad can lead to more competition, which lowers costs and raises standards. This is because providers may need to be more competitive in order to secure contracts, and there may be a greater number of suppliers available on the global market. Beroe (2022), stated that Low labor costs, tax advantages, subsidies, low tariffs, and a host of other factors are the main reasons for choosing international suppliers for goods and services purchases. The availability of cutting-edge technology, superior resources, and advanced skills that might not be found in the home country is also other advantages of global sourcing.

According to Ethiopian MRO's Annual Report (2022), Maintenance, aircraft, and engine overhaul services constitute the primary unique performance obligations in the MRO (Maintenance, repair & overhauled) segment. Due to these performance obligations, an input-oriented measurement of the percentage of completion can be made. As a result, both contract

assets and contract liabilities are recognized. These obligations involve estimating the proportion of the total contract that has already been completed and the profit overall.

Ethiopian Airlines MRO procurement seeks to ensure that the aviation industry has a steady supply of parts and supplies needed to maintain aircraft, maintain smooth operations, and minimize downtime. This trend makes it possible for business operations to be willing to obtain products and services when needed, on time. Avoiding wastage of resource like overstocking, obsolescence, underutilization and improving performance are realizing cost saving from best practice such as consolidation, long term supply agreement (EAG, 2022).

## **1.2. Background of the organization**

Ethiopian's flag carrier airline, Ethiopian Airlines Group, is fully controlled by the Ethiopian government and is commonly known by the slogan of the spirit of Africa. Established on December 21, 1945, it started operating on April 8, 1946, and expanded to include international flights in 1951. It has emerged as one of the top carriers on the continent in the last 70 years or more, unmatched in Africa in terms of fleet quantity, effectiveness, operational success, and profitability throughout practically the whole of its history (Ethiopian Fact Sheet, 2018).

Under Ethiopian airlines organizational structure, there is designated section called Procurement and Supply Chain Management (P&SCM), which offers services to the entire company. Administratively, it is under the Chief Financial Officer (CFO), and functionally, it is under the Managing Director of Maintenance, Repair, and Overhaul (MRO). It is accountable for the preservation and management of an effective and efficient supply chain management. Procurement is managed by the supply chain division, both directly and indirectly. Planning, sourcing, request for quotation (RFQ), proposal review, supplier election, contract signing, receiving invoicing, payment facilitation, warehousing, contract administration, customer database management, and logistics management are all performed by the Ethiopian P&SCM division. Ethiopian MRO's primary strategic objective is to offer comprehensive airframe maintenance services to all aircraft models flown by Ethiopian and other operators in terms of good TAT and maintenance quality (Ethiopian Airlines HRM, 2020).

## **1.3. Statement of the problem**

A certified entity that is eligible to perform maintenance, repair, and overhaul on an engine, accessory, or aircraft is known as an MRO (maintenance repair & overhaul). As FAA Certified

Repair Stations, the majority of MROs are authorized to carry out particular maintenance tasks in compliance with their operation specifications (Airshare, 2022).

According to FlyAlliance (2023), maximizing an aircraft's operational lifespan, adhering to regulations, and keeping it in airworthy condition are the major goals of aviation maintenance, repair, and overhaul. To facilitate this highly skilled technician, engineers, and support staff that are equipped with extensive knowledge and expertise is required, finally the maintenance team make ready the aircraft or part for departure.

Jaideep (2018), stated that foreign procurements are more dynamic, unpredictable, and difficult in contrast than domestic purchases. The majority of Airlines costs come from international transactions; very few items are available for purchase on the local market, for that case Ethiopian Airlines encounters a range of operational disturbances, such as extended aircraft schedules resulting from maintenance issues, flight delays, and cancellations. Foreign procurement is one major component of supply chain so supply chain management practices of the company are the main sources for the success or failures of the company. Because supply chains are always in charge of planning, forecasting, strategic sourcing, purchasing, shipping or transporting the parts, contract administration, warehousing, customer database management and materials logistics in international market. In this instance, a breakdown in one procurement activities in the supply chain can directly affect the MRO operation. If the MRO fails, it can also affect the flight schedule, resulting in complete distortion and increased expenses for the airlines.

According to the Ethiopian MRO annual report (2022), the company has run into several problems. The main challenges are listed as follows: protracted aircraft maintenance schedules; aircraft part and fuel price escalation, component or piece part shortage in the international level, Long TAT (Turn round time); long lead times for products or service delivery; expensive late core return fees; delay in payment, due to that there is sometimes payment penalties; incorrect payment and; high employee turnover.

From the above several gaps majorly MRO is affected by component or piece part shortage, Long TAT (Turnaround time) for repair, long lead times for purchase this are directly related to supply chain and purchase activities. For this case the researcher aims to study about the effects of foreign procurement on strategic sourcing, information sharing, inventory management, and supplier relationship to improve the operational performance of Ethiopian maintenance repair and overhaul or MRO.

#### **1.4. Research questions**

In line with the above statement of the problem, the following research questions were addressed in the course of this study:

- What is the effect of supplier sourcing on the operational performance of Ethiopian MRO?
- What is the effect of information sharing on the operational performance of Ethiopian MRO?
- What is the effect of inventory management on the operational performance of Ethiopian MRO?
- What is the effect of supplier relationship management on the operational performance of Ethiopian MRO?

#### **1.5. Research objectives**

##### **1.5.1. General objectives**

The general objectives of the study are to appraise the effect of foreign procurement on the operational performance in Ethiopian airlines MRO services.

##### **1.5.2. Specific objectives**

- To examine the effect of supplier sourcing on the operational performance of Ethiopian MRO.
- To examine the effect of information sharing on the operational performance of Ethiopian MRO.
- To examine the effect of inventory management on the operational performance of Ethiopian MRO.
- To examine the effect of supplier relationship management on the operational performance of Ethiopian MRO.

#### **1.6 Significance of the study**

The purpose of this research is to help Ethiopian MRO higher managements and major decision makers in the aviation and airline industries to develop strategic policy that will promote airline maintenance and repair overhaul by bolstering supply chain activities and improving Ethiopian MRO and supply chain performance. Ethiopian MRO managers and

decision makers in the supply chain can utilize this research to understand the effects of foreign procurement in the airline industries.

As the research primarily focuses on the area of maintenance and repair overhaul, this paper also attempts to provide advice on how to improve Ethiopian MRO operation performance and minimize the time required maintaining the aircrafts reduce flight delays and cancellations.

### **1.7. Scope of the study**

The study on the effect of foreign procurement on the operational performance was delimited to only Ethiopian airlines MRO division service because its convenience to the researcher. This research might not be able to explore every foreign procurement activity found in the supply chain management. The researcher tries to focus only MRO division specifically MRO Shop and PSCM department because the researcher intended that reliable, valuable and required data was got in this area.

Foreign procurement is very broad and complex concept, so the researcher tries to limit the work by focusing on effects of supplier sourcing, information sharing, inventory management and supplier relationship management on the performance of Ethiopian MRO due to time restriction and difficulties in data collection. Furthermore, in order to ensure manageability, the study delimited on how foreign procurement affects the performance of operations in the context of Ethiopian MRO, Ethiopian Airlines Groups.

The researcher was used both descriptive and inferential statistics for analysis purpose. Inferential statistics tools “correlation analysis and multiple regressions” was used to predict the relationship between foreign procurement and operational performance and to examine the effect of foreign procurement on operational performance respectively. The demographic data of the respondents was analyzed by descriptive statistical tools frequency, percentage, mean and standard deviation.

### **1.8. Limitation of the study**

This research has some limitations that offer opportunities for future researchers. Since this study is limited only Ethiopian airlines MRO division specifically MRO Shop and PSCM department, it is difficult to generalize the findings to other division. The other limitation of this research was regarding the variables considered that affects operational performance, in this study four variables were considered those are supplier sourcing, information sharing,

inventory management and supplier relationship management. Furthermore, this research approached only used quantitative methods and also the questionnaires used were closed-ended items, it might lack content coverage. In addition to this, there were limitation encountered the researcher. To mentions some of these drawback, the researches that are done in Ethiopian MRO foreign procurements are very rare, so it was challenging to find enough publications in the field. Accessing certain data might be challenging due to their confidentialities. And also, some respondents were unwilling to fill the questionnaires even though the researcher tried to clarify the purpose and direction of the study. Rather some respondents were not dedicated enough to respond the questionnaires.

### **1.9. Definition of key terms and concepts**

**Foreign procurements:** As it's known procurement is the process of obtaining or sourcing a needed item. But foreign procurement means the process of procuring foreign goods which gives a comparative advantage over domestic products. Or it can be defined foreign procurement is an international transaction made by inviting foreign bidders (Gösta, 2017).

**Operational performance:** Operational performance refers to the efficiency and effectiveness of an organization's internal processes and activities in achieving its strategic objectives and delivering value to customers. It encompasses various aspects such as productivity, quality, timeliness, cost-effectiveness, flexibility, and innovation (Slack, Brandon & Johnston, 2019).

Operational performance is a multifaceted concept that encompasses various dimensions of organizational performance, all aimed at achieving strategic objectives, enhancing customer value, and ensuring sustained success in today's dynamic business environment (Stevenson, 2018).

**Supplier sourcing:** Supplier sourcing refers to the systematic process of identifying, evaluating, and selecting suppliers to fulfill an organization's procurement needs effectively and efficiently. It involves strategically analyzing the market, assessing potential suppliers' capabilities, negotiating terms and conditions, and ultimately establishing partnerships with the most suitable suppliers. Effective supplier sourcing involves a structured approach that starts with defining procurement needs and requirements, followed by market research to identify potential suppliers. The next step involves evaluating suppliers based on criteria such as quality, cost, delivery performance, financial stability, and ethical practices. Once suitable suppliers are identified, negotiations are conducted to establish terms and conditions that are

mutually beneficial. Finally, contracts are formalized, and supplier relationships are managed to ensure ongoing performance and value delivery (Monczka et al., 2015).

**Information sharing:** Information sharing refers to the exchange of data, knowledge, or insights between individuals, organizations, or systems with the aim of improving decision-making, collaboration, and overall performance. Information sharing plays a crucial role in supply chain management by enabling real-time visibility into inventory levels, demand forecasts, production schedules, and logistics operations. By sharing information with supply chain partners, such as suppliers and distributors, organizations can improve coordination, reduce lead times, and respond more effectively to changes in customer demand or market conditions. Information sharing fosters collaboration and trust among supply chain partners, leading to enhanced efficiency, flexibility, and resilience in the supply chain. (Chopra & Meindl, 2015) emphasize that information sharing is essential for managing supply chain risks and uncertainties. By sharing information about potential disruptions, such as natural disasters, geopolitical events, or supplier issues, organizations can proactively identify and mitigate risks, develop contingency plans, and maintain business continuity. Information sharing also enables supply chain partners to collaborate on risk management strategies, such as inventory pooling, dual sourcing, or flexible manufacturing, to enhance resilience and mitigate the impact of disruptions on supply chain performance (Simchi-Levi and Kaminsky, 2008).

**Inventory management:** The discipline of inventory management is mostly concerned with defining the location and form of stored products in the warehouse. Preceding the normal and scheduled flow of maintenance and stock of materials is necessary in the hangar or several points inside MRO or at numerous sites within a supply network. The concept of inventory in the airline industry could be found in two types, the first type is inventory can be found as stock form or it can be kept as a contingency item and the other is item under operation or item on services which is installed on the aircraft and working (Robert and Richard, 2020).

**Supplier relationship management:** is interchangeably used as collaborative partnerships, managing supplier relationship is working collaboratively for the mutual benefit of both parties is the essence of a collaborative relationship complying for the agreements and commitment, evaluating performance of key suppliers, ensuring consistency in relationship, cost and price (Great Learning, 2022).

**Maintenance repair and overhaul:** is a division in the aviation sector that handles heavy and light maintenance overhauls, modifications, repairs, and inspections of aircraft as well as

aircraft component inspections and condition assessments handled by Line maintenance or Base maintenance (Ethiopian airlines annual report, 2022).

### **1.10. Organization of the study**

This research study is structured into five chapters, as well as an appendix and references. The first part is Introduction that includes: background of the study, statement of the problem, research question, research objectives, significance of the study, scope of the study, limitations of the study, definition of key terms and concepts and organization of the study. The second part is review of the related literatures that includes: theoretical review of literature, empirical review, research gap, conceptual framework and research hypothesis that extracted from different books, articles and journals. The third part is Research methodology that includes research approach, research design, unit of analysis, population and sample, data sources and types, data collection procedures, data Analysis, ethical considerations, validity test and reliability test. The fourth part is data analysis, interpretation and discussion and finally summary, conclusion and recommendation.

## **CHAPTER TWO: RELATED LITERATURE REVIEW**

This chapter reviews appropriate literature from referenced books, journals, magazines, newspapers, articles, reports of company and other publications. The chapter is arranged under five sections that include theoretical review of literature, empirical review, research gap, conceptual framework and research hypothesis.

### **2.1. Theoretical review of literature**

#### **2.1.1. Concept and definition of foreign procurement**

Foreign procurement is Finding and agreeing on terms for acquiring goods, services, or other works from outside the countries often using a tendering or competitive bidding process. The term may also refer to a contractual obligation to "procure" to "ensure" that something is done (Weele, 2010).

Foreign procurement is a common practice for those companies including technology, retail, and manufacturing. Businesses can benefit from cheaper labor and production costs as well as a wider range of supplier's option by sourcing goods and services from other nations (Mohamed, 2023).

The process through which a business or organization seeks to obtain goods or materials in order to meet its goals is referred to as Procurement. The ownership and possession of the products transfer from the seller to the buyer during the purchase process. Purchasing activities include making an inquiry, placing an order, monitoring it, overseeing it, accounting for it, receiving the goods, and paying for it (Monczka & Trent, 2003).

#### **Foreign procurement's challenges**

Although foreign procurement has numerous advantages, there is also have a big obstacle that companies must overcome. These are a few of the most common challenges:

Mohamed (2023), the first and major challenges of foreign procurement is Language and cultural barriers; this can be difficult to do business using a foreign language and culture, because it brings miscommunications, so this sometime can result in arguments, delays, and committing expensive errors. The other thing is the complexity of the supply chain overseeing a worldwide supply chain necessitates coordinating a number of vendors, shipping companies, and customs offices, managing all of this are difficult and time-consuming. Furthermore,

Laura, Stanley (2006), stated that planning and managing foreign procurement operations can be difficult due to trade restrictions, political unpredictability, and changes in currency exchange rates, which can all affect the price and availability of products and services. The other thing is quality controlling method, sometime it can be difficult to guarantee the quality of goods and services obtained from foreign vendors, especially if such providers are based in a nation with different laws and standards.

### **How to manage foreign procurement:**

Companies must put best practices for handling foreign procurement into practice if they want to overcome the above mentioned obstacles. Among those best practices are:

- Making a research about the suppliers: It's important to do some researches before working with a foreign supplier to make sure they are trustworthy, financially sound, and compliant with all applicable laws and guidelines (Alan, 2001).
- Establish solid partnerships: Effective supply chain management depends on establishing solid relationships with foreign suppliers. This call for open communication, frequent updates, and a readiness to collaborate in order to find solutions to any problems that may come up (Alan, 2001).
- Invest in technology: From locating suppliers to tracking shipments and inventory management, technology is critical to the management of international procurement. Purchasing software for supply chain management, procurement, and logistics can assist increase productivity by streamlining procedures and works (Mohamed, 2023).
- Make sure contracts are clear: Good international procurement management requires contracts that are unambiguous about expectations, deadlines, and prices. Contract termination clauses and dispute resolution procedures must to be included in these agreements (Mohamed, 2023).

### **Determinants of foreign procurements success**

**Selection of Suppliers:** Selecting the appropriate suppliers is essential. A number of factors are important, including supplier reputation, pricing, ability, and dependability (Weele, 2014).

**Contract Management:** By ensuring that all parties carry out their side of the deal, competent contract management reduces disagreements and maximizes value (Joseph, 2008).

Risk management: is crucial to the effective foreign procurement process. This includes identifying and reducing operational, economic, and geopolitical risks (Joseph, 2008).

Legal and Regulatory Compliance: Ensuring that the foreign procurement operations are carried out in an ethical and legal manner requires adherence to pertinent laws and regulations in various nations (Joseph, 2008).

Cultural and Linguistic Considerations: In order to effectively communicate and establish relationships in the context of international procurement, it is important that one has an understanding of cultural and linguistic distinctions (Joseph, 2008).

Performance Measurement and Evaluation: Finding opportunities for improvement and guaranteeing ongoing progress are made easier by establishing precise performance measures and routinely assessing supplier performance Joseph (2008).

### **2.1.2. Supplier sourcing**

The procurement function must be considered when analyzing the purchasing process. It is crucial to comprehend the function of sourcing in the procurement process by having a clear definition that makes clear that sourcing is a tactical aspect of the buying and procurement process (Weele, 2006).

Supplier sourcing is the process of finding, assessing, and choosing best suppliers to meet an organization's procurement needs. In order to guarantee a consistent supply of products or services, it involves looking into possible suppliers, evaluating their appropriateness and skills, negotiating contracts, and building partnerships. The methodical and deliberate process of finding, assessing, and choosing suppliers based on a range of factors, including quality, price, dependability, and capacity to fulfill the organization's buying needs, is known as supplier sourcing (Robert, Monczka and Giunipero, 2020).

The procurement function includes activities that determine the purchasing specifications based on suitability for use, choose the best supplier and create the processes and routines necessary to enable this, prepare and negotiate with suppliers to establish an agreement and draft a formal contract, place the order with the chosen supplier or create effective purchase orders and handling procedures, monitor and control the order to secure good flow of supply chain, follow up, and evaluation (Weele, 2006).

### **2.1.3. Information sharing**

In order to promote cooperation, openness, and efficiency amongst the many parties engaged in the foreign procurement process, information sharing is essential in international procurement operations. In foreign procurement activity exchange of information, expertise, and insights among different parties participating in international sourcing of products or services is referred to as information sharing. Through this discussion, stakeholders may reduce risks; maximize procurement results, and make well-informed decisions (Joseph, 2008).

Companies broaden their analysis and decision-making to include entire supply chains rather than just individual business units. As it's known Supply chains consist of the majorly mentioned three flows those are: material, information, and finance. Effective supply chain management requires coordinated and integrated flows within and across companies. Effective supply chain management is essential for delivering high-quality services and maintaining profitability. From the major three supplies chain flows one and critical is information flows. Information flow means a process of sharing or transferring relevant message or data from source to the receiver. Effective supply chain coordination requires information sharing. Many studies have shown that information sharing has a significant impact on supply chain performance, particularly in reducing the bullwhip effect (Lee & Whang, 2000).

Information flow is critical for identifying demand, sharing information, establishing expectations through a service level agreement or statement of work, and clearly defining the scope of work, the skills required of service providers, and feedback on performance. Information sharing is critical for identifying supplier demand, sharing information, and setting through the statement of work between supplier and operator, and clearly defining the scope of work, service provider skills, and performance feedback (Lambert and Cooper, 2000).

Advancement in information technology allows sharing information in to the aviation industries. Digital information sharing or Internet enables many organizations to quickly and accurately transfer digital data at minimal cost. To maximize competitiveness and profitability, it's important to consider what information should be shared, with whom, and how. Technical barriers are not present. This paper was review relevant literature and trie to identify key research questions (Simchi-Levi and Kaminsky, 2003).

The supply chain is a network of companies that includes suppliers, manufacturers, warehousing centers, distributors, and retailers, as well as the flow of raw materials, intermediate, and finished products. Financial and information flows influence physical flows. A supply chain may also include third parties who provide logistics services (Mentzer and DeWitt, 2001).

The aviation industry is extremely sensitive to information flow and sharing because every piece of information about Ethiopian MRO operations is highly valuable and can determine the success or failure of a single maintenance and on time flight departure. Furthermore, as we all know, the aviation industry is highly sensitive for safety, and without effective information management, safety cannot be implemented in advance level. For example, most of the time aircraft manufacturing company release SB or service bulletin letter that are the kinds of maintenance or modification information letter to be implemented on the aircraft It may be AD or airworthiness directives or which meant it may be mandatory or not. For this case the operators or airlines always must be conscious and need to collect all required letter and information from the suppliers unless it's challenging to run the airlines without implementing this. Not always every information are important because as the airline industry is very sensitive for safety ensuring credibility and reliability of information is very important and sharing information in advance makes the airline to control damage or any incident in advance (UK aviation news, (2024).

#### **2.1.4. Inventory management**

In a foreign procurement activity, organizations typically protect themselves from supply variability and disruption by maintaining higher inventory and capacity levels (Stratton and Warburton, 2006). Moreover, Golini and Kalchschmidt (2011), stated that foreign procurement has the potential to impact inventory performance, and organizations attempt to compensate for the operational effects of this practice by improving their supply chain processes. Always Inventory managers need to make decisions about how much inventory to keep and how the supply chain will need to function effectively to meet consumer demands. Monczka & Trent (2003), mention that organizations that engage in experienced foreign sourcing, organizing, and buying activities on a global scale perform better in inventory management. These factors will help the organization to decide on the level of inventory and enable them to be best player on the foreign market and help them to identify any issues that may unpredictability to the global supply chain.

#### **2.1.4.1. Managing inventory in foreign procurement activity**

Managing inventory in foreign procurement activities involves balancing supply chain efficiency, cost-effectiveness, and responsiveness to meet demand. Here are some strategies

**Demand forecasting and planning:** Utilize demand forecasting techniques to predict future demand accurately. Collaborate with suppliers to share forecast information and plan inventory levels accordingly, considering lead times and variability in demand (Chopra & Meindl, 2015).

**Safety stock management:** Maintain safety stock levels to mitigate the risk of stock outs caused by uncertainties in demand and supply. Consider factors such as demand variability, lead time variability, and desired service levels when determining safety stock levels (Simchi-Levi and Kaminsky, 2008).

**Supplier collaboration:** Collaborate closely with foreign suppliers to optimize inventory levels throughout the supply chain. Implement vendor-managed inventory (VMI) or consignment inventory agreements to allow suppliers to manage inventory levels based on real-time demand data (Monczka et al., 2015).

**Lead time reduction:** Work with suppliers to reduce lead times through strategies such as closer geographical proximity, process improvements, and transportation optimization. Minimizing lead times helps reduce the need for high inventory levels (Slack, Brandon & Johnston, 2013).

**Inventory optimization tools:** Utilize inventory optimization software and tools to analyze demand patterns, lead times, and supply chain constraints. These tools help optimize inventory levels and minimize holding costs while ensuring customer service levels are met (Silver, Pyke & Peterson, 2016).

**Supply chain visibility and integration:** Enhance supply chain visibility and integration by implementing technologies such as RFID, barcoding, and supply chain management systems. Real-time visibility into inventory levels and movements facilitates better inventory management across borders (Chopra & Meindl, 2015).

**Continuous improvement:** Implement continuous improvement initiatives to optimize inventory management practices over time. Regularly review inventory performance metrics, identify areas for improvement, and implement corrective actions to enhance efficiency and reduce costs (Jacobs, Chase & Lummus, 2014).

### **2.1.5. Supplier relationship**

As per Ambrose, Marshall and Lynch (2010), the core of achieving a successful supply chain is the process of effective management of supplier relationships. Moreover, to achieve a long-term and successful relationship, buyers and suppliers must recognize the benefits of managing the relationship, a transactional collaboration continuum to describe buyer-supplier relationships (Chen and Fung, 2013).

Successfully managing buyer-supplier relationships in the supply chain requires careful consideration of their unique characteristics. Research suggests that trust, commitment, communication frequency, relationship duration, and reputation are key characteristics (Chen and Paulraj, 2004).

#### **2.1.5.1. Managing supplier relationships in foreign business activities**

Managing supplier relationships in foreign business activities involves building trust, communication, and collaboration across cultural and geographical boundaries.

**Cultural understanding and sensitivity:** Develop cultural awareness and sensitivity to understand your foreign suppliers' cultural norms, values, and communication styles. Respect cultural differences and adapt your approach accordingly to foster positive relationships (Schermerhorn & Osborne, 2007).

**Clear communication:** Establish clear lines of communication with foreign suppliers, utilizing technology and language translation services when necessary. Regularly communicate expectations, specifications, and any changes to ensure mutual understanding and alignment (Guffey & Loewy, 2012).

**Transparency and trust:** Foster transparency in business dealings and build trust with foreign suppliers by being honest, reliable, and fair in your interactions. Demonstrate integrity and ethical behavior to establish long-term mutually beneficial relationships (Donaldson & Dunfee, 2015).

**Contractual clarity:** Develop comprehensive contracts that clearly outline expectations, deliverables, payment terms, and dispute resolution mechanisms. Ensure contracts are legally enforceable and consider local laws and regulations in the foreign country (Burton & Sams, 2010).

**Relationship building activities:** Foster relationships with foreign suppliers through face-to-face meetings, site visits, and networking events. Invest time and resources in building personal connections and understanding the supplier's business culture (O'Reilly & Pfeffer, 2000).

**Performance monitoring and feedback:** Regularly monitor supplier performance against key performance indicators (KPIs) and provide constructive feedback. Determine what needs to be improved, and then work with suppliers to put those improvements into practice (Monczka et al., 2015).

### **2.1.6. Foreign procurement and operational performance**

According to Robert, Monczka and Giunipero (2020), For many organizations, business competition has emerged as a key concern. An increasing number of benefits are seen when establishing and combining various business operations across international borders. As a result, more businesses are now making purchases from overseas countries.

The decisions made in manufacturing regarding the supply of components and raw materials for production are generally referred to as purchasing decisions. As a result, a larger number of businesses than ever before have been exploring integrated procurement. Through this kind of operation, they can take advantage of both their own and other countries' more effective competitive advantages (Robert, Monczka and Giunipero, 2020).

The idea of foreign purchasing, according to Han, Dresner and Windle (2008), is predicated on the claim that manufacturing companies are unable to completely rely on local supplier networks for systems, modules, raw materials, and components. Reduced labor costs and improved access to specialized resources and technology are guaranteed by foreign purchasing. Improved supply chain management techniques and cutting-edge technology have made international purchasing easier. As per Rajagopalan and Malhotra (2001), purchasing materials from overseas sources results in increased raw material inventory levels.

Operational performance is predicated on the requirement for efficiency, which is merely the right use of the resources at hand in order to maximize output. This results in lower operational costs, less waste, and ultimately cheaper products that add value for customers (Russell and Taylor, 2008).

Das and Narasimhan (2000), found that foreign procurement had a significant effect on the cost, delivery, and quality of production. Additionally, Thruogachantar and Zailani (2011),

found that foreign purchasing has a major effect on operational performance, which includes the businesses' competitive priority in terms of launching new products on schedule, quality, and cost.

### **2.1.7. Determining the most appropriate procurement method**

Sollish & Semanik (2011), the determination of the best procurement method is not made only based on whether the item to be procured is a good or fair price. Instead, consideration from different aspect should be given. Determining the best procurement method can depend on various factors such as project scope, budget, schedule, risk factors, and the specific needs of the organization or project. There is some basic objectives or elements that need to be consider in foreign procurement process.

- The mandates and business needs of the organization need to be considered.
- The attributes of the item or items that need to be purchased need to consider.
- The state of the market.
- Urgency of the purchase also needs to be considered.
- The appropriate level of technology required must be known before procurement.
- The procurement officer's capability is also taken into account, as is his or her experience, judgment, and ability to handle complicated procurement procedures.

### **2.1.8. The methods or techniques of procurement**

#### **Open tendering**

This method is the preferred competitive public procurement method for purchasing goods, services, and infrastructure projects. It is carried out in compliance with established protocols outlined in the standard bidding documents and the procurement guidelines. Open tendering is also known by open competitive bidding, open competition or open solicitation. These are known as invitations to tender or invitations for bids, and they are used to request bids for these specifications (Jorge and Lynch, 2019).

#### **Essential conditions for open tendering:**

- It is open to all qualified and interested bidders.
- Advertised locally and internationally.
- This has objective qualifications or criteria.
- There are neutral and clear technical specifications,

- There are clear and objective evaluation criteria.

Be awarded to the least-cost provider, without contract negotiations (Jorge and Lynch, 2019).

### **Restricted tendering**

A procurement technique known as restricted tendering restricts the suppliers, contractors, or service providers to whom tenders may be sent. Other names for this procurement process are selective tendering or limited bidding. Despite being regarded as a competitive procurement method, only firms invited or shortlisted by the procuring entity can compete under this procurement method (Jorge and Lynch, 2019).

The basic characteristic of this method is that competition is restricted to a small number of companies, or a few company can meet the particular kind of requirement in order to shorten the time and expense of the selection process (Jorge and Lynch, 2019).

### **Request for proposals**

A Request for Proposals (RFP) is a formal document issued by an organization seeking bids from potential suppliers or service providers for a specific project or procurement opportunity. It typically outlines the project requirements, scope of work, evaluation criteria, and instructions for submitting proposals. The purpose of an RFP is to solicit competitive proposals from qualified vendors and select the best-suited candidate based on factors such as price, technical capabilities, experience, and other relevant criteria (Chartered Institute of Procurement & Supply, 2019).

### **Two-Stage tendering**

Two-stage tendering is similar to the request for proposals, but the technical and financial proposals are submitted separately, first the technical detail submitted then price and other financial detail submitted, or it may be both are submitting simultaneously. This process permits to maintain the openness of the spectrum of technological solutions and implementation approaches, thus reduces the scope of losing potentially interesting proposals, while it leads to comparable bids in a structured and transparent manner (World Bank, 2003).

### **Request for quotations**

An invitation to bid, sometimes known as a request for quote (RFQ), is a procedure whereby a business asks a few chosen contractors and suppliers to provide price quotes and bids in response for the request by the procuring entity (Will Kenton, 2022).

## The Six steps of using (RFQ)

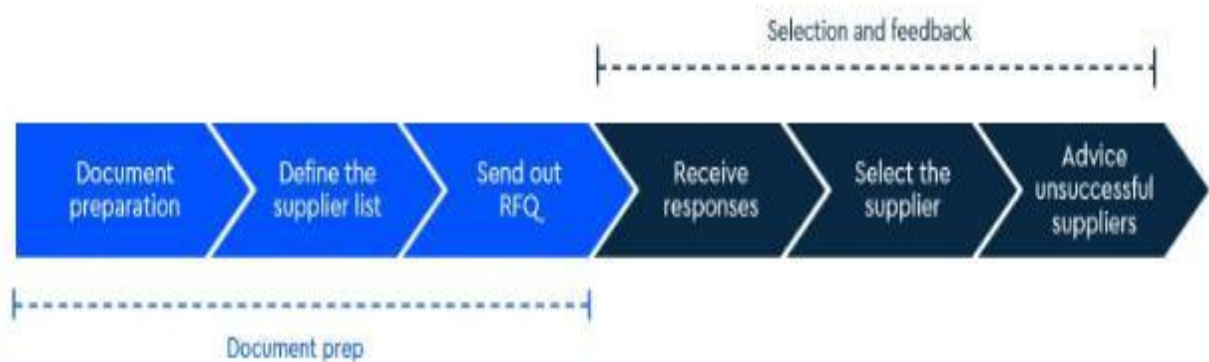


Figure 1.1 Steps of using RFQ

### Single-Source

When a business selects one supplier to supply all its materials, parts, and components even when there are other suppliers who can provide the same goods, but if there is only one supplier is engaged and supplies solely by one vendor is called single sourcing. Single sourcing is frequently used by businesses because it can reduce cost and offer product exclusivity (Kay, 2004).

### 2.1.9. Types of procurement

**Direct procurement:** According to Marijn (2024), any material needed to create a finished good is categorized under this type of procurement. For the purpose of simplification, the company's final product is influenced by direct purchases of raw materials. Anything that is bought from a wholesaler to be resold to clients or final consumers is considered from the retailer's point of view. Here is some example of direct procurement.

- Unprocessed materials/Raw Material
- Parts and components
- Equipment and Machinery
- Items purchased to resell

**Indirect procurement:** Buying products like office supplies is an example of indirect procurement. These products help with day-to-day business management but have no direct impact on the company's final product or profitability. While large corporations may hire a

facilities management company to handle those purchases. Sometime small businesses may assign office managers to handle indirect procurement processes (Marijn, 2024).

**Goods procurement:** Goods procurement refers to any tangible object purchased, whether finished or unfinished. Raw materials, office supplies, desks, and other physical goods are considered goods procurement (Allison, 2023).

**Services procurement:** Any non-tangible purchase falls under services procurement. This includes professional offerings such as consulting services or facilities repair. It also encompasses purchases such as software, with software as a service (SaaS) increasing in business use and often becoming one of an organization's most significant service-based expenditures (Allison, 2023).

#### **2.1.10. Factors that drive foreign purchasing**

**Consumer preferences and trends:** Changing consumer preferences and trends influence foreign purchasing decisions. Factors such as lifestyle changes, fashion trends, and evolving tastes can drive demand for foreign products (Anderson and Van, 2003).

**Trade policies and regulations:** Government policies and regulations, including tariffs, quotas, and trade agreements, shape foreign purchasing behavior. Trade liberalization efforts often lead to increased foreign purchases by reducing barriers to trade (Baldwin, 2016).

**Technological advancements:** Technological advancements, particularly in communication and transportation, have facilitated international trade and influenced foreign purchasing. Faster and cheaper transportation methods, along with advancements in e-commerce, have made it easier for consumers to access foreign products (Baldwin, 2016).

**Political stability and geopolitical factors:** Political stability and geopolitical factors can affect foreign purchasing by influencing investor confidence and trade relationships. Countries experiencing political turmoil may see a decline in foreign purchases due to increased risk perception (Mansfield and Mutz, 2009).

**Globalization and market integration:** Increased globalization and market integration have expanded consumer choices, driving foreign purchasing. As markets become more interconnected, consumers gain access to a wider range of products and services from around the world (Baldwin and Evenett, 2012).

**E-commerce and digitalization:** The rise of e-commerce and digitalization has transformed the way consumers shop, making it easier to purchase goods from foreign markets. Digital platforms and online marketplaces provide convenient access to a global array of products (Brynjolfsson and Smith, 2000).

**Brand image and reputation:** Strong brand image and reputation play a significant role in driving foreign purchasing. Consumers are often attracted to well-known brands associated with quality, reliability, and innovation, regardless of their country of origin (Keller's, 2003).

**Cultural influences and trends:** Cultural influences and trends shape consumer preferences and drive foreign purchasing. Globalization has led to the spread of cultural influences, such as music, fashion, and cuisine, which can create demand for foreign products (Hofstede's, 2001).

**Supply chain dynamics:** Supply chain dynamics, including outsourcing, offshoring, and global production networks, influence foreign purchasing decisions. Companies strategically source components and products from foreign suppliers to optimize costs and access specialized expertise (Gereffi et al., 2005).

**Trade agreements and policies:** Trade agreements and policies shape foreign purchasing by affecting tariffs, quotas, and market access. Free trade agreements and tariff reductions can stimulate foreign trade and increase purchasing from partner countries (Bhagwati and Panagariya, 2016).

## **2.2. Empirical review**

Now a day's foreign procurement is undeniable, the most critical and mandatory in aviation industries because no countries are self-sufficient in the world. When used to describe about foreign procurement or international trade, comparative advantage refers to the products that a country can produce more cheaply or easily than other countries, in an economic model, a comparative advantage refers to an advantage over others in producing a specific good. So, countries that produce a specific product with a low marginal cost can sell it on the international market and they can get a large market share than the other countries. In this case other country that cannot produce is recommended to buy from those countries (Richard, 2016).

Study by Argachew (2021), on the effects of procurement practice on organizational performance in the case of Ethiopian defense force higher educational institutions. This study

worked to answer the questions about effects of procurement practice, relationship, and challenges on the performance of the organization. The study was conducted on the entity of selected Ethiopian defense force higher education institutions, with a total workforce of 600 for the year 2020/2021. The finding of the study concludes that procurement practice is very critical and determined the performance of the organization. However, Ethiopian Defense Force higher education institutions are weak in executing procurement practices, resulting in poor performance in terms of cost reduction, quality goods, services, and lead time due to bad procurement practice.

The Study by Tamiru (2020), on the effects of procurement practices on organizational performance. The study was intended to check the effects of procurement practice on the performance of special emphasis at Jimma University. This study has been designed to answer the primary question about the extent of procurement practice, relationship between procurement and operation performance and challenges of procurement in the organization. The finding of the study concludes that, procurement practices adopted by the organization planning, procurement controls, procurement monitoring, inventory management and training workforces had strong significant effect on the organization performance. So, this shows that how procurement practices is very determinant factor for the performance of the organization. When I come to aviation industries Ethiopian airlines doesn't produce aircraft components so to run the operation of the organization foreign procurement practice is mandatory.

A study by Rono (2017), on the effects of procurement practices on organizational performance within the public sector in the case of east African Portland Cement Company limited. This study was designed to answer the questions for the buyer and supplier relations, supplier selection procedures, e-procurement contributes, green purchasing, and total quality management implementation effects on the performance of the organization. The findings of the study revealed the significance of the purchasing function to the organization. Organizational success is heavily dependent on procurement success, making supplier selection or implementing strategic sourcing practice is critical function for any organization, the quality of the product is also directly related with that. So, this shows how the foreign procurement is very relevant for the success of the organization.

### 2.3. Research gap

There have been many studies conducted in the case of Ethiopian airlines MRO division, but they have not focused on foreign procurement practice and its effect on the operational performance of Ethiopian MRO services.

As a researcher tries to mention in the statement of the problem there are many actual problems is there in foreign purchasing activity such as part shortage, long TAT and Lead time, Inventory or shipment handling, supplier selection and relations, flight delays, and cancellations, too much late payment penalty and incorrect payment. The following are the studies that were conducted into different organization in this country related to this title.

Ayub, A (2020) study about the effects of procurement practices on the organizational performance. Based on the analysis conducted from 144 sample respondents' and the following study discovered a positive and statistically significant correlation between the five variables (procurement planning, supplier selection procedure, buyer-supplier relationship, organization capacity, ethical practices) and organizational performance. However, the strength of the relationship varies with each variable.

Natnael (2020) the study worked on the effect of foreign purchasing on operational performance: in the case of habesha breweries sc. So this study has total sample size 162 and questionnaires were distributed to 115 respondents out of that, 112 questionnaires were returned with a response rate of 97.4%. then the research concludes that According to the results of the correlation research, there is a statistically significant and strong positive association between foreign purchasing and operational performance.

Tamiru, (2020), the study on the effects of procurement practices on organizational performance. the study finds that an organization's procurement practices, including planning, controls, monitoring, inventory management, and workforce training, significantly impact its performance.

As a result, since there are no studies have been conducted regarding foreign procurement on operational performance of Ethiopian airlines MRO services. And as per the knowledge of the researcher there is no study is conducted on the effects of supplier relationship and supplier sourcing on the performance of Ethiopian airlines MRO services. As a result, the focus of this study was on the effects of supplier sourcing (supplier selection, communication, negotiation, supplier awarding) and supplier relationship management (engagement and collaboration with

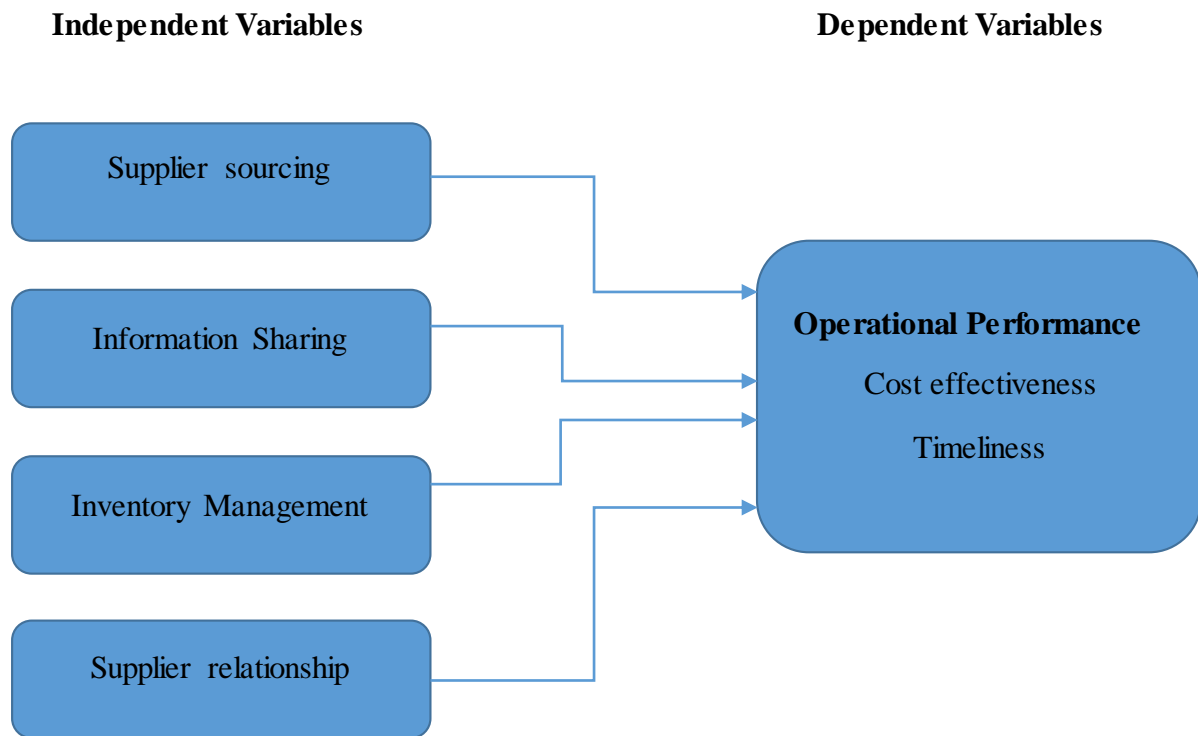
key suppliers, agreements and commitment letters compliance, managing supplier relationships consistency, supplier performance evaluation) in order to determine Ethiopian MRO service performance, particularly in terms of timeliness and cost effectiveness.

#### **2.4. Conceptual framework**

According to McGaghie, Bordage, and Shea (2001), a conceptual framework is essentially a picture of a study or survey topic that provides background information for the report's investigation based on the problem statement.

Peter et al. (2009), numerous things are the reason for achieving high performance in airline industry specially related to flight timing and flights scheduling that are the main thing determined by MRO. There are numerous factors that can influence a flight's on-time performance. One significant reason for achieving high performance in the airline industry, particularly concerning flight timing and flight scheduling, is the optimization of operations through advanced technology and data analytics. Airlines use sophisticated software and algorithms to optimize flight schedules, considering factors such as aircraft availability, crew scheduling, passenger demand patterns, and route efficiency.

Technical problems relating to aircraft maintenance are one of the factors affecting the performance of the flight on time. Before a flight takes off, the MRO division in the aviation industry oversees maintaining and ensuring that the aircraft is airworthy. To guarantee that good procurement activities, flights operate on schedule, internal supply chain integration among MRO members, strategic supplier partnerships, and the quantity and caliber of information sharing are essential Kinnison, (2013). The following conceptual framework illustrates how Ethiopian Airlines' maintenance, repair, and overhaul operational performance is impacted by foreign procurement.



**Figure 2.1.** Conceptual Framework

**Source:** Adopted from (Ebrahim and Mahmoud, 2014).

## 2.5. Research hypothesis

The hypothesis was developed based on the objective and literature review of researches. The following hypothesis was framed to know the significant effect of foreign procurement used by Ethiopian airlines MRO services on its operational performance.

**H<sub>1</sub>1:** Supplier sourcing has positive and significant effect on the operational performance.

**H<sub>1</sub>2:** Information sharing has positive and significant effect on the operational performance.

**H<sub>1</sub>3:** Inventory Management has positive and significant effect on the operational performance.

**H<sub>1</sub>4:** Supplier relationship has positive and significant effect on the operational performance.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

This chapter was discussed about the research methodology applied to conduct the research thus are research approach, research design, unit of analysis, population and sample, data sources and types, data collection procedures, data Analysis, ethical considerations, validity test and reliability test.

### **3.1. Research approach**

Creswell (2009), defines quantitative research as a type of educational research in which the researcher decides what to study, asks specific, narrow questions, collects numeric data from participants, analyzes these numbers and conducts the inquiry in an unbiased manner. The quantitative research method also used to determine the relationship between independent variable and dependent variable in a population. For this case according to this study foreign procurement activities are independent variable and operational performance like timeliness and cost is dependent variable. So, realizing this relationship, the study was used a quantitative research method because a quantitative research method is used to determine the relationship between independent variable and dependent or outcome variables.

### **3.2. Research design**

According to Leedy and Ormrod (2001), if the researcher chooses quantitative research, there are three broad categories: descriptive, experimental, and causal. Williams (2007), stated that descriptive research approach is one of the fundamental research methods that investigate the situation as it stands, experimental research design used to investigate the interaction between independent and dependent variables. And Causal research allows the researcher to investigate how dependent variables are influenced by independent variables, as well as cause-and-effect relationships between variables (John, 2002). This study was used a causal research design. Causal research, also known as explanatory research, it is the investigation of cause and effect relationships to determine causality; to detect variation within the variable that is assumed to cause the change in the other variable, and then to measure the changes in the other variable using statistical methods (Nicholas, 2008).

### **3.3. Unit of analysis**

The unit of analysis is the primary entity that was assessed in this study. The result of the unit of analysis for this survey was the group of employees involved in Ethiopian MRO's supply chain operations. The employees' perceptions of international procurement and operational performance were collected by using a survey questioner, and the collected data was used to conduct a quantitative analysis.

### **3.4. Population and sample**

#### **3.4.1. Accessible population**

According to Hair et al. (2010), accessible population is the population in research to which the researcher can apply the conclusions. This population is a subset of the target population and is also known as the study population. The accessible population of this study was consisting of 552 employees who work for the Ethiopian MRO shops (user or technical departments) and Purchasing and supply chain managements and technical (Source: ET MRO Human resource bureau, 2023 1<sup>st</sup> Semiannual Employee Performance Evaluation Report).

#### **3.4.2. Sampling method**

There are two types of sampling method: namely probability sampling methods and non-probability sampling methods. Bless and Higson (2000), mentioned that non-probability sampling method as the case where the probability of including each element of the population in a sample is unknown. Here, it is not possible to determine the likelihood of the inclusion of all representative elements of the population into the sample. Thus, the researcher was selected MRO division specifically MRO Shop and PSCM department by using non-probability sampling methods known as purposive sampling techniques.

According to Kothari (2004), Probability sampling method are those in which all units of the universe have an equal chance of being a member of the sample; also known as chance sampling, these methods ensure that every item in the population has an equal chance of being included in the sample. The sample frame for this study consists of Ethiopian Airlines employees, specifically from Ethiopian MRO divisions with a link to foreign procurement of aircraft components and items from selected departments. To ensure data reliability and accuracy, samples was collected from MRO shops and PSCM (purchasing and supply chain

management departments. As mentioned on the above this study was used probability sampling method known as stratified sampling techniques on a random sampling base. A representative sample for the questionnaire was drawn from **552** Ethiopian MRO employees. It was used in conjunction with a random table and departmental strata. As per Murphy (2019), Stratified sampling was used to ensure that each population subgroup is adequately represented in the sample.

### 3.4.3. Sample size

The sample size was calculated by using Yamane's (1967), simplified formula, with a 95% confidence level and a degree of error of 5%. The number of employees related to the company's foreign procurement was 552.

$$n = \frac{N}{(1+N(e)^2)}$$

n: represents the required sample size.

N: the total number of employees in line with foreign procurements are (552) and

e: the level of precision/ degree of error expected (0.05)

$$n = \frac{552}{(1+552(0.05)^2)} = 227$$

Therefore, n=227 according to the simplified formula to calculate sample size. (Yamane, 1967)

Table: 3.1 sample size summary.

Total Population	Sub-division	Population size	Sample size strata
552 staffs	MRO shops (user or technical departments)	361	$\frac{361 \times 227}{552} = 148$
	Purchasing and supply chain managements and technical.	191	$\frac{191 \times 227}{552} = 79$
	<b>TOTAL</b>	<b>552</b>	<b>227</b>

Based on the above table, the researcher assumes that the study was taking the strata accordingly from only the permanent employees of Ethiopian Airlines' MRO division.

### **3.5. Data sources and types**

According to Kothari (2004), researchers should consider two types of data: primary and secondary. The researcher collected relevant information from both primary and secondary data sources. Primary data sources were collected directly from respondents by using questionnaires with Ethiopian airline MRO shop and PSCM. Secondary data was collected by using different documents from the company.

### **3.6. Data collection procedures**

According to Michael and Jeremy (2016) Closed-ended questions allows asking more questions on a wider range of topics as they may be answered quickly. The researcher employed both primary and secondary data sources. Primary data was gathered through the use of closed-ended questionnaires with product consumers. This study was also supported by both theoretical and empirical literatures. Secondary data was collect from the organization numerous books, journals, corporate reports, websites, and articles related to foreign procurement.

In order to generate data suitable for quantitative analysis, the participants in this study were asked to indicate their degree of agreement using five-point Likert-type scale methods with the following rates: Strongly Disagree (1), Disagree (2), neutral (3), Agree (4) and Strongly Agree (5) for ordinal scale measurement.

Before distributing the last stage of the questionnaire, a pilot study was carried out to evaluate it once the question was accepted. Next, in preparation for the last round of data collecting, the questionnaires were enhanced and improved. In order to assure the quality of the data obtained, the researcher thoroughly examined the pilot testing delivery and collecting method in order to properly complete the data gathering. Furthermore, a great deal of secondary data was gathered from many sources.

Questionnaire: was distributed to 227 sample population using google form questioning.

Secondary data was collected from different documentation and reports and from concerned bodies in the company.

### 3.7. Data Analysis

To analyzed the data, this research was used both descriptive and inferential statistics techniques. Descriptive statistics was used for the purpose of analyze data which collected from sample respondents and assessed by using statistical tools such as frequency, percentage mean and standard deviation,

The data was collected through well-structured Likert scale questionnaire and it analyzed by using statistical package for social science (SPSS) software version 24. To determine the minimum and the maximum length of the 5-point Likert type scale, the range is calculated by  $(5 - 1 = 4)$  then divided by five as it is the greatest value of the scale  $(4 \div 5 = 0.80)$ . Afterwards, number one which is the least value in the scale was added in order to identify the maximum of this cell. The length of the cells is determined below (Dawes, 2009):

- From 1 to 1.80 represents (strongly disagree).
- From 1.81 until 2.60 represents (do not agree).
- From 2.61 until 3.40 represents (true to some extent).
- From 3.41 until 4.20 represents (agree).
- From 4.21 until 5.00 represents (strongly agree).

Correlation was also used to determine the relationships between foreign procurement (Supplier sourcing, Information sharing, Inventory management and Supplier relationship) and Operational Performance. Using Pearson's Product Moment Correlation Coefficient (r), was assessed the degree of association between the independent variables (Supplier sourcing, Information sharing, Inventory management and Supplier relationship) and the dependent variable (Operational Performance Ethiopian Airlines MRO service). This analysis helps determine the strength, direction, and statistical significance of these relationships, as illustrated in the table below.

Correlation analysis is an effective method for exploring the associations between variables. The value of the correlation coefficient (r) ranges from -1 to +1, indicating both the strength and direction of the relationship. An r value of -1 signifies a perfect negative correlation,  $r = 0$  indicates no relationship and  $r = +1$  signifies a perfect positive correlation. For r values between 0 and  $\pm 1$ , various scholars propose different interpretations with slight variations. For this study direction rule given by Zikmund et al. (2013), was used to describe the strength of association among the variables as follows.

Table 3.2. Interpretation of r Value

Value of r	Description
0.80 or higher	very high
0.6 to 0.8	Strong
0.4 to 0.6	Moderate
0.2 to 0.4	Low
0.20 or low	very low

Source: Zikmund et al., (2013).

Additionally, multiple regression analysis was employed to investigate the effect of Foreign Procurement (including Supplier Sourcing, Information Sharing, Inventory Management, and Supplier Relationship) on the Operational Performance of Ethiopian Airlines' MRO service. The multiple regression equation in this study is based on two sets of variables: dependent and independent variables. The main objective of using the regression equation is to enhance the researcher's ability to describe, understand, predict, and control the variables. The regression model is as follows:

$$OP = \beta_0 + \beta_1 SS + \beta_2 IS + \beta_3 IM + \beta_4 SR$$

Where OP is the dependent variable (Operational Performance), SS is Supplier Sourcing, IS indicates Information Sharing, IM is Inventory Management, and SR is Supplier Relationship.  $\beta_0$  is the intercept term, representing the mean effect on OP of all variables excluded from the equation.  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  are the coefficients of their respective independent variables, measuring the change in the mean value of OP per unit change in each independent variable.

### 3.8. Ethical considerations

The purpose of the research was clearly described so the respondents were understood about the purpose and goals of the questioner easily. In this case the respondent was assured that the information they provided was not exposed for anyone and it was kept confidential and not disclosed to anyone else. This ensures the anonymity and confidentiality of the respondent. Moreover, the respondents were got freedom of not writing their name and also there were not pressured to answer the questionnaires without their willingness. As well as, this study was tried to avoid misleading statements from the questionnaires.

### **3.9. Validity test**

Validity refers to the extent to which an instrument accurately measures what it is intended to measure. (Kothari, 2004) And also, Roberta and Twycross (2015), stated that validity indicates the degree to which a concept is precisely measured in a quantitative study and whether the instrument comprehensively covers all relevant content related to the variable. In other words, it assesses whether the instrument encompasses the entire domain associated with the variable or construct it was designed to measure.

To test the validity of questionnaire pre tested were conducted by distributing to 10 proposed respondents. The respondents were randomly selected from Ethiopian airlines MRO employees one week before the actual data collection. The pilot test that was conducted prior to the actual data collection has helped to get valuable comments. Moreover, In order to ensure the quality of this research design; content validity of the study were checked. The content validity was verified by the advisor of this research, who was looking into the appropriateness of questions and the scales of measurement. Peer discussion was also another way of checking the appropriateness of the questions.

### **3.10. Reliability test**

According to Saunders, Lewis and Thornhill (2009), reliability analysis is used to determine whether data collection techniques or analysis procedures yield consistent results. Furthermore, reliability analysis focuses on the internal consistency of the research instrument. The objective of reliability is to minimize errors and biases in research. Cronbach's Alpha is particularly useful for developing attitude scales and questionnaires, as it indicates whether the items measure the same construct. Items that do not align with the others can be identified and removed (Yin, 2003). The closer the Cronbach's Alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. The Cronbach's Alpha coefficient should be equal or greater than 0.7 for an acceptable reliability. Field (2005), notes that questionnaires designed to measure knowledge and intelligence should have Cronbach's alphas above the customary cut-off value of 0.7, and any scale with an alpha coefficient below this threshold should be discarded.

Table 3.3. Reliability test result

Item	No of item	Cronbach's Alpha
Supplier sourcing	7	.902
Information sharing	8	.803
Inventory management	9	.879
Supplier relationship	6	.761
Operational performance	7	.890
TOTAL	37	.847

**Source, survey 2023**

As it can be seen in the above table 3.2 all items of the questionnaire have Cronbach's alpha value greater than 0.7, therefore all items of the questionnaire were reliable to gather information from the concerned body.

## **CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND DISCUSSION**

This chapter explains the processes of data collection, including the distribution of the questionnaire, the collection of responses, and the subsequent analysis of the data obtained from employees of Ethiopian Airlines MRO service. The primary objective is to examine the effects of foreign procurement on the operational performance of Ethiopian Airlines MRO service and to identify ways to enhance the organization's operational performance. The data analysis methods utilized include frequency, percentages, mean, and standard deviation for interpretation. Data presentation was effectively illustrated using tables and figures, which are preferred for their ability to provide a clearer and more understandable depiction of the information.

### **4.1. Analysis of questionnaires response rate**

A questionnaire survey was conducted to gather the necessary information from the permanent employees of Ethiopian Airlines MRO service. A total of 227 questionnaires were distributed to employees in Addis Ababa. Out of these, 217 were successfully completed, returned, and used for the study. This results in a response rate of 95.6%, which is very good and sufficient for data analysis, reporting, and drawing conclusions.

### **4.2. Demographic information of respondents**

As outlined in the sampling techniques section, the researcher purposively selected the Ethiopian Airlines MRO service officers to choose respondents. Subsequently, 227 respondents were randomly selected to gather data for analysis. This section provides background information relevant to the study.

#### **4.2.1 Gender of respondents**

According to this study, the genders of respondents are shown in Table 4.1 below. It was found that 59.4% were male and 40.6% were female, indicating that the majority of the respondents were male. This gender distribution implies a higher representation of males among the respondents, which may reflect the gender composition of the workforce within Ethiopian Airlines MRO service. This disparity should be considered when interpreting the results, as it may influence the study's findings and their applicability to the entire employee population.

Table4.1: Genders of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid MALE	129	59.4	59.4	59.4
FEMALE	88	40.6	40.6	100.0
Total	217	100.0	100.0	

Source survey, 2024

#### 4.2.2. Position of respondents

The table 4.2 presents the distribution of respondents' positions within Ethiopian Airlines MRO service. A total of 217 respondents participated in the study, and the positions are categorized as Staff, Team Leaders, and Managers. Staff: The largest group, with 175 respondents, constitutes 80.6% of the total sample. This indicates that the majority of the respondents are in staff positions. Team Leaders: This group includes 29 respondents, making up 13.4% of the total sample. This shows a smaller but significant portion of the respondents hold team leadership roles. Managers: The smallest group, with 13 respondents, accounts for 6.0% of the total sample. This reflects the limited number of managerial positions among the respondents. These descriptive statistics provide a clear view of the distribution of different job positions among the respondents, highlighting that a significant majority are staff members, with smaller proportions of team leaders and managers. This distribution may influence the study's findings, particularly in terms of perspectives and experiences reported by the different job roles.

Table4.2. Respondents' position

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid STAFF/TECH	175	80.6	80.6	80.6
TEAM LEADERS	29	13.4	13.4	94.0
MANAGERS	13	6.0	6.0	100.0
Total	217	100.0	100.0	

Source survey 2024

#### 4.2.3. Age of respondents

The table 4.3 presents the age distribution of the 217 respondents in the study. The age categories are divided into four groups: under 24, 25-34 years, 35-44 years, and 45-54 years.

Under 24: There are 21 respondents in this age group, representing 9.7% of the total sample. This indicates that a small proportion of the respondents are young adults under the age of 24.

25-34 years: This is the largest age group, with 163 respondents, making up 75.1% of the total sample. The majority of respondents fall within this age range, suggesting that the workforce is predominantly composed of young to middle-aged adults.

35-44 years: This group includes 26 respondents, accounting for 12.0% of the total sample. This shows that a smaller, yet significant portion of the respondents are in their mid-30s to mid-40s.

45-54 years: The smallest age group, with 7 respondents, comprises 3.2% of the total sample. This indicates a minimal representation of older adults nearing retirement age.

These descriptive statistics illustrate that the majority of respondents are relatively young, predominantly in the 25-34 years' age range. This age distribution suggests a youthful workforce within Ethiopian Airlines MRO service, with fewer older employees. This demographic trend may influence the perspectives and experiences reported in the study, particularly concerning aspects related to career stage, technological adoption, and work-life balance.

Table 4.3: Respondent's age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <24	21	9.7	9.7	9.7
25-34 years	163	75.1	75.1	84.8
35-44 years	26	12.0	12.0	96.8
Above 45	7	3.2	3.2	100.0
Total	217	100.0	100.0	

Source survey, 2024

#### 4.2.4. Education level of respondents

The table 4.4 presents the educational attainment of the 217 respondents in the study. The education levels are categorized into four groups: diploma, degree, masters, and PhD.

Diploma: There are 2 respondents with a diploma, representing 0.9% of the total sample. This indicates that a very small portion of the respondents have attained this level of education.

Degree: The largest group, with 151 respondents, makes up 69.6% of the total sample. This suggests that the majority of respondents hold a bachelor's degree.

Master's: This group includes 63 respondents, accounting for 29.0% of the total sample. This shows that a significant portion of the respondents have completed a master's degree.

PhD: There is 1 respondent with a PhD,

representing 0.5% of the total sample. This indicates a minimal representation of respondents with the highest level of educational attainment. These descriptive statistics illustrate that the majority of respondents are highly educated, with most holding a bachelor's or master's degree. This high level of educational attainment suggests a well-qualified workforce within Ethiopian Airlines MRO service. The small number of respondents with only a diploma or a PhD highlights the concentration of employees in the mid-range educational levels. This distribution may influence the study's findings, as higher educational levels often correlate with specific skills, knowledge, and perspectives that could impact operational performance and professional development within the organization.

Table 4.4: Educational levels of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Diploma	2	.9	.9	.9
Degree	151	69.6	69.6	70.5
Masters	63	29.0	29.0	99.5
PhD	1	.5	.5	100.0
Total	217	100.0	100.0	

Source survey 2024

#### 4.2.5. Experience

The table 4.5 presents the distribution of respondents' work experience within Ethiopian Airlines MRO service. The experience levels are categorized into three groups: less than 5 years, 6-9 years, and more than 10 years. Less than 5 years: The largest group, with 111 respondents, constitutes 51.9% of the valid responses. This indicates that a significant portion of the respondents have less than 5 years of work experience within the organization. 6-9 years: This group includes 83 respondents, making up 38.8% of the valid responses. This suggests that a considerable proportion of respondents have between 6 to 9 years of work experience within Ethiopian Airlines MRO service. More than 10 years: The smallest group, with 20 respondents, accounts for 9.3% of the valid responses. This indicates that a smaller portion of respondents have more than 10 years of work experience within the organization. These descriptive statistics provide insights into the distribution of work experience among respondents. The majority of respondents have relatively less experience, with fewer having mid-range or extensive experience within Ethiopian Airlines MRO service. This distribution

of experience levels may influence various aspects of the study, including perspectives on organizational processes, decision-making, and career development.

Table 4.5: Experience of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <5 years	111	51.2	51.9	51.9
6-9 years	83	38.2	38.8	90.7
>10 years	20	9.2	9.3	100.0
Total	214	98.6	100.0	
Missing System	3	1.4		
Total	217	100.0		

Source survey, 2024

#### 4.2.6. Departments of respondents

The table 4.6 displays the distribution of respondents across different departments within Ethiopian Airlines MRO service. The departments are categorized as MRO Shop and PSCM (Procurement, Supply Chain, and Materials Management). MRO Shop: This department comprises 139 respondents, representing 64.1% of the total sample. It indicates that a majority of the respondents are from the MRO Shop department. PSCM (Procurement, Supply Chain, and Materials Management): This department includes 78 respondents, making up 35.9% of the total sample. It shows that a significant portion of respondents are from the PSCM department. These descriptive statistics provide insights into the distribution of respondents across different departments within Ethiopian Airlines MRO service. The majority of respondents are from the MRO Shop department, with a smaller but significant proportion from the PSCM department. This distribution may have implications for the study, as different departments may have varying perspectives, responsibilities, and experiences that could influence the analysis and interpretation of results.

Table 4.6. Departments of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid MRO shop	139	64.1	64.1	64.1
PSCM	78	35.9	35.9	100.0
Total	217	100.0	100.0	

Source survey 2024

### 4.3. Descriptive analysis of independent variables

The respondents were asked to provide their opinions on various aspects of foreign procurement that affect the performance of Ethiopian Airlines' MRO (Maintenance, Repair, and Overhaul) services. Their responses were measured using a five-point Likert scale. The collected data from the respondents were organized for further analysis using correlation and regression methods. The following tables present the descriptive statistics of the foreign procurement factors, as assessed by the structured questionnaire

#### 4.3.1. Supplier sourcing

The table presents ratings for a series of questions related to supplier sourcing within Ethiopian Airlines' MRO operations, including their corresponding means and standard deviations. Here's an interpretation of the mean and standard deviation values:

The mean value for the impact of supplier sourcing on the performance of Ethiopian Airlines' MRO operations was 4.43. This indicates a strong agreement among respondents that Supplier sourcing directly affects the performance of Ethiopian MRO operations. The mean value for continuous updates, communication, and improvement programs with key suppliers and manufacturers was 4.48. This shows that respondents strongly agree that there are effective continuous updates, communication, and improvement programs with key suppliers and manufacturers, indicating good collaboration and communication. The mean value for active involvement with key manufacturers and suppliers in new capability development was 4.37. This reflects a high level of agreement that Ethiopian MRO actively engages with key manufacturers and suppliers in developing new capabilities, suggesting a proactive approach to innovation. The mean value for timely review, update, and amendment of supplier agreements and commitment letters was 4.30. This suggests that respondents agree supplier

agreements and commitment letters are managed and updated effectively before expiration, indicating good governance practices. The mean value for the benefit of using strategic sourcing to select competitive and capable suppliers was 4.37. This indicates strong agreement that Ethiopian MRO significantly benefits from strategic sourcing in selecting competitive and capable suppliers, recognizing strategic advantages. The mean value for the core points of supplier agreements (product quality, cost, lead time, and payment terms) was 4.34. This implies that these factors are considered essential in supplier agreements, highlighting a focus on key performance indicators. The mean value for the impact of effective Supplier sourcing practice implementation on performance improvement was 4.40. This suggests that respondents strongly agree that effective implementation of Supplier sourcing practices enhances performance in Ethiopian Airlines MRO operations, emphasizing the perceived importance of strategic sourcing initiatives.

All mean values for questions related to Supplier sourcing are relatively high, ranging from 4.30 to 4.48. This indicates that respondents generally agree or strongly agree with the statements presented. The standard deviations for all questions are relatively low, ranging from 0.560 to 0.738, suggesting there is little variability or disagreement among respondents.

This implies that respondents perceive Supplier sourcing as having a significant positive impact on the performance of Ethiopian Airlines' MRO operations. The low standard deviations indicate a high level of consensus among respondents, suggesting general agreement on the effectiveness and importance of Supplier sourcing practices within the organization. Overall, these findings imply that Supplier sourcing is viewed favorably by respondents and is perceived as a key factor in improving the performance of Ethiopian Airlines' MRO operations.

Table 4.7. Respondents opinion on Supplier sourcing

<b>Supplier sourcing</b>	<b>Mean</b>	<b>SD</b>
Supplier sourcing has direct effect on the performance of Ethiopian MRO operation.	<b>4.43</b>	<b>.582</b>
There is a continuous update, communication and improvement programs with the major Ethiopian airline key suppliers and manufacturers.	4.48	.594
Ethiopian MRO actively involves with key manufacturers and suppliers in new capability development processes.	4.37	.611
Most of the time suppliers' agreements and commitment letters are reviewed, update and amended on time before expiration period.	4.30	.738
Ethiopian MRO could get huge benefit in using Supplier sourcing to select competitive and capable suppliers.	4.37	.596
In the process of awarding supplier's product quality, cost, Lead-time, and payment terms are the core points of agreements.	4.34	.595
Effective supplier sourcing practice implementation leads to improve performance in Ethiopian MRO operations.	4.40	.560
<b>GRAND MEAN</b>	<b>4.38</b>	<b>.610</b>

Source survey 2024

#### **4.3.2. Information sharing**

The table provides ratings for questions related to information sharing between Ethiopian Airlines' MRO (ET MRO) operations and their suppliers. Below is an interpretation of the descriptive statistics, focusing on the means and standard deviations for each question:

The existence of enhanced information flow with suppliers has a direct impact on the performance of Ethiopian MRO operations. Mean: 4.49 and Standard Deviation: 0.562. The high mean value of 4.49 indicates a strong agreement among respondents that enhanced information flow with suppliers directly impacts the performance of Ethiopian MRO operations. The relatively low standard deviation of 0.562 suggests a high level of consensus among respondents. Suppliers share information and knowledge on time when new aviation technology is invented, or repair capability developed. Mean: 4.41 and Standard Deviation: 0.610. The mean value of 4.41 reflects a strong agreement that suppliers share information and

knowledge promptly when new aviation technology is invented or repair capability is developed. The standard deviation of 0.610 indicates slightly more variability but still a strong consensus. Ethiopian MRO and key suppliers exchange information that helps to establish MRO maintenance tasks, such as AD (Airworthiness Directives) and SB (Service Bulletins), Mean: 4.42 and Standard Deviation: 0.557. With a mean of 4.42, respondents agree that Ethiopian MRO and key suppliers effectively exchange information to establish MRO maintenance tasks. The standard deviation of 0.557 is the lowest, indicating very little variability and strong agreement.

Ethiopian MRO and key suppliers keep each other informed about any events or changes that may affect the performance of MRO operations. Mean: 4.37 and Standard Deviation: 0.571. The mean value of 4.37 suggests agreement that Ethiopian MRO and key suppliers keep each other informed about relevant events or changes. The standard deviation of 0.571 shows relatively little variability in responses. Ethiopian MRO always informs its suppliers in advance to make changes on some needs or requirements. Mean: 4.30 and Standard Deviation: 0.601. The mean value of 4.30 indicates agreement that Ethiopian MRO informs its suppliers in advance of any changes to needs or requirements. The standard deviation of 0.601 suggests moderate variability among respondents. There is accurate and timely information sharing among ET MRO and suppliers. Mean: 4.33 and Standard Deviation: 0.645. The mean value of 4.33 shows agreement that information sharing between ET MRO and suppliers are accurate and timely. The standard deviation of 0.645 indicates slightly more variability in responses. There is complete and adequate information sharing among ET MRO and suppliers. Mean: 4.26 and Standard Deviation: 0.692. The mean value of 4.26 indicates that respondents agree there is complete and adequate information sharing among ET MRO and suppliers. The standard deviation of 0.692 is the highest, suggesting the greatest variability and indicating some differences in opinion. Information exchange between suppliers and ET MRO is reliable and credible. Mean: 4.29 and Standard Deviation: 0.582. The mean value of 4.29 suggests agreement that the information exchange between suppliers and ET MRO is reliable and credible. The standard deviation of 0.582 shows relatively low variability, indicating a good level of consensus.

Overall, the analysis indicates strong agreement among respondents on the positive aspects of information sharing between ET MRO and their suppliers. Enhanced information flow is perceived to have the most significant impact, with the least variability seen in the effectiveness

of exchanging information for maintenance tasks. Although all aspects of information sharing are viewed favorably, there is slightly less agreement on the completeness and adequacy of information sharing (IS7), suggesting this area might need more attention. The low standard deviations for most items indicate a high level of consensus among respondents, reinforcing the perceived importance and effectiveness of information sharing practices within the organization.

Table 4.8. Respondents' opinion on information sharing

<b>Information Sharing</b>	<b>MEAN</b>	<b>SD</b>
The existence of enhanced information flow with suppliers has a direct impact on the performance of Ethiopian MRO operations.	<b>4.49</b>	<b>.562</b>
Suppliers share information and knowledge on time when new aviation technology invented, or repair capability developed.	4.41	.610
Ethiopian MRO and key suppliers are exchange information that helps to establish MRO maintenance task, Like AD and SB.	4.42	.557
Ethiopian MRO and key suppliers keep each other informed about any events or changes that may affect the performance of MRO operations.	4.37	.571
Ethiopian MRO always informs for his suppliers in advance to make changes on some needs or requirements.	4.30	.601
There is accurate and timely information sharing among ET MRO's and suppliers.	4.33	.645
There is complete and adequate information sharing among ET MRO's and suppliers.	4.26	.692
Information exchange between suppliers and ET MRO is reliable and credible.	4.29	.582
<b>GRAND MEAN</b>	<b>4.35</b>	<b>.531</b>

Source survey 2024

### **4.3.3. Inventory management**

The table provides ratings for questions related to inventory management practices within Ethiopian Airlines' MRO (ET MRO) operations. Below is an interpretation of the descriptive statistics, focusing on the means and standard deviations for each question.

"Inventory management has a direct effect on the performance of Ethiopian MRO operations" received a mean rating of 4.52 and a standard deviation of 0.528. This high mean indicates strong agreement among respondents that inventory management significantly impacts the performance of Ethiopian MRO operations. The relatively low standard deviation suggests a high level of consensus among respondents.

"Enhanced packaging practices and protection have been implemented for aircraft components designed for incoming and outgoing shipments" has a mean of 4.45 and a standard deviation of 0.630. This mean reflects strong agreement that enhanced packaging practices and protections are in place for aircraft components. The standard deviation indicates slightly more variability but still shows a strong consensus.

"Ethiopian MRO inventories are sorted and stored according to the standard coding and nature of aircraft components" received a mean rating of 4.36 and a standard deviation of 0.623. This suggests that respondents agree that Ethiopian MRO inventories are sorted and stored according to standard coding and the nature of the components. The relatively low standard deviation indicates strong agreement.

"Dangerous goods (DG) and non-hazmat items are kept separate, with special care given to DG items" received a mean of 4.33 and a standard deviation of 0.654. The mean suggests agreement that DG and non-hazmat items are stored separately with special care for DG items. The standard deviation indicates relatively little variability in responses.

"The shelf life of the inventories is always checked and updated on time, both on the shelf and in the system" has a mean of 4.34 and a standard deviation of 0.654. This mean indicates agreement that the shelf life of inventories is consistently checked and updated. The standard deviation suggests moderate variability among respondents.

"Ethiopian MRO uses the FIFO method for lubricant items like oils, greases, and chemical items" received a mean rating of 4.29 and a standard deviation of 0.613. This indicates agreement that the FIFO method is used for lubricant and chemical items, with the standard deviation showing slightly more variability in responses.

"Ethiopian MRO warehouses are free from theft exposure and aircraft items are placed in secure spots" has a mean of 4.35 and a standard deviation of 0.659. This mean reflects agreement that MRO warehouses are secure and free from theft exposure, with the standard deviation indicating some variability in responses.

"Inventory management software is always updated, with accessibility restricted to authorized personnel" received a mean rating of 4.29 and a standard deviation of 0.668. This mean suggests agreement that inventory management software is regularly updated and accessible only to authorized personnel, with the standard deviation indicating slightly more variability in responses.

"ET MRO has improved inventory level management practices to maintain optimal production levels" has a mean of 4.27 and a standard deviation of 0.633. This mean indicates agreement that inventory level management practices have improved to maintain optimal production levels, with the standard deviation suggesting moderate variability among respondents.

Overall, the analysis indicates strong agreement among respondents on the positive aspects of inventory management within Ethiopian Airlines' MRO operations. "Inventory management has a direct effect on the performance of Ethiopian MRO operations" is perceived to have the most significant impact, with the least variability in agreement. Although all aspects of inventory management are viewed favorably, there is slightly less agreement on the improvement of inventory level management practices and the updating and accessibility of inventory management software. The low standard deviations for most items indicate a high level of consensus among respondents, reinforcing the perceived importance and effectiveness of inventory management practices within the organization.

Table4.9. Respondents' opinion on Inventory management

<b>Inventory Management (IM)</b>	<b>MEAN</b>	<b>SD</b>
Inventory management has direct effect on the performance of Ethiopian MRO operation. (IM1)	4.52	.528
Enhanced packaging practices and protection have been implemented for aircraft components that are designed for incoming and outgoing shipments. (IM2)	4.45	.630
Ethiopian MRO inventories are sorted and stored according to the standard coding and nature of aircraft components. (IM3)	4.36	.623
Dangerous goods (DG) and non-hazmat items are kept in separate and gives special care for those DG item. (IM4)	4.33	.654
The shelf life of the inventories is always checked and updated on time, both on the shelf and in the system. (IM5)	4.34	.654

Ethiopian MRO uses FIFO method for lubricant items like oils, greases, natural or synthetic oils and chemical items. IM6)	4.29	.613
Ethiopian MRO warehouses are free from theft exposure and aircraft items are placed on the secured spot. IM7	4.35	.659
Inventory management software's are always updated, and accessibility is only for authorized personals. IM8	4.29	.668
ET MRO has improved inventory level management practices to keep the company at an optimal production level. IM9	4.27	.633
GRAND MEAN	4.35	.629

Source survey 2024

#### 4.3.4. Supplier relationship

The table provides ratings for various aspects of supplier relationship management within Ethiopian Airlines' MRO (ET MRO) operations, focusing on the means and standard deviations for each question. Here's an interpretation of the descriptive statistics:

Supplier relationship management has a direct effect on the performance of Ethiopian MRO operation. The high mean value of 4.50 indicates strong agreement among respondents that supplier relationship management directly impacts the performance of Ethiopian MRO operations. The relatively low standard deviation of 0.545 suggests a high level of consensus among respondents.

Supplier Relationship Management involves engagement and collaboration with key suppliers to improve the relationship with Ethiopian MRO. The mean value of 4.52 reflects strong agreement that engaging and collaborating with key suppliers enhances relationships with Ethiopian MRO. The standard deviation of 0.528 indicates minimal variability and a strong consensus among respondents.

Ethiopian MRO Supplier relationship management fully enforces both parties to comply with agreements and commitment letters. With a mean of 4.36, respondents agree that Ethiopian MRO's supplier relationship management ensures compliance with agreements and commitment letters. The standard deviation of 0.602 shows relatively low variability, indicating strong agreement.

Maintaining good relationships with high-performing aviation part suppliers benefits Ethiopian MRO by allowing them to obtain higher-quality products at a lower cost and with shorter lead times, the mean value of 4.35 suggests agreement that maintaining good relationships with high-performing suppliers benefits Ethiopian MRO by securing higher-quality products at lower costs and with shorter lead times. The standard deviation of 0.643 indicates slightly more variability but still a strong consensus.

Evaluating supplier performance can help Ethiopian MRO to reduce the risk of maintenance disruptions and operational delays. The mean value of 4.38 indicates agreement that evaluating supplier performance helps Ethiopian MRO reduce the risk of maintenance disruptions and operational delays. The standard deviation of 0.582 suggests relatively little variability in responses, indicating strong agreement.

Due to the good implementation of supplier relationship management, ET MRO benefited from price consistency, AOG support, and reliability. The mean value of 4.36 reflects agreement that effective supplier relationship management has led to benefits such as price consistency, AOG support, and reliability for ET MRO. The standard deviation of 0.537 indicates minimal variability and strong consensus among respondents.

Overall, the analysis indicates strong agreement among respondents on the positive aspects of supplier relationship management within Ethiopian Airlines' MRO operations. All aspects of supplier relationship management are viewed favorably, with mean values above 4.3, indicating a high level of satisfaction and agreement. The low standard deviations for most items suggest a high level of consensus among respondents, reinforcing the perceived importance and effectiveness of supplier relationship management practices within the organization

Table 4.10. Respondents opinion on supply relationship

<b>Supplier relationship</b>	<b>Mean</b>	<b>SD</b>
Supplier relationship management has a direct effect on the performance of Ethiopian MRO operation. SRM1	4.50	.545
Supplier Relationship Management involves engagement and collaboration with key suppliers to improve the relationship with Ethiopian MRO. SRM2	4.52	.528
Ethiopian MRO Supplier relationship management fully enforces both parties to comply for the agreements and commitment letters. SRM3	4.36	.602
Maintaining good relationships with high-performing aviation part suppliers benefits Ethiopian MRO by allowing them to obtain higher-quality products at a lower cost and with shorter lead times. SRM4	4.35	.643
Evaluating supplier performance can help Ethiopian MRO to reduce risk of maintenance disruptions and operational delays. SRM5	4.38	.582
Due to good implementation of supplier relationship management ET MRO benefited by price consistency, AOG support and reliability. SRM6	4.36	.537
<b>GRAND MEAN</b>	<b>4.41</b>	<b>.572</b>

Source survey 2024

#### **4.4. Operational performance of Ethiopian airlines MRO services**

The table provides ratings for various operational aspects of Ethiopian Airlines' MRO (ET MRO) operations, focusing on the ability to acquire aircraft components and tools, quality assurance, supplier support during disruptions, timeliness of receiving parts and tools, turnaround times for repairs and exchanges, and on-time completion of maintenance. Here is an interpretation of each aspect, including the mean values:

The mean score for the statement that ET Airlines MRO acquires aircraft components and tools at a reasonable price was 4.40. This indicates strong agreement among respondents that Ethiopian MRO successfully purchases aircraft components and tools cost-effectively. This suggests efficient procurement practices, enabling the acquisition of necessary items without excessive expenditure. Similarly, the mean score for the statement that ET MRO can obtain quality aircraft parts and tools approved by the FAA and EASA whenever required was 4.45.

These scores reflect strong agreement that Ethiopian MRO has access to high-quality aircraft parts and tools that meet stringent FAA and EASA standards, ensuring the safety and reliability of the components used in maintenance operations.

For the statement that unforeseen events can sometimes disrupt Ethiopian MRO's normal operations, but key suppliers are willing to fully support these operations during such disruptions, the mean score was 4.35. This suggests that respondents agree that key suppliers provide necessary support to Ethiopian MRO during unforeseen disruptions, highlighting strong supplier relationships and their critical role in maintaining operational continuity.

The mean score for the statement that Ethiopian MRO receives purchased airplane parts and tools in a timely manner was 4.38. This indicates agreement that Ethiopian MRO receives airplane parts and tools promptly after purchase, ensuring that maintenance activities are not delayed due to supply chain issues. The statement that Ethiopian MRO receives repaired and exchange units from suppliers in a short turnaround time received a mean score of 4.32, this suggests that Ethiopian MRO benefits from quick turnaround times for repaired and exchange units from suppliers, which is crucial for minimizing aircraft downtime and maintaining operational schedules.

Lastly, the mean score for the statement that Ethiopian MRO typically completes aircraft maintenance within the specified time frame and releases them for flight on time was 4.37. This indicates agreement that Ethiopian MRO consistently meets maintenance deadlines and releases aircraft for flight as scheduled, reflecting the organization's ability to manage its maintenance processes and ensure timely service delivery.

Overall, the responses suggest strong confidence in Ethiopian MRO's operational capabilities, with all mean values above 4.3, indicating a high level of satisfaction and agreement. The consensus reflects that Ethiopian MRO effectively acquires reasonably priced and high-quality components, maintains strong supplier relationships, ensures timely receipt and turnaround of parts and tools, and adheres to maintenance schedules, reinforcing its operational reliability and efficiency.

Table 4.11. respondents' opinion on operational performance

<b>Operation performance</b>	<b>MEAN</b>	<b>SD</b>
ET MRO acquires aircraft components and tools at a reasonable price.	4.47	.586
ET MRO can get quality aircraft parts and tools that are approved by FAA and EASA whenever required.	4.38	.612
Sometime unforeseen events can disrupt the normal operation of Ethiopian MRO and make plans off track; in this case, key suppliers are willing to fully support Ethiopian MRO operations.	4.24	.746
Ethiopian MROs receive purchased airplane parts and tools in a timely manner.	4.22	.803
Most of the time Ethiopian MRO receives repaired and Exchange units from supplier in short turnaround time.	4.25	.779
Ethiopian MROs typically complete aircraft maintenance within the time frame specified and release them for flight on time.	4.29	.642
Ethiopian MRO can get cost benefit and price advantage due to smooth interaction with suppliers.	4.25	.779
<b>GRAND MEAN</b>	<b>4.30</b>	<b>.706</b>

Source survey 2024

#### 4.5. Correlation

The correlation analysis in the table indicates the strength and significance of relationships between various variables related to performance of Ethiopian Airlines MRO's services. All correlations are significant at the 0.01 level (2-tailed), denoted by \*\*, suggesting strong statistical significance. **Operational Performance** as the dependent variable and examining its correlations with the independent variables— **Supplier Sourcing**, **Information Sharing**, **Inventory Management**, and **Supplier Relationship**—the analysis reveals the following:

**Supplier Sourcing Correlation with Operational Performance:** The Pearson correlation coefficient is .937\*\*. This indicates a very strong positive relationship between Supplier sourcing and operational performance. Effective Supplier sourcing practices significantly contribute to better operational performance by ensuring that components and tools are acquired cost-effectively and reliably.

**Information Sharing Correlation with Operational Performance:** The Pearson correlation coefficient is .963\*\*. This is the strongest correlation observed in this analysis. It suggests that effective information sharing is crucial for operational performance. Efficient communication and data exchange streamline processes, reduce errors, and enhance coordination, leading to higher operational efficiency.

**Inventory Management Correlation with Operational Performance:** The Pearson correlation coefficient is .962\*\*. This strong positive relationship indicates that robust inventory management practices are critical for operational performance. Proper inventory management ensures the availability of necessary parts and tools, minimizes delays, and supports smooth maintenance operations.

**Supplier Relationship Correlation with Operational Performance:** The Pearson correlation coefficient is .898\*\*. Although slightly lower than the other variables, this strong positive correlation still underscores the importance of maintaining good supplier relationships. Reliable and supportive suppliers can provide timely delivery of parts and quick turnaround on repairs, which is essential for maintaining high operational performance.

**Summary of Correlation with Operational Performance:**

- **Information Sharing** (.963\*\*): The most significant impact on operational performance, highlighting the importance of effective communication and data exchange.
- **Inventory Management** (.962\*\*): Closely tied to operational performance, emphasizing the need for efficient inventory practices.
- **Supplier Sourcing** (.937\*\*): Strongly influences operational performance, reflecting the importance of effective procurement Supplies.
- **Supplier Relationship** (.898\*\*): Although slightly lower, it remains a critical factor for operational performance, indicating the importance of strong and reliable supplier partnerships.

Overall, the high correlation coefficients indicate that all four independent variables supplier sourcing, information sharing, inventory management, and supplier relationship are strongly linked to performance of Ethiopian Airlines MRO service. Effective management and

integration of these areas are essential for achieving high operational efficiency and performance at Ethiopian Airlines MRO service.

**Table 4.12. Correlations**

		SUPPLIER SOURCING	INFORMATION SHARING	INVENTORY MANAGEMENT	SUPPLIER RELATIONSHIP	OPERATIONAL PERFORMANCE
SUPPLIER SOURCING	Pearson Correlation Sig. (2-tailed)	1	.957** .000	.957** .000	.958** .000	.937** .000
INFORMATION SHARING	Pearson Correlation Sig. (2-tailed)	.957** .000	1	.987** .000	.925** .000	.963** .000
INVENTORY MANAGEMENT	Pearson Correlation Sig. (2-tailed)	.957** .000	.987** .000	1	.927** .000	.962** .000
SUPPLIER RELATIONSHIP	Pearson Correlation Sig. (2-tailed)	.958** .000	.925** .000	.927** .000	1	.898** .000
OPERATIONAL PERFORMANCE	Pearson Correlation Sig. (2-tailed)	.937** .000	.963** .000	.962** .000	.898** .000	1

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

#### 4.6. Multi Co- Linearity test

Multicollinearity is a problem that occurs with regression analysis when there is a high correlation of at least one independent variable with a combination of the other independent variables. As variables are highly correlated in a multiple regression analysis, it is difficult to identify the unique contribution of each variable in predicting the dependent variable because the highly correlated variables are predicting the same variance in the dependent variable. In this situation, the “overall” p-value may significant but the p-value for each

predictor may not be significant. Multicollinearity exists when Tolerance is below 0.1; and Variance Inflation Factor (VIF) is greater than 10. Accordingly, there is no Multicollinearity between supplier sourcing, information sharing, inventory management and supplier relationship there tolerance is greater than 0.1 and VIF is less than 10.

Table4.13: Multi co- linearity test

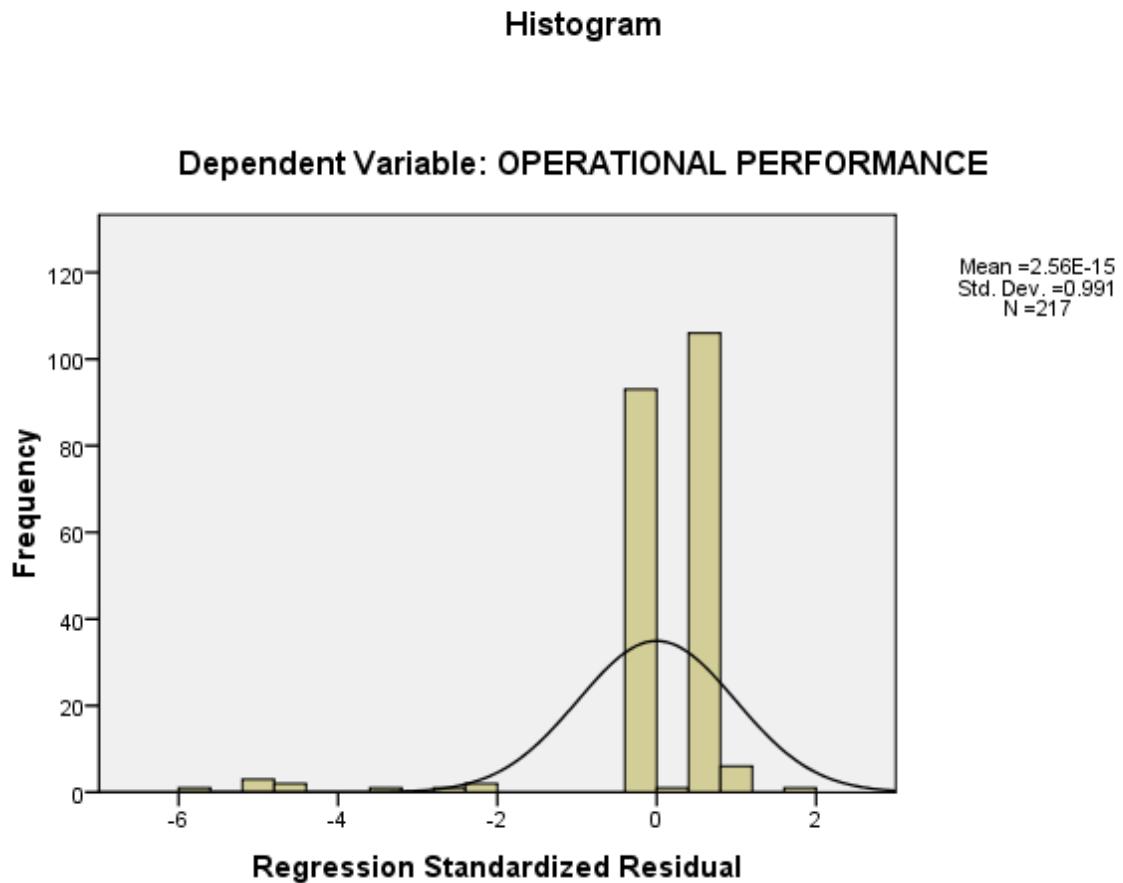
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Strategic sourcing	.146	2.591
	Information sharing	.223	4.778
	Inventory management	.323	4.286
	Supplier relationship	.282	1.251

Source: SPSS output

#### 4.7. Normality test

The histogram shown in the graph is used to assess the normality of the residuals in the regression analysis for the dependent variable "Operational Performance." Here's a detailed interpretation of the normality test based on the histogram:

The histogram shows the distribution of the regression standardized residuals. The majority of the residuals are clustered around the center, close to zero, which is typical of a normal distribution. There is a clear peak around the central value, suggesting that most residuals are close to the mean. The distribution appears to be somewhat symmetrical around the mean. However, there is some slight skewness, indicated by the presence of more observations on the right side compared to the left. The mean of the residuals is very close to zero (Mean = 2.56E-15), which is expected in a normally distributed set of residuals. The standard deviation is approximately 0.991, suggesting that most residuals fall within one standard deviation of the mean. The overlaid normal curve (black line) serves as a reference for normality. The bars of the histogram generally follow the shape of the normal curve, indicating that the residuals are approximately normally distributed.



Figur 4.1. Histogram

#### 4.8. Homoscedasticity test

To determine the approximation of equal variance assumption of the regression model the study used Levenes Test which describes the non-significant result for the test i.e. the variance is meet the assumption of equal variance. To examine the test, the following hypothesis are formulated

- Ho= the variance is equal across all sample
- H1=the variance is not equal across all sample

Table4.14: Homoscedasticity test

Test of Homogeneity of Variance <sup>a,b,c</sup>					
		Levene Statistic	df1	df2	Sig.
Performance	Based on Mean	.518	4	22	.723
	Based on Median	.707	4	22	.596
	Based on Median and with adjusted df	.707	4	18.704	.597
	Based on trimmed mean	.565	4	22	.690

The result described on the above table shows, the standard deviation is equal and the Sig.>0.05, therefore, Levenes test indicated that the regression meets the assumption of homogeneity of variance (equal variance are assumed).

#### 4.9. Regression analysis

The multiple regression analysis is an analysis of association in which the effects of two or more independent variables on a single, interval scaled dependent variable were investigated simultaneously. The results of this analysis indicate how well a set of variables is able to predict the dependent variable. Furthermore, it shows how much unique variance in the dependent variable each of independent variables explains. The model summary table4.15 provides a comprehensive overview of the regression analysis conducted to examine the relationship between operational performance (the dependent variable) and the independent variables (supplier relationship, information sharing, supplier sourcing, and inventory management).

**R (Correlation Coefficient): Value:** .967, this value represents the multiple correlation coefficient, which indicates the strength and direction of the relationship between the dependent variable (operational performance) and the combined set of independent variables. An R value of .967 signifies a very strong positive correlation, suggesting that the independent variables collectively explain a significant portion of the variance in operational performance.

**R Square (Coefficient of Determination): Value:** .935, R Square measures the proportion of the variance in the dependent variable that is predictable from the independent variables. An R Square value of .935 means that approximately 93.5% of the variability in operational performance can be explained by the model. This high value indicates an excellent fit of the model to the data.

**Adjusted R Square: Value:** .934, Adjusted R Square adjusts the R Square value for the number of predictors in the model, providing a more accurate measure of the model's explanatory power, especially when there are multiple independent variables. An Adjusted R Square of .934 is very close to the R Square value, suggesting that the model remains highly explanatory even after accounting for the number of predictors.

The model summary shows a very strong relationship between operational performance and the independent variables (supplier relationship, information sharing, supplier sourcing, and inventory management). The high R Square and Adjusted R Square values suggest that the model explains a substantial portion of the variance in operational performance.

**Table 4.15. Model Summary <sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.967 <sup>a</sup>	.935	.934	.180	.711

A. predictors: (constant), supplier relationship, information sharing, supplier sourcing, inventory management

B. dependent variable: operational performance

The ANOVA (Analysis of Variance) table 4.16 provides insight into the overall significance of the regression model. It shows how much of the total variability in the dependent variable (operational performance of Ethiopian Airlines MRO service) is explained by the regression model versus unexplained variance (residual). Here's a clear description of the statistical analysis provided by the table:

F-Statistic: F: 762.083: This statistic is calculated by dividing the Mean Square Regression (MSR) by the Mean Square Residual (MSE). The F-statistic tests whether the explained variance in the model is significantly greater than the unexplained variance. A higher F value indicates that the model explains a significant portion of the variance in the dependent variable.

Significance (Sig.): Sig: .000: This is the p-value associated with the F-statistic. A p-value of .000 indicates that the results are statistically significant. It means there is a less than 0.1% chance that the observed F-statistic value would occur if the null hypothesis were true (i.e., if the model with no predictors was just as good).

Therefore, the ANOVA table indicates that the regression model is highly significant, with an F-statistic of 762.083 and a p-value of .000. This implies that the independent variables (supplier relationship, information sharing, supplier sourcing, and inventory management) collectively explain a significant portion of the variance in operational performance. The very low residual sum of squares and mean square residual values further suggest that the model provides a good fit to the data.

**Table 4.16. ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	98.228	4	24.557	762.083	.000 <sup>a</sup>
	Residual	6.831	212	.032		
	Total	105.060	216			

A. Predictors: (Constant), SUPPLIER RELATIONSHIP, INFORMATION SHARING, SUPPLIER SOURCING, INVENTORY MANAGEMENT

B. Dependent Variable: OPERATIONAL PERFORMANCE

The table 4.17 presents the regression coefficients for the model predicting performance Ethiopian Airlines MRO service from the independent variables (supplier sourcing, information sharing, inventory management, and supplier relationship). Here's a detailed statistical description of the regression coefficients:

### **Supplier Sourcing:**

The Unstandardized coefficient (0.231) indicates that for every unit increase in supplier sourcing, operational performance is expected to increase by 0.231 units, holding all other variables constant. The standardized coefficient (0.203) shows the relative importance of strategic sourcing in predicting operational performance. The t-value (2.493) and p-value (0.013) indicate that this coefficient is statistically significant at the 0.05 level, meaning supplier sourcing has a significant positive impact on operational performance.

### **Information Sharing:**

The Unstandardized coefficient (0.550) indicates that for every unit increase in information sharing, operational performance is expected to increase by 0.550 units, holding all other variables constant. The standardized coefficient (0.474) shows that information sharing has the highest relative importance among the predictors. The t-value (4.134) and p-value (0.000) indicate that this coefficient is statistically significant at the 0.01 level; meaning information sharing has a significant positive impact on operational performance.

### **Inventory Management:**

The Unstandardized coefficient (0.439) indicates that for every unit increase in inventory management, operational performance is expected to increase by 0.439 units, holding all other variables constant. The standardized coefficient (0.383) shows the relative importance of inventory management in predicting operational performance. The t-value (3.323) and p-value (0.001) indicate that this coefficient is statistically significant at the 0.01 level; meaning inventory management has a significant positive impact on operational performance.

### **Supplier Relationship:**

The Unstandardized coefficient (-0.108) indicates that for every unit increase in supplier relationship, operational performance is expected to decrease by 0.108 units, holding all other variables constant. The standardized coefficient (-0.089) shows the relative importance of supplier relationship in predicting operational performance. However, the t-value (-1.451) and p-value (0.148) indicate that this coefficient is not statistically significant at the 0.05 level, meaning the supplier relationship does not have a significant impact on operational performance in this model.

**Significant Predictors:** Information sharing (0.550,  $p = 0.000$ ), inventory management (0.439,  $p = 0.001$ ), and supplier sourcing (0.231,  $p = 0.013$ ) are significant predictors of operational performance, with information sharing having the largest impact.

**Non-Significant Predictor:** Supplier relationship (-0.108,  $p = 0.148$ ) is not a significant predictor of operational performance in this model.

This analysis suggests that while supplier sourcing, information sharing, and inventory management significantly enhance operational performance, supplier relationships do not have a statistically significant impact in this context

Table4.17. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.524	.097		-5.415	.000
	SUPPLIER SOURCING	.231	.093	.203	2.493	.013
	INFORMATION SHARING	.550	.133	.474	4.134	.000
	INVENTORY MANAGEMENT	.439	.132	.383	3.323	.001
	SUPPLIER RELATIONSHIP	-.108	.075	-.089	-1.451	.148

a. Dependent Variable: OPERATIONAL PERFORMANCE

#### 4.10. Hypothesis testing

The hypotheses were formulated to examine the impact of various aspects of foreign procurement on the operational performance of Ethiopian Airlines MRO services. Each hypothesis corresponds to a specific independent variable and its predicted effect on the dependent variable, performance of Ethiopian Airlines MRO service. Here's a detailed description of each hypothesis:

**Hypothesis<sub>1</sub> 1:** Supplier sourcing has a positive and significant effect on performance of Ethiopian Airlines MRO service. The regression analysis shows that supplier sourcing has a positive and significant effect on operational performance, as indicated by a statistically significant coefficient ( $p = 0.013$ ). Therefore,  $H_{11}$  is supported. This hypothesis posits that effective supplier sourcing strategies, which involve selecting and managing suppliers who provide necessary aircraft components and tools, will positively enhance the operational performance of Ethiopian Airlines MRO services. This means that better supplier sourcing

should lead to improvements in efficiency, cost-effectiveness, and overall maintenance operations.

**Hypothesis<sub>1 2</sub>:** Information sharing has a positive and significant effect on operational performance. This hypothesis suggests that effective information sharing, which involves the timely and accurate exchange of relevant data and insights between different stakeholders, will positively influence the operational performance of Ethiopian Airlines MRO services. Effective communication and data sharing are expected to streamline processes, reduce errors, and enhance coordination, thereby boosting operational efficiency and performance. Information sharing is found to have a positive and significant effect on operational performance, with the highest relative impact among the predictors ( $p = 0.000$ ). Therefore,  $H_{12}$  is supported.

**Hypothesis<sub>1 3</sub>:** Inventory management has a positive and significant effect on operational performance. This hypothesis states that robust inventory management practices, which ensure the availability of necessary parts and tools while minimizing excess inventory, will positively impact the operational performance of Ethiopian Airlines MRO services. Efficient inventory management is expected to reduce delays, optimize resource utilization, and support smooth maintenance operations, thereby enhancing overall performance. Inventory management also has a positive and significant effect on operational performance, with a significant coefficient ( $p = 0.001$ ). Therefore,  $H_{13}$  is supported.

**Hypothesis<sub>1 4</sub>:** Supplier relationship has a positive and significant effect on operational performance. This hypothesis is proposing that strong supplier relationships, characterized by reliable and supportive interactions with suppliers, will positively affect the operational performance of Ethiopian Airlines MRO services. Good supplier relationships are expected to facilitate timely delivery of parts, quick turnaround on repairs, and overall support during disruptions, thus contributing to improved operational performance. The regression analysis indicates that supplier relationship does not have a statistically significant effect on operational performance ( $p = 0.148$ ). Therefore,  $H_{14}$  is not supported.

In summary, the hypotheses  $H_{11}$ ,  $H_{12}$ , and  $H_{13}$  are supported by the statistical analysis, indicating that supplier sourcing, information sharing, and inventory management positively and significantly affect operational performance. However,  $H_{14}$  is not supported, suggesting

that supplier relationship does not have a significant impact on operational performance of Ethiopian Airlines MRO service in this context.

Table 4.18. Summary of hypothesis

<b>No</b>	<b>Hypothesis</b>	<b>Decision</b>
<b>Hypothesis 1</b>	Supplier sourcing has a positive and significant effect on operational performance.	<b>Accepted</b>
<b>Hypothesis 2</b>	Information sharing has a positive and significant effect on operational performance.	<b>Accepted</b>
<b>Hypothesis 3</b>	Inventory management has a positive and significant effect on operational performance.	<b>Accepted</b>
<b>Hypothesis 4</b>	Supplier relationship does not have a statistically significant effect on operational performance.	<b>Not accepted</b>

#### **4.11. Discussion and interpretation**

The main aim of this study was to investigate the effects of foreign procurement on performance of Ethiopian Airlines MRO service. A survey was conducted among permanent employees of Ethiopian Airlines MRO service in Addis Ababa, distributing 227 questionnaires and receiving 217 completed responses, resulting in a high response rate of 95.6%. The survey findings are as follows:

Gender Distribution showed that 59.4% male and 40.6% female, indicating a male-dominated workforce in the organization. Job Positions: Majority are staff (80.6%), followed by team leaders (13.4%), and managers (6.0%). Age Distribution: Predominantly 25-34 years (75.1%), with smaller groups under 24 (9.7%), 35-44 years (12.0%), and 45-54 years (3.2%). Educational Attainment: Most hold a degree (69.6%) or master's (29.0%), with few having a diploma (0.9%) or PhD (0.5%). Work Experience: Over half have less than 5 years of experience (51.9%), followed by 6-9 years (38.8%), and more than 10 years (9.3%). Departmental Distribution: Majority from the MRO Shop (64.1%), with the rest from PSCM (35.9%). The data suggests a young, educated, and predominantly male workforce with varying job roles and departmental representation, which could influence the study's findings and interpretations.

The survey results indicate that respondents generally have a very positive perception of strategic sourcing, inventory management, and supplier relationship management within Ethiopian Airlines' MRO operations. Key findings include:

**Supplier Sourcing:** High mean values (4.30 to 4.48) and low standard deviations (0.560 to 0.738) show strong agreement among respondents that supplier sourcing positively impacts MRO performance. Enhanced information flow with suppliers (mean 4.49) is seen as particularly beneficial.

**Information Sharing:** While there is strong agreement on the effectiveness of information exchange for maintenance tasks (mean 4.42), there is slightly less consensus on the completeness and adequacy of information sharing (mean 4.26, SD 0.692), suggesting this area needs improvement. The findings align with Lambert and Cooper (2000), who emphasize the crucial role of information flow in various aspects of supply chain management. Effective information sharing is vital for identifying supplier demand, disseminating information, and setting expectations through service level agreements or statements of work. It is also essential for clearly defining the scope of work, specifying the necessary skills of service providers, and providing performance feedback. Information flow facilitates the accurate identification of demand, the clear definition of roles and responsibilities, and the establishment of performance metrics, ensuring a well-coordinated and efficient supply chain.

**Inventory Management:** Respondents agree that inventory management significantly impacts MRO operations, with consistent satisfaction across various aspects. However, there is slightly less agreement on the improvement of inventory level management practices and the updating/accessibility of inventory management software. The findings are consistent with Tamiru's (2020) study on the impact of procurement practices on organizational performance. Tamiru's research aimed to address the extent of procurement practices, the relationship between procurement and operational performance, and the challenges faced in procurement within the organization. The study concluded that procurement practices such as planning, procurement controls, procurement monitoring, inventory management, and workforce training have a strong and significant effect on organizational performance.

**Supplier Relationship Management:** High mean values above 4.3 indicate a high level of satisfaction and agreement on the positive impact of supplier relationships. The low standard deviations suggest a strong consensus among respondents. Similarly, the results align with

Chen and Paulraj's (2004) findings, which highlight the importance of carefully managing buyer-supplier relationships in the supply chain by considering their unique characteristics. Research indicates that trust, commitment, communication frequency, relationship duration, and reputation are key factors in successfully managing these relationships.

**Operational Capabilities:** Overall, there is strong confidence in Ethiopian MRO's capabilities, with all mean values above 4.3, reflecting satisfaction with acquiring quality components, maintaining supplier relationships, timely receipt and turnaround of parts, and adherence to maintenance schedules.

These findings suggest that strategic sourcing, effective information sharing, robust inventory management, and strong supplier relationships are perceived as critical factors contributing to the success of Ethiopian Airlines' MRO operations. The high level of consensus among respondents reinforces the importance and effectiveness of these practices.

The regression analysis of Ethiopian Airlines MRO service indicates the following key findings regarding the impact of various factors on operational performance:

**Information Sharing: Significant Positive effect:** Most influential predictor with an Unstandardized coefficient of 0.550 and a p-value of 0.000. Highest **Relative Importance:** Standardized coefficient of 0.474. Effective information sharing is crucial for operational efficiency, enhancing coordination and reducing errors.

**Inventory Management: Significant Positive Effect:** Second highest influence with an unstandardized coefficient of 0.439 and a p-value of 0.001. Efficient inventory management ensures the availability of necessary parts and tools, reducing delays and optimizing resource use.

**Supplier Sourcing: Significant Positive Effect:** Unstandardized coefficient of 0.231 and a p-value of 0.013. Effective procurement supplies improve operational performance by ensuring quality and cost-effective supplies.

**Supplier Relationship: No Significant Effect:** Unstandardized coefficient of -0.108 and a p-value of 0.148. Although traditionally considered important, supplier relationships did not significantly affect operational performance in this analysis.

### **Overall Model Fit:**

- **High Correlation (R = 0.967):** Indicates a very strong positive relationship between operational performance and the independent variables.
- **High R Square (0.935):** Explains 93.5% of the variability in operational performance.
- **Significant Model (F-statistic = 762.083, p-value = 0.000):** The model is statistically significant and well-fitted.

### **Hypotheses:**

- **H<sub>11</sub>, H<sub>12</sub>, H<sub>13</sub> Supported:** Supplier sourcing, information sharing, and inventory management positively and significantly affect operational performance.
- **H<sub>14</sub> Not Supported:** Supplier relationship does not significantly impact operational performance.

## CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

This study sought to assess the effects of foreign procurement on performance of Ethiopian Airlines MRO service. The study was guided by research questions to establish relationship between foreign procurement and performance. The findings from this study may be imperative because, from the analysis of key variables, the researcher be able to come up with recommendations on the key variables to be considered in influencing operational performance. This chapter provides the results and findings of the primary data, which obtained through questionnaire guide. The chapter provides analysis of the obtained data with the aim to respond to the statement problem of the study.

### 5.1. Summary

The study aimed to investigate the effects of foreign procurement on the performance of Ethiopian Airlines MRO (Maintenance, Repair, and Overhaul) service. A survey was conducted among permanent employees in Addis Ababa, with a high response rate of 95.6% (217 out of 227 questionnaires returned). The respondents were predominantly male (59.4%) and young, with 75.1% aged between 25-34 years. Most held a bachelor's degree (69.6%) or a master's degree (29.0%) and had less than 5 years of work experience (51.9%). The majority of respondents worked in the MRO Shop department (64.1%).

Key findings include:

- **Supplier Sourcing:** Respondents showed strong agreement that supplier sourcing positively affects MRO performance, particularly through enhanced information flow with suppliers.
- **Information Sharing:** Effective information exchange was highly rated, although there was slightly less consensus on the completeness and adequacy of information sharing.
- **Inventory Management:** This was seen as crucial for MRO operations, though improvements in inventory level management practices and software updates were needed.
- **Supplier Relationship Management:** Respondents were satisfied with supplier relationships, but this factor did not show a significant effect on operational performance in the regression analysis.

- **Operational Capabilities:** High confidence was expressed in the operational capabilities of Ethiopian MRO, with strong satisfaction in acquiring quality components and maintaining schedules.

The regression analysis highlighted the following:

- **Information Sharing:** Most significant positive effect on operational performance.
- **Inventory Management:** Second highest positive effect.
- **Supplier Sourcing:** Significant positive effect.
- **Supplier Relationship:** No significant effect.

The model showed a very strong correlation ( $R = 0.967$ ) and explained 93.5% of the variance in operational performance ( $R\text{ Square} = 0.935$ ). The model was statistically significant ( $F\text{-statistic} = 762.083$ ,  $p\text{-value} = 0.000$ ).

## 5.2. Conclusion

In light of four foreign procurement aspects, the primary goal of this study is to examine how foreign procurement affects Ethiopian Airlines' MRO services' operational performance. Four research questions that are produced in this research were the main focus of this study's investigation result.

The first research objective of this thesis work was to examine the effect of supplier sourcing on the operational performance of Ethiopian airlines MRO services and from the finding, the researcher concludes that supplier sourcing of foreign procurement has a positive and significant effect on the operational performance of Ethiopian airlines MRO services.

The second research objective of this research work was to examine the effect of Information sharing of foreign procurement on the operational performance of Ethiopian airlines MRO services and from the finding, the researcher concludes that information sharing of foreign procurement has a positive and significant effect on the operational performance of Ethiopian airlines MRO services.

The third research objective of this thesis work was to investigate the effect of inventory management of foreign procurement on the operational performance of Ethiopian airlines MRO services and from the finding, the researcher concludes that inventory management of

foreign procurement has a positive and significant effect on the operational performance of Ethiopian airlines MRO services.

The fourth research objective of this thesis work was to investigate the effect of supplier relationship of foreign procurement on the operational performance of Ethiopian airlines MRO services and from the finding, the researcher concludes that supplier relationship of foreign procurement has no significant effect on the operational performance of Ethiopian airlines MRO services.

The study concludes that strategic sourcing, information sharing, and inventory management significantly enhance the operational performance of Ethiopian Airlines MRO service. Effective procurement strategies, robust information exchange, and efficient inventory practices are critical factors contributing to the success of MRO operations. Despite the traditional emphasis on supplier relationships, this study found that they do not significantly affect operational performance in this context.

### **5.3. Recommendations**

1. **Enhance Information Sharing:** Improve the completeness and adequacy of information sharing among stakeholders is important to ensure effective communication and coordination. the managements of the company shall Enhance information sharing in the airlines necessitates a multifaceted approach. Standardization of procedures and formats, alongside the adoption of advanced technologies like cloud-based platforms and data analytics, facilitates seamless communication across stakeholders. Collaborative platforms and regulatory frameworks ensure secure exchange of safety-relevant data while fostering partnerships and alliances among industry players. Training programs instill a culture of transparency and awareness, supported by formal data sharing agreements that protect confidentiality.
2. **Optimize Inventory Management:** Focus on improving inventory level management practices and updating inventory management software to maintain efficiency and reduce delays. Management need to execute leverage demand forecasting techniques and adopting just-in-time inventory principles, companies can minimize excess stock while ensuring timely availability of critical parts. Collaborative relationships with suppliers enhance lead times and quality, supported by inventory segmentation

strategies that prioritize resources for high-demand items. Utilizing inventory management software and optimization tools streamlines replenishment processes and facilitates real-time tracking of inventory levels. Additionally, implementing ABC analysis informs resource allocation, while warehouse layout optimization and continuous improvement initiatives further enhance efficiency and cost-effectiveness across the supply chain.

3. **Strengthen Supplier Sourcing:** Continue to develop and refine procurement supplies to ensure the acquisition of quality and cost-effective supplies. Continue to develop and refine procurement supplies to ensure the acquisition of quality and cost-effective suppliers. Strengthening supplier sourcing involves identifying and selecting reliable suppliers, negotiating favorable terms, and fostering collaborative relationships to ensure quality, reliability, and cost-effectiveness in the supply chain.
4. **Review Supplier Relationship Management:** While currently not a significant factor, ongoing evaluation and improvement of supplier relationships could still provide benefits, especially in ensuring reliability and support during disruptions. Supplier relationship management foster collaboration and clear communication this lead to cost reduction through better negotiation and efficiency gains. Supplier relationship management also helps mitigate risks such as supply disruptions and quality issues while promoting innovation and collaboration with suppliers. By enhancing flexibility and strategic alignment, Supplier relationship management enables organizations to respond effectively to market changes and achieve their objectives. Ultimately, Supplier relationship management contributes to customer satisfaction by ensuring the availability of high-quality products and services.
5. **Focus on Training and Development:** Given the young and educated workforce, invest in continuous training and development programs to enhance skills and knowledge, particularly in areas related to strategic sourcing and inventory management. Training and development are crucial in aviation for ensuring safety, efficiency, and competency among personnel. Continuous training keeps aviation professionals updated with the latest aviation regulations, technologies, and procedures, enhancing their skills and knowledge. This focus ensures that pilots, maintenance technicians, air traffic controllers, and other personnel are equipped to handle diverse challenges and complexities in the aviation environment, ultimately contributing to safer flights and operations.

By addressing these areas, Ethiopian Airlines MRO service can further improve its operational performance and maintain its competitive edge in the aviation industry.

#### **5.4. Suggestions of Areas for Future Study**

This study was conducted on Ethiopian airlines MRO division and other researchers may be considering other division or other industry. This research approached only used quantitative methods and other researcher may be using mixed approach to find triangulation source of data. This research considered four variables that affect operational performance. Future researchers can investigate other variables that might influence on operational performance.

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# **APPENDIX**

## Appendix: Questionnaire

**Addis Ababa University School of Commerce**  
**Department of Logistics & Supply Chain Management Research**  
**Questionnaire on the effects of foreign procurement on**  
**operational performance of Ethiopian Airlines MRO service**

A Questionnaire will be filling by Ethiopian airlines MRO shop and PSCM.

### **Dear Respondent,**

I am Yosef Samson. This study will be conducted as part of a research project that will be submitted for the partial fulfillments of a master's degree in Logistics and supply chain Management. This questionnaire is designed to gather information about the Effects of Foreign Procurement on the operational performance of Ethiopian airlines MRO Services: This questionnaire is intended for collecting firsthand information or data on the topic mentioned on the above. Your active participation in providing the required data is very essential for the success of this study. The information you provide will be kept confidential and used only for academic purposes. As a result, I'd like to express my gratitude in advance for your participation and willingness to share your busy time.

### **Answering Instructions:**

- ✓ Please try to answer all the questions listed below.
- ✓ It is not necessary to write your name.
- ✓ You can mark your choice with a tick (✓) on the blank to express your opinion.
- ✓ The item has five-point Likert type scales, with the following meaning:
  - Strongly Disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly Agree

**Part A: Demographic Information**

1. Gender?

A. Male \_\_\_\_\_

B. Female \_\_\_\_\_

2. Your job position in the organization?

A. Staff/ Tech \_\_\_\_\_

B. Team leader \_\_\_\_\_

C. Manger \_\_\_\_\_

3. Age?

A. 24 & below \_\_\_\_\_

B. 25 – 34 \_\_\_\_\_

C. 35 – 44 \_\_\_\_\_

D. Above 45

4. Educational qualification?

A. Diploma \_\_\_\_\_

B. Bachelor's degree \_\_\_\_\_

C. Master's degree \_\_\_\_\_

D. PhD \_\_\_\_\_

5. How long have you worked for Ethiopian Airlines?

A. 5 and less than Years \_\_\_\_\_

B. 6 up to 9 Years \_\_\_\_\_

C. 10 and more than Years \_\_\_\_\_

6. Your Department

A. MRO Shop \_\_\_\_\_

B. PSCM \_\_\_\_\_

**Part B: The Effects of Foreign Procurement on the operational performance of Ethiopian airlines MRO Services.**

Please rate these questions based on your opinion. 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree		Scale				
<b>Supplier Sourcing</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1.1	Supplier sourcing has direct effect on the performance of Ethiopian MRO operation.					
1.2	There is a continuous update, communication and improvement programs with the major Ethiopian airline key suppliers and manufacturers.					
1.3	Ethiopian MRO actively involves with key manufacturers and suppliers in new capability development processes.					
1.4	Most of the time suppliers' agreements and commitment letters are reviewed, update and amended on time before expiration period.					
1.5	Ethiopian MRO could get huge benefit in using supplier sourcing to select competitive and capable suppliers.					
1.6	In the process of awarding supplier's product quality, cost, Lead time, and payment terms are the core points of agreements.					
1.7	Effective supplier sourcing practice implementation leads to improve performance in Ethiopian MRO operations.					
<b>Information Sharing</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
2.1	The existence of enhanced information flow with suppliers has a direct impact on the performance of Ethiopian MRO operations.					
2.2	Suppliers share information and knowledge on time when new aviation technology invented, or repair capability developed.					
2.3	Ethiopian MRO and key suppliers are exchange information that helps to establish MRO maintenance task, Like AD and SB.					
2.4	Ethiopian MRO and key suppliers keep each other informed about any events or changes that may affect the performance of MRO operations.					
2.5	Ethiopian MRO always inform for his suppliers in advance to make changes on some needs or requirements.					
2.6	There is an accurate and timely information sharing among ET MRO's and suppliers.					

2.7	There is a complete and adequate information sharing among ET MRO's and suppliers.					
2.8	Information exchange between suppliers and ET MRO is reliable and credible.					
<b>Inventory Management</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
3.1	Inventory management has direct effect on the performance of Ethiopian MRO operation.					
3.2	Enhanced packaging practices and protection have been implemented for aircraft components that are designed for incoming and outgoing shipments.					
3.3	Ethiopian MRO inventories are sorted and stored according to the standard coding and nature of aircraft components.					
3.4	Dangerous goods (DG) and non-hazmat items are kept in separate and gives special care for those DG item.					
3.5	The shelf life of the inventories is always checked and updated on time, both on the shelf and in the system.					
3.6	Ethiopian MRO uses FIFO method for lubricant items like oils, greases, natural or synthetic oils and chemical items.					
3.7	Ethiopian MRO warehouses are free from theft exposure and aircraft items are placed on the secured spot.					
3.8	Inventory management software's are always updated, and accessibility is only for authorized personals.					
3.9	ET MRO has improved inventory level management practices to keep the company at an optimal production level.					
<b>Supplier Relationship</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
4.1	Supplier relationship management has a direct effect on the performance of Ethiopian MRO operation.					
4.2	Supplier Relationship Management involves engagement and collaboration with key suppliers to improve the relationship with Ethiopian MRO.					
4.3	Ethiopian MRO Supplier relationship management fully enforces both parties to comply for the agreements and commitment letters.					

4.4	Maintaining good relationships with high-performing aviation part suppliers benefits Ethiopian MRO by allowing them to obtain higher-quality products at a lower cost and with shorter lead times.					
4.5	Evaluating supplier performance can help Ethiopian MRO to reduce risk of maintenance disruptions and operational delays.					
4.6	Due to good implementation of supplier relationship management ET MRO benefited by price consistency, AOG support and reliability.					
Please tick "√" to indicate your level of agreement with the statements and the extent to which your organization has experienced operational outcomes as a result of implementing foreign procurement. 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree.		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Operation performance</b>						
5.1	ET MRO acquires aircraft components and tools at a reasonable price.					
5.2	ET MRO can get quality aircraft parts and tools that are approved by FAA and EASA whenever required.					
5.3	Sometime unforeseen events can disrupt the normal operation of Ethiopian MRO and make plans off track; in this case, key suppliers are willing to fully support Ethiopian MRO operations.					
5.4	Ethiopian MROs receive purchased airplane parts and tools in a timely manner.					
5.5	Most Of the time Ethiopian MRO receives repaired and Exchange units from supplier in short turnaround time.					
5.6	Ethiopian MROs typically complete aircraft maintenance within the time frame specified and release them for flight on time.					
5.7	Ethiopian MRO can get cost benefit and price advantage due to smooth interaction with suppliers.					

**Thank you for your time and participation!!**