FACTORS AFFECTING HUMANITARIAN LOGISTICS COORDINATION IN EMERGENCY RESPONSE, A CASE IN SELECTED HUMANITARIAN ORGANIZATIONS IN FOOD AID

By

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Advisor

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DECLARATION

I, the undersigned declare that this thesis (Factors Affecting Humanitarian Logistics Coordination in Emergency Response, A Case in Selected Humanitarian Organizations in Food Aid) is my original work. It has not been submitted for a degree in any other universities and all the materials used in this study have been duly acknowledged.

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This research project has been submitted with my authority as the university Advisor;

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STATEMENT OF CERTIFICATION

This is to certify that the thesis prepared by Hana Terefe Belachew entitled: **Factors Affecting Humanitarian Logistics Coordination in Emergency Response, A Case in Selected Humanitarian Organizations in Food Aid**, and submitted in partial fulfilment of the requirements for the degree of Master in Logistics and Supply Chain Management with the regulations of the university and meets the accepted standards with respect to originality and quality.

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ACRONYMS AND ABBREVIATIONS

CRS:	Catholic Relief Service
DRMFSS:	Disaster Risk Management & Food Security Sector
DRMTWGs:	Disaster Risk Management Technical Working Groups
EHRP:	Emergency Humanitarian Response Plan
FDRE:	Federal Democratic Republic of Ethiopia
FHE:	Food for the Hungry Ethiopia
FAO:	Food and Agriculture Organization
FO:	Food Operators
HA:	Humanitarian Aid/Assistance
HL:	Humanitarian Logistics
HLC:	Humanitarian Logistic Coordination
HO:	Humanitarian Organizations
HRPD:	Humanitarian Resilience Plan Documents
HRD:	Humanitarian Response Document
GoE:	Government of Ethiopia
JEOP:	Joint Emergency Operational Program
NDRMCC:	National Disaster Risk Management Coordination Commission
NGOs:	Non-government organizations
ORDA:	Organization for Rehabilitation and Development Agency
SCI:	Save the Children International
SCM:	Supply Chain Management
UN:	United Nations
UNICEF:	United Nations International Children's Emergency Fund
UNHCR:	United Nation High Commissioner for Refuge
UNOCHA:	United Nations Office for the Coordination of Humanitarian Affairs
WHO:	World Health Organization
WFP:	World Food Program
WVE:	World Vision Ethiopia

ABSTRACT

The general objective of the study was sought to assess the factors affecting humanitarian logistics coordination in emergency response among humanitarian organizations in food aid. Explanatory and descriptive research design was used in executing the study. The targeted population was humanitarian organizations in food aid and proportionate stratified sampling was conducted to increase the chances of making comparisons among strata (originations), in additions purposive sampling was employed aiming logistics and program professionals who are relevant to humanitarian emergency food response and logistics coordination. Primary data was collected using questionnaire. Descriptive and inferential data analyses were generated. Out of 80 questionnaires 57 respondents filled in and returned the questionnaire, making the response rate 71%. Pearson Correlation Coefficient was computed and tested. A positive and moderate relationship to extent of (r=.598, (r=.416) & (r=.430) exist between environmental, donor, organizational factors respectively and Logistics Coordination. A positive and strong relationship to extent of (r=.675) exist between logistics coordination and interorganizational factors and all factors were statistically significant at 1% level (p=0.001, <0.01). A multiple linear regression analysis was conducted, and the coefficient of determination represented by adjusted R-squared revealed that the percentage of the variance in logistics coordination explained by the independent variables (environmental, donors' Interorganizational and organizational factors) was 56.3% and the overall model was significant. Based on the research findings, the researcher concludes that moderate and positive relationship exist between Logistics coordination and environmental, donors and organizational factors whereas, strong and positive relationship exit between logistics coordination and interorganizational factor. Further, the researcher concludes that environmental, interorganizational and organizational were the most factors affecting logistics coordination with statistical significance level of 0.027, 0.009 and 0.003 respectively (p < 0.05) whereas donors' factor was the least factor associated to logistics coordination with p=126. To improve humanitarian logistics coordination, the researcher recommends an updated logistics capacity assessment, regular logistics coordination meeting among HOs to share information and resources, harmonized interorganizational policies and procedure to engage in joint planning and implementation and at last clear logistics coordination misconception through training and experience sharing platforms.

Keywords: Humanitarian Logistics Coordination, Environment factors, Donor Factors, Interorganizational Factors, and Organizational Factors. Food Aid, cluster, emergency response.

CHAPER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1. Introduction

Chapter one covers the background of the study in line with the objectives of the study, followed by the statement of the problem with the gaps that to be addressed. The chapter further presents the main and specific objectives, leading to research questions. The scope and limitation of the study are followed by organization of the study and definition of important terms.

1.2. Background of the Study

In Ethiopia, the overall humanitarian emergency response and humanitarian development assistances is coordinated by The National Disaster Risk Management Coordination Commission (NDRMCC). NDRMCC leads the humanitarian response assistance at federal and regional level through Disaster Risk Management Technical Working Groups (DRMTWGs) across the country and hosts a series of specialised task forces that work in clusters in every sector. The United Nations agency OCHA support the GoE to strengthening the DRMTWGs. Various UN Agencies, NGOs and the Ethiopian Red Cross are active participants of humanitarian responses at the regional and sub-regional levels.

As stated by OCHA good coordination means less gaps and overlaps in the assistance delivered by humanitarian organizations. To deal with the growing number of complex disasters, and to handle the growing need for more sustainable humanitarian operations (Chang, Wilkinson et al, 2010), HOs are required to coordinate with each other. The very nature of emergency response makes coordination necessary. In Ethiopia, for past decades the HOs have had to respond to several natural and manmade disasters and complex emergencies. Since 2015, HOs have been faced with complex and an increasing political arrest, violence, internal displacement of people and drought within others. Due to these experiences there has been an attempt to increase coordination within humanitarian actors and improve coherence in humanitarian response, where the NDRMC leading the coordination effort in partnership with UNOCHA. Despite coordination challenges, humanitarian actors have been encouraged to consider long term objectives into their life-saving work integrated into the work of all clusters

in the humanitarian response sectors and the Emergency Humanitarian Response Plan (Dolinskaya, Shi, Karen, & Ross, 2011).

There are different clusters of humanitarian organizations including food security to share information, resources and plan together to implement quality programming in logistics coordination during emergencies responses in Ethiopia; however various studies/reports indicated that in many cases humanitarian organizations fail to come together. Coordination and planning together is very critical element in the implementation of humanitarian emergency responses to utilize resources and overcome logistical challenges. When there is effective coordination there is always a possibility for timeliness of the response and cost effectiveness.

In emergency responses, ensuring enough food is available and people have access to it requires, a strong coordinated humanitarian response built around the needs of the most vulnerable people. For instance, Van Wassenhove (2006) points out that even when organizations are well prepared to respond during disasters, they may be less effective when they operate individually within a large-scale disaster. In every humanitarian emergency response effort, logistics is at the heart to bring the food and first aid assistance to affected people. Thus, the coordination of Humanitarian Logistics within HOs is very important, coordinating resources would reduce costs related to operations and improves response time (Dolinskaya et al, 2011).

An empirical evidence in Haiti, Indonesia, Pakistan and various disaster affected areas, showed that uncoordinated humanitarian logistics activities creates congestion and chaos (Bennett, Bertrand et al, 2006). For example, in Ethiopia according to PMR (2018) in 2017 out of 7.8mil targeted people the food cluster reached 5.6milion, out of 598mil fund request 330mil received which makes the food sector funding at 55% short of 45% to fully reach affected people and coordinating scarce resources is out of question (at the time of this study conducted the PMR for 2018 yet to be published).

International donors' community, UN agencies and NGOs have been working in close collaboration with the GoE and playing a critical role in reducing food Insecurity and responding to emergency food requirement disaster affected area. Nevertheless, when alert is activated in emergency crises, the HL focuses on response to save lives. As a result, operations

are hampered by problems resulting uncoordinated logistical activities, difficulties in organizing emergency response (which affects decision-making and coordination), disaster-management strategy (mitigation, prevention and preparedness), the social and economic environment of the area affected by the disaster, an inefficient use of financial and non-financial resources and poor coordination (Thevenaz & Resodihardjo, 2010).

The complexity of emergency response need continues to make coordination among humanitarian organization important and challenging. Often, Humanitarian organizations tend to specialise based on their overall mission and objectives (Van Wassenhove, 2006). They are largely independent, with many having their own funding and systems. When specialised and independent organisations combined, they can face a series of problems related to coordination, (Bennett, Bertrand et al, 2006) as evidenced during the Indian Ocean tsunami in 2004 and the Darfur crisis in 2004/2005. In both cases, coordination proved difficult in such large and complicated settings. Some provision of relief was overlapping, some populations were not well served and there were problems related to prioritising the pipeline (Van Wassenhove, 2006; OCHA, 2007). Such cases indicate the need for coordination in terms of both preparedness and response, and logistics activities.

1.3. Humanitarian Organization in Ethiopia Working in Food Sector

According to official Humanitarian Requirement Documents (HRD) published annually, JEOP is a consortium of five members (CRS, ORDA WV, FHE, CARE), and WFP are a cluster in food aid sector who are partnering with NDRMC to respond to the food requirement in Ethiopia. Official CRS website states that, The JEOP consortium is led by CRS with primary objective to save lives and protecting livelihoods through the distribution of food to targeted disaster-affected populations. More specifically, the program planned to address the immediate food security needs of drought affected populations. Whereas, WFP is the leading humanitarian organization fighting hungers and saving lives through delivering food assistance in emergencies working closely with NDRMC and International communities to reduce the impacts of food insecurity and logistics challenges in Ethiopia. Thus, the fact that resource is scarce, this research is intending to investigate the humanitarian logistics coordination within HOs, these are WFP and JEOP who are food cluster in food aid sector. Below is a table

illustration of an ongoing food cluster, operational response coverage for HOs including GoE as published by OHCA in December 2018.

Table 1: Ongoing food response and operational presence

Ethiopia: 3W - Operational Presence (Ongoing and Planned Activities) (as of November 2018)

Region	Organization	Implementing Partner(s)	Organization Type	Status
Afar	NDRMC	NDRMC	Government	Ongoing
Amhara	NDRMC	NDRMC	Government	Ongoing
	JEOP	JEOP	International NGO	Ongoing
Benishangul Gumz	NDRMC	NDRMC	Government	Ongoing
Dire Dawa	JEOP	JEOP	International NGO	Ongoing
Gambela	NDRMC	NDRMC	Government	Ongoing
Harari	NDRMC	NDRMC	Government	Ongoing
Oromia	NDRMC	NDRMC	Government	Ongoing
	WFP	WFP	UN Agency	Ongoing
	JEOP	JEOP	International NGO	Ongoing
SNNP	NDRMC	NDRMC	Government	Ongoing
	JEOP	JEOP	International NGO	Ongoing
Somali	WFP	WFP	UN Agency	Ongoing
Tigray	NDRMC	NDRMC	Government	Ongoing
	JEOP	JEOP	International NGO	Ongoing

Creation date: 31 December 2018 Map Doc:14_3W_FOOD_123118_A4 Sources: Food Cluster Feedback: ocha-eth@un.org

1.4. Statement of the problem

According to the latest World Bank, Country Score Card (2016) Ethiopia ranks 126th out of 160 countries in Logistics Performance Index (LPI) in the access to sea ports, security, road and storage infrastructure and are insufficient. These challenges drive up humanitarian assistance operating costs especially those in food sector. The highest proportion of food assistance takes place in kind than in cash, thus the cost of transportation, warehousing, dispatch and distribution poses funding constraints to reaches affected people and limits the operational capacity of organizations.

Humanitarian Organizations required to optimize scarce resources through logistics coordination that will enable them to respond to humanitarian needs. Mattewos (2015) in Ethiopian context stated that logistics coordination as bottlenecks in logistics management and suggested that in most international countries logistics coordination challenges are solved by forming various councils and transit corridor management authorities. This implies that humanitarian organizations are encouraged to coordinate their humanitarian response to overcome logistical challenges collectively.

For instance, Van Wassenhove (2006) points out that even when organizations are well prepared to respond during disasters, they may be less effective when they operate individually

within a large-scale disaster. Van Brabant (1999) further suggests that "cost-effective use of resources, rational allocation of tasks, and working towards agreed priorities" are all characteristics that promote coordination among HOs. (Gazley and Brudney 2007) suggest that coordination can yield many benefits such as "economic efficiencies, greater service quality, organizational learning, access to new skills, diffusion of risk, improved public accountability, ability to buffer external uncertainties, and conflict avoidance." The significant amount of uncertainty (e.g. number of beneficiaries, availability of supply, conditions of supply networks, availability of human resources, etc.) faced by HOs when responding to disasters (Thevenaz and Resodihardjo, 2010) can amplify the benefits of coordination. However, high levels of uncertainty also create additional barriers to coordination.

Based on the latest available data from PMR published in 2018, for covering year 2017, the report showed that due to logistical challenges the food distribution by the three operators, NDRMC, WFP and JEOP in rounds, covering one-month food consumption requirement were significantly delayed. Further, PMR (2016) pointed out, that the food delivery and distribution encountered several challenges, at woreda level resulted in delayed food dispatches. For example, during the year 2017, the number of target beneficiaries initially identified in the HRD were 5.6 million later increased to 7.8 million people. The scale of emergency and an increased number of affected people stretched the resource pipeline to reach the entire affected people by food cluster

The scale of emergency operation in Ethiopia is huge and humanitarian actors are diverse and many in numbers, however on the other side, the government of Ethiopia particularly the regions which are supposed to lead the coordination do not have the capacity to do so and are often influenced or at times surpassed by humanitarian organizations with large presence and experienced staff. Due to the scale of emergency timely response without coordination is impossible, duplication of effort cannot be avoided without coordination, resources are always not enough to meet the emergency needs and prioritization is very important in emergency and without coordination prioritization cannot be done. This research intends to assess and determine the factors affecting the logistics coordination among HOs in Food aid.

Relating to the title of the research, during the academic year of "Humanitarian Logistic Module", the topic called "The Importance of Coordinated Functions in Emergency Humanitarian Logistics', and the contributing factors hampering coordination generated the

main motivation for this study. In line with this, literatures on humanitarian logistics have suggested that logistic coordination among humanitarian organization during disaster and emergency response is very important for timely response and reduce cost. However, very few literatures empirically tested challenges of humanitarian logistics coordination and no evidence found that studies carried out in context of Ethiopia. Further conducting this research may provide the chance to broaden practical scope of knowledge and profession in Humanitarian Logistics.

1.5. Research Question

The importance of humanitarian logistics coordination and its effect on emergency response operation under studied subject and this is an attempt to study and provide answers to the following research questions:

- What are the factors affecting humanitarian logistics coordination within HOs, in food aid?
- What type of relationship exists between the environmental, donors, interorganizational, and organizational factors and humanitarian logistics coordination?
- What is an extent of humanitarian logistics coordination affected by environmental, donors, interorganizational and organizational factors?

1.6. General Objective of the Study

The general objective of this study is to determine the factors affecting Humanitarian Logistic Coordination within HOs in food Aid.

1.6.1. Specific Objectives

The study specifically attempts to:

- To determine the relationship that exists between the environmental, Logistics Coordination.
- To determine the relationship that exists between the donors and Humanitarian Logistics Coordination.
- To determine the relationship that exists between the interorganizational and Humanitarian Logistics Coordination.
- To determine the relationship that exists between the organizational factors and Humanitarian Logistics Coordination.

- To examine an extent of humanitarian logistics coordination affected by environmental, donors, interorganizational and organizational factors.

1.7. Significance of the study

Humanitarian logistics coordination has been a very important part of an emergency response effort even though it is at early stage in Ethiopia having a complex and vast concept. Regardless of the need for logistics coordination, there has been no empirical study carried out either to assess, identify or to determine the challenges or factors affecting humanitarian logistics coordination within humanitarian organizations. Effective humanitarian logistics coordination has a positive impact on humanitarian response time and cost of emergency response effort to beneficiaries. Based on in-depth review of theoretical and empirical literatures the study identified factors, and this research determined the most factors that affect the logistics coordination within humanitarian organizations, in food aid. The findings of the research shall benefit humanitarian organizations in food aid including students who wish to conduct similar research, this study could serve as empirical reference.

1.8. Limitation of the Study

There was no empirical study in Ethiopian context logistic coordination given Humanitarian logistics coordination is a very vast concept thus, the study was conducted based on an experience of other countries adopted from literatures. Also, to measure the impact of these factors without including NDRMC, who is the lead coordinator and cluster in food response was another limitation of this study. The lack of time and resources to extend participants outside Addis Ababa was another limitation of this study. In addition, the lack information to respond to the questioner openly and timely that can be major input for the research, lack of enough time to conduct the study were also among the various problems encountered by the researcher during the study.

1.9. Scope of the Study

The scope of study covered HOs in food/cluster, these are WFP and JEOP (CRS, ORDA, WV, FH, and Care) organizations with their country office situated in Addis Ababa and ORDA in Bahir Dar. The research used descriptive and explanatory research design to provide basic descriptive information about the dataset and to explain the independent and dependent

variables relationship. Quantitative survey questionnaire using Likert scale was used to collect data. The research was conducted within horizontal coordination concept in which the study includes humanitarian organizations who has similar nature humanitarian emergency food response. Logistics and Programme Professionals' respondents from the six organizations was purposefully selected based on relevancy of subject under study. The study was conducted within academic year 2018/2019.

1.10. Operational Definition

Coordination: According to the study conducted by (Reindorp & Wiles, 2001), coordination is defined as follows:
"…the systemic use of policy instruments to deliver humanitarian assistance in organized and effective manner. Such instruments include strategic planning, gathering data and managing information, mobilizing resources and ensuring accountability, orchestrating a functional division of labour, negotiating and maintaining a serviceable framework with host political authorities and providing leadership."

Horizontal Coordination: (Ergun, Gui et al, 2011) define horizontal coordination as "the management of parallel actions in ways that increase effectiveness" which may include conducting identical or different activities or projects by different organizations.

Cluster: is defined by WHO, a group of agencies that gathered to work together towards common objectives within a sector of emergency response e.g. food, Health, Agriculture Water and sanitation, and so on - typically reflecting important and somewhat separate areas of relief work.

Humanitarian organization: according to Fritz Institute (2003), Humanitarian organizations, whose mission's centre on minimizing loss of life and alleviating suffering, are the primary vehicle through which governments channel aid.

Humanitarian Logistics: according to Fritz Institute (2003), humanitarian logistics is considered as the "system and process involved in bringing together and coordinating people, knowledge and skills with the goal of helping those in need who are struck by natural and other catastrophic disasters where the process of aid will be executed through providing and managing procurement, transportation, tracking, warehousing and last mile delivery

processes." Van Wassenhove (2006) defines Humanitarian logistics as "mobilizing people, resources, skills and knowledge to help vulnerable people affected by disaster."

1.11. Organization of the Study

Chapter one is about the general background of coordination in humanitarian context and humanitarian organizations and food aid and discussing the problem statement that exist within humanitarian organizations in food aid and the challenges that affects logistics coordination during humanitarian response. Chapter two investigates literatures, relevant to coordination theories and concepts, in humanitarian logistic discusses followed with empirical literature review to identify challenges within humanitarian organizations and analyse the literature gap and develop conceptual framework relevant to the issue under study. Chapter three is about the methodology of the study. Chapter four presents the analysis of the data where the findings leading to answers of the research questions. Chapter five presents summary, conclusion and recommendations for possible future research directions and further discussions.

CHAPTER TWO
RELATED LITERATURE REVIEW

2.1. Introduction

The theoretical reviews are based on Resource Based Theory and Relief Coordination. The researcher examines literature relevant to coordination concepts in humanitarian logistics context and empirical studies written by various scholars in the field of HL to understand the challenges of coordination in HL and the knowledge gap that exist to establish the conceptual framework for data collection instrument. This includes definition and concepts of Humanitarian Coordination, Basic Humanitarian Principle, Coordination type, and challenges faced by HL and conceptual framework.

2.2. Theoretical Reviews

The theoretical review looks into, the Resource Based Theory and Relief Coordination Theory as discussed here below.

2.2.1. Resource Based Theory

Based on resource-based view (RBV) argue that organizations may achieve a desired competitive advantage through the bundling of strategic resources which are valuable, rare, inimitable and non-substitutable (Barney, 1991) while the RBV suggests that this is dependent on specific conditions. Visibility is one of the desired capabilities in the humanitarian supply chain leveraged to reduce risk of poor coordination due to asymmetric information (Fawcett and Fawcett, 2013; Wang et al. 2017).

According to Eisenhardt and Martin (2000), Resource-based theory holds that the firm can be considered as a bundle of resources that are heterogeneously distributed across in this case, HOs with enduring differences between them. This theory suggests that a company must secure an efficient bundle and flow of the right type of resources from its operating environment to stay relevant and pile up its performance (Rungtusanatham et al, 2003). In this theory, resources refer to physical or tangible assets that include plants, equipment; as well as intangible assets such as knowledge, expertise, and other organizational assets.

In line with this, competitive advantage can result from having a shared ownership of or access to, unique or expensive assets like transport, innovations, and barriers to resources. It is these resources that can enable HOs to have leverage for competitiveness in the humanitarian operations through the combination of such resources and capabilities in a way that forms the core competencies of each individual HO.

According to Zacharia, Sanders, and Nix (2011), Resource Based Theory is critical to many firms due to its competency in logistics and that it can be expensive if a company opts to invest in it. This is because competency is a source of sustainable competitive advantage that HOs can have over a period and whose realization is pegged on the practicability of taking advantage of the resources that a company must achieve efficiency and effectiveness by utilizing even the resources it does not own.

HOs have therefore relied on outsourcing to gain access to other firm's valuable resources in the competitive market. With the growing need for such resources, HOs searching and providing such services become reciprocally adapted towards one another and more value dependent. The theory thus suggests that coordination enables firms to be accessible to complementary resources and create much more competitive resource bundles, providing them with a competitive advantage (Zacharia, Sanders & Nix, 2011).

2.2.2. Relief Coordination Theory

A vital component of humanitarian assistance is the coordination within all actors involved in the delivery of humanitarian assistance which allow the most efficient, cost effective, and successful operations possible (Atta, 2008). Relief coordination theory suggests that it is possible to arrange the efforts of diverse organizations and the orderly and organized direction of activities (Seybolt, 1997; McEntire, 1997). The humanitarianism offers a more specific and often cited definition of the concept as: managing information; mobilizing resources and assuring accountability; organizing a functional division of labour in the field; negotiating and maintaining a serviceable framework with host political authorities; and providing leadership (Minear, 2002). The success of any relief activity depends heavily on the effectiveness of the logistics operations.

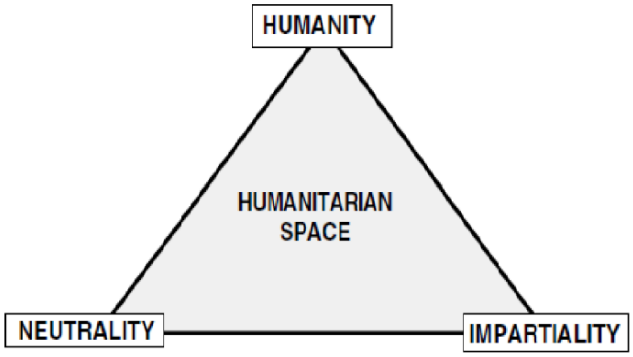
Analysts and scholars also often suggest that coordination is important to improve service delivery effectiveness. Indeed, while effectiveness is rarely defined, it is most often given as the reason why achieving coordination within service providing agencies is important (Minear, 2002). An effort to reduce duplication, often framed as securing or improving organizational efficiency, is also frequently offered as a rationale for why humanitarian organizations should seek to coordinate their assistance operations (McEntire, 1997).

2.2.3. Basic Humanitarian Principles

Humanitarian response is guided by humanitarian principle. These are the principles of humanity, neutrality and impartiality is fundamental to the provision of humanitarian assistance, and as such warrant consideration in coordination strategies and policies (Atta, 2008; Tomasini and Wassenhove, 2006). OCHA suggest that humanitarian activities are guided by the four humanitarian principles: humanity, neutrality, impartiality and independence. These principles provide the foundations for humanitarian action. Promoting and ensuring compliance with the principles are essential elements of effective humanitarian coordination (OHCA, 2012).

The Humanitarian Space is an environment where humanitarians can work without hindrance. Implications, especially related to neutrality of an organization (and its perception as such by other actors), should be carefully considered when coordination between different actors, especially across traditional professional lines. As members of a wider group, it is important to recognize that actions taken by one humanitarian organization which may run the risk of compromising a key principle of humanitarian action, may have unintended and potentially dangerous results for other organizations acting in the same area. It is for such reasons that a strict adherence to these principles is important and should be incorporated into discussions on coordination (Atta, 2008). Humanitarian organization need access to people in need and have similar goal to save lives and alleviate human suffering, but wide variance in such principle elements as organizational structure, technical expertise, mission, mandate, and social and political interest, geographical infrastructure, may hinder or prevent natural coordination on the field (Atta, 2008).

Figure 1: Humanitarian Space



Source: Tomasini and Van Wassenhove, 2004c

2.2.4. Humanitarian Coordination Concept

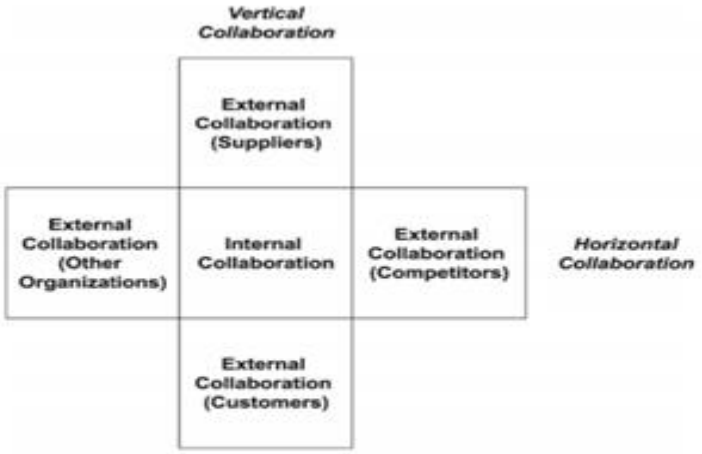
Coordination, collaboration, alliances, or integration are often used interchangeably to qualify for interorganizational partnership. The coordination concept is an essential tool in the way to obtain the big picture of an emergency in humanitarian logistic context. A lack of coordination within humanitarian organization can create big losses of human and material resources (Kaynak & Tuger, 2014). Effective coordination is the hidden force multiplier in emergency response. With coordination, one plus one does not equal three; it equals five or ten. It reduces duplication and competition and allows different agencies and organizations to complement each other and give added value (OCHA, 2014).

Coordination has been referred as the cooperation of two or more unconnected or rival organizations to share their exclusive knowledge or resources (Kaynak & Tuger, 2014). The humanitarian sector comprises many independent organisations, of different natures and sizes, working alongside one another in crises and emergencies to achieve broadly similar objectives. There does not seem to be a single, agreed-on understanding of what humanitarian coordination entails, however, a broadly accepted definition of coordination is 'the organization of the different elements of a complex body or activity to enable them to work together effectively' (Oxford English Dictionary, 2015).

There are two sub-categories of the main coordination concept. These are vertical and horizontal coordination. Vertical and horizontal coordination are two very broad and related topics that have been explored at length in several different literatures including organization design, transaction costs and network literature (Galbraith, 1977, Heide, 1994, Hakansson and Snehota, 1995, Mintzberg, 1980, Thompson, 1967b, Williamson, 1981). Problems of

coordination will often stem from specialization of tasks or actors. Vertical coordination is here taken to mean the coordination of a logistics, i.e. point of origin to point of consumption. For practical purposes the point of origin may be variable. Sometimes it is useful to talk about a manufacturer (as in most of the commercially oriented SCM literature). Other times another actor such as a donor may be more usefully seen as the point of origin (Heigh et al, 2007). Horizontal coordination deals primarily with actors at the same level of a supply chain such as two HOs delivering similar services in the same area. These may belong to different supply chains and the challenge is to make use of any overlap to achieve economies of scale (Hulthén, 2002). Horizontal coordination concerns the internal relationship, the partnership inside an organization or a community, or the collaboration of an organization with competitors and non-competitors.

Figure 2: Vertical & Horizontal Coordination



Horizontal and vertical cooperation (Source: Barratt, 2004)

2.2.5. Coordination through Cluster

The UN Humanitarian reform program revealed inefficiency, duplication and overlap, this led to the concept of coordination through cluster which also proposed by Jahre and Jensen (2010) in humanitarian logistics as a different approach to minimize the consequences of a natural disaster. The cluster concept involves organizing humanitarian help based on several sectors with a predefined management. Clusters were introduced to improve the effectiveness of the Office for the Coordination of Humanitarian Affairs (OCHA) system in the five following key areas:

i. satisfactory global capacity to react to the current and future crisis;
ii. trustworthy and predictable leadership at a global and local level;

iii. unbreakable alliance between UN bodies, NGOs and local authorities;
iv. responsibility, both for the reaction and in relation to receivers;
v. strategic field-level organization and prioritization.

Jahre and Jensen (2010) suggest achieving these goals, three main aspects are represented as essential for the cluster system of: These are: "selected global direction, central and local competence construction and supplier of last alternative". Firstly, the cluster concept is planned at the global perspective and then prepared for a location while the event occurs. Each global cluster is constant, permanent and is directed by one assigned group, while some clusters have a supplementary support group. As one cluster is permanent and is organized at a global perspective, it offers a large flexibility in its response to the incident. It can offer partnerships to the existing organizations as well as the total involvement in an area where there is a lack of organization. Secondly, the global management of the clusters has a special task of making sure both central and local competence creation. To make certain the global perspective and the coordination between different small and large areas of assistance, the global cluster management has a vital role. Finally, the supplier of last alternative is another important part of the cluster perspective.

The concept of cluster is, if no other organization can supply a necessary service, the cluster management must be engaged to deliver it as the supplier of the last alternative (Kaynak & Tuger, 2014). It is also a large responsibility because before the applications, it is assumed that the engagement of the last alternative provider replaces a leading position with limitless commitments without the resources to meet them. Information management and exchange is a main activity for the cluster system. The balance between the coordination within cluster is assumed to have a direct influence over the total beneficiary value. All the members of the system assumed to be prepared for a coordinated approach as part of a disaster operation in various contexts (Kaynak &Tuger, 2014).

Despite the introduction of humanitarian response through cluster approach scholars argue, the application of it to improve effectiveness and efficiency within the HOs, confusion still exists even within UN agencies about the added value of clusters and how they fit with the pre-existing sectoral task force. One reason for the potential duplication is that there is no explicit Inter-Agency Steering Committee guidance on how to involve government bodies in clusters, in countries where they have the capacity to participate. As a result, International Non-

Governmental Organisations (INGOs) felt that there were too many coordination meetings and their purpose is not always clear.

2.2.6. Humanitarian Coordination Approach in Ethiopia through Cluster

The cluster approach was rolled out in Ethiopia in early 2007 following consultations within the international community and the Government of Ethiopia. In implementing the cluster approach at the federal level, the humanitarian community sought to strengthen support for the Government-led coordination structures housed in the Disaster Risk Management and Food Security Sector (DRMFSS), and in 2013 National Disaster Risk Management Coordination Commission established to lead the cluster coordination and key line ministries, including Agriculture, Health and Ministry of Water Resources. The clusters work at the technical level and aims to support government-led sector task forces and avoid the establishment of parallel coordination mechanisms.

The Office for Coordination of Humanitarian Affairs (OCHA) convenes the inter-cluster coordination mechanism, which meets every two weeks and is intended to provide a forum for the respective cluster leads to discuss issues of mutual concern and ensure that cross-cutting issues are followed up. The inter-cluster coordination mechanism also has a role in making recommendations of key issues for Ethiopia Humanitarian Country Team (EHCT) consideration and of carrying out activities requested by the EHCT. WFP and FAO co-chair with NDRMC in food insecurity cluster. In Food Cluster, NDRMC, WFP and JEOP is known as food operator partnering to address food response requirement in Ethiopia. FAO supports GoE in disaster preparedness and resilience (OHCA, 2016).

Furthermore, the Logistics and Food Insecurity Task Forces, co-chaired by the Government and WFP, both in Addis Ababa and in the field. The Logistics Cluster is a coordination mechanism activated to ensure an efficient and effective emergency response. It is comprised of a group of humanitarian actors committed to commonly address logistics needs in humanitarian contexts by ensuring coordination, information management, and, where necessary, by facilitating access to logistics services (WFP, 2017).

2.2.7. Coordination in Disaster Life Cycle

There has recently been some empirical research on the types of coordination involved in humanitarian logistics and the fact that different types take place at certain points within the 'lifecycle' of a disaster, man-made or natural. A typical lifecycle consists of ramp-up, maturity and ramp down phases. (Donini, 1996) points to three forms which can be described as follows: I, Coordination by command where there is central coordination; agreement on responsibilities and objectives; and common territorial areas of responsibility. II, Coordination by consensus where organizations have access to compatible or shared communications equipment, liaison and interagency meetings and pre-mission assessments. III Coordination by default includes routine contact between desk officers and civil military operations centres.

Coordination by command: in the 'ramp-up phase' time is critical and there is a pressing need to clear the bottlenecks in the processes so that the HOs can get to the scene of the disaster quickly and start their work. This is where coordination by command can be very effective. Simple issues such as obtaining visas, getting customs clearance, signing agreements with the military on accessible corridors and times, can all hinder the initial stages. There is no point in every HOs negotiating with hosting government, for example, to obtain visa and customs clearance to be able to bring people and goods into the affected people. In this case, one organization should take the lead and clear things for all (Donini,1996).

Figure 3: Disaster life cycle, source Donnini, 1996

	Ramp Up	Maturity	Ramp Down
Command			
Consensus			
Default			

Coordination by consensus: as the bottlenecks are cleared and all HOs are installed and operational, their focus will shift to fulfilling their own specific mandate (eg food, health, water). They no longer accept coordination by command. However, take for instance fuel which is outside the mandate of any one organization. If a central body such as the cluster lead agency anticipates fuel shortages in a certain region because of cartel formations which are raising prices, humanitarian organizations would probably appreciate this information being

posted on a website and be ready to discuss how they can collectively solve the issue. This is coordination by consensus (Donini,1996).

Coordination by default: when organizations start pulling out, coordination will still happen but only occasionally, by default. This tends to happen naturally in the field as humanitarians from one organization swap ideas, help, advice with those from another organization (Donini, 1996).

2.2.8 Humanitarian Logistics

The definition of humanitarian logistics (HL) within emerging research field is most frequently used in the literature is offered by Thomas and Kopczak (2005), ‘’The process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials as well as related information, from the point of origin to the point of consumption for meeting the end beneficiary’s requirements’’. HL encompasses a range of activities, including procurement, transport, tracking and tracing, customs clearance, local transportation, warehousing and last mile delivery.

The definition proposed by Fritz Institute, Overstreet et al, (2011), is a process of planning, implementation and control efficiently, focus on low cost flow and storage of goods and materials, as well as related information, from point of origin to point of consumption for relieving the suffering of vulnerable people. Its role encompasses a range of activities, including the planning, preparation, transportation, and acquisition, storage, monitoring and tracking.

Humanitarian logistics is a link between disaster preparedness and response effort, undertaking logistics elements that include procurement, transport, warehouse and distribution, and between headquarters and the field through effective use of information flows. These activities are crucial to the effectiveness and speed of response for major humanitarian programs, such as food, health, shelter, water and sanitation. Logistics can be one of the most expensive parts of a relief effort. Since the logistics handles, procurement, transport, warehousing and tracking of goods through the supply chain, improving humanitarian logistics coordination would act as catalyst for reducing costs related to operations and to improving response time (Dolinskaya, Shi et al, 2011).

2.2.9. Challenges of Humanitarian Logistic Vs Commercial Logistics

The comparison between the commercial and humanitarian supply chain has been studied by a large body of researchers from several different perspectives. Humanitarian logistics, as well as business logistics, encompasses a range of activities, including: preparedness, planning, design, procurement, transportation, inventory, warehousing, tracking and tracing, distribution, recipient satisfaction bidding and reverse bidding, reporting and accountability, and customs clearance (Gustavsson, 2003; Thomas and Kopczak, 2005). The basic principles of managing the flow of goods, information and finances that have been established by commercial logistics are also valid for humanitarian logistics (Kovacs and Spens, 2007).

However, HL is characterised by large-scale activities, irregular demand and unusual constraints (Beamon and Kotleba, 2006) that can range from a lack of electricity supplies to limited transport infrastructure including 'controlled' environment with some minor variability (e.g. traffic congestion) (Kovacs and Spens, 2009). Whereas, commercial logistics are normally planned of demand and relatively well established while humanitarian logistical decisions are made within shorter time frames (Balcik and Beamon, 2008). They usually deal with a predetermined set of suppliers, manufacturing sites, and a stable or at least predictable demand, which are all unknown in humanitarian logistics (Cassidy, 2003). Many businesses are driven by customers (i.e. demand) in commercial logistics, while humanitarian organisations are mostly driven by donors (i.e. supply) (Tomasini and Van Wassenhove, 2009). The customers (aid recipients) have no choice and, therefore, 'true demand' is not created in humanitarian logistics (Kovacs and Spens, 2009).

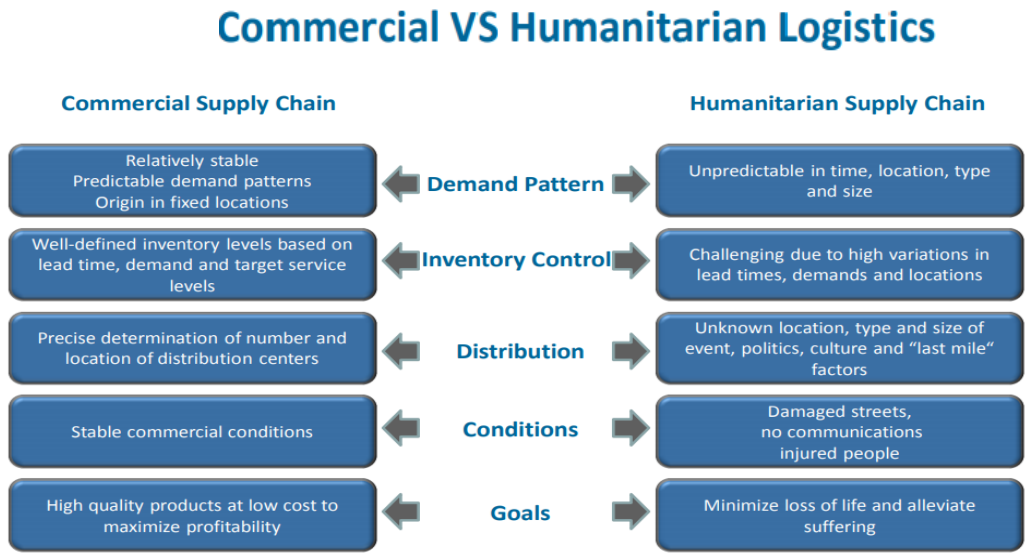
Cost is one of the reasons for pre-purchasing the supplies as they can purchase them at a reasonable price (Salisbury, 2007). Once disaster occurs, demand increases dramatically, and suppliers will often raise their prices in response. Humanitarian organisations adapt the in-advance purchase strategy and store in the prepositioned warehouse to react quickly (Beamon and Balcik, 2008). There are several challenges that humanitarian organizations face to ensure the smooth flow of the humanitarian logistics. Difficulty in creating an effective pre-positioning plan includes uncertainty about whether natural disasters will occur and, if they do, where and with what magnitude (Rawls and Turnquist, 2010).

Consequently, operating a prepositioned warehouse could be financially prohibitive and there are only a handful of relief organisations who can support the expense of operating distribution

centres (Balcik and Beamon, 2008; Salisbury, 2007). Although prepositioned stocks may be useful, they may be restricted as they require considerable financial investment (Chaikan, 2003). For this reason, some of the HOs tend to focus on operational disaster relief activities rather than disaster preparedness (Thomas, 2007). Salisbury (2007) argues that internal transport capacity is one of the most limited resources in determining the capacity of humanitarian organizations. For large scale quick onset disasters, it is impossible to meet the entire emergency demand solely from prepositioned stocks (Balcik and Beamon, 2008). The difficulty to initiate or to maintain the prepositioned warehouse strategy are due to the uncertainty of disaster occurrences, funding tendencies in the sector and the costs associated with operating distribution centres (Oloruntoba and Gray, 2006; Balcik and Beamon, 2008; Balcik et al, 2010). The warehouse would be useless if it is easily exposed to frequent disaster occurred area.

Humanitarian responses challenged by the suddenness of disaster occurrence and the operational capacity and capability to respond the emergency response with objectives to save lives and alleviate sufferings by providing humanitarian support in the form of medicine, water, food and shelter Thevenaz, C. & Resodihardjo, S. L. (2010). HL challenge is not only fund constraint but time, by how swift the response time is requiring their focus on response at search and rescue, sustaining or saving life, and restoring self-sufficiency, even these operations are always impeded by logistical problems, difficulties in humanitarian logistics management, disaster-management policy and over-abundance of financial resources.

Figure 4: Difference between Commercial Vs Humanitarianly Logistics



Source Fritz Institute (2016.)

2.3. Empirical Literature Review

Empirical Literature review presents using systematic review from empirical evidence impacting coordination efforts within HOs. These factors are categorized into four, these are: factors associated to an environment that humanitarian organizations operating in; factors associated with donors funding structures and interest' factors associated with interorganizational relationship, and factors associated with individual organization.

2.3.1. Environmental Factors

Offering a rapid and appropriate response during humanitarian disasters can be a huge task requiring complex coordination (Balcik, Beamon, Krejci, Muramatsu, Ramirez, 2009; Long and Wood, 1995). Challenges to humanitarian logistics coordination include that an environment physical destruction may exist which limits logistical pathways (Kovacs and Spens, 2007; Sami, 2010). Sudden-onset disasters have a strong negative impact on the physical infrastructure of the region, destroying transport infrastructure such as bridges and air fields, electricity networks and communication infrastructure (Barabasoglu et al, 2002 & Moshtari & Goncalves, 2015).

Environmental factors point to the unpredictability or uncertainty of the demand and infrastructure in the affected region as well as the available local and international resources (Moshtari & Goncalves, 2015). Certain factors such as uncertainty about occurrence of disaster, irregularities in demand and less time to deliver life material with constraint of lack of resources (Balcik, 2008) are indicative of the challenges in HL. These were also cited by Richey et al, (2009) Furthermore, the actual challenges faced in HL depend on the scale, type and region of the disaster where it occurs. Unpredictability is a negative factor as the timing and intensity of disasters are not predicted before their occurrence, also, the regional infrastructure is not predicted in advance, and therefore, this creates a challenge as to how to manage or what supplies are needed prior to the disaster (Balcik et al, 2010). Unpredictability of demand in humanitarian organizations is relevant in terms of timing, location type and size (Balcik and Beamon, 2008). Moreover, aid agencies can only exist temporarily as each time a disaster strikes a new humanitarian effort and new supply chain practices and endeavours are needed (Oloruntoba & Gray, 2006), especially since many disasters happen unknowingly without any previous notice.

The quality of the infrastructure warehouse would be a concern for humanitarian organisations as some of the potential warehouses are in near the disaster-prone areas. This area tends to have low quality of infrastructure. In some situations, after disaster hits, changes in the political environment or military situation on the field, which influence the involvement of HOs in collaborative initiatives, are witnessed. Some humanitarian organisations tend to locate their warehouse close to the disaster vulnerable countries to reduce cost and time. However, some are aware that being close to those areas would put the warehouse in danger due to the natural disasters. To avoid the warehouse destroyed by the natural disasters, some humanitarian organisations rather prefer to locate the warehouse that would receive less influence of them. Similarly, security issues relate to complex emergencies such as natural disasters or in times of civil arrest on war situations affect questions of inventory control Beamon et al, (2010). Thus, different types of disasters pose challenges for humanitarian logisticians. The other challenges reported by Richey et al, (2009) are "lack of transport infrastructure, own use of advanced information technologies and lack of communication, lack of supplies and equipment, difficulties in enforcing standards, lack of knowledge of humanitarian organizations, brain drain, lack of governance, absence of legislation, security problems. Additionally, there is rarely access to reliable, adequate and timely exchange of information (Day, Junglas et al, 2009; Schulz and Blecken 2010) about the disaster location, its intensity, the extent of damage in regional infrastructure (i.e. communication, transportation), the amount of population affected, or beneficiaries' needs.

However, in some cases, access to too much and often incomplete or inaccurate information delays data processing. Furthermore, the presence of new or inexperienced HOs adds more challenges to the humanitarian environment. The high number of HOs and the lack of transparency in their resources and capabilities to deliver humanitarian relief increase uncertainty and the likelihood of competition within them for available resources. In addition, coordination challenge occurs in humanitarian logistics due to the concept of diverse humanitarian organizations who share the same vision and mission of helping others come together and clash culturally, geographically, linguistically and politically (Balcik et al, 2010).

Thus, an important challenge of humanitarian logisticians is to determine bottlenecks and the usability of infrastructure. A long-term view on assuring the accessibility of disaster struck regions is through the mapping and even construction of transport infrastructure as part of humanitarian logistics projects, such as UNJLC's road constructions in South Sudan. Such

infrastructure projects are of strategic relevance to humanitarian logistics (Altay *et al.*, 2009). Finally, beneficiaries' demands require quick response, which provides less time for coordination.

2.3.2 Donors Expectation and Funding Structure

Donors are important actors in disaster situations because they provide the most support to major relief activities (Kovács & Spens, 2007; Day et al, 2012.). However, even when the victims' needs are identified, donors are the ones who decide what to donate (Day *et al.* 2012) As noted by Van Wassenhove & Martinez (2012), one of the frequent problems of donations is that donors push their surpluses within solicited donations, with common distribution of old goods and perishables. (Kabra, Ramesh & Arshinder, 2015) pointed that, in the case of cash donations, there is a greater expectation that it be spent on tangible relief rather than in information systems material, or logistics equipment. An important aspect is that if relief organizations do not use resources efficiently, donors may discontinue donations (Beamon & Balcik, 2008).

Donors have arranged competitive contracts and employed incentive mechanisms (Cooley and Ron 2002, Huxham, 1993, Barnett, 2005) designed upon short-term objectives or quick results, which subsequently motivate HOs to keep a short-term view of operations and decisions. Therefore, within this kind of environment, HOs are concerned with their own survival and self-preservation, so they have low tendency to collaborate with others (Huxham 1993; Cooley and Ron 2002; Barnett, 2005; Balcik, Beamon et al, 2010; Kovacs and Spens 2010).Thus, it is noted that donations received are related more to what donors want to donate and there are different expectations regarding the use of donor related to the type of donation.

Donors are associated in promoting the coordination efforts within HOs to deliver sustainable and efficient services to the beneficiaries. Some donors have initiated programs to promote coordination within HOs. However, there are some concerns which influence HOs' tendency to engage in the plans or follow the donors' proposed guidelines. For example, funds are sometimes available in special situations that might be considered to threaten humanitarian principles, such as violation from neutral or impartial humanitarian action (Cairns 2012). In addition, coordination demands resources, so it is worth it to establish coordination relationships before disasters hit. However, the funds are mostly available after the disasters

hit. In addition, HOs are under pressure to use the provided funds on specific projects over a short-term period, so they cannot use them to strengthen their collaborative relationships. Due to the challenges in assigning donations to HOs, such as the rising number of HOs or the increasing concern of donors on the efficient use of the available resources.

Jahre and Heigh (2008) studied funding constraint relates to failure in humanitarian supply chain. Their studies showed that there are two types of funding long and short term (commonly seen as development and emergency response), which are further divided into tied (earmarked) and untied (un-earmarked) donations depending on the stipulation of the donor, often on political grounds. This means that (1) the funding of permanent supply chains is usually negligible or short term; (2) the funding of emergency is earmarked extended short term; and (3) project supply chains get all combinations of funding. The many who work within this sector are used to thinking of humanitarian aid in terms of disaster response operations and their associated funding needs. Donors and humanitarian organizations to think more of long-term, un-earmarked funding with attention to risk sharing, cost recovery, and impact measurement and secondly changes in logistics structures and processes can have profound effects on the use of donations. As logistics constitute such a high share of the total cost, it is confusing that donors do not show more interest in logistics and supply chains of humanitarian aid.

2.3.3. Inter Organizational Factors

The third category includes factors associated with interorganizational characteristics or status. One of the key challenges of humanitarian logistics operations is that of rapid response in which divers' group of humanitarian actors and organizations are involved in the response (Moshari & Goncalves, 2015). Humanitarian organizations are wide and varied, each with its own organizational structure, ways of operating, communicating and making decisions. Humanitarian organizations take many different forms: from aid agencies (e.g. UN agencies) and governmental organizations (GOs) to international non-governmental organizations and Non-governmental organizations (NGOs) (Moshari & Goncalves, 2015). They differ in local presence, size, and mandate. This difference in organizational structure affects coordination efforts and the response times of these organizations. The size of an organization effectively delimits its operational possibilities. On the one hand, small humanitarian NGOs can focus on "niche markets" and disasters that are particularly prevalent in a region (Spens et al, 2007).

The conflict within HOs mandates or goals (strategic level) and the different internal policies, standards, operational approaches and timeframe in humanitarian operations (operational level) lead to low coordination. Another aspect of incompatibility within HOs initiates from their various values and organizational cultures, which could lead to misunderstanding, conflicts, or mistrust within organizations and eventually decreases their sense of mutuality and engagement in collaborative efforts. Scarcity of resources, particularly during peak seasons, leads to intense competition over limited resources, publicity, or media attention. Constrained resources, which limit funding during the disaster (Long and Wood, 1995; Oloruntoba and Gray, 2006; Whiting and Ayala-Ostrom, 2009; Benini, Conley, Dittemore, Waksman, 2009); organizational structures, which result in autonomous, under-defined, and non-unified operations (Long and Wood, 1995; Benson, Biggers, Wall, Haselkorn, 2010); and bottom-up decision-making, which can limit logisticians' access to decision-makers.

The other factor which influences interorganizational relationships is the extent of disparity within the partners. Organizations in weak positions of power or resources are less engaged in collaborative efforts, because of their organizational value or policy which is not to be coordinated with powerful organizations (Moshari & Goncalves, 2015). The challenges to humanitarian logistics are to determine with which organizations effectively coordinate/collaborate for which purpose. Logisticians are torn between the front office media exposure of the organization, leading to the requirement to be first on site, which in its turn triggers donations to the organization, and the back office logistical operation that ideally puts the needs of beneficiaries first. This front office, back office indicates that humanitarian organizations do, indeed, regard each other's as competitors, be it for the same funding resources or for media attention, while at the same time collaborators in the effective delivery of relief (Moshari & Goncalves, 2015).

Information is the other factor in interorganizational relationships required for decision making. Quality and the completeness of information is key as it influences both the decision making and coordinating functions during humanitarian relief operations, resulting in better performance by organizations. According to Jessica and Leslie (2009), superior solutions to complex decision tasks require partners to effectively integrate unique, relevant, and often diverse informational sets. Hence the increasing interest in information sharing. Among humanitarian organizations the sharing of information helps build a fuller picture of crisis and

enables cohesion among entities and a coherent approach to humanitarian response programming. Meier, (2011) indicates that when disaster strikes, access to information is just as important as access to food and water.

In business environment, information sharing among organizations, as well as between the organization and its customers, suppliers, and alliance partners, plays a critical role in improving the quality of customer service, reducing production cycles, increasing the cooperation among different department units, and consolidating the relationships with alliance partners. Cate and Staten, (2000), indicates that information sharing is essential to, identify and meet individual needs, increase efficiency and lower prices, enhance customer convenience, inform customers of new opportunities, expand access to services and products.

2.3.4. Organizational Factors

The last group associated to individual organizations. The existing or potential benefits of coordination with other organizations are not clear in humanitarian settings. Scholars and practitioners note several benefits of collaboration within HOs, such as improving on-time delivery of products/services, reducing humanitarian operations' costs, or having access to more resources (e.g. financial, equipment, skills, or information) (Moshari & Goncalves, 2015). However, HO managers have some concerns about the costs of coordination which discourage them to initiate or join collaborative efforts. For example, there is a belief that coordination increases bureaucracy, which decreases organizational flexibility and timely response to the beneficiaries' needs. Additionally, some HOs consider themselves as sovereign entities, so coordination could endanger their competencies or capabilities. Moreover, coordination complicates accountability for performance or raises the possibility of loss of control over operations (Huxham 1993).

Another organisational factor is related to the organization's independency, which is prized in the humanitarian context. Each HO looks for approaches which strengthen its identity and distinguish it from other organizations. The current belief is that engaging in collaborative efforts could put their identity or independency at risk. Furthermore, some HOs' managers believe that engaging in collaborative efforts could threaten their non-politically driven mission (Minear, 2004) or could lead to violation of humanitarian principles such as impartial action (Cairns, 2012). The other factors include those related to the resources (i.e. money, staff)

necessary to have successful collaboration initiatives. HO's managers have limited time, so they usually delegate arranging collaborative efforts to junior or temporary colleagues who do lack the proper leadership or decision-making skills.

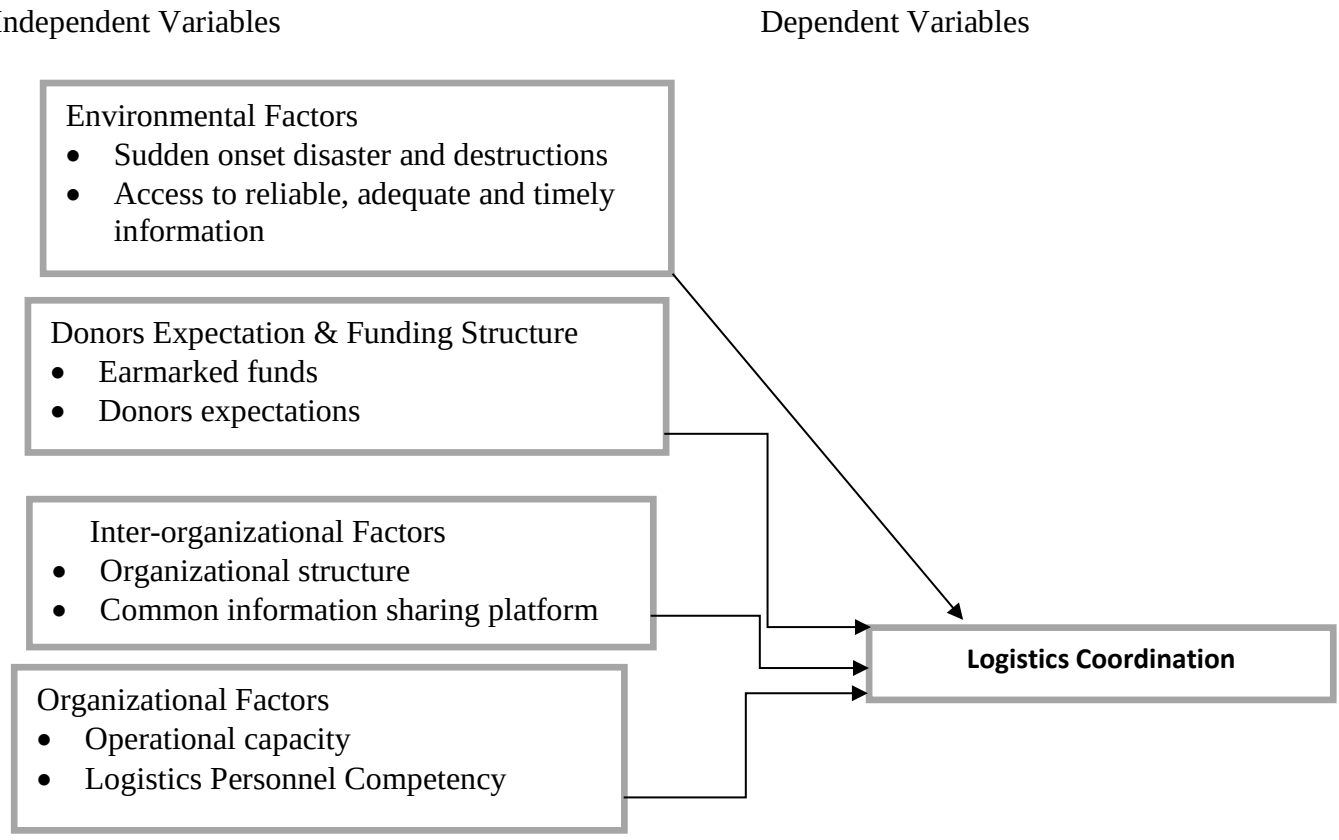
The last organizational factors are associated with HO's capabilities for engaging in collaborative efforts. Because of temporary or high turnover of human resources in HOs, they do not have enough knowledge or experiences in efficient humanitarian operations Logistics skills are needed not only in support of operation but for contribution to the success of a mission (Moshari & Goncalves, 2015). Logistics skills research differentiates between actual skills, attributes, experience, competencies and knowledge areas. Myers *et al.* (2004) make a distinction between logistics knowledge acquired through education, work experience and skills (social decision-making, problem-solving and time management skills). Additionally, a number of scholars argue that the skills and attitudes of HO human resources do not fit the needs of partners interested in maintaining efficient collaborative relationships or carrying out joint projects with other organizations such as propensity towards collaborative leadership and avoiding command and control mentality, skills in well communicating with other partners and building group identity, capabilities in joint decision making, planning, assigning roles and accountability, and eventually joint implementation or performance assessment of projects. Finally having access to tools and technologies facilitates information sharing and communication within HOs to strengthen overall collaboration within partners.

2.4. Conceptual Frame work

The literature review presents several factors affecting logistics coordination among HOs are categorized into four, these are: the first factors are associated to an environmental in which humanitarian organizations emergency response takes place, the second factors is related to Donors funding structures and interest, the third factors is related to Interorganizational relationships and the fourth factor is related to individual organization that have an impact on logistics coordination.

The conceptual framework, in general, assesses and determines how these factors affect the humanitarian logistics coordination within HOs in food aid during emergency response food assistance. The diagram hereunder is adopted from the literatures to assess the relationship between the independent variables (environmental, donors, interorganizational & organizational factors) and determine what are the most affecting factors and the extent of independent factors on impact on the dependent variable (logistic coordination).

Figure 5: Independent and dependent variables



Source: adopted from Moshari, M. & Goncalves, P. (2015) and modified by researcher.

2.5. Identified Literature Gap

The review of literatures in context of humanitarian logistics indicates that research have begun to lay out the foundation for a core body of knowledge. In fact, prominent researchers in this field of study state that academic research in humanitarian logistics and supply chain management is still in its infancy (Tatham et al, 2009). There is a growing body of research in humanitarian logistics, predominately in planning stage and the challenges of coordination in humanitarian logistics calls for empirical research.

Humanitarian Logistic Coordination is fundamental when providing humanitarian assistances to victims of any disasters in any country, and coordination plays a key role in utilization of scarce resources to humanitarian responses. Literatures on humanitarian logistics have suggested that logistic coordination among humanitarian organization during disaster and emergency response is very important for timely response effort and reduce cost. However, very few literatures empirically tested challenges of humanitarian logistics coordination in the context of India and Kenya whereas there is no evidence found that studies are carried out on humanitarian logistics coordination in context of Ethiopia. This research based on literatures review, identified humanitarian logistics coordination challenges, and the intent of this research to determine the factors affecting the humanitarian logistics coordination within HOs in food aid and to provide a direction to future research efforts in humanitarian logistics areas.

Thus, this study will contribute by exploring and empirically testing to determine the factors affecting logistics coordination and their relationship in selected humanitarian organizations, in food aid emergency response, in Ethiopia.

CHAPTER THREE
METHODOLOGY OF THE STUDY

3.1 Introduction

This chapter covers methodology of the study that describes the study area and the research approach and design utilized to conduct the study. These followed by the target population and sampling technique of the study. The chapter discussed briefly the data collection procedure, an ethical consideration of the study, data analysis and organization including data validity and reliability test.

3.2. Description of the Study Area

The mandate of humanitarian organization defines its operational boundaries (Kovacs & Spens, 2009). Based on official Humanitarian Requirement Documents, WFP and JEOP, a consortium of five NGOs (CRS, CARE, WV, FH, and ORDA) are designated to respond to emergency food response, in food security sectors. Save the Children International (SCI) were the member of consortium and based on the information obtained at the time of questionnaire distribution from these NGO'S, SCI ceased emergency food response programme for the last one year and irrelevant to this study. Hence, SCI excluded from this research and replaced by ORDA (Organization for Rehabilitation and Development Agency), It is a member of JEOP and an Ethiopian operated NGO based in Bahir Dar, Amhara region of Ethiopia. The research was conducted in the above selected humanitarian organizations in food aid responding to emergency in line with horizontal coordination concept and scope.

3.3. Research Approach

The research approach was mixed method, in view of the fact that, the nature of the research data was qualitative leaning, in which perception and judgments of respondents were transformed into the form of survey questionnaire using Likert scale and analysed quantitatively using SPSS tool. (Creswell, 2009), point out that, the researcher might collect qualitative data by transforming the qualitative themes into counts and comparing these counts with descriptive quantitative data. Sandelowski et al, (2014) cited (Collins & Dressler, 2008, p. 365) stated that to talk about converting qualitative into quantitative data is to assume that two kinds of data (qualitative and quantitative) exist and the two are not so much different kinds of data as these data are experiences formed into words or numbers, respectively.

3.4. Research Design

As Saunders, Lewis and Thornhill (2009), explained studies are classified into three categories based on their purpose i.e. exploratory study, descriptive study and explanatory study. Among these, the researcher used descriptive and explanatory research design. Descriptive research design used to present descriptive statistics that provide basic information such as the mean of data set, whereas explanatory research designs was used to explain and investigate the relationship between of independent variables (environment, donors, inter-organizational and organizational factors) and dependent (logistics coordination) variables.

3.5. Target population

The target population of this research was a selected humanitarian organization in food aid sector responding to emergency food responses, these were WFP and JEOP a consortium of five humanitarian organizations, these are CRS, CARE, WV, FH, ORDA. The total population of this research was the employees of the six organizations (WFP, CRS, WV, CARE FH are based in Addis Ababa) and ORDA in Bahir-Dar and the total population who are currently working for these organizations in main offices are 710, number of populations for each organization is stated in table 3:sample determination.

3.5.1 Proportional sample size

Stratified sampling was employed by dividing the total population into six strata. Proportional stratified sampling was applied, and each strata was proportion to stratum population. The sample size was taken as 80 based on the following table proportionate.

Table 2: Sample determination

Population ranges	Sample size		
	Low	Medium	High
51-90	5	13	20
91-150	8	20	32
151-280	13	32	50
281-500	20	50	80
501-1200	32	80	125
1201-3200	50	125	200
3201-10000	80	200	315
10001-35000	125	315	500
35001-150000	200	500	800

Source: Naresh Malhotra (2007) Marketing research an applied approach, Butterworth Heinemann; Oxford, England

Table 3: Sample size determination for each stratum

Name of strata	Number of Population	Proportional Sample size	Sample size for each stratum
World Food Programme	270	270/710=0.380282	0.380282 X 80=30
Christian Relief Services	100	100/710=0.140845	0.140845 X 80=11
World vision	100	100/710=0.140845	0.140845 X 80=11
Care	100	100/710=0.140845	0.140845 X 80=11
ORDA	70	70/710=0.098592	0.098592 X 80=8
Food for Hunger	70	70/710=0.098592	0.098592 X 80=8
Total	710		80

Source: Organizations

According to Mugenda and Mugenda (2003), the sample must be carefully selected to be representative of the population. Thus, for this study purposive sampling techniques was used because Logistics and Programme Officers were relevant to the subject under the study and selected deliberately.

3.6. Data Collection Procedures

Primary data was collected through paper-based self-administer surveys questionnaires with closed-ended questions effective in collecting quantitative data. But, the questionnaires adopted from (Moshari & Goncalves, 2015 & Kabra et al, 2015). The survey questionnaire was designed using Likert scale 1 to 5 ranging from strongly disagree to strongly agree. The questionnaire has two parts and, the first part dealt with the general background of the respondents and the organization and the second part have two sections, the first section has four factors representing the independent variables and each factor contained 4-5 questions the second section represent the dependent variable and has 4 questions. The questionnaire was administered by the researcher drop-off to the respective humanitarian logistics and programme professionals and collection at an agreed time and place.

Secondary data was obtained from different secondary sources of documents about humanitarian logistics coordination and supply chain journals, humanitarian response reports, articles international published researches to construct the research framework of the study.

This study chooses all these materials because these was available and contain adequate information about the study area.

3.7. Validity & Reliability

3.7.1 Validity

Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). There are three types of validity test according to Malhotra (2010): these are content validity, predictive validity, and construct validity. This study addressed content validity through the review of literature and adapting instruments used in previous research. Prior to the actual data collection, the questionnaires were tested, and modified.

3.7.2. Reliability

The four factors representing the independent variables were adopted from literatures (Moshari & Goncalves, 2015 & Kabra et al, 2015). To ensure the reliability of the instrument, the questionnaire was review by the experts and pilot test was carried out, and based on the feedback, instrument was modified to ensure item total statistics Cronbach's Alpha (α) would fall more than 0.7. The reliability statistics of the four independent variables are presented hereunder in table 4.

Table 4: Cronbach's Alpha Table for all items

Variables	Cronbach's Alpha	N of Items
Environmental Factors	0.894	5
Donors Factors	0.702	4
Interorganizational factors	0.754	4
Organizational factors	0.770	5
Logistics coordination	0.728	4
N of sample population		57

Source: SPSS output Data (2019)

3.8. Data Organization and Analysis

The researcher used quantitative data analysis method comprising of both descriptive and inferential statistics (correlation and regression). The data that was collected through questionnaires was edited, coded, entered into the Statistical Package for Social Sciences

(SPSS) for analysis and generation of descriptive and inferential statistics. Pearson Coefficient of Correlation was used to determine the relationship among the independent variables (Environmental, Donors, interorganizational and organizational factors) and Logistics coordination by humanitarian organization (the dependent variable). Multiple linear regression model was conducted in this study in order to predict the value of dependent variable (Logistics Coordination) based on the value of independent variable (Environment, Donors, Interorganizational and Organizational).

3.9. Ethical Consideration

Permission to carry out the research and authorization letter to the sample organizations obtained from the Addis Ababa University which explained the respondents the reason why the research was conducted and enhanced the confidentiality of the data collected from them, including the sample organizations covered under study.

The questionnaires were self-administered, data collected in person after meeting the concerned person and briefed with information about the purpose of the research, expected duration and procedures and any prospective research benefits. Also understand restrictions of confidentiality, such as data coding, disposal, sharing and archiving, and when confidentiality must be broken. The questionnaires were dropped and picked within one week. This ensured to obtain valid and reliable data from all respondents since they have adequate knowledge and experience on humanitarian logistics coordination and emergency food responses.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETAION DISCUSSION OF RESULTS

4.1 Introduction

Chapter four presents data analysis, findings and discussion in line with the objectives of the study and research questions. According to Hagger et al, (2003) the researcher should strive to achieve a response rate of 50 per cent, 60 per cent or 75 per cent. Based on stratified sampling technique, the researcher prepared 80 copies of questionnaires and distributed to six organizations, 57 out of which was returned which was a response rate of 71%, that was acceptable for one to make analysis, conclusion and recommendation.

4.2 General Demographic Information

The general information collected from the respondent was: organizations, gender, age, educational qualification, years of experience and positions are presented hereunder in table 5.

Table 5: General Background of Respondents

	Demographic Data	Frequency	Percent	Cumulative
Organization	WFP	22	38.6	38.6
	CRS	10	17.5	56.1
	CARE	9	15.8	71.9
	World Vision	7	12.3	84.2
	ORDA	5	8.8	93.0
	FHE	4	7.0	100.0
	Total	**57**	**100.0**	
Gender	Female	14	14	25.0
	Male	43	43	75.0
	Total	**57**	**57**	**100.0**
Educational Qualifications	Secondary School	1	1.8	1.75
	College Diploma	1	1.8	3.51
	First Degree	27	47.4	50.88
	Second Degree and above	28	49.1	100.0
	Total	**57**	**100.0**	

Demographic Data		Frequency	Percent	Cumulative
Experience in current organization	Below 5 Years	17	29.8	29.8
	5-10 Years	20	35.1	64.9
	11-15 Years	16	28.1	93.0
	Over 15 Years	4	7.0	100.0
	Total	**57**	**100.0**	
Experience with Previous organizations	Under 5 Years	15	26.3	26.3
	5-10 Years	19	33.3	59.6
	11-15 Years	16	28.1	87.7
	Over 15 Years	7	12.3	100.0
	Total	**57**	**100.0**	
Position	**Logistics Officer**	37	65.0	65.0
	Program Officer	20	35.0	100.0
	Total	**57**	**100.0**	

Name of organizations: the respondent was requested to indicate their respective organization as shown in table 5 above 38.6% of them were from WFP, 17.5 % from CRS, 15.8 % from CARE, 12.3% from WV, 8.8% from ORDA, and 7% were from FH.

Gender: The distribution indicates that 25% of respondents were female and 75% of the respondents were males. The dominant number is males consisting 75% of staff working in different positions and only one fourth of were females.

Educational status: the distribution of respondents indicates in table 5 above that 49.1% of the respondents acquired second degree and above, 47.4% of respondents with first degrees, 1.8% each with college diploma and secondary school certificates. Only 1.8% of the respondents are at secondary school education level. The remaining 98% are of college and university graduate backgrounds. Therefore, the employees from the six organizations were educated well enough to understand the questions and thus to have provided credible results.

Experience with current organization: as indicated in table 5 above 29.8% of the respondents have below 5 years of experience, 35.1% of the respondents 5-10 years of experience, 28.1% of respondent have 11-15 years of experience and 7% of respondent has over 15 years of experiences in their current organization. This indicates that 35% of respondents served their

current organization for more than 11 years, while over 35% of respondent have been with their current organization between 5 to 10 years and the number of years was quite enough to provide credible information related to the study.

Experience with other organizations: As indicated in the table 5 above, respondent before joining their current organizations, and 26.3% of the respondents had experience with less than 5 years, 33.3% of the respondents had experience between 5-10 years, 28.1% of respondent had 11-15 years and 12.3% of respondent had over 15 years experiences other than their current organizations. This indicates that over 40 % of respondents have more than 11 years of experiences in different organizations while over 33.3% of respondent had 5-10 years of prior experience with different organizations to compare and understand the challenges faced by humanitarian organizations and provide credible information related to the study.

Positions: respondents' position in their current organization distribution indicates 65% of respondents were Logistics Officers and 35% were Programme Officers. The findings indicated that Programme Officers are involvement in food emergency response programmes.

4.3. Descriptive Analysis

The responses were generated on a five-point Likert scale; 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree. The respondents were required to state their level of agreement or disagreement. To determine the minimum and the maximum length of the 5-point Likert type scale, the range is calculated by $(5 - 1 = 4)$ then divided by five as it is the greatest value of the scale $(4 \div 5 = 0.80)$. Afterwards, number one which is the least value in the scale was added to identify the maximum of this cell. The length of the cells is determined below based on traditional way and if mean score from 0.01 to 1.00 is (strongly disagree); from 1.01 to 2.00 is (disagree); from 2.01 until 3.00 is (neutral); 3.01 until 4:00 is (agree) and score from 4.01 until 5.00 is (strongly agree). Respondent response to environmental factors with regards logistics coordination are described in table 5 below.

Table 6: Environmental factor with regards to logistics coordination

Environmental factors	N	Minimum	Maximum	Mean	Std. Deviation
Infrastructures distracted by sudden-onset disasters impact timely emergency food response.	57	1	5	3.02	1.261
Humanitarian Organizations in food aid have the capacity to meet unpredictable food demand in emergency operations.	57	1	5	2.98	1.356
Basic infrastructures conditions like transportation, communications, electricity is critical for timely emergency food responses.	57	1	5	3.11	1.145
Involvement of large number of diverse humanitarian actors delay emergency food responses.	57	1	5	2.74	1.343
Access to reliable, adequate and timely information at regional level is critical to humanitarian organization in food aid for emergency response	57	1	5	3.19	1.315

Source: SPSS Regression output 2019

As described in table 6 above, responses to items under environmental factor indicates that the majority of respondents agreed to the statements that, 'Infrastructures distracted by sudden-onset disasters impact timely emergency food response'; 'Basic infrastructures conditions like transportation, communications, electricity is critical for timely emergency food responses' and 'Access to reliable, adequate and timely information at regional level is critical to humanitarian organization in food aid for emergency response' in the mean of 3.02 with the variance 1.261; in the mean of 3.11 with variance of 1.145 and in the mean of 3.19 with variance of 1.315 respectively. Whereas, the majority of respondents remained neutral to the statements that, 'Humanitarian Organizations in food aid have the capacity to meet unpredictable food demand in emergency operations' and 'Involvement of large number of diverse humanitarian actors delay emergency food responses' in the mean of 2.98 with variance of 1.356 and 2.74 with the variance of 1.343 respectively. The overall mean dimension is 3.01.

Table 7: Donor factors with regards to logistics coordination

Donor Factors	N	Minimum	Maximum	Mean	Std. Deviation
Donors provide earmarked funding structure to humanitarian emergency response programmes.	57	1	5	3.84	1.177
Donors have greater expectation that funds spent on relief rather than in information systems material, or logistics facilities.	57	1	5	3.67	1.041
Donors are interested to provide funds to facilitate coordination among humanitarian organization in food aid during emergency response with proposed guidelines to follow.	57	1	5	3.53	1.351
Donors provide long term fund commitment to humanitarian organizations in food aid to strengthen collaborative relationships before disaster occurs.	57	1	5	2.68	1.088

Source: SPSS Regression output 2019

As described in table 7 above, responses to items under Donor factors indicates that the majority of respondents agreed to the statements that, 'Donors provide earmarked funding structure to humanitarian emergency response programmes'; 'Donors have greater expectation that funds spent on relief rather than in information systems material, or logistics facilities' and 'Donors are interested to provide funds to facilitate coordination among humanitarian organization in food aid during emergency response with proposed guidelines to follow' in the mean of 3.84 with the variance 1.177; in the mean of 3.67 with variance of 1.041 and in the mean of 3.53 with variance of 1.315 respectively. Whereas, the majority of respondents remained neutral to the statements that, 'Donors provide long term fund commitment to humanitarian organizations in food aid to strengthen collaborative relationships before disaster occurs' in the mean of 2.68 with variance of 1.088. The overall mean dimension is 3.43

Table 8: Interorganizational factors with regards to logistics coordination

Interorganizational Factors	N	Minimum	Maximum	Mean	Std. Deviation
Humanitarian organizations in food aid differ in their organizational structures.	57	1	5	3.51	1.364
Humanitarian organizations in food aid have different operational approaches and timeframe in food emergency responses.	57	1	5	3.75	1.299
Humanitarian organizations in food aid have common information sharing platform to build a fuller picture of food emergency response needs.	57	1	5	2.51	1.338
Humanitarian organizations in food aid have mutual trusts among themselves to share resources including information, knowledge, and logistics facilities for emergency programmes.	57	1	5	3.12	1.593

Source: SPSS Regression output 2019

As described in table 8 above, responses to items under Interorganizational factors indicates that the majority of respondents agreed to the statements that, 'Humanitarian organizations in food aid differ in their organizational structures'; 'Humanitarian organizations in food aid have different operational approaches and timeframe in food emergency responses' and 'Humanitarian organizations in food aid have mutual trusts among themselves to share resources including information, knowledge, and logistics facilities for emergency programmes' in the mean of 3.51 with the variance 1.364; in the mean of 3.75 with variance of 1.299 and in the mean of 3.12 with variance of 1.593 respectively. Whereas, the majority of respondents remained neutral to 'Humanitarian organizations in food aid have mutual trusts among themselves to share resources including information, knowledge, and logistics facilities for emergency programmes' in the mean of 2.51 with variance of 1.338. The overall mean dimension is 3.22.

Table 9: Organizational factor with regards to logistics coordination

Organizational factors	N	Minimum	Maximum	Mean	Std. Deviation
My organization have financial resources to join coordination efforts.	57	1	5	3.68	1.256
Coordination increases bureaucracy, which decreases my organizational flexibility and timely response to the beneficiaries' needs.	57	1	5	3.12	1.283
Engaging in coordination efforts could put my organization identity or independency at risk.	57	1	5	2.61	1.236
My organization has operational capacity to respond to emergency food assistance at any time.	57	1	5	3.16	1.544
My organization have competent logistics personnel with experience in humanitarian service to facilitate coordination.	57	1	5	3.35	1.408

Source: SPSS Regression output 2019

As described in table 9 above, responses to items under Organizational factors indicates that the majority of respondents agreed to the statements that, 'My organization have financial resources to join coordination efforts'; 'Coordination increases bureaucracy, which decreases my organizational flexibility and timely response to the beneficiaries needs'; 'My organization has operational capacity to respond to emergency food assistance at any time' and 'My organization have competent logistics personnel with experience in humanitarian service to facilitate coordination' in the mean of 3.68 with the variance 1.256; in the mean of 3.12 with variance of 1.1283; in the mean of 3.16 with variance of 1.544 and in the mean of 3.35 with variance of 1.408 respectively. Whereas, the majority of respondents remained neutral to the statement that, 'Engaging in coordination efforts could put my organization identity or independency at risk' in the mean of 2.61 with variance of 1.236. The overall mean dimension is 3.18.

Table 10: Descriptive statistics for logistics coordination

Logistics Coordination	N	Minimum	Maximum	Mean	Std. Deviation
Joint decision making occurs within humanitarian organizations in food aid during emergency food response.	57	1	5	3.86	.915
Humanitarian Organizations in food aid have joint information and knowledge sharing platforms during emergency food response.	57	1	5	3.72	1.082
Humanitarian Organizations in food aid shares human resources among themselves during emergency food response.	57	1	5	2.46	1.196
Humanitarian Organizations in food aid shares logistics facilities/resources among themselves during emergency food response.	57	1	5	2.61	1.398

Source: SPSS Regression output 2019

As described in table 10 above, responses to items under Logistics Coordination indicates that the majority of respondents agreed to statements that, 'joint decision making occurs within humanitarian organizations in food aid during emergency food response' and Humanitarian Organizations in food aid have joint information and knowledge sharing platforms during emergency food response' in the mean of 3.86 with the variance .915 and in the mean of 3.72 with variance of 1.082 respectively. Whereas, the majority of respondents remained neutral to the statements that, 'Humanitarian Organizations in food aid shares human resources among themselves during emergency food response' and 'Humanitarian Organizations in food aid shares logistics facilities/resources among themselves during emergency food response' in the mean of 2.46 with variance of 1.196 and in the mean of 2.61 with variance of 1.398. The overall mean dimension is 3.16.

4.4. Correlation Analysis

Correlations are the measure of the linear relationship between two or more variables. As described by Kothari (2004), a coefficient of correlation has the value of '*r*' lies between ± 1. Positive values of *r* indicate positive correlation between the two variables, whereas negative values of '*r*' indicate negative correlation. A zero value of '*r*' indicates that there is no

association between the two variables. According to Evan's (1996), the strength of the correlation can be described as, the absolute value of r namely 0.00-0.19 (Very Weak), 0.20-0.39 (Weak), 0.40-0.59 (Moderate), 0.60-0.79 (Strong) and 0.80-1.00 (Very Strong).

Table 11: Correlation Analysis

		Environmental Factors	Donors' Factors	Interorganizational Factors	Organizational Factors	Logistic Coordination
Environmental Factors	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	57				
Donors' Factors	Pearson Correlation	.244	1			
	Sig. (2-tailed)	.068				
	N	57	57			
Interorganizational Factors	Pearson Correlation	.700**	.372**	1		
	Sig. (2-tailed)	.000	.004			
	N	57	57	57		
Organizational Factors	Pearson Correlation	.103	.227	.228	1	
	Sig. (2-tailed)	.446	.089	.088		
	N	57	57	57	57	
Logistic Coordination	Pearson Correlation	.598**	.416**	.675**	.430**	1
	Sig. (2-tailed)	.000	.001	.000	.001	
	N	57	57	57	57	57

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

Pearson Correlation Coefficient calculated and tested to determine the relationship between the independent variables (Environmental, Donors, Interorganizational and Organization Factors) and Logistics coordination (the dependent variable).

The result in table 11 above shows that, between Environmental Factors and Logistics Coordination a positive and moderate relationship to extent of (r = 0.598) exist. The relationship was statistically significant at 1% level (p=0.001, <0.01).

The result between in table 11 above indicates that, Donor Factors and Logistic Coordination shows that a positive and moderate relationship to extent of (r=0.416) exist and statistically was significant at 1% level (p=0.001, <0.01).

The result between Interorganizational and Logistics Coordination shows that a positive and strong relationship to extent of (r=0.675) exist. It was also statistically significant at 1% (p=0.001, <0.01).

The results between organizational factors and logistics coordination in table 11 above indicates that a positive and moderate relationship to extent of (r=0.430) exist and statistically was significant 1% (p=0.001, <0.01).

4.5. Regression Analysis

According to Gujarati (2004), before running regression analysis, it is necessary to assess whether the collected data violate some key assumptions of linear regression models as any assumption violations can result in unclear and biased research results. To test multiple regression models, first the classical assumptions would be tested. It should be noted that the three classic assumptions must be tested in undertaking the regression analysis. These assumptions include Normality and Multicollinearity (Brooks, 2008). Therefore, in this section, the researcher tried to make sure that whether these assumptions are met.

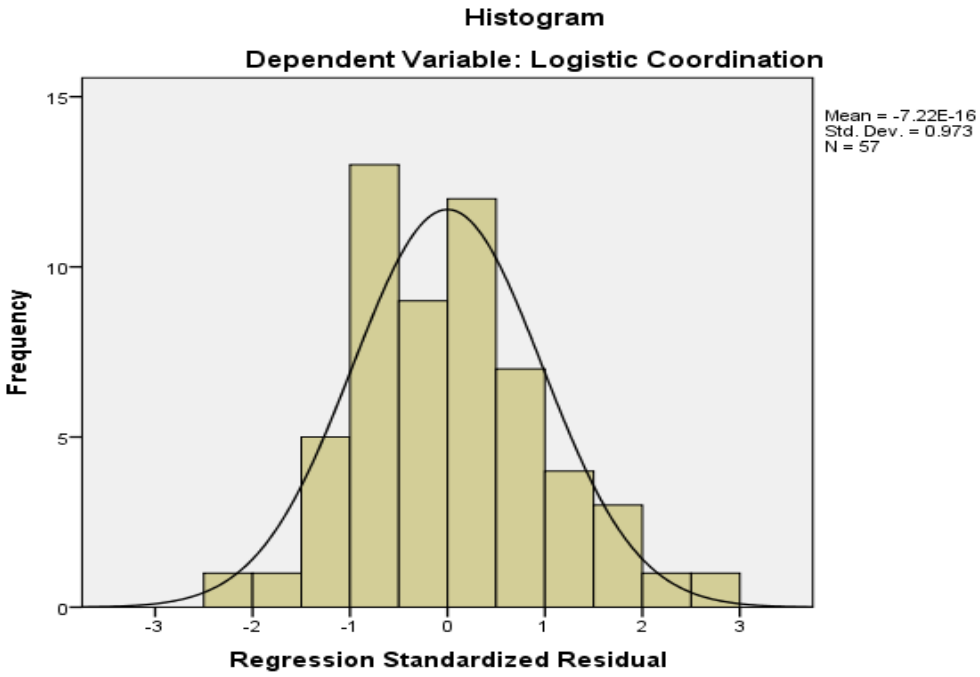
4.5.1. Normality Test

The data were checked to verify that the assumption of multivariate normality was met. Brooks (2008) noted that to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled. The normality assumption is about the mean of the residuals is zero. According to Gujarati **(**2004), in testing the normality assumption, one of the three tests of normality could be considered: (1) histogram of residuals; (2) normal probability plot (NPP), a graphical device; and (3) the Jarque–Beratest (it is an asymptotic, or large-sample, test). As indicated below, Because of their simplicity, the first one simple graphical instrument for testing the normality assumption was applied in this study.

4.5.1.1 Histogram of Residuals

A histogram of residuals is a simple graphic device that is used to learn something about the shape of the Probability Density Function of a random variable. On the horizontal axis, the values of the variable of interest (OLS residuals) are divided into suitable intervals, and in each class interval rectangles are erect equal in height to the number of observations (frequency) in that class interval. If the residuals are normally distributed around its mean of zero, the histogram is a bell-shaped. The shape of the histogram as shown below in diagram 6 revealed that the residuals are normally distributed around its mean of zero.

Figure 6: Histogram



Source SPSS Regression output 2019,

4.5.2 Multicollinearity

Multicollinearity exists when there is a strong correlation between two or more predictors in the regression model. Multicollinearity poses a problem only for multiple regressions because it involves more than two predictors. Perfect collinearity exists when at least one predictor is a perfect linear combination of the other (Guajarati, 2004).

There are various methods to produce collinearity diagnostic and one of which is the variance inflating factor (VIF). The VIF indicates whether a predictor has strong linear relationship with the other predictor(s). Some authors therefore use the VIF as an indicator of multicollinearity. The larger the value of VIF, is the more troublesome or collinear the variable. As a rule of

thumb**,** any variables with a value above 10.0 of VIF indicate the multicollinearity problem (Hair et al. 1998). Related to the VIF is the tolerance statistics, which is the reciprocal of VIF. An insignificant tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be included to the regression equation. Tolerance ranges from 0 to 1. Any variables with a tolerance value below 0.10 or the closer the tolerance value to zero indicates a level of Multicollinearity. On the other hand, the closer tolerances to 1, the greater the evidence that variables noncollinear with the other repressor Guajarati, 2004).

Considering the regression model for this study, SPSS regression results (table 12) shows that Tolerance for all independent variables is more than 0.10 and Variance Inflation Factor- VIF for the independent variables is less than the limited value, 10.0. As a result, we can say that there is no Multicollinearity between the independent variables.

Table 12: MultiCollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Environmental Factors	.507	1.972
Donors Factors	.840	1.190
Interorganizational Factors	.454	2.202
Organizational Factors	.919	1.088

a. Dependent Variable: Logistic Coordination

A multiple linear regression analysis was contacted to determine the relationship between independent variables (Environmental, Donors, Interorganizational and Organizational Factors) and the dependent variable (Logistic Coordination). The model summary is presented in the table 13 hereunder:

Table 13: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.771[a]	.594	.563	.55864	1.936

a. Predictors: (Constant), Environmental Factors, Donor Factors, Interorganizational Factors Organizational Factors, b. Dependent Variable: Logistic Coordination

Coefficient of determination: It clarifies the extent to what changes in the dependent variable can be explained by the change in the independent variables. R^2 is the proportion of the

variance in the values of the dependent variable i.e. logistics coordination (Y) explained by all the independent variables i.e. Environmental, Donors' Interorganizational and Organizational Factors (X1, X2, X3, X4) in the equation together; sometimes reported as adjusted R^2, when a correction has been made to reflect the number of variables in the equation.

The four independent variables that were studied (environmental, donors' Interorganizational and organizational factors), explains Logistics Coordination by 56.3%represented by R square adjusted, since it is multiple regression. The R square was 0.594 and this indicates that the data utilized to analyse the association between Environmental, Donors' Interorganizational and Organizational Factors (independent variables) and Logistics Coordination was closely associated.

Table: 14 Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.911	.506		-1.800	.078
Environmental Factors	.366	.161	.282	2.274	.027
Donors' Factors`	.236	.152	.150	1.555	.126
Interorganizational Factors	.390	.143	.357	2.720	.009
Organizational Factors	.421	.136	.286	3.099	.003

a. Dependent Variable: Logistic Coordination

The Regression model was as follows:

$Y=a + b_1X_1 + b_2X_2 + b_3X_3+b_4X_4+\alpha$

Y is the value of the Dependent variable (Logistics Coordination), what is being predicted or explained

a (Alpha) is the Constant/intercept

b_1, $b_2b_3b_4$ is the Slopes (Beta coefficient) for X_1X_2 X_3X_4

X_1 Environmental Factors (independent variable) that is explaining the variance in Y (Logistics Coordination)

X_2 Donor Factors (independent variable) that is explaining the variance in Y (Logistics Coordination)

X_3 Interorganizational Factors (independent variable) that is explaining the variance in Y (Logistics Coordination)

X_4 Organizational Factors (independent variable) that is explaining the variance in Y (Logistics Coordination).
α is an error term at 95% confidence level
The regression was: Y = -.911 + .366X1 + .390X3 + .421X4

The constant (Beta) value is simply the intercept of the model. It is the value of the (Logistics Coordination) dependent variable when all the independent (Environmental, Donors, Interorganizational and Organizational Factors) variables are equal to zero and the logistics coordination would be -.911.

In view of this, the above equation is established. The findings revealed that taking all other independent variables constant, the value of increase by 1unit in environmental factors for every 1 unit of change will lead to 0.366 changes that will increase logistics coordination. The p–value was 0.027 which is less than 0.05 and thus the relationship was significant. The findings further indicate that taking all other independent variables constant, the value of increase by 1 unit in interorganizational factors for every 1 unit of change will lead to 0.390 changes that will increase logistics coordination. The p–value was 0.009 which is less than 0.05 and thus the relationship was significant. The findings were also indicated that the value of increase by 1unit in organizational factors for every 1 unit of change will lead to 0.421 changes that will increase logistics coordination. The p-value was 0.003 less than 0.05 and thus the relationship was significant.

Thus, the finding results revealed that environmental, interorganizational and organizational are the most factors that are affecting humanitarian logistics coordination in humanitarian organizations in food aid.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1. Summary

Based on the questionnaire collected from respondent and quantitative data, Inferential statistics analysis was generated, and research findings are summarized and presented as follows:

- Pearson correlation coefficient result revealed that logistics coordination was associated positively to environment factors to an extent of r=.598 with moderate relationship and statistically significant at 1% level. The multiple regression coefficient result for environment factors revealed that the amount of a unique variance a predictor (environmental factors) accounts for was statistically significant at p=0.027, p<0.05.

- Pearson correlation coefficient result revealed that logistics coordination was associated positively to donor factors to an extent of r=.416 with moderate relationship and statistically significant at 1% level. The multiple regression coefficient result for donor factors revealed that the amount of a unique variance a predictor (donor factors) accounts for was not statistically significant at alpha 0.05.

- Pearson correlation coefficient results revealed that logistics coordination was associated positively to interorganizational factors to an extent of r=.675 with strong relationship and statistically significant at 1% level. The multiple regression coefficient result for interorganizational factors revealed that the amount of a unique variance a predictor (interorganizational factors) accounts for was statistically significant at p=0.009, P<0.05.

- Pearson correlation coefficient results revealed that logistics coordination was associated positively to organizational factors to an extent of r=.430 with moderate relationship and statistically significant at 1% level. The multiple regression coefficient result for organizational factors revealed that the amount of a unique variance a predictor (Organizational factors) accounts for was statistically significant at p=0.003, P<0.05.

- The coefficient of determination for multiple regression is represented by R-squared adjusted and the result revealed that the percentage of the variance in logistics coordination explained by the independent variables (environmental, donors' Interorganizational and

organizational factors was at 56.3% collectively and the result indicated that there was close association between the factors and logistics coordination.

- The regression coefficient table revealed that the value of increase by 1 unit in environmental factors for every 1 unit of change will lead to 0.366 changes that will increase in logistics coordination. The study revealed also that the value of increase by 1 unit in organizational factors for every 1 unit of change will lead to 0.421 changes that will increase logistics coordination. The study revealed that the value of increase by 1 unit in interorganizational factors for every 1 unit of change will lead to 0.390 changes that will increase logistics coordination.

5.2 Conclusion

The study aimed at determining the factors affecting Logistics Coordination among humanitarian organizations in food aid emergency response in Ethiopia. Four factors were identified and adopted from literatures, and accordingly environmental factors were measured in terms sudden onset disaster and destructions, unpredictable demand, basic infrastructure, access to reliable, adequate and timely information and diversity of actors. Donors factors were measured in terms of earmarked funds, donors' expectations, donors' interest and lack of long-term commitments. Interorganizational factors was measured in terms organizational structure, operational approaches & timeframe, mutual trust to share resources and common information sharing platform. Organizational factors were measured in terms of organizational financial resources, organizational bureaucracy& flexibility, organizational identity/independency risk, operational capacity and availability of competent logistics personnel.

In line with research question and specific objectives 'to determine the type of relationship between the independent variables (factors) and logistics coordination (dependent)', Pearson Correlation Coefficient test revealed, and the researcher conclude that a positive and moderate relationship exist between the first independent variable i.e. environmental and logistics coordination at statistically significant level. A positive and moderate relationship exist between second independent variable, donor factors and logistic coordination at statistically significant level. A strong and positive relationship exist between the third independent variable Interorganizational factors and Logistics Coordination at statistically significant level. A positive and moderate relationship at the fourth independent variable organizational factors and logistics coordination at statistically significant level.

The researcher conducted a multiple regression analysis to determine the relationship between independent variables and the dependent variable. The R square adjusted was 0.563, the R square was 0.594 and standard error was 0.559. The Adjusted R square was 0.563, it is evident that the data utilized to analyse the relationship between the independent factors and logistic coordination and the researcher conclude that independent and dependent variables were closely associated.

In line with the research questions and specific objectives, to examine the extent of relationship between the independent variables and logistic coordination, the study revealed environmental, inter-organizational and organizational factors were significance at 0.05, $p < 0.05$) and the researcher concluded that environmental, inter-organizational and organizational factors were the most associated factors affecting humanitarian logistic coordination. Donor factors was the least associated factors affecting logistics coordination with $p = 0.126$ in humanitarian organization in food aid.

5.3 Recommendations

The researcher recommends the following action points for consideration among humanitarian organizations to improve logistics coordination which contributes to reduce cost and humanitarian response time.

1. In general coordination is at an early stage in Ethiopia and would get even worse before it gets better with the decentralization plan included in the Disaster Risk Management Policy of the country which is gradually giving the role of coordination and response to regions. This is for slow onset emergency such as the once caused by drought. It is even worse with fast onset emergencies such as flood. Thus, the researcher recommends that availability of updated logistics capacity assessment is very crucial. This logistic capacity assessment will include all the updated information on infrastructure of the country (roads, rails, bridge, suppliers, warehouses locations, transport capacity, communication facilities etc) equipped with updated logistic capacity assessment, HOs will be enabled to reduce the factors affecting humanitarian logistics coordination for timely response to emergency needs.

2. Resources always are not enough to meet the emergency needs and prioritization is very important in emergency. Prioritization cannot be done without coordination. Coordination is critical in Ethiopia as emergency is massive in scale and timely response is impossible without coordination. The stakeholders are diverse and many in number and duplication of effort cannot be avoided without coordination.The researcher recommends further to the Government led coordination effort, considered as joint decision-making measures, the culture of regular logistics coordination meeting, information and experience sharing on how to manage food with effective logistics support that will reduce logistical challenges need to be established and improved among humanitarian actors in food aid.

3. Although resource sharing depends on the donor requirement and it makes resource sharing very difficult or impractical, donor community should develop permissible platform that will encourage humanitarian organizations to share resources and

embrace logistics coordination, since this has the most significant influence in their humanitarian operations.

4. Humanitarian organizations at the moment are still focused to enhance organizational capacity to respond to an emergency or a need. The level of engagement in coordination and shared resource for coordinated response has not matured to the extent it should be. Having said that the different organizational structures, different logistical arrangements, different procedures and polices does not make coordination entirely effective. Thus, humanitarian organizations need to harmonize organizational policy and procedures to engage in planning together and in the implementation of humanitarian response to better utilize resources and overcome logistical challenges through logistical coordination, when there is proper coordination there is always a possibility for timeliness of the response and cost effectiveness.

5. The study indicated that there is a lack of understanding of logistics coordination and misconception that logistics is only about food storing among humanitarian organizations and these misconceptions need to be cleared. There should be a minimum standard of logistics understanding among humanitarian actors that are enhanced by trainings and experience sharing to draw common understanding and to clear misconceptions.

5.4. Further Research Directions

The research identified four independent variables (environmental, donors, interorganizational and organizational factors) to explain the logistics coordination challenges was 56.3% these factors impact unfavourably humanitarian logistics coordination among humanitarian organizations in food. Thus, the researcher recommends future studies to examine other factors that affect humanitarian logistic coordination in Ethiopian.

The study identified four independent variables to assess their impact on humanitarian logistics coordination among humanitarian organizations in food aid, and the researcher recommends determining whether these findings would be the same or different in other humanitarian response sectors/clusters.

Logistic coordination concept at early stage, and to measure the impact and understand the context of coordination in Ethiopia and the challenges that exist among the stakeholders, the researcher recommends, future studies on combination of vertical and horizontal that include actors in both vertical and horizontal line, these are GoE (NDRMC), Donors communities, Humanitarian Organizations in various humanitarian response sectors/clusters, Suppliers (business/private companies) involved in humanitarian response.

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ANNEX I

Questionnaire

General Instructions

1 You are not required to write your name.

2 Provide your answer to every question.

3. Where answer options are available, please tick (√) in the appropriate box for PART I.

PART-I: General Information: this part of questionnaire is designed to gather background information about respondent and his/her organization

1.1 Name of the organization:

1.2 Gender/Sex:

Female ☐ Male ☐

1.3 Educational Qualification:

Secondary School Completion Certificate ☐ College Diploma ☐

First Degree ☐ Second Degree and above ☐

1.4 Years of experience in your organization:

Below 5Years ☐ 5-10 Years ☐ 10-15 Years ☐Over 15 Years ☐

1.5 Years of experience in other humanitarian/non- humanitarian organizations:

Under 5Years ☐ 5-10 Years ☐ 10-15 Years ☐Over 15 Years ☐

1.6 Current position in organization:

Programme Officer ☐Logistic Officer☐

Part II: Instruments to determine factors affecting Logistics Coordination

Section 1: Humanitarian organizations in food aid, tick the appropriate number to indicate the extent to which you agree or disagree with each statement as per rating:

5 = Strongly Agree (SA), 4 = Agree (A), 3 = Neutral (N)2 = Disagree (D)1 = Strongly Disagree (SD)

1. Environmental Factors in which Humanitarian organizations operates		SA 5	A 4	N 3	D 2	SD 1
SI. 1.1.	Infrastructures distracted by sudden-onset disasters impact timely emergency food response					
SI. 1.2.	Humanitarian Organizations in food aid have the capacity to meet unpredictable food demand in emergency operations					
SI. 1.3.	Basic infrastructures conditions like transportation, communications, electricity is critical for timely emergency food responses					
SI. 1.4.	Involvement of large number of diverse humanitarian actors delay emergency food responses					
SI.1.5.	Access to reliable, adequate and timely information at regional level is critical to humanitarian organization in food aid for emergency response					
2. Donors' expectations and Funding Structure		SA 1	A 2	N 3	D 4	SD 5
SI. 2.1.	Donors provide earmarked funding structure to humanitarian emergency response programmes					
SI. 2.2.	Donors have greater expectation that funds spent on relief rather than in information systems material, or logistics facilities					
SI. 2.3.	Donors are interested to provide funds to facilitate coordination among humanitarian organization in food aid during emergency response with proposed guidelines to follow					
SI. 2.4.	Donors provide long term fund commitment to humanitarian organizations in food aid to strengthen collaborative relationships before disaster occurs.					

3. Inter organizational Factors (Interorganizational difference that exist within humanitarian organizations in food aid poses challenges to logistics coordination)		SA 1	A 2	N 3	D 4	SD 5
SI.3.1.	Humanitarian organizations in food aid differ in their organizational structures					
SI.3.2.	Humanitarian organizations in food aid have different operational approaches and timeframe in food emergency responses					
SI.3.3.	Humanitarian organizations in food aid have common information sharing platform to build a fuller picture of food emergency response needs					
SI.3.4.	Humanitarian organizations in food aid have mutual trusts among themselves to share resources including information, knowledge, and logistics facilities for emergency programmes					
4. Organizational Factors (Your individual organization)		SA 1	A 2	N 3	D 4	SD 5
SI.4.1.	My organization have financial resources to join coordination efforts					
SI 4.2.	Coordination increases bureaucracy, which decreases my organizational flexibility and timely response to the beneficiaries' needs					
SI.4.3.	Engaging in coordination efforts could put my organization identity or independency at risk.					
SI.4.4.	My organization has operational capacity to respond to emergency food assistance at any time					
SI.4.5.	My organization have competent logistics personnel with experience in humanitarian service to facilitate coordination					

Section II Logistic Coordination		SA 1	A 2	N 3	D 4	SD 5
SII. 1.	Joint decision making occurs within humanitarian organizations in food aid during emergency food response					
SII. 2.	Humanitarian Organizations in food aid have joint information and knowledge sharing platforms during emergency food response					
SII 3.	Humanitarian Organizations in food aid shares human resources among themselves during emergency food response					
SII. 4.	Humanitarian Organizations in food aid shares logistics facilities/resources among themselves during emergency food response					

Kindly use this opportunity to provide us with any further information concerning logistical coordination you feel may be of value to this questionnaire and to the wider humanitarian community in Ethiopia; Many thanks for your assistance.

Continue overleaf or on additional page(s) as convenient.

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Thank you!

ANNEX II

SPSS Dataset Output

1. Scale: Environmental Factors

Case Processing Summary

		N	%
Cases	Valid	57	100.0
	Excluded[a]	0	.0
	Total	57	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.894	5

Item Statistics

Environmental Factors	N	Minimum	Maximum	Mean	Std. Deviation
Infrastructures distracted by sudden-onset disasters impact timely emergency food response.	57	1	5	3.02	1.261
Humanitarian Organizations in food aid have the capacity to meet unpredictable food demand in emergency operations.	57	1	5	2.98	1.356
Basic infrastructures conditions like transportation, communications, electricity is critical for timely emergency food responses.	57	1	5	3.11	1.145
Involvement of large number of diverse humanitarian actors delay emergency food responses.	57	1	5	2.74	1.343
Access to reliable, adequate and timely information at regional level is critical to humanitarian organization in food aid for emergency response	57	1	5	3.19	1.315

2. Scale: Donor Factors

Case Processing Summary

		N	%
Cases	Valid	57	100.0
	Excluded[a]	0	.0
	Total	57	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.702	4

Item Statistics

Donor Factors	N	Minimum	Maximum	Mean	Std. Deviation
Donors provide earmarked funding structure to humanitarian emergency response programmes.	57	1	5	3.84	1.177
Donors have greater expectation that funds spent on relief rather than in information systems material, or logistics facilities.	57	1	5	3.67	1.041
Donors are interested to provide funds to facilitate coordination among humanitarian organization in food aid during emergency response with proposed guidelines to follow.	57	1	5	3.53	1.351
Donors provide long term fund commitment to humanitarian organizations in food aid to strengthen collaborative relationships before disaster occurs.	57	1	5	2.68	1.088

3. Scale: Interorganizational Factors

Case Processing Summary

		N	%
Cases	Valid	57	100.0
	Excluded[a]	0	.0
	Total	57	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.754	4

Item Statistics

Interorganizational Factors	N	Minimum	Maximum	Mean	Std. Deviation
Humanitarian organizations in food aid differ in their organizational structures.	57	1	5	3.51	1.364
Humanitarian organizations in food aid have different operational approaches and timeframe in food emergency responses.	57	1	5	3.75	1.299
Humanitarian organizations in food aid have common information sharing platform to build a fuller picture of food emergency response needs.	57	1	5	2.51	1.338
Humanitarian organizations in food aid have mutual trusts among themselves to share resources including information, knowledge, and logistics facilities for emergency programmes.	57	1	5	3.12	1.593

4. Scale: Organizational Factors

Case Processing Summary

		N	%
Cases	Valid	57	100.0
	Excluded[a]	0	.0
	Total	57	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.770	5

Item Statistics

Organizational Factors	N	Minimum	Maximum	Mean	Std. Deviation
My organization have financial resources to join coordination efforts.	57	1	5	3.68	1.256
Coordination increases bureaucracy, which decreases my organizational flexibility and timely response to the beneficiaries' needs.	57	1	5	3.12	1.283
Engaging in coordination efforts could put my organization identity or independency at risk.	57	1	5	2.61	1.236
My organization has operational capacity to respond to emergency food assistance at any time.	57	1	5	3.16	1.544
My organization have competent logistics personnel with experience in humanitarian service to facilitate coordination.	57	1	5	3.35	1.408

5. Scale: Logistics coordination

Case Processing Summary

		N	%
Cases	Valid	57	100.0
	Excluded[a]	0	.0
	Total	57	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.728	4

Item Statistics

Logistics coordination	N	Minimum	Maximum	Mean	Std. Deviation
Joint decision making occurs within humanitarian organizations in food aid during emergency food response	57	1	5	3.86	.915
Humanitarian Organizations in food aid have joint information and knowledge sharing platforms during emergency food response	57	1	5	3.72	1.082
Humanitarian Organizations in food aid shares human resources among themselves during emergency food response	57	1	5	2.46	1.196
Humanitarian Organizations in food aid shares logistics facilities/resources among themselves during emergency food response	57	1	5	2.61	1.398

Correlations

		1.Enviromental Factors	2.Donors' Factors	3.Interorganization Factors	4.Organizational Factors	Logistic Coordination
1.Enviromental Factors	Pearson Correlation	1	.244	.700**	.103	.598**
	Sig. (2-tailed)		.068	.000	.446	.000
	N	57	57	57	57	57
2.Donors' expectations and Funding Factors	Pearson Correlation	.244	1	.372**	.227	.416**
	Sig. (2-tailed)	.068		.004	.089	.001
	N	57	57	57	57	57
3.Interorganization Factors	Pearson Correlation	.700**	.372**	1	.228	.675**
	Sig. (2-tailed)	.000	.004		.088	.000
	N	57	57	57	57	57
4.Organizational Factors	Pearson Correlation	.103	.227	.228	1	.430**
	Sig. (2-tailed)	.446	.089	.088		.001
	N	57	57	57	57	57
Logistic Coordination	Pearson Correlation	.598**	.416**	.675**	.430**	1
	Sig. (2-tailed)	.000	.001	.000	.001	
	N	57	57	57	57	57

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

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.771[a]	.594	.563	.55864	1.936

a. Predictors: (Constant, 1. Environmental Factors, 2. Donors' expectations and Funding Factors, 3.inter organization Factors), 4. Organizational Factors

b. Dependent Variable: Logistic Coordination

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.765	4	5.941	19.037	.000[b]
	Residual	16.228	52	.312		
	Total	39.993	56			

a. Dependent Variable: Logistic Coordination

b. Predictors: (Constant), 1. Environmental Factors, 2. Donors' expectations and Funding Factors, 3. Interorganizational Factors4. Organizational Factors,

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.911	.506		-1.800	.078		
	1.Enviromental Factors	.366	.161	.282	2.274	.027	.507	1.972
	2.Donors' Factors	.236	.152	.150	1.555	.126	.840	1.190
	3.iInterorganization Factors	.390	.143	.357	2.720	.009	.454	2.202
	4.Organizational Factors	.421	.136	.286	3.099	.003	.919	1.088

a. Dependent Variable: Logistic Coordination

Collinearity Diagnostics[a]

Model	Dimension	Eigen value	Condition Index	Variance Proportions				
				(Constant)	1.Enviromental Factors	2.Donors' Factors	3.interorganization Factors	4.Organizational Factors
1	1	4.870	1.000	.00	.00	.00	.00	.00
	2	.060	8.973	.03	.13	.05	.17	.14
	3	.033	12.107	.02	.03	.81	.00	.28
	4	.023	14.651	.21	.36	.00	.50	.22
	5	.013	19.110	.74	.48	.14	.33	.35

a. Dependent Variable: Logistic Coordination