



Addis Ababa University
College of Business and Economics
School of Commerce
Department of Logistics and Supply Chain Management

**FACTORS AFFECTING THIRD-PARTY LOGISTICS SERVICES IN THE
HUMANITARIAN SUPPLY CHAIN: THE CASE OF WORLD FOOD
PROGRAMME, ETHIOPIA**

Simeret Yemane Berhe

June 2023
Addis Ababa, Ethiopia

FACTORS AFFECTING THIRD-PARTY LOGISTICS SERVICES IN THE HUMANITARIAN SUPPLY CHAIN: THE CASE OF WORLD FOOD PROGRAMME, ETHIOPIA

Simeret Yemane Berhe

Department of Logistics and Supply Chain Management

School of Commerce

College of Business and Economics

Addis Ababa University

Under the Supervision of Tesfaye Belay

A Thesis Submitted to the Department of Logistics and Supply Chain Management, School of Commerce, College of Business and Economics, Addis Ababa University in Partial Fulfillment for the Requirements of a Master of Art in Logistics and Supply Chain Management

June 2023
Addis Ababa, Ethiopia

ORIGINAL LITERARY WORK DECLARATION

This is to certify that the thesis prepared by Simeret Yemane Berhe, entitled: “**Factors Affecting Third-Party Logistics Services in the Humanitarian Supply Chain: The Case of World Food Programme, Ethiopia**”, and submitted in partial fulfillment of the requirements for the Degree of Master of Art in Logistics and Supply Chain Management complies with the regulations of the University and meets the accepted standards concerning originality and quality. I, Simeret Yemane Berhe, declare that this thesis is my original work, complies with the regulation of the university, fulfills the accepted standard of thesis quality and all the material resources I used during the thesis write-up had been duly acknowledged.

Advisor

Signature

Date

Ass. Professor: Tesfaye Belay

Internal Examiner

Signature

Date

Dr. Zelalem Bayisa

External Examiner

Signature

Date

Dr. Gebre Sorsa

ABSTRACT

Humanitarian supply chain management (HSCM) in general, and collaboration and coordination among humanitarian organizations (HOs) in particular, have drawn substantial attention in recent years in both academics and practice. However, to save more lives and provide relief to those in need in the quickest amount of time feasible, humanitarian supply chain (HSC) actors are looking to maximize the advantages of their organizations and services in light of the financial crisis declining income. The main purpose of the study is to evaluate Factors affecting 3PL services in the WFP of Ethiopia's HSC. The study used quantitative approaches to produce a theme of ideas and numerical data that can be transformed into frameworks and numbers, respectively. And the sample was chosen at random from a total population. After the data is checked, the descriptive data was analysed and coded by the use of the IBM Statistical Package for the Social Sciences (SPSS) latest version. According to the study's findings, the humanitarian supply chain's effectiveness is more strongly influenced by planning. Adoption of sound and appropriate planning techniques plays a striking role and has developed into a crucial enabler to enhance an organization's supply chain performance. Planning must be carefully crafted because it can have a significant positive or negative impact on the organization's performance as a whole. As a result, during planning, consideration should be given to operational and strategic considerations as well as tangible and intangible elements that could improve an organization's success.

Key Words: third-party, logistics services, supply chain, WFP

ACKNOWLEDGMENTS

Praise and gratitude are due to the All-Powerful, who made it possible for us to arrive at this day. My sincere gratitude goes out to my adviser for his unwavering support and helpful suggestions in a variety of areas. I also have admiration and respect for the members of the Department of Logistics and Supply Chain Management.

TABLE OF CONTENTS

| | |
|--|--------|
| ORIGINAL LITERARY WORK DECLARATION | iii |
| ABSTRACT..... | iii |
| ACKNOWLEDGMENTS | v |
| LIST OF TABLES..... | ix |
| LIST OF FIGURES..... | x |
| ABBREVIATIONS AND ACRONYMS | xi |
| CHAPTER ONE | - 1 - |
| 1. INTRODUCTION | - 1 - |
| 1.1. Background of the Study..... | - 1 - |
| 1.2. Background of the Organization | - 3 - |
| 1.3. Statement of the Problem | - 4 - |
| 1.4. Research Questions | - 5 - |
| 1.5. Objectives | - 5 - |
| 1.5.1. General Objective | - 5 - |
| 1.5.2. Specific Objectives | - 6 - |
| 1.6. Significance of the Study | - 6 - |
| 1.7. Scope of the Study | - 7 - |
| 1.8. Limitations of the Study..... | - 8 - |
| 1.9. Definition of Terms..... | - 8 - |
| 1.9.1. Conceptual Definitions | - 9 - |
| 1.9.2. Operational Definitions..... | - 9 - |
| 1.10. Organization of the Research Proposal..... | - 9 - |
| CHAPTER TWO | - 10 - |
| 2. LITERATURE REVIEW | - 10 - |
| 2.1. Theoretical Review | - 10 - |
| 2.1.1. 3PL..... | - 11 - |
| 2.1.2. The benefits of 3PL..... | - 12 - |
| 2.2. Empirical Review..... | - 12 - |
| 2.3. Stakeholders | - 14 - |
| 2.4. Conceptual Framework..... | - 15 - |
| CHAPTER THREE | - 16 - |

| | | |
|--------|--|--------|
| 3. | RESEARCH METHODOLOGY | - 16 - |
| 3.1. | Study Area | - 17 - |
| 3.2. | Research Approach | - 18 - |
| 3.3. | Research Design | - 18 - |
| 3.4. | Population | - 18 - |
| 3.5. | Sources of Data | - 19 - |
| 3.5.1. | Primary Source | - 19 - |
| 3.5.2. | Secondary Source | - 19 - |
| 3.6. | Sample Size and Sampling Procedures | - 19 - |
| 3.7. | Data Collection | - 20 - |
| 3.8. | Statistical Analysis | - 20 - |
| 3.9. | Ethical Considerations | - 21 - |
| | CHAPTER FOUR | - 21 - |
| 4. | RESULT AND DISCUSSION | - 21 - |
| 4.1 | Response rate | - 22 - |
| 4.2 | The Demographic information | - 22 - |
| 4.3 | Factors Affecting Humanitarian Supply Chain Performance/Core Competency of WFP | - 23 - |
| 4.3.1 | Humanitarian Supply Chain Planning | - 24 - |
| 4.3.2 | Communication | - 26 - |
| 4.3.3 | Coordination | - 28 - |
| 4.3.4 | Transportation Factors | - 30 - |
| 4.3.5 | Infrastructure Factors | - 32 - |
| 4.4 | Summary of the Means | - 33 - |
| 4.5 | Treatment of missing data, outliers | - 33 - |
| 4.6 | Validity and Reliability | - 34 - |
| 4.6.1 | Validity | - 34 - |
| 4.6.2 | Reliability | - 35 - |
| 4.7 | Correlation Analysis | - 35 - |
| 4.1 | Analysis of the Factors Affecting Humanitarian Supply Chain Performance in WFP | - 37 - |
| 4.1.1 | Multiple Linear Regression Analysis | - 38 - |
| 4.1.2 | Model Summary | - 38 - |
| 4.1.3 | Normality Test | - 38 - |

| | | |
|--------------|---|--------|
| 4.1.4 | Multicollinearity Test..... | - 40 - |
| 4.1.5 | Model estimation..... | - 41 - |
| CHAPTER FIVE | | - 43 - |
| 5 | SUMMARY, CONCLUSIONS AND RECOMMENDATIONS..... | - 43 - |
| 5.2 | Summary of the findings..... | - 43 - |
| 5.3 | Conclusion | - 45 - |
| 5.4 | Recommendation | - 46 - |
| 5.5 | Further Study | - 47 - |
| 5. | REFERENCES | - 48 - |
| 6. | APPENDIX..... | - 54 - |
| | Part I..... | - 55 - |
| | Part II | - 56 - |

LIST OF TABLES

Table 1.....- 22 -
Table 2:.....- 25 -
Tale 2.....- 26 -
Table 3:.....- 28 -
Table 4:.....- 30 -
Table 5:.....- 32 -
Table 6:.....- 33 -
Table 7.....- 35 -
Table 8:.....- 36 -
Table 9:.....- 38 -
Table 9.....- 39 -
Table 10:.....- 40 -
Table 11:.....- 41 -

LIST OF FIGURES

| | |
|-------------|--------|
| Fig 1..... | - 16 - |
| Fig 2..... | - 25 - |
| Fig 3:..... | - 28 - |
| Fig 4:..... | - 30 - |
| Fig 5:..... | - 32 - |

ABBREVIATIONS AND ACRONYMS

| RN | ABBREVIATIONS AND ACRONYMS | |
|-----|----------------------------|--|
| 1. | 3PL | Third-Party Logistics |
| 2. | AAH | Action Against Hunger |
| 3. | AAU | Addis Ababa University |
| 4. | APICS | Association for Supply Chain Management |
| 5. | BSP | Bilateral Service Provision |
| 6. | CARE | Cooperative for Assistance and Relief Everywhere |
| 7. | CISP | Comitato Internazionale Per Lo Sviluppo Dei Popoli |
| 8. | COOPI | Cooperazione Internazionale |
| 9. | CSP | Country Strategic Plan |
| 10. | DRC | Danish Refugee Council |
| 11. | EFA | Exploratory Factor Analysis |
| 12. | FHI 360 | Family Health International 360 |
| 13. | HI | Humanity and Inclusion |
| 14. | Hos | Humanitarian Organizations |
| 15. | HSC | Humanitarian supply chain |
| 16. | HSCM | Humanitarian supply chain management |
| 17. | ICRC | International Committee of the Red Cross |
| 18. | IDPs | Internally Displaced People |
| 19. | IFRC | International Federation of Red Cross and Red Crescent Societies |
| 20. | IT | Information Technology |
| 21. | LCs | Logistic Clusters |
| 22. | LETs | Logistics Emergency Teams |
| 23. | MTI | Medical Teams International |
| 24. | NGO | Non-Governmental Organization |
| 25. | NRC | Norwegian Council Refugee |
| 26. | PSNP | Productive Safety Net Programme |

| | | |
|------------|--------|--|
| | | |
| 27. | SCI | Save the Children International |
| 28. | SCM | Supply Chain Management |
| 29. | SDG | Sustainable Development Goal |
| 30. | SOC | School of Commerce |
| 31. | TNT | Thomas Nationwide Transport |
| 32. | UN | United Nations |
| 33. | UNFAO | United Nations Food and Agriculture Organization |
| 34. | UNHRD | United Nations Humanitarian Response Depot |
| 35. | UNICEF | United Nations International Children’s Emergency Fund |
| 36. | UNOCHA | United Nations Office for the Coordination of Humanitarian Affairs |
| 37. | UPN | United Parcel Service |
| 38. | WFP | World Food Programme |
| 39. | WHO | World Health Organization |
| 40. | WVE | World Vision Ethiopia |

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

In recent years, both academics and practitioners have given much attention to humanitarian supply chain management (HSCM) in general and collaboration and coordination among humanitarian organizations (HOs) in particular (Bealt et al., 2016; Ruesch et al., 2022). However, in order to save more lives and offer aid to people in need in the shortest possible period, humanitarian supply chain (HSC) players are attempting to maximize the benefits of their organizations and services in light of the financial crisis's diminishing income (Paciarotti et al., 2021).

Specialized logistics expertise is necessary due to the complexity of the logistical infrastructure during humanitarian intervention, the need for effective procedures, and the potentially rocky collaboration various HSC actors (Diehlmann et al., 2021). Additionally, donors are increasingly putting pressure on HOs due to a perceived lack of accountability and transparency (Davila et al., 2008). Additional significant factors that explain why HOs like United Nations Children's Fund (UNICEF), The World Food Programme (WFP), the United Nations Humanitarian Response Depot (UNHRD), and the International Federation of Red Cross and Red Crescent Societies (IFRC) collaborate to develop logistics concepts for other humanitarian organizations (HOs), share resources, and try to function as logistical alliances or service providers that emphasize dependability, flexibility, and timeliness of delivery (Dufour et al., 2018; Keshvari Fard & Papier, 2021).

Despite the advice in strategic literature used by businesses should concentrate on the main competencies of them, many HOs regrettably lack these capabilities in their core competencies (Fattahi et al., 2020). But in the 1990s, outsourcing logistics operations became popular in the business world (Kyengo & Kilika, 2017). Various phrases, like "contract logistics," "third party logistics" (3PL), or "logistics alliances" are used to refer to this outsourcing of logistics (Marasco,

2008). Services for customs clearance, warehousing, and the information flow that goes along with it for numerous industries, are all included in 3PL activities (Darko & Vlachos, 2022). A 3PL includes using outside businesses to carry out logistical tasks that have often been handled within an organization (Fairchild, 2016).

The third party's (logistics provider's) operations may encompass all of the logistics process's steps or just a few of them. A "logistics alliance," which is an overtime cooperative arrangement between a shipper and a logistical provider, aims to provide different logistics services, like transportation, warehousing, inventory control, distribution, and other value-added operations (Darko & Vlachos, 2022; Payaro & Papa, 2017). A 3PL relationship promotes collaboration when bespoke solutions are tailored to a specific sector or customer and, in most circumstances, the profits or risks may equitably share between two partners. These developments increase customer satisfaction, allow customers network connectivity to the world for shopping and getting their goods delivered, and save labor and asset costs (Tien et al., 2019).

The aforementioned definition emphasizes the strategic aspect of the idea and presupposes that several requirements must be satisfied for the relationship between the customer and supplier of logistical operations to be referred to as a 3PL. 3PLs provide a way for supply chain participants to delegate particular tasks, including warehousing and shipping, to a third party with specialized knowledge in those tasks. To foster "healthy" competition, several performers offer these services. The 16th edition of the Association for Supply Chain Management (APICS) Dictionary discussed about 3PL that it incorporates teams of buyers and suppliers working with a delivery service provider. This outside entity could offer additional supply chain expertise (APICS, 2023).

The choice to concentrate on core expertise is the most compelling justification for delegating logistics tasks to a third party (APICS, 2020; Mohiuddin & Su, 2013). But the relationships between shippers and logistics providers have undergone a significant transformation recently (Cichosz et al., 2020). Previously, the main driving forces were to lower costs and free up money for other uses. Today, the main driving forces are to expand market coverage, boost service quality, or become more adaptable to consumers' changing needs (Dufour et al., 2018). The following queries should be raised and handled; what are the costs right now? What knowledge of clients does the contractor have? What unique qualities does the contractor possess? Will the contractor, if necessary, hire the partners with the highest qualifications (APICS, 2020)?

1.2. Background of the Organization

Ethiopia has significantly advanced its development over the past 20 years, reducing poverty and boosting spending on essential social services. However, food insecurity and malnutrition remain serious issues on a national level, with an estimated 20.4 million people currently in need of food assistance. Included in this are individuals who were internally displaced (IDPs), compelled to leave their homes due to the nation's violent north and its severe drought in the south and southeast (WFP, 2023).

Despite these challenges, the five-year Growth and Reform Plans of the Government of Ethiopia aim to bring the country to middle-income level by 2025 by maintaining strong growth and speeding structural reform. This goal is supported by WFP through a range of activities targeting at disadvantaged populations experiencing both acute and chronic food insecurity, such as refugees & internally displaced people (IDPs), as well as those who are at risk of malnutrition (WFP, 2023).

Additionally, WFP supports the Ethiopian government's Productive Safety Net Programme (PSNP), which provides millions of rural households with a history of chronic food insecurity with ongoing, multi-year assistance in an effort to wean them off of requiring emergency food aid. In addition to supporting the work of the Ethiopian government and addressing the most pressing concerns for food security, WFP provides unconditional food and cash transfers to the most vulnerable households across Ethiopia, school feeding programs, and assistance to smallholder farmers in their efforts to adapt to climate change (WFP, 2023).

The United Nations (UN) created nine (later eleven) cooperative platforms for humanitarian action (known as "clusters") in 2005 to address the issue of agency coordination. The Logistic Clusters (LCs) function as a humanitarian coordinator on the ground to enhance and encourage cooperation among Humanitarian organizations that provide transportation and storage facilities, in order to increase overall disaster response efficiency and effectiveness. The LCs and Bilateral Service Provision (BSP) as one of the entities are also under the control of WFP Supply Chain. BSP offers a range of logistics services to international NGOs and the government using a full-cost recovery method. BSP offers logistics services such warehousing, purchasing, fumigation, fuel provision, land transport, and airfreight in several regions of the world in response to requests from humanitarian organizations (WFP, 2023)

1.3. Statement of the Problem

On-site and off-site logisticians must support and manage supply chains for HOs for this to be done effectively. The variety humanitarian logistics procedures during humanitarian assistance efforts entails substantial costs: roughly forty to sixty percent but can increase percentage of 80 among the overall expenditures – can go with logistical performance, including procurement costs and enhancing corporate focus, utilizing more modern logistics technology, warehousing effectively for quick replenishment, improving customer service, and increasing resource, technological, and business flexibility are essential. As a result, effectively coordinated and optimized humanitarian logistics have the potential to reduce complexity and lead times, increase service quality, reduce costs associated with logistics, and improve resource allocation.

Rahman et al.'s paper from 2019 listed fourteen obstacles for international 3PL service providers operating in China, which were broken down into four categories: the economic, technological, business, and human resource environments (Rahman et al., 2019). In another study conducted on Swedish 3PL, a few challenges were perceived by the studied companies (Björklund & Forslund, 2019). It is noteworthy that the most frequently outsourced activities continue to be those that are more transactional, operational, and repetitive even if the 3PL business has grown overall as a consequence of an increase in outsourcing activities. The relationship between shippers and 3PL providers, as well as the capacity to get beyond existing obstacles that are lowering the effectiveness of the logistics system, are key factors in whether redesigning or designing the system will be successful (Shi et al., 2019). Not much has been researched on logistics outsourcing in emerging countries, particularly in the humanitarian sector in Ethiopia, significant work has been done in identifying the actual difficulties that these 3PL companies encounter when conducting business.

There are several instances of 3PL suppliers succeeding in the commercial sphere. But it's unclear how likely it is that such a tactic will succeed in a humanitarian context. Even though HOs have used 3PL and 4PL logistical activities, Ethiopian studies that assess the system's worth have not been particularly recognized. Therefore, the goal of this study was to ascertain how and to what extent the 3PL concept can increase the effectiveness of supply chains for humanitarian aid.

1.4. Research Questions

This study focused on the above listed questions:

- What are the effects of planning on the organization's supply chain performance?
- What are the effects of inter-intra organization communication on the organization's humanitarian supply chain performance?
- What are the impacts of coordination with staffs and partners and other organizations on the humanitarian supply chain performance of the organization?
- What are the effects of infrastructure factors on the supply chain performance of WFP?
- What are the effects transportation facilities related factors on the humanitarian supply chain performances of the organization?

1.5. Objectives

1.5.1. General Objective

- To assess Factors affecting 3PL services in the WFP of Ethiopia's HSC

1.5.2. Specific Objectives

- To investigate the effects of planning on the organization's supply chain performance
- To examine the effects of inter-intra organization communication on the organization's humanitarian supply chain performance.
- To determine the key drivers for outsourcing value chain management within an organization to 3PL.
- To assess the impacts of coordination with staffs and partners and other organizations on the humanitarian supply chain performance of the organization.
- To assess the effects of infrastructure factors on the supply chain performance of WFP

1.6. Significance of the Study

The significance of 3PL logistics activities among the management of the HSC in WFP, Ethiopia, was examined in this study. By improving the logistics services already provided and planned to be provided in the future, the study's findings helps the organization take the necessary actions to increase the support of HOs and governmental institutions. To increase efficiency through better coordination among the participants in the HSC and outsourcing their tasks to service providers,

the study offers managerial insights into applying a 3PL idea in this situation. This research report gives other researchers direction and guidance for their future investigations on the subject because there hasn't been enough prior research in this setting.

1.7. Scope of the Study

In our country WFP Supply Chain division, BSP, and LCs are the units engaged in delivering logistics service support to several HOs while supporting the achievement of the SDG and CSP in collaboration with other units in the division as required. Accordingly, the study focused on these subunits' core logistics activities being delivered on behalf of HOs and government entities. The study was conducted at the UN WFP Country Office to assess Factors affecting 3PL logistics activities in HSCM.

1.8. Limitations of the Study

Due to various settings and circumstances, every study article has its own unique set of constraints. The current study was an institution-based survey (i.e. WFP country office Supply Chain division), which influence the inferential power of the findings. It is not addressed that how much and in what ways might the 3PL concept improve HSCM performance.

1.9. Definition of Terms

1.9.1. Conceptual Definitions

Procurement: The process of acquisition of goods services and works.

Logistics: The portion of supply chain management that manages the handling, storage, and forward and reverse movement of commodities between origin and distribution points.

Warehousing: The processes involved in receiving, storing, and shipping commodities to and from places used for production or distribution

WFP Bilateral Service Provision: a coordination unit that provides non-programmatic activities that strengthen WFP's strategic positioning as a global humanitarian partner, providing technical assistance and technical expertise to support member nations' efforts to achieve SDG and CSP.

Logistics Cluster: An organization dedicated to handling logistical demands in humanitarian contexts by guaranteeing coordination, information management, and, if appropriate, allowing access to logistics services has been activated to provide an efficient and successful emergency response.

1.9.2. Operational Definitions

Organization: United Nations World Food Programme

Partners: Governmental organizations, national NGOs, and international NGOs to whom logistics services are provided.

Service Providers: 3PL organizations

1.10. Organization of the Research Proposal

There are five chapters in this research. The opening chapter comes first. It includes the study's history, which provides context for 3PL in general. The problem statement provides an explanation of why this research will be done. Based on the research questions stated in the problem statement, the general and specific study objectives are also presented in this chapter. This chapter also discusses the importance of the study's focus on those who stand to gain from its results.

A review of related literature is the main focus of the second chapter. It includes theoretical, empirical, and conceptual components that serve as the study's framework and supporting data. It discusses the topic of the study and other pertinent problems. The third chapter, "Research Methodology," focuses on the data sources used, the best sampling strategies, and how the information will be presented and analyzed. The study proposal's work plan is found in Chapter 4. The final chapter, Chapter 5, discusses the financial breakdown and criticizes the meticulous budget required to carry out the investigation.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Theoretical Review

In order to effectively, efficiently, and quickly provide beneficiaries with health care, food, shelter, water, medications, and sanitation in the event of a disaster, supply chain management is crucial. According to Tomasini and Van Wassenhove (2009), transportation and procurement expenses make up about 80% of the expenditures associated with logistics for relief efforts. Humanitarian

organizations (HOs) are under pressure to give relief in a proper and economical manner due to the rise in natural catastrophes and the ensuing humanitarian emergencies (Tomasini et al., 2009).

Performance management is essential for an efficient and effective humanitarian supply chain. Although many studies are primarily anecdotic in character and lack more robust research methodologies, it is generally accepted that organizations using performance management outperform those that do not. Performance measurement is the process of calculating the efficiency and effectiveness of an operation; it involves using a collection of indicators to calculate the efficiency and effectiveness of an activity, two key objectives of businesses or organizations (Matthias Klumpp, 2014).

Performance evaluation is essential for guiding strategic, tactical, and operational decision-making, as well as for carrying out and achieving strategic objectives. By reporting the current level of performance and contrasting it with the desired level of performance, it makes effective control and correction easier while making decision. It is crucial for improving decision-making, streamlining interactions between third party logistics, supply chain participants, and raising supply chain transparency. Other objectives include tracking progress (demonstrating whether planned improvements actually occurred), identifying success, determining whether customer needs are met, identifying problems, bottlenecks, or waste, and determining where improvements are necessary (Snow, 2019).

2.1.1. 3PL

Aspects of 3PLs have most likely existed for hundreds or perhaps thousands of years. According to the Council of Supply Chain Management Professionals, the 3PL acronym first appeared forty years ago. The council stated in a glossary that "the term 3PL was first used in the early 1970s to identify intermodal marketing companies in transportation contracts." Contracts for transportation up to that point had only included the shipper and the carrier as participants (Mueller, 2019).

A third-party logistics provider (3PL) manages, oversees, and offers logistics services on behalf of a shipper. The importance of 3PLs to the global economy has multiplied in recent decades. Outsourced logistics services, which include everything involving administration of one or more aspects of procurement and fulfillment activities, are provided by 3PL (third-party logistics)

providers. In the world of business, the term "3PL" refers to any service agreement that includes the storing or shipment of goods. A 3PL service might be a single provider, like shipping or storage in a warehouse, or it can be a system-wide collection of services that can handle supply chain management (Logistics Blogs, 2019).

Contemporary 3PL enterprises increasingly try to affect the actions of other companies on the market and try to develop the proper structure of added value in logistics processes. As such, 3PL enterprises continuously improve their offering of services to gain a competitive advantage in the logistics-service-provider market; it also includes the specialized services offered on the market (Eric Owusu Darko, 2022).

2.1.2. The benefits of 3PL

Utilizing a third-party logistics (3PL) provider to handle logistics tasks like packaging, warehousing, fulfillment, and distribution results in cost savings because you no longer need to maintain a warehouse or hire people to oversee supply chain activities, for example. A 3PL provider most likely performs better on tasks like shipping while also having an easier time scaling its business. A fulfillment center will be better able to satisfy demand if the publishing business in the previous example unexpectedly had to ship more copies of a well-known title than if the publisher itself had to do so (Rheude, 2023).

2.2. Empirical Review

Providers of logistics services in humanitarian supply chains have changed, and new service categories as well as operators have appeared within the logistics sector. It is clear that HOs provide logistics services in general; for example, WFP transports then convey HOs' relief supplies and UNHRD or IFRC has set up branches for HOs or e-procurement in the UN.

Growing interest in outsourcing supply chain activities for humanitarian help might be seen as a means of gaining a competitive edge. Rada and Vandermerwe (1988) first used the word servitization. Servitization is the standardization and high customization of a range of customer-focused goods, services, self-service, and information. Heaslip outlined four areas in 2013 where academics in humanitarian logistics should apply their research to services in the field: Service

standardization, servitization, humanitarian logistics service improvements, and humanitarian organizations as providers of logistics services. Heaslip (2013) adapted the four servitization strategies outlined by Baines et al. (2009) for the humanitarian supply chain: embedded services, comprehensive services, integrated solutions, and distribution control.

Logisticians both on-site and off-site support and supply chain management are essential for the effective administration of humanitarian supply networks. The many different humanitarian logistics procedures involve large costs: simply from a percent of forty to sixty that can add to a percent of 80 of the overall expenditures - with logistical activities, including procurement prices. As a result, effectively coordinated and optimized humanitarian logistics can reduce complexity and lead times, increase service quality, reduce costs associated with logistics, and improve resource allocation.

According to Gebauer et al. (2006), expanding service offerings, starting with product-related services (such as a catalog of WFP and IFRC items), and moving on to services that support the client as well as relationship marketing are all recommended. The following are four logistics ideas that we outline in order to effectively optimize and organize humanitarian logistics, ensure cooperation, and boost customer satisfaction.

Agility, A.P. Moeller Maersk, UPS, and TNT Express are the four firms that make up the Logistics Emergency Teams (LETs), which were established in 2008. In the field of humanitarian logistics, these four companies compete against one another on a commercial level (Cozzolino, 2012). They are skilled in carrying out humanitarian aid activities and have a variety of CSR programs. After a tragedy, LETs help with emergency response logistics in the humanitarian logistics sector. In this phase, LETs provide logistics experts, logistics knowledge, and assets like warehouses, trucks, forklifts, and transportation services to the relief community in the first three to six weeks following the occurrence of a disaster, under the coordination of WFP as the global leader of the logistics cluster (LogCluster, 2008).

Logistics Cluster: To address the issue of agency coordination, the UN established nine (later 11) collaborative platforms of humanitarian operations (referred to as "clusters") in 2005. In order to improve and foster collaborations amongst humanitarian actors in the area of providing warehousing and transport capacity to increase overall emergency response efficiency and

effectiveness, the Logistics Cluster, which has its headquarters in Rome, acts as a humanitarian coordinator at the field level. In order to ensure effective and efficient disaster response logistics, the Logistics Cluster is in charge of coordination, information management, supply of training for business partners, development of tools to boost capacity, and provision of logistics services. (LogCluster, 2013).

DHL DRT: The DHL DRTs intervene to address a potential lack of coordination and collaboration in last-mile distribution of humanitarian aid. Typically, during crisis response, supplies like food, medical equipment, and tents arriving from all over the world quickly clog regional airports. There is frequently no predetermined catastrophe plan for handling such circumstances. The Disaster Response Teams (DRTs) and the UN Office for Coordination of Humanitarian Affairs (UNOCHA) work closely together. The DRTs are made up of 400 employee volunteers from different countries who have received specialized training to deal with the difficulties of deployment in the wake of a disaster. Members of DRT teams assist in overseeing the logistics of supplies for disaster relief that arrive at airports. They handle inbound relief supplies, set up and manage warehouses, which involves sorting and stocking products, and work with local authorities and airport workers.

DHL currently employs three DRTs. After being called, the teams are prepared for deployment within 72 hours. The idea of DHL help & relief has come to light as a supply chain remedy for humanitarian relief activities. For the three phases of disaster management, such as preparation, post-disaster, and regeneration and development of a region ravaged by a natural disaster, the logistics professionals offer logistics services to the international relief, humanitarian, and development sector. Following a thorough review of the supply chain, DHL chooses the various logistics providers' actions for each stage (DPDHL, 2014).

2.3 Stakeholders

Stakeholders are people who have an interest in a plan that a business or organization is pursuing because they will be impacted by it in some manner and want to have a say in it. They may gain from the project, in which case they will be positive and supportive; alternatively, the project may hurt their interests or they may believe it will have a negative effect on them, in which case they will try to stop it or, at the very least, cast a negative light on it (Hazzouri&Thoumy, 2020).

The project manager, the client, team members from the performing organization, and the project sponsor are typically considered project stakeholders. There are more than just these few, though (Smith, 2000). One project's stakeholders can include users, facility managers, designers, contractors, subcontractors, employees, service providers, banks, insurance companies, journalists, the general public, community leaders, customers, and pressure organizations (Chinyio & Olomolaiye, 2010).

Stretton, (2014), considers stakeholders from either a benefactor or a hostile standpoint. In his analysis, the beneficiary perspective focuses on all parties who are anticipated to gain something specific from the project. These stakeholders typically have an interest in the success of the program and are open to discussion and negotiation. Contrarily, most adversarial stakeholders, according to the adversarial view, are thought to be theoretically or actually antagonistic to the initiative and may not be willing to address and negotiate problems, making it difficult to convert those adversarial stakeholders into beneficiary stakeholders.

At certain stages of the project, some stakeholders may be more important than others. We can learn more about these stakeholders and what they anticipate from the project if we give the stakeholder identification and mapping process ample time. It is crucial to try to understand the individuals you will be working with and depending on during the project before thinking about becoming involved and trying to influence stakeholders. While it's important to share information with stakeholders, it's just as important to gather knowledge about them at first (van der Walt, 2016).

2.4 Conceptual Framework

| Third-Party | Independent variables | | Dependent variable |
|------------------------------|--------------------------|-----|---------------------------|
| Logistics Services in HSC | Planning Factors | →→→ | Humanitarian Supply Chain |
| | Communication Factors | →→→ | |
| | Coordination Factors | →→→ | |

| | | | |
|--|-------------------------|-----|--|
| | Transportation factors | →→→ | |
| | Infrastructural factors | →→→ | |

Figure 1: conceptual framework

CHAPTER THREE

3. RESEARCH METHODOLOGY

This part discusses about the general thesis techniques used to gather relevant data necessary to reach the objectives of the study. The methodology includes the description of the research environment, the research strategy, the research design, the population and sampling, the data processing, and the data presentation.

3.1. Study Area

The WFP is the leading humanitarian agency, saving and improving lives, offering food assistance when needed, and collaborating with locals to improve nutrition and develop resilience. The organization's activities are concentrated on special operations, development aid, relief and rehabilitation, and emergency support. The majority of the effort is done in conflict-affected nations, where the likelihood of undernourishment is three times higher than in peaceful nations. In 2021, the WFP helped 128.2 million people in more than 120 countries and territories by distributing 4.4 million metric tons of food, US\$2.3 billion in cash and vouchers, and other aid.

In Addis Abeba, the WFP Ethiopia Country Office is located in the Bole sub-city, in front of Ethiopian Airlines Cargo or 200 meters from the Skylight. Hotel (PO Box 25584, Code 1000). The organization's two main sub-processes are Program and Supply Chain. The units that report to the division head under the Supply Chain division include Operation, Fleet, BSP, Logistics Cluster, Capacity Strengthening Contracting, Cash Based Transfer, Funds Management, and Procurement. Additionally, supported organizational functional units are those for human resources management, finance management (RDF & Program), information system management, planning, monitoring, and evaluation.

As a member of the Supply Chain division, BSP and Logistics Cluster communicate with governments, global NGOs, national NGOs, and UN organizations. The units look into potential future interventions while providing cost-effective and efficient logistical support. The main areas of logistics services provided to external partners to meet the SDB and CSP are warehousing, inland transportation, international and domestic air freight, fumigation, procurement, and fuel provision.

Several operational clusters of the external partners are directly impacted by the logistics services being offered, including those related to food security (UNFAO, SCI, AAH, UNOCHA, etc.), education (SCI, Imagine 1 Day, CARE, UNICEF, etc.), camp coordination (OCHA, COOPI, etc.), health cluster (UNICEF, WHO, ICRC, MTI, HI, etc.), nutrition (Goal Ethiopia, NRC, FHI 360, etc. (ACTED, FHI 360, NRC, CISP, etc.)

3.2. Research Approach

With a focus on counting and classifying aspects as well as producing statistical tools and figures to characterize what is observed using organized questionnaires or methodologies, the study used quantitative approaches to produce a theme of ideas and numerical data that can be transformed into frameworks and numbers, respectively. A humanitarian supply chain's key decision consideration for 3PL services are outlined in the strategies, which also demonstrate how 3PL was applied in certain supply chains. When evaluating difficult multiple-criteria alternatives or prioritizing options when numerous criteria must be taken into account, this method blends qualitative and quantitative data to help support decision-making.

3.3. Research Design

A research design is defined as a strategic framework for action that acts as a link between research questions and research execution or implementation (Ornstein, 2013). The study was used descriptive and explanatory study design. In the explanatory research, the study concern was determining the impact and cause and effect relationships among variables. Accordingly, in descriptive method the study focused on the determination of the frequency with which an event occurs and how variables are related in a particular context.

3.4. Population

In contrast to the target population, which refers to the full collection of factors from which the researcher intends to conclude, the term "population" refers to the broad category of people, events, or objects that the researcher wants to examine. The target demographic to which the findings should be applied should be identified and in line with the aims and problems outlined in the problem description. All employees (including officers, team leaders, technical advisers, and directors) active in providing service to internal WFP was included in the study's population.

3.5. Sources of Data

3.5.1. Primary Source

Primary information was gathered from Employees of WFP. WFP staffs include the Head, officers, associates, and assistants/business support assistants. For the purpose of gathering data, structured questionnaires with closed-ended questions were utilized.

3.5.2. Secondary Source

In this particular study, secondary source of data includes documents that consist; of journals, SOPs of each unit, guidelines, annual reports, midyear reports, CSP, SDG, Service Level Contract agreement, and any other document that the investigator comes across while data collection and assumed to be helpful to enrich the research.

3.6. Sample Size and Sampling Procedures

The suitable number of respondents chosen for this study was referred to as the sample size. Employees of WFP who are now employed in the lines of the humanitarian supply chain department make up the study's population. Accordingly, the sample was chosen at random from a total of 420 populations. As a result, below is a quick formula that determined sample size:

$$n = \frac{N}{1 + Nd^2}$$
$$n = \frac{420}{1 + 420(0.05)^2} = \frac{420}{2.05} = 204.87 \sim 205$$

Where;

n = sample size required

d = level of precision (tolerable error)

N = the study population

3.7. Data Collection

In order to assess the significance of 3PL and how it affects the effectiveness of the humanitarian supply chain within WFP, both primary and secondary sources were employed. Employees of WFP Ethiopia who work in the organization's supply chain program served as the major sources of the data. Structured questionnaires were utilized as a data collection tool to collect the primary information. There were two major sections to the instrument: standard questions about the importance of 3PL supply chain performance of the firm that was created from relevant studies, articles, and journals. Additionally, based on the organization's setting and problem area, the researcher also produced a set of questions. Secondary data were gathered from a variety of sources, including books, papers, journals, organizational documents, and secondary data sources.

The research instrument was designed clearly which is free from any ambiguity to address the study's stated objectives. First of all the selected participants was communicated for their consent before starting data collection. Then after knowing the willingness of participants, the prepared self-administered structured questionnaire was distributed to each respondent. After a certain time, questionnaires were collected along with an appreciation for their participation as well as spending their precious time.

In addition, a document review was conducted to capture information on Factors affecting 3PL logistics services in the chain of humanitarian aid. Finally, the investigator was remark thank you message for the cooperation of all respondents.

3.8. Statistical Analysis

Statistical analysis is a procedure that involves many choices and specific actions that may only be found in research. The process of data analysis consists of a number of tasks that may call for the use of various statistical methods in various contexts. The data was initially reviewed for accuracy to guarantee uniformity and completeness.

After the data was verified, the most recent version of IBM's Statistical Package for the Social Sciences (SPSS) was used to analyze and code the descriptive data. The study's findings were then presented using a specified technique, including frequency distribution, mean, standard deviation,

correlation, and regression, before being interpreted and discussed in relation to earlier comparable studies or standards.

3.9. Ethical Considerations

Before beginning data collection, AAU SOC was asked the organization (WFP) to obtain official authorization to conduct the research. Before disseminating the research instrument, all participants' permission was sought before they are enrolled as respondents in the study. During data collection, interviewers were explained the study's goal, scope, and intended outcome to respondents. All information obtained from participants was handled ethically, without distorting the individuals' initial concerns, and was kept confidential. Respondents were assured that any information gathered throughout the study was kept private. To protect the respondents' anonymity, no individual was identified in any reports or publications based on their responses.

CHAPTER FOUR

4. RESULT AND DISCUSSION

The review of the study's results on the elements influencing an organization's supply chain performance is presented in this portion of the essay using the example of WFP. Frequency tables mean and standard deviation, correlation charts, and regression equations were used to evaluate and show the results.

4.1 Response rate

The study objectives, which have been used to inform a discussion of the findings, served as a guide for the data's analysis and interpretation. The sampled respondents received 205 questionnaires in all, 190 (92.6%) of which were correctly completed and returned a level of response deemed satisfactory at any rate. According to Kennedy et al. (2011), a study response of 65% and above is noteworthy in facilitating the analysis of a study, and a response rate of 92% is over the needed threshold (Kennedy et al., 2011).

4.2 The Demographic information

Table 1 Demographic Profile

| Profile of respondents | | Frequency | Percent |
|---|--|-----------|---------|
| Gender | Male | 110 | 57.9 |
| | Female | 80 | 42.1 |
| Age | <30 | 49 | 25.7 |
| | 31-40 | 97 | 51.1 |
| | 41-50 | 32 | 16.8 |
| | >51 | 12 | 6.3 |
| Educational states | Diploma | 18 | 9.4 |
| | B.Sc./BA | 75 | 39.4 |
| | M.Sc./MA | 86 | 44.2 |
| | PhD | 11 | 5.8 |
| Work experience | <3 | 36 | 18.9 |
| | 3-6 | 60 | 31.5 |
| | 7-10 | 58 | 30.5 |
| | >10 | 34 | 17.8 |
| Currently working directorates place | Operation | 78 | 41 |
| | Procurement | 31 | 16.3 |
| | Supply Chain: Logistics Cluster | 26 | 13.6 |

| | | | |
|--|--|----|------|
| | Funds Management | 26 | 13.6 |
| | Contracting | 18 | 9.4 |
| | Supply Chain: Bilateral Service Provision | 11 | 5.7 |

Source: Own survey 2023

The aforementioned story indicates the gender distribution of respondents, with male respondents making up more than 57.9% of the total. This number is consistent with the reality that men make up the bulk of WFP's workforce. The respondents were asked to fill out their age and educational background because these factors are thought to be predictive of one's capacity for understanding the issues that formed the study's focus. To this purpose, the above table shows that most of the respondents (51.1%) are between the ages of 30 and 40. This shows that majority of their age fall in the early adult range. The table above provides information on the respondents' educational backgrounds, showing that 86 respondents (44.2%) had master's degrees or more.

There were 75 responders (or 39.4%) who had earned a university degree, 3 (9.4%) who had earned a college diploma, and only 1 (5.8%) who had earned a PhD. As a result, the researcher was confident that the respondents were competent enough to offer accurate and pertinent information in response to the study's raised questions. 34 respondents (17.8%) have worked for the company for more than ten years, which is the average amount of time respondents spend with a company. 36 participants (18.9%) have worked for the WFP for less than three years, compared to 118 respondents (62%) who have worked there for three to ten years. We have a respondent pool with more years of expertise that are more conversant with the workings of the humanitarian supply chain. This information implies that the majorities of the respondents were well-versed in the organization's activities and could offer crucial information.

4.3 Factors Affecting Humanitarian Supply Chain Performance/Core Competency of WFP

The respondent's opinions on how the humanitarian supply chain performs from the standpoint of those variables are discussed in this section. The respondents were given questionnaires on several

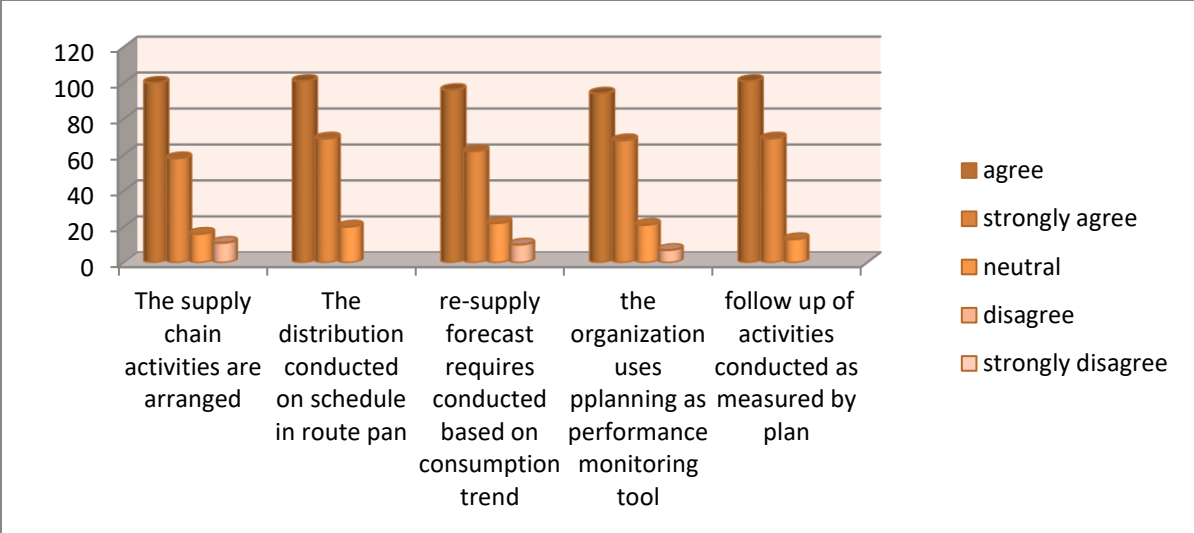
factors that would enable them to examine how the organization's supply chain performance was affected by supply chain management methods. Additionally, the respondents were asked to indicate how strongly they agreed or disagreed with the use of the factors in management from strongly Disagree (1) to Strongly Agree (5) on a Likert scale.

One sample t-test was employed in this study to gauge the relevance of the respondents' perceptions based on their responses. If the p value (the standard statistically significant level of error) is less than 0.05 and the t value is larger than 2, the level of agreement is considered to differ significantly in this test.

Between 1 and 1.80, is the computed composite mean value, suggests that respondents perceive a strong disagreement, on the other hand the ranges from 1.81 to 2.6 represent a perception of disagreement, the range from 2.61 to 3.4 represents a perception of neutrality, the scale from 3.41 to 4.2 represents a perception of agreement, and the range from 4.21 to 5.00 represents a perception of a strong agreement, respectively (Nyutu et al., 2020). The interpretation of the above table is further clarified on the following lines to get a general impression of the respondents by setting the average level of agreement to each question as moderate or 3 (hypothesized test value). The variables included infrastructure, transportation-related factors, communication, coordination, and HSC planning.

4.3.1 Humanitarian Supply Chain Planning

Planning is necessary for a humanitarian supply chain to be effective. The plan must first and foremost be based on a thorough knowledge of the geographical, sociological, political, and physical characteristics of the area where the activities will take place (Akele, 2020). For a smooth operation, a well-thought-out strategy is necessary, but it also needs to be understood and approved by all parties participating in any future relief effort.



Source: Own survey 2023

Fig 2: HSCP Effect of Planning Variables

Table 2: HSCP Effect of planning

| Planning Constructs | N | Mean | SD |
|--|-----|-------|-------|
| The supply chain activities are arranged on time frame to be performed | 190 | 3.917 | 0.591 |
| The distribution conducted on schedule in route plan | 190 | 3.899 | 0.479 |
| Re-supply forecast request is conducted based on consumption trend | 190 | 4.019 | 0.513 |
| The organization uses planning as performance monitoring tool | 190 | 4.001 | 0.576 |
| Follow up of activities conducted as measured by plan | 190 | 3.991 | 0.310 |

Source: Own survey 2023

According to the aforementioned graph, 83.1% of respondents agreed with the first assertion on the timing and arrangement of supply chain activities and their impact on supply chain

performance with $M=3.917$, but 52.6% strongly agreed. 5.8% of the total disagrees with the notion that supply chain activities are planned out according to when they should be completed.

With 36.3% strongly agreeing, 53.2% agreeing, and 10.5% neutral, it can be seen from the same data that respondents believe the distribution of the necessary materials to the needy will take place as planned in having mean of 3.899 and SD 0.479. This suggests that the success of the organization's humanitarian supply chain is impacted by the distribution of goods according to plan because the mean score of agreement is much higher than the intended value of disagreement.

According to the third statement, conducting re-supply forecast based on consumption trend received a mean level of agreement responses throughout the company having a mean of 4.019 and SD 0.513. Of them, 96 (50.5%) agreed with the statement, and 62 (32.6%) strongly agreed. 22 (11.5%) of them were characterized as neutral, while 10 (5.3%) of them disagreed. As a result, it is essential for the effectiveness of the humanitarian supply chain to conduct re-supply projection in order to fulfill unforeseen demand brought on by relief efforts.

The business is also thought to use planning as a performance monitoring tool, according to respondents, who agreed with the claim in 94 (49.4%), 68 (35.7%) strongly agreed, and 7 (3.7%) disagreed. The actual level of agreement in this area is much higher than the level of agreement that was originally planned with a mean and SD result of 4.001 and 0.576 respectively. The monitoring of activities carried out in line with the plan is the third element of HSC planning. The outcome shows that monitoring actions that were carried out according to plan as measured is a crucial element ($M=3.991$ SD=.310. Of them, 101 (53.1%) agreed, and 69 (36.4%) strongly agreed. 13 (6.8%) of the responders overall are impartial, while 7 (3.7%) strongly disagree.

4.3.2 Communication

Tale 2: HSCP Effect of Communication Variables

| Communication Constructs | N | Mean | SD |
|---|-----|-------|-------|
| Communication between the SC staffs | 190 | 3.997 | 0.591 |
| Timely and accurate information exchange | 190 | 3.862 | 0.511 |
| Communication between SC with other departments | 190 | 3.816 | 0.523 |
| Frequent information communication | 190 | 3.892 | 0.594 |

| | | | |
|---|-----|-------|-------|
| Exchange of information takes place frequently, Informally and/or in a timely manner. | 190 | 3.869 | 0.587 |
| The ICT implementation | 190 | 3.804 | 0.574 |
| Adoption of ICT | 190 | 3.792 | 0.549 |

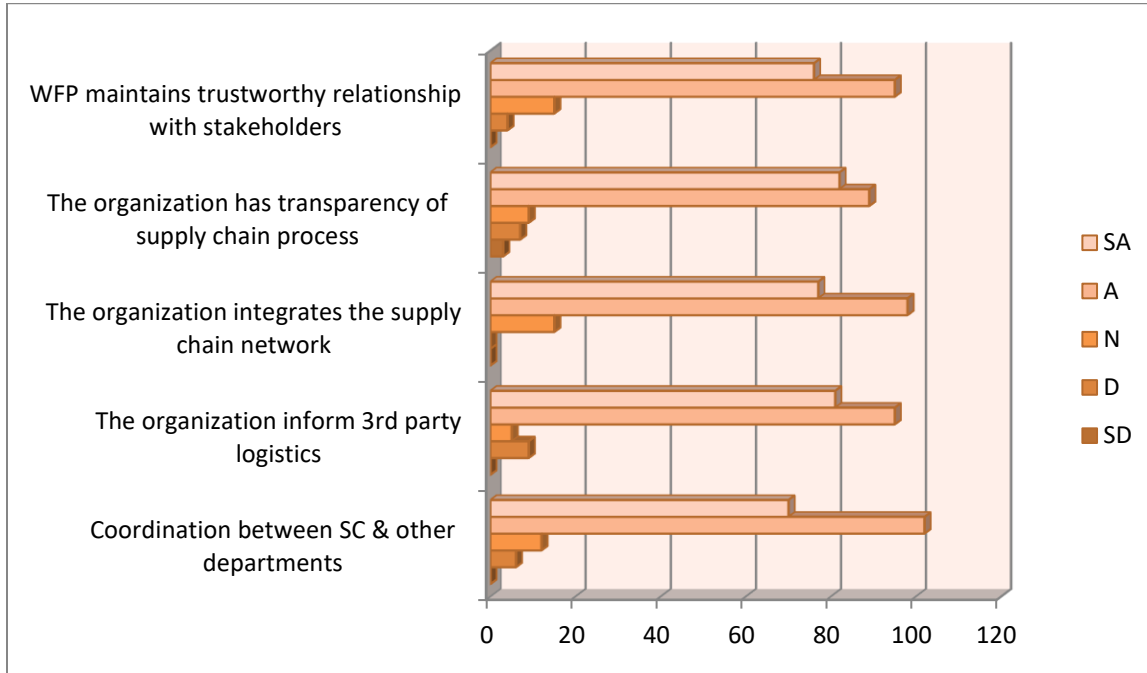
Source: Own survey 2023

The effectiveness of the organization's supply chain is affected by communication, as shown in Table 4.2. The findings indicate a significant propensity towards agreement regarding the necessity of establishing effective communication between supply chain personnel at the organization's head office, principal distribution point, and operational staff levels at the Woreda level. Effectively established communication at every level of the supply chain hierarchy is a crucial instrument for enhancing the organization's supply chain performance, which has a mean of 3.99. The statistical findings show that the respondent employees had a favorable attitude about this statement.

The evaluation of how well the organization's supply chain performs in relation to fast and accurate information exchange and communication with major third-party logistics providers, carriers, and other partners follows. The results show a high level of agreement with regard to this HSC communication component, with 77 respondents strongly agreeing and 101 others agreeing. Only 12 people disagreed, though. This degree of agreement is a great deal higher than the suggested point. Thirdly, with a mean M of 3.82, the respondents' responses indicated a very strong tendency of agreement about the significance of effective communication between the programs' supply chains and other departments, such as finance and the Food Aid Program. This data finding shows how crucial effective communication is between the supply chain and other work units. According to the results displayed in the same table, 86.3% of respondents believed that frequent information transmission interruptions have a significant impact on the organization's supply chain function. Only 4.2% of them disagree, however. The importance of frequent, formal, informal, and timely information exchange was accepted as the fifth communication variable to influence HSC performance, with a strong tendency towards its essentiality, with 39.4% of them strongly agreeing and 46.8% of the respondents agreeing with the idea mentioned here. The respondents were scored with M=3.80, SD=0.57 and M=3.79, SD=0.55 for their attitudes on the adoption of ICT systems to improve the SC's responsiveness to the unpredictable client demand. These statistical findings show that implementing an ICT system improves the operational excellence of WFP's HSC

performance and is viewed as one of the key elements influencing the organization's supply chain performance.

4.3.3 Coordination



Source: Own survey 2023

Fig 3: HSCP Effect of Coordination

Table 3: HSCP Effect of Coordination

| Coordination Constructs | Mean | SD |
|--|------|------|
| Coordination between SC with other departments | 3.85 | .651 |
| The organization inform the 3rd party logistics/transporters | 3.89 | .691 |
| The organization integrates the supply chain network | 3.87 | .663 |
| The organization has transparency of SC process | 3.88 | .69 |
| WFP maintains trustworthy relationship with stakeholders | 3.86 | .665 |

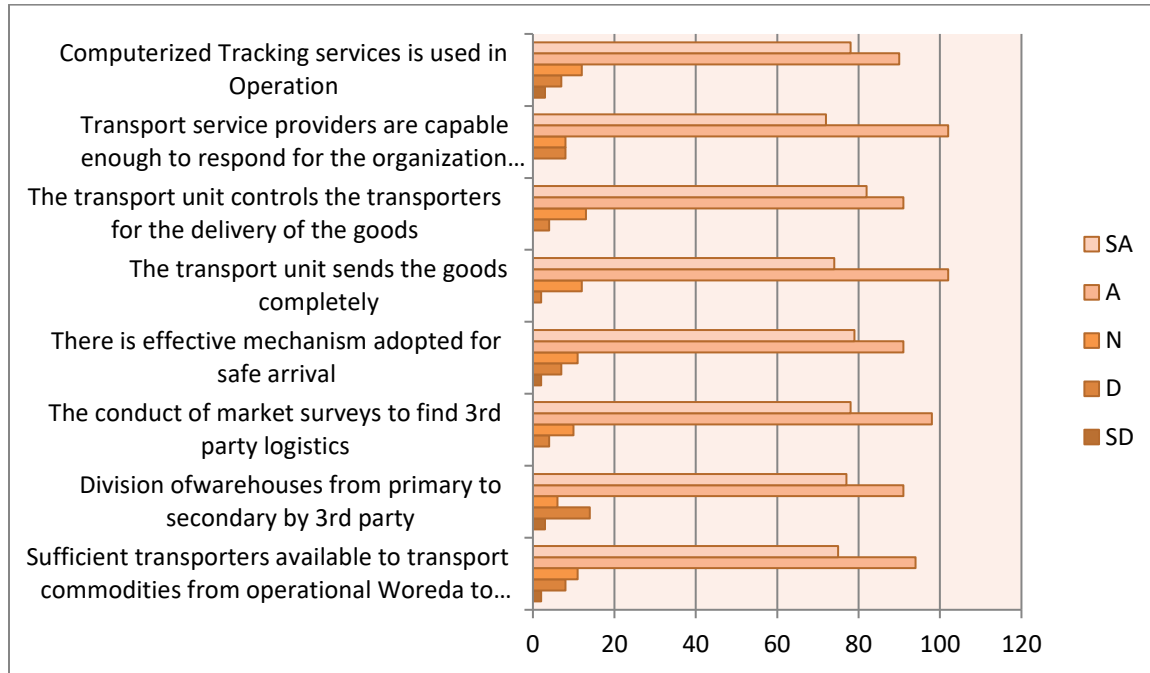
Source: Own survey 2023

The respondents were scored with $M=3.80$, $SD=0.57$ and $M=3.79$, $SD=0.55$ for their attitudes on the adoption of ICT systems to improve the SC's responsiveness to the unpredictable client demand. These statistical findings show that implementing an ICT system improves the operational excellence of WFP's HSC performance and is viewed as one of the key elements influencing the organization's supply chain performance.

The respondents were then asked to rate how well their organization's humanitarian supply chain would work if they proactively informed partners, beneficiaries, and third-party logistics and carriers. With a mean score of ($M = 3.89$, $SD = 0.69$), they consequently showed a high propensity towards this attribute. This finding indicates that the calculated and hypothesized means differ statistically significantly, and that proactive notification of partners, beneficiaries, and outside logistics and transporters would affect the effectiveness of their organization's humanitarian supply chain.

A comment was also requested from the respondents on the possibility that integrating the supply chain network as a coordinating dimension would affect the effectiveness of their organization's supply chain by keeping them informed to facilitate informed decision-making. With no thought being reversed, a strong propensity of agreement toward this proposition was seen with 40% and was agreed upon by 51.5%. The fourth statement, which calls for the creation of a transparent supply chain process, received considerable support from the participants—43.1%, 46.8% agreed, and 4.7% were neutral. 5.2% of the respondents expressed varied degrees of opposition to the notion. A strong tendency of agreement level of ($Mean = 3.87$, $SD=0.66$) was found to support respondents' perceptions of the maintenance of trustworthy relationships with stakeholders such as government (local or national), militaries, and others as a coordination variable affecting supply chain performance.

4.3.4 Transportation Factors



Source: Own survey 2023

Fig 4: HSCP Effect of Transportation Factors

Table 4: HSCP Effect of Transportation

| Transportation Factors | N | Mean | SD |
|---|-----|------|-------|
| Constructs | | | |
| Sufficient transporters available at Woreda level to transport commodities from operational Woreda to end users distribution points | 190 | 3.89 | 0.531 |
| 3rd party logistics/transporters delivered the commodity from primary to secondary warehouses (Woreda warehouse) without loses | 190 | 3.79 | .541 |
| The organization conducts market surveys to find potential 3rd party logistics for the commodity transportation purpose | 190 | 3.89 | .527 |

| | | | |
|--|-----|------|-------|
| There is effective mechanism adopted that confirms safe arrival of all the shipped goods both in terms of quality and quantity | 190 | 3.86 | .512 |
| The transport unit sends the goods with complete and correct transportation and dispatching documents | 190 | 3.71 | .599 |
| The transport unit controls the transporters for the delivery of the goods to project offices without delay. | 190 | 3.88 | .601 |
| Transport service providers are capable enough to respond for the organization urgent transport need in short notice | 190 | 3.79 | 0.528 |
| Computerized Tracking services is used in Operation | 190 | 3.69 | .515 |

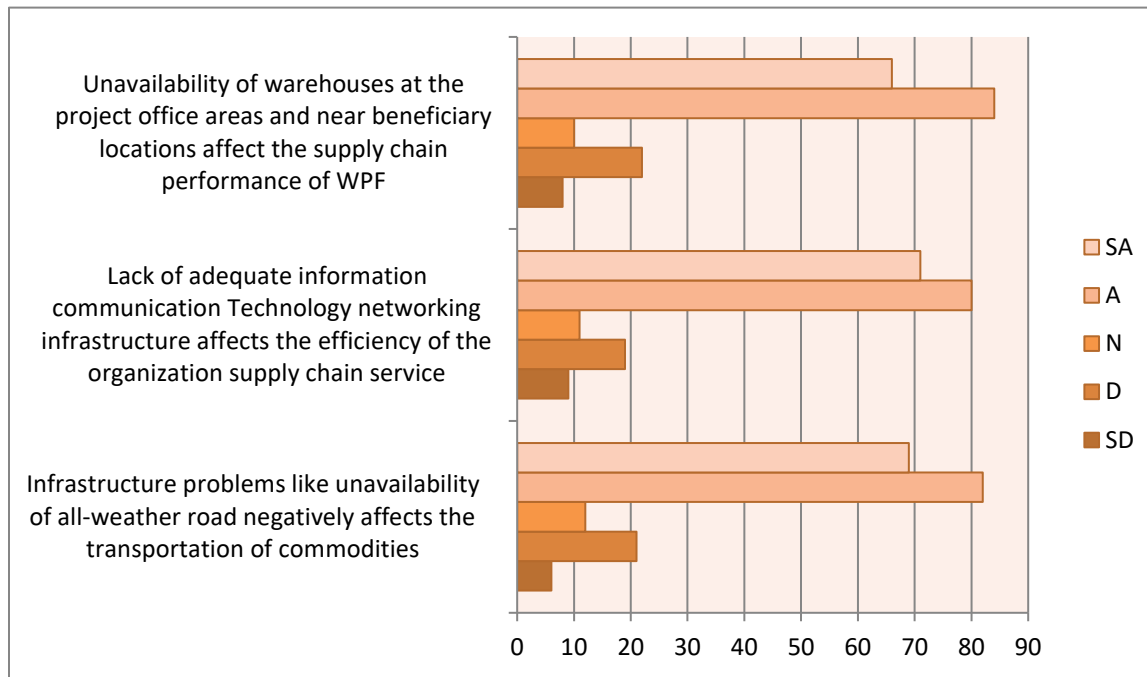
Source: Own survey 2023

The mean score values of the predictor variables or elements transportation are shown in Table above. It has been noted that availability of sufficient transporters to move commodities from operational Woreda to end users has a mean score value 3.89 and SD= 0.531. Of the respondents 39 strongly agree and 49.4% agree that there are enough transporters available to convey goods from operational Woreda to end consumers. The delivery made by third-party logistics/transporters from the primary warehouse to the secondary warehouse was assessed as the other transportation factor variable with average mean of 3.79 and standard deviation of 0.541. This rating falls within the range of an agreement level that the supply chain's efficiency is impacted by the caliber of deliveries made by third-party carriers.

The other aspect of transportation that the respondents' attitudes were assessed was whether conducting a market study to identify possible third-party logistics for the shipment of commodities had an effect on supply chain effectiveness. The overall percentage of respondents who agree with this claim is 51.5%; 41% of them strongly agree; 5.2% are neutral; and 2.1% disagree. Adoption of effective and efficient procedures that guarantee the delivery of commodities in terms of both quality and quantity is the second transportation component variable that caught the respondents' attention and was backed by a high degree of agreement. Additionally, questions were put to the respondents to provide their thoughts on how control systems affected the performance and each action of the carriers in order to deliver goods on time. An overwhelming

majority of respondents strongly agreed that implementing a control system was necessary to ensure that goods were delivered without delay and that people in need would be saved.

4.3.5 Infrastructure Factors



Source: Own survey 2023

Fig 5: HSCP Effects of Infrastructure Factors

Table 5: HSCP Effect of Infrastructure Factors

| Infrastructure Factors | Mean | SD |
|--|------|------|
| Constructs | | |
| Transportation of goods from major distribution locations to secondary warehouses is impacted by infrastructure issues. | 4.01 | .611 |
| Insufficient information and communication Technology networking infrastructure has an impact on an organization's supply chain and service effectiveness. | 3.86 | .671 |
| The performance of WFP's supply chain is impacted by the lack of warehouses near recipient localities and project office regions. | 3.98 | .682 |

Source: Own survey 2023

The above table demonstrates how infrastructure problems, including the absence of all-weather highways, affect the transfer of commodities from primary distribution locations to secondary warehouses and subsequently from warehouses to end users. Strong trend of agreement level of

Mean score ($M = 4.01$, $SD = 0.61$) supports the issue's criticality. This level demonstrates how severely threatened the organization's supply chain is by the lack of infrastructure, such as an all-weather road. The assessment of the effects of inadequate information and communication technology (ICT) networking infrastructure on the effectiveness of the organization's supply chain service is the subject of the other infrastructure-related issue. Finally, it was found that the organization's supply chain performance is impacted by the lack of warehouses near beneficiary locations and the project office areas. The respondents' significant predisposition to agree with this infrastructure variable was evident.

4.4 Summary of the Means

In terms of factors affecting supply chain performance in WV Ethiopia, the findings show that, Planning practice, Infrastructure, Coordination, Communication, Transportation Factors related factors, and affect supply chain performance with a significant sample mean of 3.961, 3.950, 3.870, 3.861 and 3.812 level of agreement respectively. The table below puts all the means of the identified independent variable as well as of the dependent variable all together. It has already been pointed out in the previous discussions that all of the dimensions of the independent variables are falling within the agreement level.

Table 6: Grand Mean

| Statement | N | M | SD |
|-----------------------|----------|----------|-----------|
| Planning | 190 | 3.961 | .4944 |
| Communication | 190 | 3.861 | .5612 |
| Coordination | 190 | 3.870 | .6720 |
| Transportation | 190 | 3.812 | .5442 |
| Infrastructure | 190 | 3.950 | .6546 |

4.5 Treatment of missing data, outliers

While gathering data, outliers and missing numbers are regularly seen. Missing values lower the amount of data that can be processed, reducing the study's statistical power and, ultimately, its capacity to produce reliable conclusions. Additionally, it reduces the effectiveness of the data and introduces a large bias into the results. Outliers have a substantial impact on the estimation of

statistics, such as the average and standard deviation of a sample, leading to values that are either overstated or underestimated. Therefore, the methods used to analyze the missing values and outliers have a significant impact on the data analysis's outcomes (Kwak & Kim, 2017). For this study complete case analysis is applied. This technique eliminates any missing values before analyzing only the data of variables that were observed at each time point (Kwak & Kim, 2017).

Again according to Kwak & Kim, (2017) for the treatment of outliers in the collected data, there are also so many methods from that trimming is used. In this method, a data set without outliers is examined. Mean and other trimmed estimators reduce data volatility but introduce bias based on under- or overestimation.

4.6 Validity and Reliability

4.6.1 Validity

By testing the validity, readability, validity, clarity, and ambiguity of the statements and questions, the data collection tools were piloted on a sample of the respondents to assure the validity of the questionnaires. A measurement is reliable if it accurately captures the idea we're trying to gauge. Correlation is one strategy for validating evidence.

A measure of how well two variables predict one another is correlation. The Pearson Product-Moment Correlation, which assumes interval data, or the Spearman Rank-Order Correlation, which simply assumes ordinal data, are two examples of correlation (Turney, 2022). Between -1 and +1 is the Pearson's correlation coefficient. While the latter denotes a perfect positive relationship, the former denotes a perfect negative relationship. In this study, the following decision-making criteria were used to test the validity of Pearson's Product Moment Correlation Coefficient.

- ❖ If r-statistic is greater than the crucial value at the 95% level of freedom ($\alpha = 0.05$), the survey question is accurate; otherwise, it is rejected. In other words, consider it as "VALID" if the estimated value is greater than the crucial value 95% degree of freedom or of 0.05; otherwise, it is invalid.

- ❖ Alternatively, if the Sig. (2-tailed) value is 0.05 or less, the item is legitimate; otherwise, the item is invalid. (Note that the "0.000" value for the Sig. (2-tailed) value, often is called the p-value, is used in the majority of legitimate situations.

4.6.2 Reliability

Data collectors were trained on the data collection instruments and processes and the investigator was supervised the data collection process and review the questionnaires that was completed to clarify any data inconsistencies. Cronbach's test was used to verify the instrument's dependability.

Table 7: *Reliability Statistics (Cronbach's Alpha)*

| No | Variables | Items No. | Cronbach's Alpha |
|----|---------------------------------|-----------|------------------|
| 1 | HSC PLANNING | 5 | 0.904 |
| 2 | HSC COMMUNICATION | 7 | 0.903 |
| 3 | HSC COORDINATION | 6 | 0.865 |
| 4 | TRANSPOTERS' AVAILABILITY | 8 | 0.901 |
| 5 | ISSUE RELATED TO INFRASTRUCTURE | 3 | 0.943 |
| 6 | HSC PERFORMANCE | 3 | .896 |

Source: Own survey 2023

With a coefficient higher than the established limit of 0.8, the dependability and value of the Cronbach's alpha reliability test indicated that there was good internal consistency. A coefficient of more than 0.8 is considered good, more than 0.7 is considered acceptable, more than 0.6 is debatable, more than 0.5 is considered subpar, and less than 0.5 is unacceptable (Tavakol & Dennick, 2011).

4.7 Correlation Analysis

The strength and direction of the link were demonstrated by the given correlation coefficients. The p-value that was employed also indicated the likelihood that this association was significant. Constant values for the Pearson correlation coefficient vary from -1 to +1. A correlation value of

1 indicates that two variables are perfectly associated in a positive sense; a correlation coefficient of -1 indicates that two variables are perfectly related in a negative sense; and a correlation coefficient of 0 indicates that two variables are not linearly related. A weak or nonexistent association between the two items is indicated by a low correlation coefficient. If it is between 0.3 and 0.49, R denotes a moderate connection. When the correlation coefficient is high, or when $p > 0.5$, the variables are significantly associated (Kiernan, 2014). The dependent variable's change depends on the sign of the coefficient. When the coefficient is positive, the dependent variable will travel in the same direction as the independent variable; when the coefficient is negative, the dependent variable moves in the opposite direction from the independent variable.

Table 8: Correlation Matrix

| Variables | | Planni ng | Communi cation | Coordinat ion | Transport ation Factors | Infrastruc ture Factors | HSC Performa nce |
|---------------------------|----------------------------|--------------|-------------------|------------------|-------------------------------|-------------------------------|------------------------|
| Planning | Pearson Correlati on | 1 | .716** | .539** | .817** | .570** | .844** |
| | Sig. (2- tailed) | | .000 | .000 | .000 | .000 | .000 |
| | N | 190 | 190 | 190 | 190 | 190 | 190 |
| Communi cation | Pearson Correlati on | .716** | 1 | .435** | .787** | .698** | .805** |
| | Sig. (2- tailed) | .000 | | .000 | .000 | .000 | .000 |
| | N | 190 | 190 | 190 | 190 | 190 | 190 |
| Coordinati on | Pearson Correlati on | .542** | .413** | 1 | .531** | .485** | .532** |
| | Sig. (2- tailed) | .000 | .000 | | .000 | .000 | .000 |
| | N | 190 | 190 | 190 | 190 | 190 | 190 |

| | | | | | | | |
|-------------------------------|---------------------|--------|--------|---------|--------|--------|--------|
| Transportation Factors | Pearson Correlation | .797** | .768** | .535** | 1 | .679** | .801** |
| | Sig. (2-tailed) | .000 | .000 | .000 | | .000 | .000 |
| | N | 190 | 190 | 190 | 190 | 190 | 190 |
| Infrastructure Factors | Pearson Correlation | .601** | .703** | .472** | .692** | 1 | .698** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | | .000 |
| | N | 190 | 190 | 190 | 190 | 190 | |
| HSC Performance | Pearson Correlation | .893** | .823** | .6127** | .798** | .751** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | |
| | N | 190 | 190 | 190 | 190 | 190 | 190 |

Source: Own survey 2023

Humanitarian Supply Chain Performance and HSC Planning have a strong and positive relationship, as shown in the correlation matrix table, where the correlation coefficient between the two is 0.893. Additionally, a significant positive correlation between communication and supply chain performance was found ($r= 0.805$). The estimated correlation coefficient between infrastructural factors and the effectiveness of the humanitarian supply chain showed a positive association, as shown by Factors affecting $r=.698$.

4.1 Analysis of the Factors Affecting Humanitarian Supply Chain

Performance in WFP

Multiple regression analysis was performed using the statistical program SPSS version 25 to ascertain and quantify the degree to which the explanatory factors explain the variation in the explained variable.

4.1.1 Multiple Linear Regression Analysis

Several linear regressions can be used to analyze the numerical relationship between two or more independent variables and a single continuous dependent variable. When predicting Factors affecting one variable based on the currently known values of other variables, multiple linear regressions are used. The variable of interest subjected to prediction is referred to as the dependent variable (or, occasionally, the outcome variable), in this case, the effectiveness of the humanitarian supply chain. The term independent variable (predictor variables) refers to the variable we are utilizing to predicting Factors affecting the other variable. In this study, the independent variables are the HSC planning, communication, coordination, transportation, and infrastructure aspects.

The criterion variable (Humanitarian Supply Chain Performance)'s variation has been explained by the independent factors by 86.8%. According to this statistical finding, factors linked to infrastructure, transportation, coordination, and HSC planning account for 86.8% of the variation in the effectiveness of the supply chain for humanitarian aid. However, the remaining 13.2% of the variance is related to other factors that the model did not account for.

4.1.2 Model Summary

While the WFP's humanitarian supply chain performance was determined to be 86.8% explained by the independent factors examined, 13.2% of the difference was caused by other omitted variables that were not examined.

Table 9: Model Summaries and ANOVA for Multiple Linear Regressions

| Model | R | R Square | Adjusted Square | R Std. theEstimate | Error of | Durbin-Watson |
|-------|-------------------|----------|-----------------|--------------------|----------|---------------|
| 1 | .935 ^a | .874 | .865 | .09642 | | 2.011 |

Source: Own survey 2023

4.1.3 Normality Test

Because variables must be regularly distributed for both correlation analysis and regression analysis, the data were examined to determine their normality of distribution (Kiernan, 2014). The residuals' normal probability plots, when visually inspected, show that the values have a normal

distribution and satisfy the assumption of normality. Skewness and kurtosis were used as two measures to determine the normalcy. Skewness measures how severely one end of the scale dominates the distribution of responses. Skewness and kurtosis were used to calculate the distribution's real departure from normalcy. Kurtosis is the measure of the distribution's peakedness or flatness when compared with a normal distribution, while Skewness is the "measure of symmetry of a distribution; in most cases, the comparison is made to a normal distribution.

Table 9: normality Test

| | N | Skewness | | Kurtosis | | Fisher skewness Coefficient t | Fisher Kurtosis Coefficient t |
|------------------------------------|-----------|-----------|---------------|-----------|---------------|--|--|
| | Statistic | Statistic | Std. Error | Statistic | Std. Error | | |
| Planning Factors | 190 | .165 | .233 | -.487 | .461 | 1.2334 | 1.886 |
| Transportation factors | 190 | .427 | .233 | .083 | .461 | 1.8766 | 1.338 |
| Infrastructural factors | 190 | .297 | .233 | .066 | .461 | 0.9861 | .901 |
| Communication Factors | 190 | .266 | .233 | -.043 | .461 | -1.2534 | .855 |
| Coordination Factors | 190 | .315 | .233 | -.461 | .461 | 0.8673 | .845 |

If the results falls between -1.96 and 1.96, it suggests that the distribution is not significantly different from normal distribution(Mahbobi & Tiemann, 2015). The skewness and kurtosis coefficients for the study were between -1.96 and 1.96, as shown in the above table, indicating that there were no skewness or kurtosis issues with the data. A variable's absolute Kurtosis index value of 10.0 or higher indicates a normalcy issue, whereas values of 20.0 or higher suggest a more severe problem (Kline, 2005). Therefore, the acceptable absolute value of skewness and kurtosis should not exceed three and ten respectively and the study results were also in the acceptable range.

4.1.4 Multicollinearity Test

Multicollinearity occurs when there is a strong correlation between two or more factors in a regression model. When two predictors have a correlation coefficient of one and at least one of them is a perfect linear combination of the others, this is the simplest case of perfect collinearity.

Table 10: Model Summaries and ANOVA for Multiple Linear Regressions

| Model | Coefficients ^a | | | | p-value | Collinearity Statistics | |
|--------------------------------|-----------------------------|-------|---------------------------|--------|---------|-------------------------|-------|
| | Unstandardized Coefficients | | Standardized Coefficients | T | | Tolerance | VIF |
| | B | SEM | B | | | | |
| (Constant) | -.203 | .183 | | -1.111 | .270 | | |
| Planning Factors | 0.310 | 0.075 | 0.318 | 4.106 | 0.000 | 0.302 | 3.324 |
| Transportation factors | 0.238 | 0.091 | 0.233 | 2.667 | 0.013 | 0.225 | 4.249 |
| Infrastructural factors | 0.193 | 0.058 | 0.221 | 3.553 | 0.001 | 0.456 | 2.139 |
| Communication Factors | 0.149 | 0.068 | 0.167 | 2.188 | 0.05 | 0.321 | 3.225 |
| Coordination Factors | 0.143 | 0.046 | 0.167 | 3.226 | 0.010 | 0.681 | 1.463 |

Source: Own survey 2023

If there is perfect collinearity across predictors, there are an infinite number of coefficient combinations that would work equally well, making it impossible to generate unique estimates of the regression coefficients.

However, no variable in this study has a VIF value greater than 10 or a tolerance value less than 0.10. This shows that there is no evidence for the multi-collinearity of the study.

4.1.5 Model estimation

Using the SPSS software, a diagnostic test was carried out to determine how well or poorly our estimation technique suited the sampled data and tested hypotheses about whether the coefficient estimations were made appropriately.

Five explanatory variables humanitarian supply chain planning, communication, coordination, transportation factors, and infrastructure related factors—and a dependent variable (humanitarian supply chain performance) were used by the researcher to investigate the effects of those factors affecting humanitarian supply chain performance in WFP. Factors affecting third-party logistics services in the humanitarian supply chain is therefore a function of planning, communication, coordination, transportation factors, and infrastructure-related factors, which is the functional link between the variables in this study.

It has decided whether to reject or not to reject the null hypothesis regarding the model's fitness by looking the regression model at the 5% significance level. The significance value for the regression model in general is 0.000. The null hypothesis, "There is no relationship between explained and explanatory variables," is thus rejected because the statistical significance of the regression model used for the study is less than 0.05. This indicates that, overall, the model used for the study is significantly adequate for explaining the variation in the dependent variable.

Table 11: Multiple Linear Regressions

| Model | Coefficients ^a | | | | |
|------------------------------|-----------------------------|-------|---------------------------|--------|---------|
| | Unstandardized Coefficients | | Standardized Coefficients | T | p-value |
| | B | SEM | B | | |
| (Constant) | -.203 | .183 | | -1.111 | .270 |
| Planning Factors | 0.310 | 0.075 | 0.318 | 4.106 | 0.000 |
| Communication Factors | 0.149 | 0.068 | 0.167 | 2.188 | 0.05 |
| Coordination Factors | 0.143 | 0.046 | 0.167 | 3.226 | 0.010 |

| | | | | | |
|--------------------------------|-------|-------|-------|-------|-------|
| Transportation factors | 0.238 | 0.091 | 0.233 | 2.667 | 0.013 |
| Infrastructural factors | 0.193 | 0.058 | 0.221 | 3.553 | 0.001 |

Source: Own survey 2023

The performance of the WFP's humanitarian supply chain can be predicted using the independent variables—planning, communication, coordination, transportation, and infrastructure—identified in the above table. Given that the other variables in the equation are held constant, the variable HSC Planning's coefficient of (= 0.310) indicates that a one-unit increase in the quality of HSC Planning has a considerable impact. The organization's humanitarian supply chain performance was found to be affected by two factors, the second of which was the variable transportation factor, with a coefficient of (= 0.238). The outcome suggests that, when other factors in the equation are held constant, an increase in the availability, effectiveness, and management of transporters results in an improvement in the organization's performance in terms of its humanitarian supply chain. The third category is infrastructure-related issues, the other significant independent variable influencing an organization's performance in the humanitarian supply chain. The organization's humanitarian supply chain line would perform 19.1% better with one unit better infrastructure, according to the calculated Beta coefficient of 0.191, which suggests holding other variables constant. Additionally, HSC Communication and Coordination were found to be significant independent variables affecting the performance of the humanitarian supply chain, with a beta coefficient of (= 0.149), which meant that, when all other model variables were held constant, an improvement in communication practices and coordination efforts would result in a 14.3% increase in the organization's performance in the humanitarian supply chain..

CHAPTER FIVE

5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the major findings, draws conclusions from those findings, and offers suggestions based on those conclusions. The study's unique research objectives were addressed in the conclusion and suggestions.

5.2 Summary of the findings

The investigation concentrated on five fundamental benefits of 3PL services: understanding the impact of HSC Planning supply chain and how it affects the latter; researching the impact of communication on HSC and how communication affects HSC of the organization; examining the impact of coordination on supply chain performance and how coordination affects HSCP of WFP; evaluating the impact of availability, efficiency, and management of transporters on SC performance; and researching the impact of infrastructure.

The study included both a descriptive and an explanatory research design. Using the descriptive method, the study concentrated on figuring out how frequently an event happens and how various variables interact to one another in a specific situation. Additionally, the study's explanatory strategy focused on identifying the causal connections between various factors. In order to achieve this, this research used a descriptive and explanatory research design to provide a sufficient description of the variables and expose the degree to which the identified factors affect WFP's performance in the humanitarian supply chain.

Having the highest tendency of agreement level with respect to its overall dimension, humanitarian supply chain planning was given the highest ranking as a factor affecting the HSC Performance of the company. The conclusion shows that the type of planning method selected can have a very beneficial or a very negative impact, focusing in particular on the effectiveness of the supply chain and the overall performance of the business. The activities must be planned in a timely manner and according to schedule while utilizing the fewest resources possible to lessen the disastrous effects of the disaster. The overall goal of planning is to properly respond to humanitarian needs in the event of disasters, which is considered to be mitigation and satisfying the initial and vital needs of the survivors.

Second comes is the study indicates the third factor that was found to affect the humanitarian supply chain performance is infrastructure factor.

The third one that can affect is collaboration which was likely to affect how well the organization's humanitarian supply chain operated. When rescue operations are underway, coordinating logistics can be a difficult undertaking that, if not completed swiftly and efficiently, could lead to the loss of resources and lives. In actuality, there isn't a single, widely accepted model of supply chain management that managers in the humanitarian sector have devised and used for humanitarian logistics and relief supply chain activities for those affected by disasters.

The next one is communication which was likely to affect how well the organization's humanitarian supply chain operated. Deficiencies in communication or misunderstandings could result in fatalities.

Lastly transporters' availability, efficiency and management that were put on the second place as a factor affecting the HSC Performance of the organization by getting the fifth highest tendency of agreement level towards its overall dimension. Which indicates the availability and mode of transportation, and its efficiency defines our responses to the emergency humanitarian assistance need to reach its destination as intended.

Various goals and objectives, such as the management of transportation, supply chain approaches for humanitarian logistics, and coordination and communication among the organizations participating in the responses to natural disasters, Resource management, military partnership, Logistics Information System (LIS), Education and training, Damage assessment, local and regional action, decisive command and control, and uncertainty competition

5.3 Conclusion

According to the study's findings, the humanitarian supply chain's effectiveness is more strongly influenced by planning. Adoption of sound and appropriate planning techniques plays a striking role and has developed into a crucial enabler to enhance an organization's supply chain performance. Planning must be carefully crafted because it can have a significant positive or negative impact on the organization's performance as a whole.

The study's infrastructure factors, such as the lack of an all-weather road to transport goods Poor networking infrastructure for information and communication technology and a lack of warehouses in project office areas and close to beneficiary locations were found to have a negative impact on the supply chain performance of the organizations from primary distribution points to secondary warehouses and Woreda to beneficiaries.

Then it was found that the study's coordination techniques had a favorable effect on the organization's supply chain performance.

The study also found that communication practices (effective communication between supply chain staff members timely and transmission of precise information with important third parties between the organization logistics, and other partners, frequent information communication interruptions, and ICT implementation to improve the SC ability to quickly modify its capacity in reaction to adverse).

Finally, transportation factors evaluated from the perspectives of transporters' availability, efficiency, and management (availability of sufficient transporters to move aid commodities from operational Woreda to beneficiaries' distribution center, delivery made by 3rd party logistics/transporters without any discrepancies, conducting market surveys to find potential 3rd party logistics for the commodity transportation, and establishment of effective mechanism to control costs).

5.4 Recommendation

Basis on the study's results, listed suggestions bellow are put forth: Any firm can increase its efficiency by carefully planning. As a result, during planning, consideration should be given to operational and strategic considerations as well as tangible and intangible elements that could improve an organization's success. The creation of a coordination system with other participants in the scene and the facilitation of the system for sharing of imposed issues and problems, as well as the consideration of coping mechanisms in the context of humanitarian aid logistics, are all necessary for a supply chain to perform at its highest effectiveness and efficiency levels. To create the infrastructural facilities, the business must collaborate with external players and stakeholders.

5.5 Further Study

Additionally, it would be fascinating to include businesses and other governmental and non-governmental organizations in this study. Generally speaking, in order to promote a better understanding and perception about the issue, similar studies need to be carried out in various firms around the nation.

5. REFERENCES

- Akele, B. (2020). THE ROLE OF SUPPLY CHAIN INTEGRATION ON PERFORMANCE OF SELECTED INTERNATIONAL HUMANITARIAN ORGANIZATIONS IN ETHIOPIA.
- APICS. (2020). APICS Certifies Supply Chain Professional (CSCP) Learning System Version 4.4. <https://www.ascm.org/learning-development/certifications-credentials/cscp/>
- APICS. (2023). APICS Dictionary (16th ed.). <https://www.ascm.org/apics-dictionary-16th-edition/>
- Bealt, J., Fernández Barrera, J. C., & Mansouri, S. A. (2016). Collaborative relationships between logistics service providers and humanitarian organizations during disaster relief operations. *Journal of Humanitarian Logistics and Supply Chain Management*, 6(2), 118–144. <https://doi.org/10.1108/JHLSCM-02-2015-0008>
- Björklund, M., & Forslund, H. (2019). Challenges Addressed by Swedish Third-Party Logistics Providers Conducting Sustainable Logistics Business Cases. *Sustainability*, 11(9), Article 9. <https://doi.org/10.3390/su11092654>
- Chinyio, E., & Olomolaiye, P. (2010). Construction Stakeholder Management.
- Cichosz, M., Wallenburg, C. M., & Knemeyer, A. M. (2020). Digital transformation at logistics service providers: Barriers, success factors and leading practices. *The International Journal of Logistics Management*, 31(2), 209–238. <https://doi.org/10.1108/IJLM-08-2019-0229>
- Darko, E. O., & Vlachos, I. (2022). Creating Valuable Relationships with Third-Party Logistics (3PL) Providers: A Multiple-Case Study. *Logistics*, 6(2), Article 2. <https://doi.org/10.3390/logistics6020038>

- Davila, J., Hussmann, K., Lateef, K. S., Macuane, J. J., & Cox, M. (2008). Working towards more effective collective donor responses to corruption. OECD DAC.
<https://www.oecd.org/dac/accountable-effective-institutions/45019669.pdf>
- Diehlmann, F., Lüttenberg, M., Verdonck, L., Wiens, M., Zienau, A., & Schultmann, F. (2021). Public-private collaborations in emergency logistics: A framework based on logistical and game-theoretical concepts. *Safety Science*, 141, 105301.
<https://doi.org/10.1016/j.ssci.2021.105301>
- Dufour, É., Laporte, G., Paquette, J., & Rancourt, M. (2018). Logistics service network design for humanitarian response in East Africa. *Omega*, 74, 1–14.
<https://doi.org/10.1016/j.omega.2017.01.002>
- Eric Owusu Darko, I. V. (2022). Logistics | Free Full-Text | Creating Valuable Relationships with Third-Party Logistics (3PL) Providers: A Multiple-Case Study.
<https://www.mdpi.com/2305-6290/6/2/38>
- Fairchild, A. M. (2016). What is the Role of Third Party Logistics (3PL) Partners in an Omni-Channel Strategy? *International Journal of Operations Research and Information Systems (IJORIS)*, 7(1), 22–32. <https://doi.org/10.4018/IJORIS.2016010102>
- Fattahi, H., Abolghasem Gorji, H., & Bayat, M. (2020). Core competencies for health headquarters: A systematic review and meta-synthesis. *BMC Public Health*, 20(1), 891.
<https://doi.org/10.1186/s12889-020-08884-2>
- Hazzouri, M., & Thoumy, M. (2020). Internal stakeholders' perspective on lean energy and environmental sustainability: The case of Notre Dame University-Louaize. *World Review of Entrepreneurship, Management and Sustainable Development*, 16(5), 492–518.

- Kennedy, H. P., Farrell, T., Paden, R., Hill, S., Jolivet, R. R., Cooper, B. A., & Schindler Rising, S. (2011). A randomized clinical trial of group prenatal care in two military settings. *Military Medicine*, 176(10), 1169–1177.
- Keshvari Fard, M., & Papier, F. (2021). Collaboration in Humanitarian Operations in the Context of the COVID-19 Pandemic (SSRN Scholarly Paper No. 3827430).
<https://doi.org/10.2139/ssrn.3827430>
- Kiernan, D. (2014). Chapter 7: Correlation and Simple Linear Regression.
<https://milnepublishing.geneseo.edu/natural-resources-biometrics/chapter/chapter-7-correlation-and-simple-linear-regression/>
- Kline, T. J. (2005). *Psychological testing: A practical approach to design and evaluation*. Sage publications.
- Kwak, S. K., & Kim, J. H. (2017). Statistical data preparation: Management of missing values and outliers. *Korean Journal of Anesthesiology*, 70(4), 407–411.
<https://doi.org/10.4097/kjae.2017.70.4.407>
- Kyengo, J. M., & Kilika, J. (2017). Strategic Assets, Competitive Capabilities and Firm Performance: Review of the Literature. *Journal of Business and Economic Development*, 2(3), Article 3. <https://doi.org/10.11648/j.jbed.20170203.11>
- Logistics Blogs. (2019). 6 Key Benefits of Third-Party Logistics (3PL) in Supply Chain Management | GEP. <https://www.gep.com/blog/mind/6-key-benefits-of-third-party-logistics-3pl-in-supply-chain-management>
- Mahbobi, M., & Tiemann, T. K. (2015). Chapter 2. The Normal and t-Distributions.
<https://opentextbc.ca/introductorybusinessstatistics/chapter/the-normal-and-t-distributions-2/>

- Marasco, A. (2008). Third-party logistics: A literature review. *International Journal of Production Economics*, 113(1), 127–147. <https://doi.org/10.1016/j.ijpe.2007.05.017>
- Matthias Klumpp, S. de L. H., & Hella Abidi. (2014). Humanitarian supply chain performance management: A systematic literature review | Emerald Insight. https://www.emerald.com/insight/content/doi/10.1108/SCM-09-2013-0349/full/html?casa_token=0ioSuCcEHswAAAAA:Cne-NGurIxxhJq7UdkLuEt9qQFc50c4vxA1geWmLO7tTIRps3XJfZwUN8vSoTddk_LEwFWzUQzbD_QTFvVCMg0VRVxh2K1sPbpFzAZLk3YwrDCegdjYgJA
- Mohiuddin, M., & Su, Z. (2013). Offshore Outsourcing of Core and Non-Core Activities and Integrated Firm-Level Performance: An Empirical Analysis of Québec Manufacturing SMEs. *Management*, 16(4), 454–478. <https://doi.org/10.3917/mana.164.0454>
- Mueller, S. (2019, February 13). A Brief History of Third Party Logistics (3PL). *Symbia Logistics*. <https://www.symbia.com/resources/third-party-logistics/>
- Nyutu, E., Cobern, W. W., & Pleasants, B. A.-S. (2020). Correlational Study of Student Perceptions of their Undergraduate Laboratory Environment with respect to Gender and Major. *International Journal of Education in Mathematics, Science and Technology*, 9(1), 83–102. <https://doi.org/10.46328/ijemst.1182>
- Ornstein, M. (2013). *A companion to survey research*. Sage.
- Paciarotti, C., Piotrowicz, W. D., & Fenton, G. (2021). Humanitarian logistics and supply chain standards. Literature review and view from practice. *Journal of Humanitarian Logistics and Supply Chain Management*, 11(3), 550–573. <https://doi.org/10.1108/JHLSCM-11-2020-0101>

- Payaro, A., & Papa, A. R. (2017). Logistics Outsourcing: Why Do Not Some Italian SMEs Adopt the Externalization? *Asian Business Research*, 2(2), Article 2.
<https://doi.org/10.20849/abr.v2i2.164>
- Rahman, S., Ahsan, K., Yang, L., & Odgers, J. (2019). An Investigation into critical challenges for multinational third-party logistics providers operating in China. *Journal of Business Research*, 103, 607–619. <https://doi.org/10.1016/j.jbusres.2017.09.053>
- Rheude, J. (2023, May 16). What Is a 3PL? Third-Party Logistics Definition, Process, and Resources. Red Stag Fulfillment. <https://redstagfulfillment.com/3pl-definition-process-resources/>
- Ruesch, L., Tarakci, M., Besiou, M., & Van Quaquebeke, N. (2022). Orchestrating coordination among humanitarian organizations. *Production and Operations Management*, 31(5), 1977–1996. <https://doi.org/10.1111/poms.13660>
- Shi, Y., Osewe, M., Li, Q., Han, L., & Liu, A. (2019). Global challenges and research gaps for third-party logistics: Literature review. *International Journal of Logistics Economics and Globalisation*, 8(1), 46–66. <https://doi.org/10.1504/IJLEG.2019.100209>
- Smith, L. W. (2000). Stakeholder analysis: A pivotal practice of successful projects. *Project Management Institute Annual Seminars & Symposium*.
- Snow, J. (2019). *Supply Chain Manager's Handbook*.
- Stretton, A. (2014). IDENTIFYING AND CLASSIFYING PROGRAM/PROJECT STAKEHOLDERS.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>

- Tien, N. H., Anh, D. B. H., & Thuc, T. D. (2019). Global supply chain and logistics management. Dehli: Academic Publications.
- Tomasini, R., Van Wassenhove, L., & Van Wassenhove, L. (2009). Humanitarian logistics. Springer.
- Turney, S. (2022, May 13). Pearson Correlation Coefficient (r) | Guide & Examples. Scribbr.
<https://www.scribbr.com/statistics/pearson-correlation-coefficient/>
- van der Walt, D. (2016). What does a 'healthy team' mean?
- WFP. (2023, April 28). Ethiopia | World Food Programme.
<https://www.wfp.org/countries/ethiopia>

6. APPENDIX

**ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS,
SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

Consent Form

Dear Sir/Madam

My name is Simeret Yemane Berhe. I am conducting research on Factors affecting 3PL logistics services in humanitarian supply chain management at WFP Ethiopia for the partial fulfillment of a master's degree in logistics and supply chain management at Addis Ababa University, College of Business and Economics, School of Commerce. I would like to extend my deepest appreciation for your willingness and enthusiasm in participating in this valuable research.

The purpose of this survey is to assess Factors affecting 3PL logistics in the humanitarian sector. I assure you that your response will be highly confidential and there is no harm to you in giving this information except the time you will spend on the response to the questions. This survey will take about 15–20 minutes to complete. We thank you in advance for your kind cooperation in answering the questions as truthfully as possible.

If you have any questions, please don't hesitate to contact me via email: simret.yemane42@gmail.com.

Are you volunteering to participate?

Yes _____

No _____

Part I: General Information and Demographic Background of Respondents

Please mark ✓ for your appropriate choice.

1. Gender: Male Female

2. Age

Less than 30 years 31 – 40 years 41 – 50 years Above 51 years

3. Educational qualification

Diploma Degree Masters PhD

Others (specify) -----

4. How long have you worked in the organization?

Below 3 years 3 – 6 years 7 – 10 years Above 10 years

5. In which directorate are you working currently?

Supply Chain: Bilateral Service Provision Contracting
 Supply Chain: Logistics Cluster Funds Management
 Operations Procurement

Others (specify) _____

6. What is your job position?

Director Head of Unit Associate Assistant Officer

If other, please specify-----

Part II

Please indicate the degree to which you agree with the following statements regarding the World food program Ethiopia position regarding Supply Chain management practices after the employment of 3PL logistics services.

| Planning | | Score | | | | |
|----------------------|---|-------|--|--|--|--|
| | | | | | | |
| 1. | The supply chain activities are arranged on a time frame to be performed | | | | | |
| 2. | The distribution was conducted on schedule in the route plan | | | | | |
| 3. | Based on the consumption, re-supply had been forecasted to be requested | | | | | |
| 4. | The organization uses planning as a performance-monitoring tool | | | | | |
| 5. | Follow-up of activities conducted as measured by the plan | | | | | |
| Communication | | | | | | |
| 6. | Good communication and coordination between the supply chain staff (such as head office, primary distribution point, and operational Woredas) | | | | | |
| 7. | Information exchange between the organization and key 3rd party logistics /transporters and other partners timely and accurate manner | | | | | |

| | | | | | | |
|---------------------|--|--|--|--|--|--|
| 8. | Good communication between the supply chain of the programs with other departments (such as finance and logistics) | | | | | |
| 9. | There is no frequent information communication interruption in WFP that affects the supply chain function | | | | | |
| 10. | The exchange of information takes place frequently, informally, and/or on time. | | | | | |
| 11. | The ICT implementation improves the ability of the supply chain to rapidly adjust its capacity in response to customer demand. | | | | | |
| 12. | Adoption of ICT contributes to the cost minimization of the total supply chain expense | | | | | |
| Coordination | | | | | | |
| 13. | Good coordination between the supply chain of the programs with other departments (such as finance and logistics) | | | | | |
| 14. | The organization informs the 3rd party logistics/transporters and partners/beneficiaries in advance of any changing needs | | | | | |
| 15. | The organization integrates the supply chain network (e.g. decide to keep warehouse and fleet management) | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| 16. | The organization has transparency in the supply chain process (the way activities are conducted is visible to others) | | | | | |
| 17. | WFP maintains trustworthy relationships with stakeholders like government, militaries, other NGOs | | | | | |
| 18. | There is good coordination and understanding between WFP and its donors for its successful operations | | | | | |
| Transporters' availability, efficiency, and management | | | | | | |
| 19. | Sufficient transporters available at the Woreda level to transport commodities from operational Woreda to end users' distribution points | | | | | |
| 20. | 3rd party logistics/transporters delivered the commodity from primary to secondary warehouses (Woreda warehouse) without loses | | | | | |
| 21. | The organization conducts market surveys and finds potential 3rd party logistics for the commodity transportation | | | | | |
| 22. | There is an effective mechanism adopted that confirms the safe arrival of all the shipped goods both in terms of quality and quantity. | | | | | |

| | | | | | | |
|--------------------------------------|--|--|--|--|--|--|
| 23. | The transport unit sends the goods with complete and correct transportation and dispatching documents. | | | | | |
| 24. | The transport unit controls the transporters for the delivery of the goods to project offices without delay | | | | | |
| 25. | Transport service providers are capable enough to respond to the organization's urgent transport need on short notice | | | | | |
| 26. | Computerized Tracking services are used in the operation | | | | | |
| Infrastructure Related Issues | | | | | | |
| 27. | Infrastructure problems like the unavailability of all-weather roads negatively affect the transportation of commodities from primary distribution points to secondary warehouses and Woreda to end users distribution centers | | | | | |
| 28. | Lack of adequate information communication Technology networking infrastructure affects the efficiency of the organization's supply chain service | | | | | |
| 29. | Unavailability of warehouses at the project office areas and near beneficiary locations affect the supply chain performance of WFP | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| Humanitarian Supply Chain Performance with Intended/targeted beneficiaries | | | | | | |
| 30. | The organization delivered quality foods to drought-affected beneficiaries on time to save lives | | | | | |
| 31. | The organization achieved in reducing casualties and the impact of the disaster/drought on human lives | | | | | |
| 32. | The organization has accountable to beneficiaries and donors | | | | | |
| 33. | The organization has controlled the quality of the commodities at primary distribution points, at operational Woredas, and end users distribution points | | | | | |
| 34. | Beneficiaries are much satisfied with the achievements of the time efficiency of the organization's commodity/food distribution | | | | | |
| Please indicate the degree to which your organization successfully, performs or does not the organization's mission regarding the supply chain operating system. | | | | | | |
| 35. | Regarding, supply chain planning, communication, and coordination the organization performs well. | | | | | |
| 36. | The organization performs well in reducing challenges of transport availability and infrastructural problems. | | | | | |

| | | | | | | |
|-----|--|--|--|--|--|--|
| 37. | The organization performs well in delivering products, to target beneficiaries | | | | | |
|-----|--|--|--|--|--|--|