HUMANITARIAN RELIEF OPERATION PRACTICES, CHALLENGES AND PERFORMANCE OF THE NATIONAL DISASTER AND RISK MANAGEMENT COMMISSION IN CRISES MANAGEMENT

BY

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Declaration

I, the undersigned, declare that this thesis entitled “Humanitarian Relief Operation Practices, Challenges and Performance of the National Disaster and Risk Management Commission in Crises Management” is my original work and has not been presented for any degree in any other university, and that all the sources of materials used for the thesis have been duly acknowledged.

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Certificate

This is to certify that Selamawit Assefa has carried out her thesis work entitled “Humanitarian Relief Operation Practices, Challenges and Performance of the National Disaster and Risk Management Commission in Crises Management” under my guidance and supervision. Accordingly, I hereby assure that the study is her own original work and suitable for submission of the award of MA in Logistics and Supply Chain Management.

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This is to certify that the thesis prepared by Ms. Selamawit Assefa, entitled "Humanitarian Relief Operation Practices, Challenges and Performance of the National Disaster and Risk Management Commission in Crises Management", which is submitted in partial fulfillment of the requirements for the Degree of Masters in Logistics and Supply Chain Management, complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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Dedication

To my Sister Bethlehem Assefa

To my Dad Assefa Redi

To my Supervisor Dr. Shiferaw Mitiku

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The Researcher

ABBREVIATIONS AND ACRONYMS

ACLED: Armed Conflict Location and Event Data
ACAPS: Assessment Capacities Project
APICS: American Production and Inventory Control Society
DRMTWG: Disaster Risk Management Technical Working Group
ECHO: European Civil Protection and Humanitarian Aid Operations
EFQM: European Foundation for Quality Management
EOP: Emergency Operations Plan
HDRP: Humanitarian and Disaster Resilience Plan
IDPs: Internally Displaced Persons
IFRC: International Federation of Red Cross and Red Crescent Societies
NDRMC: National Disaster Risk Management Commission
NFI Non Food Item
NGO: Non Government Organization
OCHA: United Nation Office for the Coordination of Humanitarian Affairs
PMSs: Performance Measurement Systems
SNNPS: Southern Nations, Nationality and Peoples Region
SCOR Supply Chain Operations Reference
UN: United Nations
UNJLC: United Nations Joint Logistic Centre
UNHRN: United Nation Humanitarian Response Network
UNDSS United Nations Department of Safety and Security

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Abstract

The objective of the study was to assess the humanitarian relief operation practice, challenge, and performance of the National Disaster and Risk Management Commission in Crisis Management. Specifically, this study intended to explore and empirically test the practice and challenges of the humanitarian relief operation in four phases namely; mitigation, preparedness, response, and recovery and to measure the performance of the National Disaster and Risk Management Commission in the Gedio-Guji relief operation. A systematic literature review is made to identify variables and their items to design a structured questionnaire. A total of 70 questionnaires were distributed to resource mobilization and fund administration directorate, logistics directorate, disaster risk reduction directorate, response and rehabilitation directorate, early warning and emergency response directorate and Adama main warehouse of which 63 questionnaires were filled and returned with a response rate of 90 percent. Descriptive statistics like percent, mean and standard deviation were used to describe the practice and the challenges of National Disaster and Risk Management Commissions relief operation, Kendals. Wallis coefficient of concordance of the rank order analysis model is computed to rank the challenges affecting the performance of the National Disaster and Risk Management Commission. Davidson (2006) scorecard model used to evaluate the performance of the Gedio- Guji five round relief operation. The result of the study is triangulated using qualitative data (collected using interview). The result of the analysis shows that the existence of strong practice in the organization, the challenge stated was seen strong. The top three ranked challenges are poor inventory management in the preparedness phase, fund rising problems in the response phase, lack of coordination and collaboration in the preparedness phase respectively. Performance of Gedio- Guji relief operation were measured using the Davidson scored card model and the result shows very low performance in its appeal coverage, delivery took longer than the standard time, financial efficiency was very low for food item, non food item and shelter and total over weighted operation and finally assessment accuracy was overrated for food on the other side it was perfect for non food but as a total over weighted operation was overrated. Finally this study recommends that while performing relief operation during mitigation, preparedness, response and recovery phase National Disaster and Risk Management Commission should take in to account the affected community culture, language, and religion, also focusing in strengthen the relationship between different actors which involves in the relief operation, building and maintaining infrastructure, modernizing inventory management system, working on successful fundraising events, working with different sector on stabilizing security, hiring qualified adequate manpower and using up-to-date information technology towards the successful achievement of the relief operation. The study recommends in order to increase the appeal coverage National Disaster and Risk Management Commission should focus intensively on the appeal coverage at the end of the day donor wont delivery what they haven't pledged in the first phase, follow up with donors should be continues to increase delivery of relief items with the quantity they have pledged and the delivery time they have promised accurate assessment and verifying of data should be done to minimize the gap between actual spent and budget for relief operation.

Key Words: *Humanitarian, Relief, Operation, Performance, Practice, Challenge*

CHAPTER ONE
INTRODUCTION

This chapter presents the background of the study, problem statement, objective of the study, research question, scope of the study, significance of the study, definition of terms and organization of the study.

1.1 Background of the Study

The current situation of the country coupled with a shortcoming that has been created during relief operation has inspired me to do the study on humanitarian logistics in crisis management in National Disaster and Risk Management Commission (NDRMC).

RobertE. *et al* (2011) they have denoted that whether in the form of an earthquake, hurricane, tsunami, influenza pandemic, or terrorist attack, the next major disaster is closer than we might think.

Humanitarian relief logistics is defined by Thomas and Kopczak, (2005) as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people

United Nation Office for Disaster Reduction, (2017) in their definition of disaster stated that as a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of human, material, economic and environmental losses and impacts.

According to Ichoua, (2010) when a major disaster strikes, a timely response is critical to saving lives and mitigating affected population sufferings. In fact, the first 72 hours of a disaster relief effort are critical as the chance for survival beyond that time window without water or food decreases drastically. The challenge is to deliver the appropriate emergency supplies in sufficient quantities exactly when and where they are needed.

Most of the 2017 humanitarian needs have been passed over into 2018 given insufficient recovery opportunities and the still dire condition of vulnerable communities due to the impact of successive drought, mainly in the south and southeastern Ethiopia, compounded by recent spikes in conflict-induced displacements. The HDRP seeks US$1.658 billion to reach 7.88 million people with emergency food/cash. In addition, 3.4 million households are in need of livestock support; 3.5 million moderately malnourished children and pregnant and breastfeeding women and 350,000 severely malnourished children are expected to require emergency nutrition support; 6.9 million people are without safe drinking water; 1.5 million internally displaced people require shelter and non-food item support; 6.5 million people require emergency health interventions; 2.2 million children need support to continue their education; and some 300,000 vulnerable people need protection assistance, mainly in displacement settings (Disaster Risk Management Technical Working Group, 2018).

Under the proclamation of the Council of Ministers Regulation No. 363/2015, the National Disaster and Risk Management Commission was established to provide appropriate and timely responses to disaster before, during and after the disaster period at all levels through establishing a coordinated, accountable and decentralized system in a scalable manner.

Since its establishment, NDRMC has been engaged in many disaster relief activities some was being successful and others being a failure on the eyes of the public. Therefore this study is to identify challenges faced in humanitarian logistics in crisis management in National Disaster and Risk Management Commission.

1.2 Statement of the Problem

In Ethiopia, the humanitarian situation has changed dramatically since the beginning of 2017. Consecutive poor rainfalls have led to drought, loss of pastoral livelihoods in the large pastoralist Somali region reduced household food access and unaddressed grievances regarding the marginalization, oppression, and political exclusion of ethnic groups has led to renewed tensions with the government (Assessment Capacities Project (ACAPS), 2017).

According to Mulugeta Abebe (2009), for many years, the emphasis was given on post-disaster response, recovery, and rehabilitation rather than on pre-disaster preparedness and prevention measures. This has resulted in the loss of lives and displacement. Although the policy of disaster management in Ethiopia seems to change in lessons learned from several years of experience, still there are problems that NDRMC has to solve. Active partnership and collaborative relationship among actors in disaster management communities appear to be lacking.

As stated by Alexander Blecker (2009), the success of any humanitarian relief operation greatly depends on securing adequate funds; on the other hand, the shortage of funds will hinder the performance of relief operation. In the Ethiopian case because of the continued occurrence of disaster in a short period of time a high shortage of funding has been experienced.

Mid-Year Review (MYR) of the 2018 Humanitarian and Disaster Resilience Plan faced a funding shortfall of US$416.4 million to support 7.95 million people with relief food/cash assistance and 9.45 million people with non-food supplies with total 17.4 million people until the end of the year, at a cost of $1.494 billion. (United Nations Office for the Coordination of Humanitarian Affairs, 2018). The humanitarian situation in 2019 remains similar to 2018 mainly due to mass internal displacements in various parts of the country and related humanitarian and protections needs in order to save lives and prevent suffering at least 8.3 million people are in need of food and non-food assistance. (United Nations Office for the Coordination of Humanitarian Affairs, 2019).

On account of doing this study, the researcher has made a preliminary interview with four directorates and one main warehouse manager of the National Disaster and Risk Management Commission. Namely Early Warning and Response Directorate, Disaster Risk Reduction Directorate, Disaster Recovery, and Rehabilitation Directorate, Logistics Directorate and Adama Main Warehouse.

In response to a preliminary interview made with the staff of NDRMC with respect to common and main challenges faced were found to be of unavailability of qualified manpower to deal with disaster management and humanitarian logistics management. The other problems mentioned by the NDRMC staff were a) inadequate funding, b) information technology issues, c) security related issues are elaborated as follows.

Inadequate funding as most international donors reduces their aid, putting great pressure on the government on filling the gap, resulting in the delay of the release of fund from the donor. Challenges with information technology were quality of data mainly false data being collected from the regions resulting on overrated or underrated request, network problem restricting data flow from region to head office, minimum usage of information technology on reporting, tracking, tracing and data management practices as well as not having scientific early warning indicators for rapid onset disaster. As of the security-related issue mentioned by the staff were obstacles created in the distribution of relief logistics especially on disaster induced by the conflict which resulted from aid trucks being held hostage, hence not being able to reach the affected area on time are among the challenge mentioned by the interviewees.

Therefore, based on the findings of a preliminary interview in-depth research and empirical testing of the problems are needed. As a result, the study has identified the practice and challenges of the disaster management cycle and measure the Gedio-Guji relief operation performance of the National Disaster Risk Management Commission.

1.3 Research Questions

This research is expected to answer the following research questions:

- What are the major challenges for NDRMC during mitigation phase of its relief operation?
- What are the major challenges for NDRMC during preparedness phase of its relief operation?
- What are the major challenges for NDRMC during response phase of its relief operation?
- What are the major challenges for NDRMC during recovery phase of its relief operation?
- How the disaster management cycle is being practiced at the NDRMC?
- What is the relief operation performance of the NDRMC on the Gedio-Guji relief operation (from round 1-5)?

1.4 General Objective

The main objective of the study is to identify the practice, challenges and measure the performance of relief operation at the National Disaster and Risk Management Commission of Ethiopia (NDRMC).

1.41 Specific Objective

- To identify the major challenge for NDRMC in its relief operation during disaster mitigation phase of disaster management
- To determine the major challenge for NDRMC in its relief operation during disaster preparedness phase of disaster management
- To identify the major challenge for NDRMC in its relief operation during the disaster response phase of disaster management
- To identify the major challenge for NDRMC in its relief operation during the disaster recovery phase of disaster management

- To assess the disaster management cycle practice of the NDRMC
- To measure the overall relief operational performance of the NDRMC: at Gedio-Guji relief operation (from the round 1-5)

1.5 Scope of the Study

This study has identified the practice and challenge of humanitarian relief operation in crisis management faced in the four-phase of relief operation mainly mitigation, preparedness, response and recovery focusing on shortage of funding, lack of professional staff, inadequate infrastructure, inadequate use of information technology, unstable security, inadequate inventory management practice, limited collaboration and cooperation, social barrier and measure the performance of NDRMC on Gedio- Guji relief operation using a scorecard model developed by Davidson (2006). Despite the availability of a number of issues related to supply chain management, this research limited itself only on government humanitarian organization being NDRMC with particular reference of Addis Ababa head office and Adama main store due to the accessibility and convenience to the researcher. The secondary data from the year 2018-2019 were considered for evaluating the performance of the NDRMC on Gedeo- Guji relief operation.

1.6 Significance of the study

The study would benefit the humanitarian organization in Ethiopia who knows beforehand possible challenges they might face during relief operations and put mitigating factors to reduce the impact of the challenges. The study sought to drive direction for NDRMC to gain a better understanding of the challenges faced during the relief operation phase mainly mitigation, preparedness, response and recovery and also to evaluate its performance on Gedio-Guji relief operation.

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Although the study was carried out for an academic purpose and it is confined to a single humanitarian organization in Ethiopia, the findings shall contribute to deepening the knowledge of the humanitarian supply chain in general and the study area in particular. Therefore, the

outcomes of the study would be helpful for policymakers in formulating future policies and strategies on humanitarian supply chain management, donors would gain a better understanding of the environment within which relief humanitarian organizations operate. Above all the study would be first of its kind in the areas that, it may be used to stimulate for further research, researchers and scholars advance the body of knowledge on humanitarian logistics in crisis management so that they can build upon the concept and work done.

1.7 Definitions of Terms

Logistics: The process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements." Note that this definition includes inbound, outbound, internal, and external movements and the return of materials for environmental purposes. (Council of Logistics Management, 1998)

Disaster: is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins. (The International Federation of Red Cross and Red Crescent Societies (IFRC), 2018)

Humanitarian Logistics: 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 the purpose of alleviating the suffering of vulnerable people. The function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance (Thomas and Kopczak, 2005)

Relief/response: The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can

be of an immediate, short-term, or protracted duration. (Ministry of Social Solidarity Secretary of State for Social Assistance and National Disaster Management Directorate 2008)

Disaster management: The organization, planning, and application of measures preparing for, responding to and recovering from disaster (The United Nation Office for Disaster Reduction, 2017)

Annotation: Disaster management may not completely avert or eliminate the threats; it focuses on creating and implementing preparedness and other plans to decrease the impact of disasters and "build back better". Failure to create and apply a plan could lead to damage to life, assets and lost revenue. (The United Nation Office for Disaster Reduction, 2017)

1.8 Organization of the Study

The study comprises five respective chapters in which the researcher clearly state the entire process of the study, this include chapter one introduction this chapter contains the background of the study, statement of the problem, objectives of the study, basic research questions, scope of the study, significance of the study and definition of terms. Next is chapter two review of related literature this part of the study deals with the theoretical review, empirical review, conceptual framework and identifying literature gaps relevant to the proposed study followed by chapter three research methodology of the study in this chapter the researcher describe description of the study area, research approach, research design, population size, data source and type, data collection procedure, method of data analysis and presentation, reliability and validity test and ethical consideration and in chapter four results and discussion is covered the researcher summarizes the results, and findings of the study, and also interpret or discuss the findings. Finally chapter five deals with summary, conclusions, and recommendations.

CHAPTER TWO
RELATED LITERATURE REVIEW

In this section, literature specifically theoretical and empirical literature was reviewed on the works of various scholars in the field of supply chain management, humanitarian supply chain management, humanitarian logistics, challenge of humanitarian logistics, phase of humanitarian relief operation, performance measurement frameworks for relief operation to understand the state of the art and then to develop conceptual framework for data collection instrument and also to identify literature gap.

2.1 Theoretical Literature Review

2.1.1 Supply Chain Management

The Council on Supply Chain Management Professionals (CSCMP) (2008) has defined supply chain management as the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. In their definition, they have also included coordination and collaboration with actors and parties, which can be suppliers, intermediaries, third-party service providers, and customers.

Simchi-Levi *et al*. (2000), elaborate that SCM is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs while satisfying service level requirements. While supply chain management is concerned with network-wide optimization of material, information and financial flows in supply chains, logistics management is mainly concerned with operational activities such as transportation and storage (Waters, 2003).

Activities of the supply chain start with the customer order and end when the customer pays the expenses of the received commodity or service and the final product is delivered to him. The difference between the money spent by the customer with the total costs spent by the whole chain to produce and distribute the commodity shows the chain profitability (Ganjali, M., Shirouyehzad, H., & Shahin, A., 2016).

2.1.2 Humanitarian Supply Chain and Logistics Management

According to Torre *et al* (2011), the humanitarian supply-chain management (HSCM) involves managing the different interrelated factors important for the effectiveness of the humanitarian operation system such as goods and materials, information, manpower, political authorities, available infrastructure & etc. to reduce the impact of a disaster for the people who are affected. In the same document, they underlined the fact that the HSCM and the commercial supply-chain management are different in their motives and the realms at which they operate. While the driving force behind commercial supply chain management is basically profit maximization, efficiency & business long term growth that of HSCM is mainly reducing human suffering & rehabilitation of disaster affecting people in a timely manner.

Logistics Management is defined as the planning, implementing and controlling of the forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements efficiently and effectively (CSCMP, 2008).

2.1.3 Humanitarian Logistics

Thomas and Kopczak (2005) base their definition of humanitarian logistics on a survey among humanitarian logisticians from the headquarters of humanitarian organizations and projects conducted by the Fritz Institute. They summaries their findings with the following definition: "Humanitarian logistics is defined as 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 the purpose of alleviating the suffering of vulnerable people encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance.

The ICRC writes in their profile logistician as being responsible for procurement, ensure warehouse maintenance, deal with customs formalities, monitor stock levels, draw up budgets with the delegation administrator, analyze costs, and train and supervise local personnel (International Committee of the Red Cross, 2008).

Kovács and Spens (2007) denote humanitarian logistics as a "mixed array of operations" including disaster relief as well as enduring support for developing regions, i.e. as a response to various catastrophes. They see the commonality in all these operations that their objective is to aid people in their survival. They also include the design of the transportation of all kinds of material and personnel from supply points to a large number of destination nodes as well as the transfer of people affected by the disaster to the health care centers.

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Similarly, Beamon (2004), has defined humanitarian logistics as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods, materials, and equipment as well as related information, from point of origin to point of consumption for the purpose of meeting the beneficiary's requirements.

According to Cozzolino (2012), in a disaster situation, logistics can be considered a critical activity that differentiates between a successful and a failed relief operation.

Trunick (2005) stated logistics is the most expensive part of a relief operation that it accounted for about 80 percent of the total cost. Therefore the appropriate implementation of logistics practice will be a major contributor for efficiency and effectiveness in the relief operation. In humanitarian supply chains, effectiveness ensures that we save time, and time saved means more lives saved; efficiency ensures that we save costs, and costs saved means more lives helped.

Gyöngyi, K. and Karen, S. (2009) they have described the dilemma a logisticians face in giving priorities as front office and back office pressure meaning 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.

2.1.4 Humanitarian Actors and Parties Concerned

The effective management of multiple relationships within a supply chain with a multiplicity of key players is an important capability of supply chain managers, including those in emergency relief chains (Tokman *et al.*, 2007).

According to Oloruntoba and Gray (2009), different players participated in the international emergency relief chain, apart from the aid-user such as large governments and their donor agencies who fund the emergency relief chain, delivery partners such as international humanitarian NGOs who receive donor funds to procure and delivery relief goods, multilateral/international organizations and their specialized agencies, vendors of food and non-food relief goods, transportation, shipping, freight forwarding companies, and allied support services; governmental agencies of the aid-receiving country, corporate donors and the international media .

Similarly, Kovács and Spens (2009), denote humanitarian organizations take many different forms: from super national aid agencies (e.g. UN agencies) and governmental organizations (GOs) to big international non-governmental organizations (BINGOs) and one-man non-governmental organizations (NGOs). They differ in local presence, size, and mandate.

2.1.5 Practice of Humanitarian Logistics in Relief Operation

Before looking into the practice of disaster it's better to look into the general organization of relief operation. According to Thomas (2003), once a disaster strikes a relief organization generally go through the following basic process being assessment, procurement, and shipping.

Assessment: An individual from the relief organization travels to the site to perform an assessment (usually within the first 24 hours of a crisis) to estimate the supplies required to meet the relief needs of the affected population. This individual then communicates the results of the assessment to an off-site logistician who translates the assessment into supply requirements (Thomas, 2003).

Procurement: A preliminary appeal for donations of cash and relief supplies is often made within 36 hours of the onset of a disaster. If donors respond and the appeal is funded, relief supplies are mobilized. The logistician first attempts to procure the supplies from local sources, and if the relief organization owns a centralized warehouse, the logistician then checks available supplies in those warehouses. Anything that cannot be fulfilled locally or from centralized warehouses is procured from global suppliers through competitive bidding. There can be and are usually multiple suppliers supplying a single relief organization for each relief effort (Thomas, 2003).

Shipping: Depending on the location of the disaster, the shipping capabilities of the supplier, and the negotiated contract, the goods are shipped to the disaster site (Thomas *et al* (2007).

2.1.5.1. Humanitarian Supply Chain Management Practice

As defined by Department of Homeland Security (DHS) (2008), emergency management is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other manmade disasters. From the definition

given by the Department of Homeland Security we can high light the four phases of emergency management which are mitigate, prepare, respond and recover.

Malcolm E. Baird (2010) stated that the concept of "phases" has been used since the 1930s to help describe, examine, and understand disasters and to help organize the practice of emergency management.

In an article titled Reconsidering the Phases of Disaster, David Neal cites different examples of different researchers using five, six, seven, and up to eight phases long before the four phases became the standard (Neal, 1997).

The widespread use of "mitigation, preparation, response, and recovery" to help describe "comprehensive emergency management practice" is the result of work by the National Governors' Association (NGA) in the late 1970s. The NGA formed a subcommittee on Disaster Assistance in 1977 in response to the lack of coordination of emergency management at both the federal and state levels (Malcolm E. Baird, 2010).

2.1.5.2 Definition of the Phase of Relief Operation

Phase 1 Mitigation

As defined by the National Governors Association (1979), mitigation activates include any activities that actually eliminate or reduce the probability of occurrence of a disaster (for example, arms build-up to deter enemy attack or legislation that takes the unstable double-bottom tanker off the highways). It includes long-term activates designed to reduce the effects of unavoidable disasters (for example, land-use management, establishing comprehensive emergency management programs, or legislating building safety codes).

Phase 2 Preparedness

In a governor's guide titled comprehensive emergency management: The National Governors' Association (1979), described preparedness as activities that are necessary to the extent that

mitigation measures have not, or cannot, prevent disasters. Actors in the relief operations like governments, organizations, and individuals develop plans to save lives and minimize disaster damage by compiling state resource inventories, mounting training exercise, or installing warning system. Preparedness measures also seek to enhance disaster response operations by stockpiling vital food and medical supplies, through training exercise, and by mobilizing emergency personnel on a standby basis.

Phase 3 Response

The response begins when an emergency event is imminent or immediately after an event occurs. It encompasses of the activities that address the short term direct effects of an incident it also includes the execution of emergency operations plans (EOPs) and of incident mitigation activities designed to limit the loss of life, personal injury, property damage and unfavorable outcomes (DHS - U.S. Department of Homeland Security, 2008 and FEMA – Federal Emergency Management Agency, 2006).

Phase 4 Recovery

According to the National Fire Protection Association (2007), recovery activities and programs are designed to return conditions to a level that is acceptable to the entity. They are also designed to assist victims and their families, restore institutions to suitable economic growth and confidence, rebuild the destroyed property and reconstitute government operations and service. Most of the time this activity goes beyond after the incident itself includes mitigation components designed to avoid damage from future incidents.

Maon, Lindgreen and Vanhamme (2008-2009), instead of using phase of relief operation they have used cycles of relief operation they also stated forecasting efforts should be employed both on preparedness and recovery cycle leading to early warning. The four cycles are all interrelated one cycle happening next to the other. In their dual cycle model of the disaster relief operation, they have described the four cycles as following:

A) **Mitigation** Including identifying potential hazards, evaluating potential hazards, development of structure and unstructured measures.

B) **Preparedness** Including communication plans, intervention plans, multi-agency coordination, maintenance and training, and sensitization.

C) **Response** Including mobilization of resources, primary procurement, and immediate assistance humanitarian aid. They have also stated that when disaster hit disaster impact analysis will be done taking in to account the nature, intensity, and scope of the disaster.

D) **Recovery** including reconstruction, rehabilitation, and restoration to the normal way of life (Maon, Lindgreen and Vanhamme, 2008-2009).

2.1.6 Characteristics of Humanitarian Logistics

Beamon and Kotleba (2006) characterized the supply chains of the relief operation as highly volatile environments as well as provide assistance in both the short and medium-term time horizons, i.e. in both emergency and more unstable contexts. Further, they have elaborated uncertainty in humanitarian supply chains as the uncertainty of demand, supply, personnel, and equipment as well as lead time, process instabilities and financial resources. They also stated demand patterns are highly irregular and the environment puts unique constraints on the operations.

Thomas and Kopczak (2005) also recognize uncertainty in humanitarian supply chains stating the field suffers from frequent breakdowns and interruptions in the material and information flow, which is in strong contrast to the extremely short lead times required. Due to the particular nature of funding their activities and the perception of logistics as a necessary expense rather than an integrated function which necessitates high management attention

2.1.7 Challenge of Humanitarian Logistics

In this study the researcher focuses will be on shortage of funding, lack of professional staff, inadequate infrastructure, inadequate use of information technology, unstable security,

inadequate inventory management practice, limited collaboration and cooperation, lack of measurement tools, social and economic factors because major ground study like (Schulz and Belecken, 2010), (Richardson *et al.*,2010), (Beamon & Balick, 2008), (Oloruntoba, 2005), (Iqbal *et al.*,2007), (Gyöngyi and Karen,2009), (Tomas, 2005), (Belcker, 2009) and (Altay *et al.,* 2009) has described the above as major challenge faced during relief operation.

2.1.7.1 Internal Factors Affecting Humanitarian Logistics

Funding: Due to the nature of how these supply chains are funded, investments in research and infrastructure are severely restricted. The main stakeholder in humanitarian supply chains is not the beneficiary who should be in the focus of humanitarian operations but rather the donor (Blecker, 2009).

Increasing competition for funds and tightened donor scrutiny can make the reaction and recovery stages seem to like picnics compared with strategic planning and prevention operations. Preparedness opportunities typically weaken, and a difficult challenge for agencies consists of leveraging awareness and sensitizing private and institutional donors to the role and importance of preparedness and strategic concern (Maon, Lindgreen and Vanhamme, 2008-2009).

Human Resources: Blecker (2009) clearly stated the severity of the challenge faced by humanitarian logistics with the lack of training in logistics personnel as logisticians being in the midst of numerous requirements posed by local governments and officials, donors, the media, beneficiaries, and their own headquarters. Professional logisticians are rare and thus, employee reliability is hampered. Mostly, standardized processes do not exist and the use of untrained personnel does not support the standardization of work processes. Retention of personnel is extremely difficult considering the aforementioned challenges and requirements to logisticians as a result staff turnover rates are high.

Thomas (2005) further elaborates the difficulty faced on human resource management with a lack of career advancement for field logistician's results in extreme turnover rates, as high as 80 percent per year.

Information Technological Issues. Because people tend to donate money expecting to directly help those impacted by the disaster, funding for necessary equipment and information technology has been limited (Oloruntoba and Gray, 2006).

Further Thomas (2003b), supported the existence of the challenge stating even though more sophisticated SCM tools could result in lowered costs and more efficient operations in the longer term, agencies have limited human and financial resources to invest in such advances.

Similarly, Lee and Zbinden (2003), denote most NGOs lack an efficient electronic infrastructure, and access to information remains tricky or even impossible at several points in the supply chain.

Russel (2005) in his Master Thesis titled The Humanitarian Relief Supply Chain: Analysis of the 2004 South East stated that most disaster relief agencies rely on Excel for their tracking, resulting in little visibility into inbound shipments; this, in turn, impedes the undertaking of receiving, clearing customs, shipping to intermediate warehouses, and distribution along the supply chain.

Coordinating- Collaboration and Measuring Issues. According to Maon, Lindgreen and Vanhamme (2008-2009), process coordination during disaster relief operations, as well as among disaster relief actors, often remains limited. Collaboration between humanitarian organizations can take place at different stages along the relief chain (Oloruntoba, 2005). Schulz and Blecken (2010), also have denoted the existence of limited cooperation only on the preparedness phase of the disaster relief life cycle.

Inventory Management Practice Issues: Inventory being the backbone of humanitarian logistics at the same time headache to the field has a great influence on the success of the relief operation. According to Richardson holding the right amount of inventory is very critical in preparation for emergency response and crisis management (Richardson *et al.,* 2010).

2.1.7.2. External Factors Affecting the Humanitarian Logistics

Infrastructure: Gyöngyi and Karen (2009) described the challenge as insufficient transportation facility and telecommunication structures also impair the smooth delivery of relief items to the affected population.

International Federation of Red Cross and Red Crescent Societies (2009) further strength the challenge with respect to transportation infrastructure as well as communication infrastructure, by stating often disaster tends to happen in areas where the local infrastructure is already in a poor state.

Kunz & Reiner (2012), denoted humanitarian logistics operate in such areas were difficult to reach under normal circumstances because roads are often inadequate.

Similarly Tomasini & Van Wassenhove (2009), stated that the challenge of infrastructure encompasses road network, railway, airports, power supply, warehouses, communications lines, etc. that are damaged in the disaster or were non-existent to begin within the affected region become a great obstacle for the performance of humanitarian logistics.

Security Issues: The security assessment should be done as soon as disaster strikes. In most of the scenes after a disaster strikes security will be lost especially in human-induced disasters. Access to some routes and airfields may be destructed to reach the location or clearance and permits may be needed by the logistic supply teams, especially in emergencies (Iqbal *et al.*, 2007). According to Walton, *et al.*, (2011), despite humanitarian workers efforts to strengthen operational security in insecure environments, attacks that have led to death, kidnapping or serious injury, continue to exact a heavy toll on humanitarian personnel preventing the wounded and sick from receiving the care and protection they require.

Social and Economical Factor: According to Altay *et al.*, (2009), the social and economic challenges was described as uncertainty in demand and supply, uncompetitive of market economy, the absences of local supplier, availability stiff competition, absences of financial donors, the culture and language of the host country, high inventory and transportation cost, and

lack of trust among the supply chain partners, availability of local suppliers, literacy level of the society, type of market economy, the local culture and religion.

2.1.8 Performance Measurement in Humanitarian Logistics

Supply chain performance measurement is a relatively neglected but a growing area in the literature (Beamon & Balick, 2008).

According to Neely *et al.* (1995), a performance measure is a metric used to quantify the effectiveness and efficiency of action. Effectiveness is defined as the extent which customer requirements are met, while the efficiency is the measure of how economically the resources are utilized when providing a given level of effectiveness. Performance measurement is critical to NGO accountability (Beamon, 2004).

Lindenberg and Bryant (2001) state as resources become tighter; NGOs face new pressures for greater accountability for program impact and quality. Today, contributors, donor agencies, scholars, and relief and development practitioners are all asking the effectiveness and efficiency of the relief operation.

On the other hand Van Wassenhove (2006), high lights the importance of measuring the performance of the relief chains especially with the increased frequency and scale of disasters, scarce resources, funding competition, and the need for accountability require more efficient, effective and transparent relief operations. Since logistics is central to relief operations and the most expensive part of any relief operation.

Despite its significance, performance measures and measurement systems have not been widely developed and systematically implemented in the relief chain various factors make performance measurement a challenging task for NGOs. One of the distinctive characteristics of nonprofit organizations is performance criteria ambiguity (O'Neill and Young, 1988).

The most widely adopted performance measurement systems are the Balanced Scorecard (Kaplan and Norton, 1996) and the EFQM Business Excellence Model (EFQM, 1999). They both provide a structured approach for identifying improvement opportunities and threats and translating companies' strategies in achievable goals, targets, and specific tasks. In contrast to these systems, competing techniques were introduced, such as The Performance Measurement Matrix (Keegan *et al.,* 1989), SMART Performance Pyramid (Lynch, Cross, 1991), Performance Prism (Neely, Adams *et al.,* 2001), among others.

According to American Production and Inventory control Society (APICS) (2018), there are over 250 SCOR metrics that are organized in a hierarchical & codified structure from organization level 1 to process level 2 to diagnostic level 3. The metrics are categorized into five performance attributes: reliability, responsiveness, agility, costs, and asset management efficiency. The strategic challenge for a company is to define, align and prioritize the competitive requirements for each attribute knowing that it will have to choose where it will be best in class and where it is acceptable to perform at an average level.

A major drawback regards to the SCOR model is it's useful less for humanitarian context. For applicability to humanitarian supply chains standard indicators need to be adjusted to allow for other crucial stakeholders to be included such as donor, beneficiaries, military or government. Therefore, indicators have to be re-defined for the specificities of the humanitarian context this will takes away the major strengths of SCOR (Addis Ababa University College of Business and Economics School of Commerce; MA-Logistics and Supply Chain Management Program, 2015).

Beamon (1998, 1999) provides a literature review of performance metrics used in supply chains. The author argues that a performance measurement system rather than a single metric is required in order to meet the characteristics of effective performance measurement.
Therefore Beamon (1999), develops the three-part framework for performance measurement consisting of resource metrics, output metrics, and flexibility metrics. Several studies use this framework to select performance metrics in supply chain modeling, such as Persson and Olhager (2002) and Angerhofer and Angelides (2006).

Beamon & Balick (2008) highlighted the challenges inherited from the unique characteristics of the disaster relief environment bring significant challenges to selecting appropriate performance metrics and developing measurement systems.

The Performance Prism (PP) is one of the younger conceptual systems and is considered a second-generation performance management system. This system was developed by a team of experienced researchers and consultants in the performance management area (Neely, Adams, and Kennerley, 2001) the metrics rely upon comprehensiveness, internal compatibility, horizontal integration vertical integration and usefulness/beneficiaries.

According to Striteska & Spickova (2012), the weakness for prism metrics is it offers little about how the performance measures are going to be implemented, some measures are not effective in practice, short of logic among the measures, no sufficient link between the results and drivers and no consideration is given to the existing PMSs that companies may have in place.

Following three principles a) align metrics to the organization's core strategy (Lambert, 2001), b) understand the dynamics of how performance is driven (Caplice & Sheffi, 1994) and c) review the metrics periodically as performance improves (Meyer, 2005), (Davidson, 2006) develops a framework for measuring the performance of logistics in real humanitarian operations served by the International Federation of Red Cross and Red Crescent Societies. The proposed framework relies upon four performance metrics, namely appeal coverage, a donation to delivery time, financial efficiency, and assessment accuracy (Larrea, O., 2013).

A. **Appeal coverage:** this indicator uses two specific metrics:

> **Percent of appeal coverage:** defined as the percentage of the number of items that donors have pledged out of the total number of items requested for the operation at a given point in time. It is expressed as the ratio of the number of items pledged and the total items requested. The purpose of this metric is to

indicate to the organization how well and how quickly they are finding pledges for the requested items (Larrea, O., 2013).

Percent of items delivered: defined as the percentage of items that have actually been delivered on-site out of the total number of items requested for the operation at a given point in time. This metric is expressed in factional form as the ratio of the number of items delivered and the total items requested.

These two metrics together indicate how well an organization is a) finding donors and b) how well is delivering goods to the destination disaster place at a specific point in time (Larrea, O., 2013).

B. **Donations-to-Delivery Time:** The second performance indicator measures how long it takes for an item to be delivered after a donor has pledged to donate it. It's expressed as the difference between the time of pledge delivery and actual delivery time (Larrea, O., 2013).

C. Financial Efficiency: This indicator uses three specific metrics: Three metrics are included as part of the indicator of financial efficiency.

The first financial efficiency metric is expressed as the ratio of the difference between donor cost and budget cost and budget cost. This metric indicates the amount under or over budget as a percentage of the budget cost (Davidson, 2006).

The second metric of financial efficiency expresses differences to budget in more absolute terms. The second financial efficiency metric is defined as the difference between actual dollars spent and budgeted dollars (Davidson, 2006).

The third metric of financial efficiency incorporates the transportation costs of delivering the goods to the beneficiaries. It is expressed at a given point in time as the ratio of total transportation costs and total product costs (Larrea, O., 2013)

D. Assessment Accuracy The purpose of a metric related to assessment accuracy is to measure how much the operation´s final budget changed over the time from the

operation´s original budget. This metric is expressed as the ratio of the revised operation budget and the original operation budget (Larrea, O., 2013).

2.1.9 Grounded Theory

While conducting this research the following theory were consulted:

2.1.9.1 Coordination Theory

The idea of an international organization to coordinate disaster relief was first brought to the table following World War I (Hutchinson, 2000). Most currently the UN has created the Office for the Coordination of Humanitarian Affairs (OCHA) (Arlikatti, Bezboruah & Long, 2012). This office is ideally supposed to help coordinate the efforts of different agencies around the globe; the ultimate goal being to increase cohesion and effectiveness. Clearly collaboration is seen on the international stage as a necessity to improving response to natural disaster (Grogg, Richelle S., 2016)

At the heart of coordination is a relationship between organizations, and theories of inter organizational relationships, specifically resource dependence and transaction-cost economics (TCE), have provided the underlying framework for studying coordination (Alicia C. Bunger, 2010).

Human service agencies are encouraged to "coordinate" their services with one another under the assumption that collaborative activity can facilitate access to services, duce unnecessary duplication of effort, and produce a more effective and efficient social service system (Alicia C. Bunger, 2010).

2.1.9.2 Resource Based Theory

Resource- based theory (RBT) Firm's strategic resources are the roots to gain sustainable competitive advantage (Jay B. Barney, Valentina Della Corte, Mauro Sciarelli and Asli Arikan, 2012).

An organization can be considered as a collection of physical resources, human resources and organizational resources (Barney, 1991; Amit and Shoemaker, 1993). Resources of organizations that are valuable, rare, imperfectly imitable and imperfectly substitutable are main source of sustainable competitive advantage for sustained superior performance (Barney, 1991).

2.1.9.3 Social Network Theory

Social network theory and methods offer a distinct perspective on and set of tools with which to understand media effects, enabling consideration of how micro- and macro social structures mediate and moderate media effects. The theories of two-step flow and diffusion of innovations examine the paths by which mediated messages travel through social networks (Wenlin Liu, Anupreet Sidhu, Amanda M. Beacom, and Thomas W. Valente, 2017).

Scott (1991) summarizes, there are three lines of research that contributed to the theory's early development: the socio metric analysis tradition, which relies on graph theory methods from mathematics; the interpersonal relations tradition, which focuses on the formation of cliques among a group of individuals; and an anthropology tradition that explores the structure of community relations in less developed societies.

Although all three theories have influence on the research coordination and resource based theory were the theory's the study accommodate throughout its course.

2.2 Empirical Literature Review

In this review, the researcher aims to review literature findings of related studies conducted on factors affecting humanitarian performance and measurement indicators of humanitarian logistics operation having consistent and contradictory findings.

Goli, Bakhshi and Tirkolaee (2017) stated that one of the main barriers to the sustainable development in different countries is suffering from natural disasters (earthquake, flood, storm, lightning, avalanche, tornado, fire, volcanic burst, etc.) as well as unnatural ones (war, terrorist attacks, road accidents, industrial accidents, political issues, immigration, homelessness, etc.)

unpreparedness and inappropriate confrontation against these disasters impose heavy damages and losses to nations and their properties, which might sometimes be irrecoverable.

2.2.1 Factors Affecting Performance of Humanitarian Logistics

Humanitarian operations with their ultimate stake of saving lives frequently take place in highly unstable and volatile environments, under great time pressure, working on poor infrastructure and generally exhausting working conditions. Humanitarian supply chains, which deliver goods and services in response to sudden and slow-onset disasters as well as chronic emergencies and which strive to provide humanitarian assistance both rapidly and efficiently, are subject to specific challenges (Thomas and Kopczak, 2005).

The ultimate goal of the relief chain is to save lives and reduce human suffering, given financial constraints (Beamon and Balcik, 2008).

Unlike the private sector with its sharp focus on a single bottom line, NGOs have two major bottom lines: mission effectiveness and financial sustainability (Moore, 2000; Lindenberg and Bryant, 2001). The pressure of time in the relief chain is not a question of money but a difference between life and death (VanWassenhove, 2006).

According to Beamon & Balick (2008), two of the most important characteristics that distinguish the relief chain from the supply chain are related to stakeholders and funding constraints. The number of stakeholders in a relief operation, the complex relations that evolve around them, and their different and possibly conflicting interests and demands lead to challenges in setting and prioritizing goals in relief logistics.

Thomas, on the other hand, describe challenges by phase for instance NGOs are encouraged to focus on operational disaster relief activities rather than disaster preparedness that will reduce expenses or make the relief more effective over the long-term (Thomas, 2003).

A. Infrastructure

Kumar and Havey (2013) has found out in their study that creating effective mechanisms for transportation of goods and services and procurement of goods and supplies is vital to carry out effective disaster relief. They further explained the importance of infrastructure in relief operation by suggesting approaches that ensure that victims of a disaster provided with resources desperately in a timely manner. According to Aman (2013), limitation in port and airfield capacity is a major challenge for logisticians in the relief operation.

Rahel Tarekegne (2016), also found out investments in system structure are not well supported by donors despite the potential to ultimately improve performance in the long run

B. Collaboration and Coordination

Owusu-Kwateng, Abdul Hamid and Debrah (2017) stated in their findings that there are indicators of a low-level collaboration between relief agencies and other partners with the least collaboration with the affected communities also limited collaboration was identified by (Thomas and Kopczak, 2005). Kovács and Spens (2009) in their study found out that one of the utmost challenges of humanitarian logisticians is to find collaboration partners.

According to Bardhan and Dang (2016), the role of coordination was found to be the most critical. It is difficult to define coordination, yet its absence can be acute. All other enablers would also be adversely affected in its absence. It was observed during the study that there has been an improvement in the level of preparedness of stakeholders. Yet it is not uniform among all concerned and a lot needs to be done

On the contrary, research done by Rahel Tarekegne (2016), found out coordination and collaboration is not a problem for the humanitarian logistics in INGOs operation in Ethiopia. However, duplication of responses receipt of unsolicited items exists on a small scale in the humanitarian arena.

C. Inventory Management

Amna (2013) found out in the study that in emergency operations it is difficult to estimate the number of packages that will be stored in the warehouses and also shortages of secure warehousing space, and difficulties with commodity handling and packaging are the major barriers in the management of logistics. The lack of capacity to manage is the major threat when the need arises, especially if a country is economically reliant on agriculture.

Furthermore, Owusu-Kwateng, Abdul Hamid and Debrah (2017), stated their findings that an evaluation of inventory management using performance measure also indicated poor inventory management particularly with receiving, storing and dispatching relief items.

D. Funding

There is inadequate funding resulting from the government not providing enough funds for relief material making the state dependent on donor agencies for emergency relief (Isife, Theresa and R.O, 2012).

A shortage of funding was also found out by (Özpolat, 2012/2013). There finding shows the inefficiencies of funds because most relief agencies are funded by public resources and they are subject to constraints in their procurement and logistics policies.

Similarly, Tigist Yigezu (2016), stated that aid agencies also take decisions of supplies based on the donor priorities and area of their interest. They restrict where and how their resources can be used also the researcher stated findings on the high cost of supplies during the emergency and diminishing donor funding opportunities

E. Human Resource

Kovács and Spens (2009) found out that the brain drain and the lack of qualified in-country staff similarly lack of professional staff was stated by (Thomas and Kopczak, 2005).

On the contrary, Rahel Tarekegne (2016), found out that the shortage of formally trained personnel in logistics and related activities is not a challenge to the performance of the humanitarian logistics in Ethiopia. Nonetheless, the researcher has pointed out the existence of significant difficulty of finding new recruits to fill posts in logistics. Contrary to the literature the researcher has found out the turnover rate in humanitarian organizations in Ethiopia is found to be somewhat stable.

F. Information Technology

One of the major challenges found by Rahel Tarekegne (2016), is on the usage of information technology systems. As stated by the researcher most of the humanitarian organization doesn't use a database system more powerful than Excel as a result problem exists in tracking and tracing.

Similarly, Tigist Yigezu (2016), found out on her study a shortage on the usage of improved information technology in managing the relief operation explained by very limited numbers of software being used for disaster response initiatives.

In addition, Thomas and Kopczak (2005), sated inadequate use of technology. Also, Goli, Bakhshi, and Tirkolaee (2017), found out that the emergency organizations create challenges for information management and coordination among relief activities

On the contrary Hellingrath and Widera (2011), found out in their study the existence of logistics technologies, innovations in information and communications technologies, and information.

G. Socio Economical Factors

According to Demeke (2016), holding other factors constant, a unit increase in socioeconomic factors will cause an increase in the performance of humanitarian logistics. On the contrary (Mebrahtom Tesfay) 2016 stated in his study that an additional unit of socio-economic challenges will decrease the performance by 0.348. According to Melkamu Beyene (2018), socioeconomic factors seem to have a fragile predictive effect on the performance of

humanitarian logistics. This does not mean that these variables totally do not have any effect on the performance of humanitarian logistics but rather these variables seem to impact the performance of humanitarian logistics minimally.

2.2.2 Performance Measurement

According to Rahel Tarekegne (2016), a major obstacle found for performance measurement is having not enough information about how an operation is undertaken with how much cost, what obstacles were faced and how it was solved. The researcher also found out that the presence of several stakeholders in humanitarian logistics with differing interests making it difficult for setting performance measures.

Bölsche.D (2012) showed the similarity between Supply Chain Operations Reference-model (SCOR) and Score Card Model as reliability and assessment accuracy, responsiveness and donation-to-delivery time, costs and financial efficiency and assets and financial efficiency.

Larrea, O. (2013,) found out that the key performance indicators and scorecards developed by (Davidson, 2006) could be manipulated to fit the characteristics of the site of the disaster. Different types of operations produce different values in indicators performance, according to the specific conditions of each disaster. The forced migration operations require more effort and are more difficult to carry out the operations to address disasters caused by natural.

Bölsche.D, (2012) argues that the instrument of performance measurement is not to avoid the occurrence of disasters, but to improve the aims of humanitarian logistics with each step on a higher level and in consequence; it contributes to alleviate the suffering of the affected people.

2.2.3 Disaster Management Phase

According to Kovács and Spens (2009), the challenges of humanitarian logistics do not only depend on the types of disasters, but also on the activities related to different phases of disaster relief.

2.2.3.1 Mitigation

In the Mitigation phase, peoples' behavior and perception towards disasters constituted obstructing free flow and easy access to disaster relief personnel and equipment to the disaster site. Another constraint identified during the mitigation phase was a lack of political will-power to execute disaster mitigation projects. Followed by a lack of effective planning, lack of common standards, lack of funding and inappropriate donations, lack of effective coordination and corporation with other disaster relief organization (Baidoo, 2018).

2.2.3.2 Preparedness

Based on the research done in Gahana Kovács and Spens (2009), sated the existence of a very low level of preparation. They also found out struggle in the preparedness phase with customs procedures resulting in a lack of exemptions from customs duties on imports of relief items leads to the absence of in-country warehouses.

According to Baidoo (2018), major challenges faced during preparedness phase were lack of early warning systems, coordination, and collaboration among disaster relief organizations and lack of ICT facilities, lack of funding and inappropriate donations, people's behavior, perception about disasters and lack of logistics and lack of information and early warning systems.

2.2.3.3 Response

In the response phase, poor infrastructure, lack of coordination and corporation and lack of information as well as lack of ICT facilities were identified as the main constraints inhibiting the timely response to disasters and inaccessibility of beneficiaries in different parts of the country. (Kovács and Spens, 2009).

2.2.3.4 Recovery

A challenge particularly striking during the recovery phase is that of aid dependency. This issue does not only relate to beneficiaries becoming dependent but also local authorities depending on donors and NGOs to solve issues instead of acting themselves. Generally, however, development and reconstruction projects are rare (Kovács and Spens, 2009).

2.3 Conceptual Framework of the Study

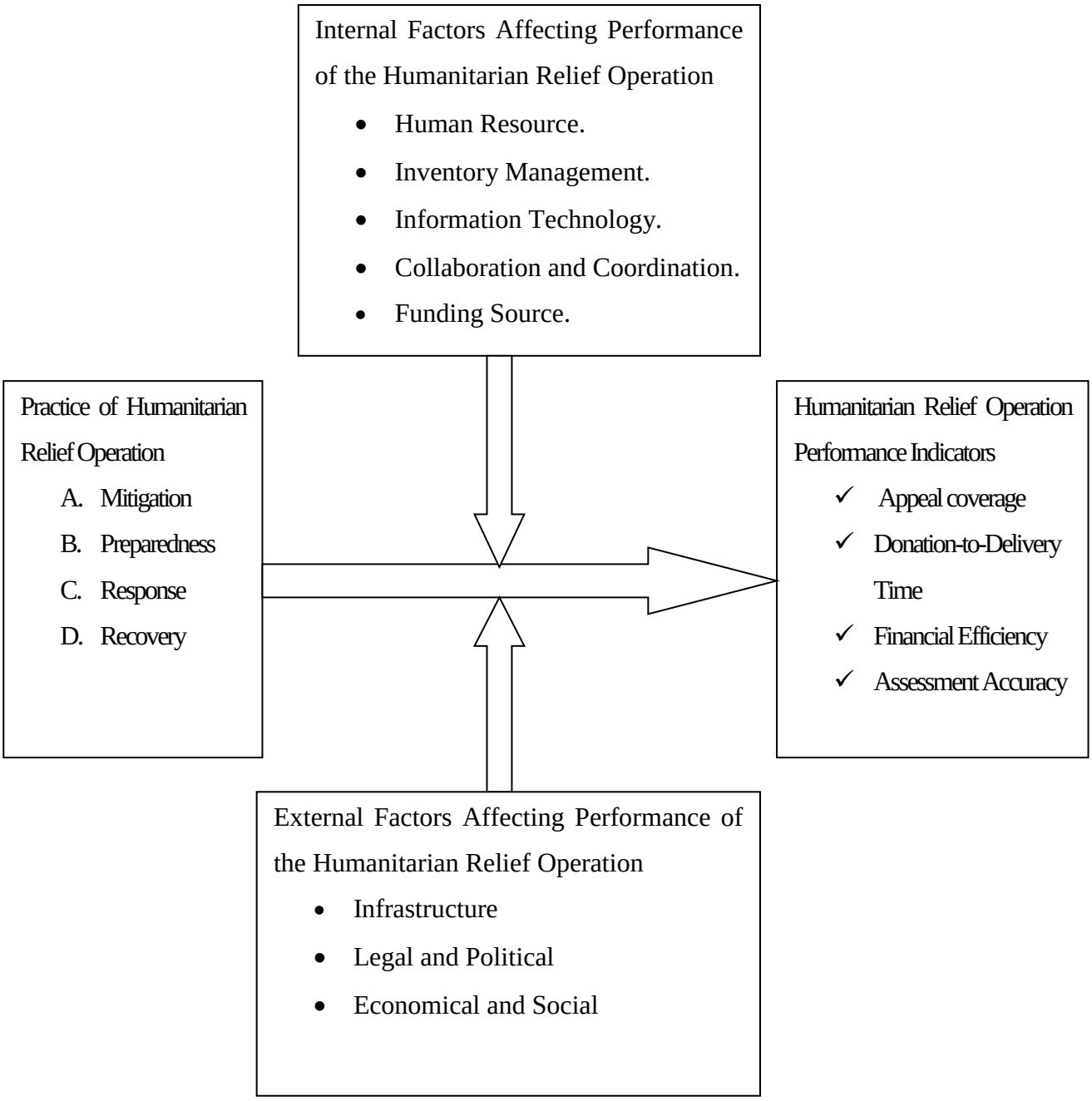

Figure 1 Conceptual framework of the study, source self depicted and semi modified from Davidson, 2006 and Malcolm E. Baird. 2010

The conceptual framework indicates the practice of the humanitarian relief operation namely mitigation, preparedness, response, and recovery while those practices can be affected by externally and internally factors specifically human resource, inventory management, information technology, collaboration and coordination, funding source, infrastructure and communication, technological, security, economic and social where as performance of humanitarian relief operation were evaluated using the Davidson (2006) scorecard model by the following indicators appeal coverage donation-to-delivery time, financial efficiency, assessment accuracy.

The aim of this framework is to identify factors affecting the performance of relief operation and to recommend a possible solution to challenges that may come up in performing relief operation in a different phase of the humanitarian relief operation and also to measure the performance of the humanitarian logistics.

2.4 Identified Literature Gap

Most of the prior research on humanitarian logistic are either focused on identifying challenges or done on the measurement of humanitarian logistics performance. As far as the researcher knowledge goes this study will be first of its kind on the identification of challenges affecting the performance of the humanitarian relief operation with respect to the four disaster management cycle and at the same time measuring the performance of the humanitarian logistics.

The other literature gap the researcher found is the majority of the studies done on humanitarian logistics are of theoretical as such creating gap on testing the validity of theories used in humanitarian logistic. However, this study tried to fill the gap that has been identified above as much as possible by contributing additional knowledge to the field of the study.

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter include a description of the study area, research approach and design, population design, data source and type, data collection procedure, ethical considerations, method of data analysis and presentation, validity test and reliability test.

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3.1 Description of the study Area

The study was conducted in both Addis Ababa and Oromiya region namely Addis Ababa head office and Adama main warehouse for identifying the practice and challenges of the relief operation and for evaluating the performance of the NDRMC in the Gedeo-Guji relief operation. Ethiopia has faced with an unprecedented surge of inter-communal conflict in the Gedeo zone (SNNP region) and West Guji zone (Oromia region), which at its height, displaced 860,056 people from Guji zone and 307,360 from Gedeo zone. Under the proclamation of the Council of Ministers Regulation No. 363/2015, National Disaster and Risk Management Commission was established to provide appropriate and timely responses to disaster before, during and after the disaster period at all levels through establishing a coordinated, accountable and decentralized system in a scalable manner. This study has focused on identifying the practice and challenges faced during the humanitarian relief operation and measure the performance of the National Disaster and Risk Management Commission.

3.2 Research Approach

The study problem is more likely to be answered through a combination of qualitative and quantitative approaches in order to reduce the limitation and increase the quality and flexibility of the data (Robinson, 1998). Therefore, in terms of research approach, this research has employed a mix of quantitative and qualitative approach while conducting the study to improve

evaluation by ensuring that the limitations of one type of data are balanced by strengths of another

.

3.3 Research Design

The study has identified the various humanitarian logistics practice, challenge and measures the performance of the National Disaster Risk Management Commission to achieve this objective descriptive research type was used. The major purpose of descriptive research is the description of the state of affairs as it exists at present (Kothari, 2004). Given the limited amount of research in the area of humanitarian logistics in Ethiopia, the descriptive research method would provide more information about the topics under investigation. To full fill, the objective of the research which is to identify the practice and challenge during relief operation descriptive research plays an instrumental role in terms of identifying reasons behind factors affecting relief operation performance and examine the existing practice of disaster management. A scorecard model developed by Davidson were used to measure the overall relief operation performance of the NDRMC during the Gedio-Guji relief operation.

3.4 Population of the Study

National Disaster Risk Management Commission is the responsible government organization for emergency preparedness and responses for disaster management through the provision of emergency supplies. According to the human resource department of NDRMC total employees under the organization are 387. Census method was used to determine sample population using the following inclusion criteria: a) Respondent must have a work experience of one year and above, b) Respondent work description should be directly related with humanitarian relief operation. C) Respondent work station should be Addis Ababa (Head Office) and Adama Main Warehouse. The researcher used the inclusion criteria in order to get quality data, to avoid confusion among the respondent while filling the questionnaires and to make sure the research is

conducted under the scope outlined in chapter one of the study. Therefore the total population was 70

3.5 Data Source and Type

Both primary and secondary data source was used to collect relevant data for the study. The primary source was collected form NDRMC employees using questionnaire and interview while secondary data were collected by reviewing both published and unpublished materials and documents gathered from different journals, articles, books, research study, and situation report. For measuring the performance of the National Disaster and Risk Management commission a scorecard model developed by Davidson (2006), were used.

3.6 Data Collection Procedure

The primary data were gathered particularly using a survey questionnaire. The researcher has distributed the questionnaire to the respondents of the employee of NDRMC. For the purpose of this study a quantitative methodology involving a close-ended questionnaire has been used as the measuring instrument. The close-ended questionnaires were administered to groups of people simultaneously since they are less costly and less time consuming than other measuring instruments. The questionnaire has two sections. The first section dealt with the profile of the respondents and the organization and the second section contains information on research objectives. The questionnaire design was in the form of a Likert scale where respondents were required to indicate their views on a scale of 1 to 5 ranging from strongly disagree to strongly agree. The questionnaire was administered by the researcher for the employee by drop-off and collection at an agreed time and place. Interviews were conducted with the five directorates and one main warehouse manager. A standardized open-ended interview was used.

3.7 Method of data Analysis and Presentation

The data collected were reviewed for completeness and accuracy upon completion of the data collection process. Thereafter, the data were sorted & coded, then entered into the Statistical Package for Social Sciences (SPSS) and descriptive statistics like mean; percentage and standard deviation were used to analyze the data. With respect to the challenges of humanitarian relief operation the Kendals.Wallis coefficient of concordance of the rank order analysis model was used to determine and rank the challenges of the relief operation. To evaluate the NDRMC performance on Gedio- Guji relief operation a scorecard model developed by Davidson (2006), were used. The results of the study were presented with the help of tables.

3.8 Reliability and Validity Test

3.8.1 Reliability Test

According to Bryman and Bell (2007), reliability analysis is concerned with the internal consistency of the research instrument. To ensure reliability measurement and assessment of the real situation in the NDRMC the researcher has used the Cronbach's Alpha. A reliability coefficient of .70 or higher is considered "acceptable" in most social science research situations (Bryman and Bell, 2007). Yurdugül (2008) analyzed sample sizes of 30 and found that Cronbach's alpha coefficients were reliable.

Table1: Summary of Reliability Test

Items	No of Items	Cronbach's Alpha	Standardized Cronbach's Alpha
Mitigation Practice	5	.79	.80
Preparedness Practice	10	.814	.812
Response Practice	8	.74	.73

Recovery Practice	8	.79	.79
Mitigation Challenge	8	.74	.73
Preparedness Challenge	8	.71	.71
Response Challenge	8	.76	.79
Recovery Challenge	8	.78	.78
Over Reliability	63	.91	.91

Source: Own Survey, 2019

To assess the internal consistency of each construct obtained, a reliability test was conducted. The above table indicates the results of the reliability analysis done for every construct and overall. The Cronbach's alpha coefficient for the 63 items is between 0.906 and 0.907, suggesting that the items have relatively high internal consistency. Therefore, all variables used in this research are highly reliable for data analysis.

3.8.2 Validity Test

In the study, validity was assured by four components. First, the questionnaires were closed-ended to avoid the irrelevant answer. Second to ensure internal validity of the questionnaire the researcher has given supervisor and experts on the field for review and their recommendation were part of the final questionnaire. Third construct validity is assured by rearranging the questions according to the comments of the respondents in order to keep the flow of the question. Finally conducting a pilot survey on the questionnaires by taking 6 logistics coordinators that have worked in humanitarian logistics for more than a year. By having the respondents comment and suggestion all the necessary improvements were considered.

3.9 Ethical Consideration

A letter from Addis Ababa University, School of Commerce Department of Logistics and Supply Chain Management were used to get the permission of the selected respondent to collect data prior to filling the questionnaire. Each of the respondents was given a details explanation about the objective and significance of the study.

Then the respondent was asked for their informed consent to participate by explaining the fact that they have the right to decline to respond. The respondent has been assured about the confidentiality of the information by explaining the fact that their identity would be disclosed and information gained after the completion of the questionnaires will not be transferred to any other third party or used for any purpose other than academic intent.

CHAPTER FOUR
RESULTS, DISCUSSION AND INTERPRETATION

This chapter presents results, discussion and interpretation of the study on the humanitarian relief operation practices challenges and performance of the NDRMC in crisis management. The findings were analyzed in the form of descriptive statistics by computing mean and standard deviation, inferential statistics by Kendals. Wallis coefficient of concordance of the rank order and relief operation performance measurement scorecard model by Davidson (2006), presented using a table. The analysis and interpretation of data were guided by the research objectives from which a discussion of findings has been made.

4.1. Response Rate

A total of 70 questionnaires were issued out. The completed questionnaires were edited for completeness and consistency. Out of the 70 questionnaires issued out, 63 were returned. This represented a response rate of 90%, which is valid and used for analysis (Fowler, 2002). The collected data were presented and analyzed using SPSS (version 22) statistical software.

4.2. Descriptive Analysis of Practice during Relief Operation

4.2.1 Demographic profile of the respondent

The study initially sought to ascertain the general information on the employee of NDRMC involved in the study with regards to the gender, age, level of education, working experiences in the organization, department /directorate, and experience in the humanitarian relief operation. The general information points at the respondents' suitability in answering the questions on the humanitarian relief operation practices challenges and performance of the NDRMC in crisis management.

Table 2: Demographic profile of the respondent

Item	Sub-Items	Frequency	Percentage
Gender	Female	20	31.7
	Male	43	68.3
Age	20-30	18	28.6
	31-40	12	19.0
	41-50	18	28.6
	Above50	12	19.0
Respondent educational level	Grade 12 Completed	1	1.6
	College Diploma	7	11.1
	First Degree	36	57.1
	Second Degree and Above	19	30.2
Respondent work experience in the organization	1-5 Years	24	38.1
	6-10 Years	11	17.5
	11-15 Years	10	15.9
	16-20 Years	8	12.7
	Over 20 Years	10	15.9
Working Experience in humanitarian sector	1-5 Years	20	31.7
	6-10 Years	17	27.0
	11-15 Years	9	14.3
	16-20 Years	8	12.7
	Over 20 Years	7	11.1
Directorate	Resource Mobilization and Fund Administration Directorate	5	7.9

	Logistics Directorate	17	27.0
	Disaster Risk Reduction Directorate	10	15.9
	Response and Rehabilitation Directorate	10	15.9
	Adama Main Warehouse	11	17.5
	Early Warning and Emergency Response Directorate	8	12.7

Source: Own Survey, 2019

4.2.1.1. Gender

As the table depicts that the gender distribution of respondents in NDRMC covers 68.3 % of males and 31.7% of females respectively. This implies that the gender distribution of NDRMC is dominated by male employees.

4.2.1.2 Respondent's Age Range

From the findings, 28.6 % of the respondent are on the age range of 20-30, 19% of the respondent are on the age range of 31-40, 28% of the respondent are on the age range 41-50 and the rest 19 % of the respondent are on the age range of above 50.

4.2.1.3 Respondent's Level of Education

The level of education that an individual has acquired determines their competence in executing their mandate in dealing with their day to day tasks. The results of respondents associated with their educational background were grade 12 completed 1.6 %, college diploma 11.1%, first degree 57.1% and second degree and above 30.2%. The result indicates that most of the

respondents were qualified professionals so that they can easily understand and provide their opinion on the research questionnaire.

4.2.1.4 Respondent's Work Experience in the Organization

Respondents were also asked to indicate their work experience in the current organization. As the result shows 38.1% of the respondent has 1-5 years of work experience, 17.5% of the respondent has 6-10 years of work experience, 15.9% of the respondent has 11-15 work experience, 12.7 % of the respondent has 16-20 years of work experience and 15.9% of the respondent has over 20 years of work experience. The result indicates almost all of the respondents had sound knowledge and experience of their organizations so that they will give sound and reliable information to the research question.

4.2.1.5 Working Experiences in Humanitarian Sector

The number of years that an individual has worked in the humanitarian sector determines their level of experience in dealing with humanitarian relief operations. 31.7% of the respondent has 1-5 years of work experience, 27% of the respondent has 6-10 years of work experience, 14.3% of the respondent has 11-15 work experience, 12.7 % of the respondent has 16-20 years of work experience and 11.1% of the respondent has over 20 years work experience. The result shows that most of the respondent has work experience of 1-5 years. The result indicates that almost all of the respondents had sound knowledge and experience in the area. Thus they will provide sound and concrete information to the study.

4.2.1.6 Department/Directorate of the Respondent

As shown in the table 8.2% of the respondent are working at resource mobilization and fund administration directorate, 27.9% of the respondent are working at logistics directorate, 16.4% of the respondent are working at disaster risk reduction directorate, 16.4% of the respondent are working at response and rehabilitation directorate, 18% of the respondent are working at Adama

main warehouse and 13.1% of the respondent are working at early warning and emergency response directorate. The results indicate that the respondents were from different department/work unit and thus they will give an independent view of humanitarian supply chain practices and humanitarian supply chain challenges.

4.2.2 Humanitarian Relief Operation Practices and Challenge of the NDRMC

In this part, the findings of the four phases of humanitarian relief operation practice and challenges were discussed. The respondents were asked to indicate the humanitarian relief operation practice of their company and also the challenge faced while performing relief operations. Accordingly, primary data were collected about the practice and challenge of the humanitarian relief operation during the four phases namely mitigation, preparedness, response and recovery phase. Based on this, respondents gauge the practice and challenge of the organization using five scale Likert responses namely: strongly disagree, disagree, neutral, agree and strongly agree.

The scores of strongly disagree have been taken to represent a variable which had a mean score of 1 to 1.80, the scores of disagree have been taken to represent a variable with a mean score of 1.81 to 2.60, the score of neutral has been taken to represent a variable which had a mean score of 2.61 to 3.20, the score of agreement has been taken to represent a variable which had a mean score of 3.21 to 4.20 and the score of strongly agree have been taken to represent a variable which had a mean score of 4.21 to 5.00 (Moidunny, 2009). A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents. Based on these respondents views were revised by competing for mean and standard deviation

4.2.2.1 Humanitarian Relief Operations Practices during Mitigation Phase at NDRMC

Based on various literatures reviewed the following were taken as the practice of humanitarian relief operation during mitigation phase; plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster, a process for developing a plan of action to mitigate disaster, adequate human resources available for disaster management, a plan of action to create awareness of disaster risk factors at the community level and public information projects and budget allocated for mitigation for rapid onset relief operation.

Table 3: Humanitarian relief operation practice during mitigation phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There is plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster	0	0	17	14	21	11	3.41	1.07
There is a process for developing a plan of action to mitigate disaster	0	0	7	7	28	21	4.00	.95
There is adequate human resources available for disaster management	1	0	14	11	28	9	3.51	1.00
There is a plan of action to create awareness of disaster risk factors at the community level and public information projects	0	3	20	11	22	7	3.15	1.13
There is budget allocated for mitigation for rapid onset relief operation	3	2	6	9	29	14	3.78	1.02
Grand Mean							**3.57**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

Related to the mitigation phase plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster has a mean value of 3.41 with standard deviation of 1.07 the results demonstrated the organization has practice regarding a plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster although data gathered from interview from NDRMC staff suggest that there was no or little plan of action for eliminating the probability of occurrence of rapid onset disaster. The existence of a plan of action before any disaster happens the organization conducts an initial and comprehensive assessment (Tigist Yigezu, 2016).

With related to the process for developing a plan of action to mitigate disaster has a mean score value of 4.00 with a standard deviation value of .95 which implies the organization has practiced for developing a plan of action to mitigate disaster. This means having a plan of action to mitigate disaster will further prepare in tackling disaster before occurrence which was consistent with the finding of the interview conducted with the NDRMC staff.

The mean value of adequate human resources available for disaster management was 3.51 with a standard deviation of 1.01 which implies the organization has adequate human resources during the mitigation phase of the relief operation. On the other hand existence of inadequate human resource during the mitigation phase was mentioned in the interview with NDRMC staff.

Concerning whether the organization has a plan of action to create awareness of disaster risk factors at the community level and public information projects the mean value was 3.15 with a standard deviation of 1.13. The results demonstrated the organization has some what a plan of action to create awareness for the community and for the public in disaster risk factors which create a room for improvement in installing the practice in the organization. In other words, having a plan of action to create awareness at the community level will fully prepare and equip the community to avoid disaster before happening.

Regarding the budget allocated for mitigation for rapid onset relief operation the mean value was 3.78 with standard deviation value of 1.02 which imply the organization has a practice of

allocating budget for rapid onset relief operation in mitigation phase that is having budget allocated during mitigation will increase the chance of avoiding loss in life since budget plays a big part in the success of relief operation which will result on the disaster being mitigated rather than go through preparedness, response and recovery which costs highly. However, the finding from the interview done with the NDRMC staff contradicted with finding stating the absence of budget allocation during the mitigation phase.

Conclusively, the grand mean value for humanitarian relief operation practice during mitigation phase is found to be 3.57 emphasizing on the practice process for developing a plan of action to mitigate disaster, budget allocated for mitigation for rapid onset relief operation and adequate human resource available for disaster management while triangulating the data gathered with interview only practice process for developing a plan of action to mitigate disaster was consistency with finding while the rest budget allocated for mitigation for rapid onset relief operation and adequate human resource available for disaster management contradicted with data gathered from interview.

4.2.2.2 Humanitarian Relief Operations Practices during Preparedness Phase at NDRMC

Based on various literatures reviewed the following were taken as the practice of preparedness in humanitarian relief operations: training for response personnel/professional, personal preparedness, focuses on preparing equipment and procedures for use when rapid disaster occurs, plan of action for disaster management in relief operation, procurement of relief items before the occurrence of a disaster, evacuating plan of action for disaster threatened populations, programs and procedures for mutual assistance between different humanitarian actors, collaboration and coordination between various players in humanitarian relief operation, procurement of relief items is done locally to achieve effectiveness and efficiency, good inventory/ stock management processes and well-established processes for handling, sorting and packaging relief items for storage or distribution to beneficiaries.

Table 4: Humanitarian relief operation practice during preparedness phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There exist training for response personnel/professional	2	0	7	6	44	4	3.73	.75
There exist personnel preparedness, focuses on preparing equipment and procedures for use when rapid disaster occurs	2	3	7	11	36	4	3.50	.95
There exist a plan of action for disaster management in relief operation	0	0	1	9	43	10	3.98	.60
There is procurement of relief items before the occurrence of a disaster	2	0		4	44	13	4.14	.51
There exist evacuating plan of action for disaster threatened populations	1	2	11	17	28	4	3.33	.95
There exist programs and procedures for mutual assistance between different humanitarian actors	0	2	4	7	37	13	3.87	.92
There exist collaboration and coordination between various players in humanitarian relief operation,	0	1	5	11	36	10	3.77	.86
The procurement of relief items is done locally to achieve effectiveness and efficiency	0	2	10	18	23	10	3.46	1.04
There is a good inventory/ stock management processes	2	2	8	11	37	3	3.50	.90
There is a Well-established processes for handling, sorting and packaging Relief items for storage or distribution to beneficiaries	1	1	4	9	42	6	3.77	.77
Grand Mean							**3.71**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

With related to training for response personnel/professional has a mean score value of 3.73 with a standard deviation value of .75 which indicates the organization has a practice for training response personnel/professional during preparedness stage. Training for response personnel might include short or long time training workshop which will advance the knowledge of the personnel. This shows that having trained for response personnel will standardize and will be a stepping stone in achieving success in a given relief operation. Overall these findings are in accordance with findings reported by Chaikin (2003), which states capacity building and training are critical in the preparedness stage.

The mean value of personnel preparedness, focuses on preparing equipment and procedures for use when rapid disaster occurs was 3.50 with standard deviation of .95 indicating the existence of practice of personnel preparedness, focusing on preparing equipment and procedures for use when rapid disaster occurs which shows having a procedure for preparedness on both personnel and equipment is being one step closer to giving effective response for a disaster. A similar pattern of the result was obtained in an interview with NDRMC staff on the preparation procedure which might include rapid mobilization and deployment of personnel and equipment.

Concerning whether the organization has a plan of action for disaster management in relief operation the mean value was 3.98 with standard deviation .61 which indicates the organization is practicing a plan of action for disaster management in the relief operation. Disaster management as an emerging practice in the organization has been practiced in both disaster risk reduction and disaster risk management which plays a great role in disaster management. This is consistent with what has been found from the interview conducted with the NDRMC staff.

Regarding the procurement of relief items before the occurrence of a disaster, the mean value was 4.14 with a standard deviation value of .51 which denote the organization is practicing the procuring of relief items before the occurrence of a disaster. This shows that the existence of a large warehouse for storage for the goods which were procured before the occurrence of a disaster making the response fast to the disaster-affected area. A similar pattern of results was obtained by Howden M. (2011), which stated that the pre-positioning of the aid materials has an

important place in preparedness stage also Russell (2005), stated that the UNJLC is leading an initiative to establish the (UNHRN) of coordinated, strategically located stocks of emergency materials.

The mean value of evacuating plan of action for disaster threatened populations 3.33 with a standard deviation of .95 which implies the organization has a practice plan of action for evacuating disaster threatened populations. This indicates that before the occurrence of the disaster-affected community can be reallocated from the disaster-affected area to a safe zone. The result is in line with the finding revealed in an interview with NDRMC staff.

With related to programs and procedures for mutual assistance between different humanitarian actors the mean score value was 3.87 with a standard deviation of .92 which implies the organization practice programs and procedures for mutual assistance between different humanitarian actors. Because of the nature of relief operation, the different humanitarian organizations participates in a single relief operation creating mutual assistance among the organization will result in the success of the relief operation. Contrast to the finding data gathered from NDRMC staff through interview relieved that there is a lack of mutual assistance among the humanitarian relief organization working to gather in the relief operation.

Regarding the collaboration and coordination between various players in the humanitarian relief operation, the mean value was 3.77 with a standard deviation of .87 which implies the organization practice collaboration and coordination between various players in the humanitarian relief operation. This shows that collaboration and coordination between players on humanitarian relief operation will eliminate the occurrence of duplication and it can smooth the workflow.
On the contrary Van Wassenhove, Tumasini, and Stapleton (2008) argue the absence of coordination among the players of humanitarian relief operation as a result of skepticism of humanitarians towards executives which is based on the fact that business might refrain from the partnership or reduce their level of commitment once conflicts or problems arise. Negative stereotypes, with regard to aims, and objectives as well as culture differences and the associated value and beliefs, are prevalent on both sides (Jon Maether, 2010).

With related to locally done procurement of relief items to achieve effectiveness and efficiency the mean value was 3.46 with the standard deviation of 1.04 which implies the organization practice procurement of relief items locally to achieve effectiveness and efficiency. According to the finding effectiveness and efficiency is achieved by procuring relief item locally for the reason of cheap price easy access to market short delivery time. On the contrary to the finding of the interview with NDRMC staff indicated the opposite stating prices of relief item are cheaper and a variety of relief item is available while procuring internationally.

The mean value of good inventory/ stock management processes 3.50 with standard deviation of .91 which implies the organization practice good inventory/stock management processes The findings are directly in line with previous findings of Owusu-Kwateng, Abdul Hamid and Debrah, 2017, Russel (2005), which stated majority of organizations had both warehousing and inventory management systems and procedures in place and that these systems and procedures met the needs of their operation. On the contrary findings on the challenge of humanitarian relief operations during the preparedness phase stated the existence of poor inventory management as one of the challenges.

Regarding the practice of well-established processes for handling, sorting and packaging relief items for storage or distribution to beneficiaries the mean value was 3.77 with a standard deviation of .78. This suggests that the existence of well-established processes for handling, sorting and packaging relief items for storage or distribution to beneficiaries' practice. Contrary to the finding data gathered on the challenge of humanitarian relief operations during the preparedness phase revealed that there exist poor practice on handling, sorting and packing relief items.

In conclusion, the grand mean value for humanitarian relief operation practice during preparedness phase is found to be 3.71 articulating on the organization practice for procurement of relief items before the occurrence of a disaster, plan of action for disaster management in

relief operation and programs and procedure for mutual assistance between different humanitarian actors.

4.2.2.3 Humanitarian Relief Operations Practices during Response Phase at NDRMC

Based on various literatures reviewed the following were taken as the practice of response in humanitarian relief operations: initial assessments for a relief operation, comprehensive assessments for a relief operation, within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office, action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible, within 72 hours response are given to the affected community, plan of action for activating the emergency operations center within 72 hours of the occurrence of a disaster, emergency rescue and search plan and increasing security operations during the occurrence of rapid onset disaster

Table 5: Humanitarian relief operation practice during response phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There exist initial assessments for a relief operation	1	2	2	7	42	9	3.87	.81
There exist comprehensive assessments for a relief operation	1	1	5	8	38	10	3.82	.85
Within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office	0	0	7	7	35	14	3.88	.88
There is action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible	0	1	6	7	46	3	3.69	.77

Within 72 hours response are given to the affected community	1	2	9	11	30	10	3.59	1.03
There exist a plan of action for activating the emergency operations center Within 72 hours of the occurrence of a disaster	1	1	10	8	32	11	3.67	1.01
There exist emergency rescue and search plan	1	1	9	11	33	8	3.61	.94
There exist increasing security operations during the occurrence of rapid onset disaster	0	2	7	13	34	7	3.58	.94
Grand Mean							**3.71**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

With related to initial assessments for a relief operation has a mean score value of 3.87 with a standard deviation value of .81 which implies the existence of initial assessments practice for a relief operation organization. This shows that at the event of a disaster first round assessment will be done to measure the damage and collect early data for decision making which aligns with the findings of Long and Wood (1995), initial assessments are required to conduct immediately after the disaster unfolds in order to determine the general needs of the affected population.

The mean value of comprehensive assessments for a relief operation was 3.82 with a standard deviation of .85 which implies the existence of comprehensive assessments for relief operation in the organization. This means a detailed assessment next to the initial assessment will be done to determine exactly what has happened and what will be needed to overcome the effect of the disaster. This result ties well with the finding of Thomas (2003), which states that an individual from the relief organization travels to the site to perform an assessment (usually within the first 24 hours of a crisis) to estimate the supplies required to meet the relief needs of the affected population.

Concerning whether the organization has response within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are

collected and communicated to the head office the mean value was 3.88 with standard deviation .88 which imply the organization is practicing response within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office. Any disaster by their nature needs rapid response especially rapid onset disaster in order to reduce the impact of the disaster all assessment of data gathering should be done and response should be given within 72 hours. The basic findings are consistent with an interview conducted with the NDRMC staff.

Regarding the action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible the mean value was 3.69 with a standard deviation value of .77 which imply the organization practice action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible. This shows that effectiveness and efficiency are being met at the same time which aligns with the findings of Beamon (2004), and Tomasini & Van Wassenhove (2004), for a sudden onset disaster, many displaced individuals may require quick relief items, and response strategy needs to be deployed at once to minimize the impact of disaster on the affected population.

The mean value of (3.59) response is given within 72 hours to the affected community with a standard deviation of 1.03, which indicates the organization has a practice of giving a response to the affected community within 72 hours. In line with the finding of Ichoua Q. (2010), which states the first 72 hours of a disaster relief effort are critical as the chance for survival beyond that time window without water or food decreases drastically.

With related to a plan of action for activating the emergency operations center within 72 hours of the occurrence of a disaster the mean score value was 3.67 with a standard deviation of 1.00 which denote the organization practice a plan of action for activating the emergency operations center within 72 hours of the occurrence of a disaster. This indicates that from every directorate officials will be gathered to create emergency operation center which will oversee the success of relief operation. In line with the data collected through the interview from NDRMC staff which

revealed the activation of the emergency operation center both in the head office and near the place where the disaster occurred.

Regarding the emergency rescue and search plan, the mean value was 3.61 with a standard deviation of .94 which implies the organization practice emergency rescue and search plan. Emergency rescue and search plan are activated right after the occurrence of the disaster to allocate communities which are isolated by the disaster from any help to safe zone where they can get treatment. A similar pattern of the result was obtained through an interview with NDRMC staff.

With related to increasing security operations during the occurrence of rapid onset disaster the mean value was 3.58 with the standard deviation of .94 which implies the organization practice increasing security operations during the occurrence of rapid onset disaster. Most of the scene after a disaster strikes security will be lost especially in a human-induced disaster. When a disaster happens increasing security operation during the occurrence of rapid disaster both save lives and time it took to deliver relief items. The result ties well with the findings from the interview with the NDRMC staff.

Altogether the grand mean value for humanitarian relief operation practice during the response phase is found to be 3.71 amplifying on the practice of response within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office, initial assessment for a relief operation and comprehensive assessments for a relief operation.

4.2.2.4 Humanitarian Relief Operations Practices during Recovery Phase at NDRMC

Based on various literatures reviewed the following were taken as the practice of recovery in humanitarian relief operations: plans to identify needs and define resources, plans to provide housing, restore security, amend infrastructure and promote community restoration, plan of

action to incorporate mitigation measures and techniques, procedure of keeping records of past or previous disasters, plan to evaluate the relief operation and to identify lessons learned, plan to develop initiatives to mitigate the effects of future incidents, good inventory (stock) management processes, budget allocated for recovery, reconstruction and rehabilitation

Table 6: Humanitarian relief operation practice during recovery phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There exist plans to identify needs and define resources	2	0	3	13	42	3	3.73	.62
There exist plans to provide housing, restore security, amend infrastructure and promote community restoration	0	1	6	19	32	5	3.53	.83
There is a plan of action to incorporate mitigation measures and techniques	0	1	13	13	33	3	3.38	.92
There is a procedure of keeping records of past or pervious disasters	0	1	12	11	37	2	3.42	.89
There exist plan to evaluate the relief operation and to identify lessons learned	0	0	9	16	37	1	3.47	.75
There is a plan to develop initiatives to mitigate the effects of future incidents	0	3	8	15	34	3	3.41	.94
There is a good inventory(stock) management processes	0	2	9	12	36	4	3.49	.93
There is budget allocated for recovery, reconstruction and rehabilitation	0	4	12	16	28	3	3.22	1.02
Grand Mean							3.46	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

With related to plans to identify needs and define resources has a mean score value of 3.73 with a standard deviation value of .62 which implies the existence of plans to identify needs and define resources. This indicates that while in recovery phase needs and resources should be defined in order to fully recover the community affected by the disaster.

The mean value of plans to provide housing, restore security, amend infrastructure and promote community restoration 3.53 with a standard deviation of .83 which implies the existence of plans to provide housing, restore security, amend infrastructure and promote community restoration. This shows that when disaster wipes out everything and drastically change the life of the affected community taking action in as soon as possible in restoring what is lost will help the community to heal from the disaster. This finding was in line with the finding of both Gustavsson and Chaikin (2003), which states after the immediate responses, relief actors must begin to help victims in their reconstruction effort through a coordinated regional approach which targets the most vulnerable

Concerning whether the organization has a plan of action to incorporate mitigation measures and techniques the mean value was 3.38 with standard deviation .92 which implies the organization is practicing a plan of action to incorporate mitigation measures and techniques. This indicates that if incorporating mitigating measures in the recovery phase to reduce the occurrence of disaster in the future time. A similar pattern of results was obtained from an interview with NDRMC staff.

Regarding the procedure of keeping records of past or previous disasters the mean value was 3.42 with a standard deviation value of .89 which implies the organization practice procedure of keeping records of past or previous disasters. This indicates that even if the magnitude and nature of every disaster are totally different there are patterns that can be learned from each disaster which can be used helps to tackle the upcoming disaster. This aligns with the findings of Thomas & Kopczak, (2005), records making and utilization of logistics data for post-event learning will increase the efficiency and effectiveness of logistics in other humanitarian operations. On the other hand interview with NDRMC staff, revealed that there are poor practice and procedure of

record keeping; data are dispersed throughout the directorate they only comply when needed for a report.

The mean value of the plan to evaluate the relief operation and to identify lessons learned 3.47 with a standard deviation of .75 which implies the organization has the plan to evaluate the relief operation and to identify lessons learned. This finding was in line with the finding of Samii and Van Wassenhove (2003), which state debriefing following a relief operation often is absent or limited in their ability to suggest improvement to relief supply systems, the lessons learned from one disaster event often fade before the next one

In the other hand the study conducted by Thomas (2005), indicated that knowledge gained during the field missions frequently lost, due to a high turnover rate of field logisticians, often as high as 80%

With related to a plan to develop initiatives to mitigate the effects of future incidents the mean score value was 3.41 with a standard deviation of .94 which implies the organization has an existing plan of action to develop initiatives to mitigate the effects of future incidents. The purpose of the initiatives is to eliminate the occurrence of future disasters by way of mitigating them before occurrence. This result is consistent with the finding derived from interview responses with NDRMC staff.

Regarding the good inventory (stock) management processes the mean value was 3.49 with a standard deviation of .93 which implies the organization practices good inventory (stock) management processes. This indicates that there is good receiving, storing, dispatching, and distributing the system in place. On the contrary findings from humanitarian relief operation challenges during the recovery phase revealed the existence of poor inventory management.

With related to the budget allocated for recovery, reconstruction, and rehabilitation the mean value was 3.22 with the standard deviation of 1.02 which implies the existence of practice in allocating budget for recovery, reconstruction, and rehabilitation. Budget being the backbone of

any relief operation is highly demanded recovery, reconstruction and rehabilitation phase. On the other hand findings from humanitarian relief operation challenges during the recovery phase show the existence of budget allocation during the recovery phase.

Altogether the grand mean value for humanitarian relief operation practice during the recovery phase is found to be 3.46 asserting on plans to identify needs and define resources, plans to provide housing, restore security and good inventory (stock) management processes.

4.3 Descriptive and Inferential Statistics Data Analysis of the Humanitarian Relief Operation Challenges of the NDRMC

The findings on the challenge faced during the performance of the humanitarian relief operation on the four phases were discussed comparing the descriptive and inferential statistics data analysis. The respondents were asked to indicate the humanitarian relief operation challenge of their company.

4.3.1 Humanitarian Relief Operation Challenges during Mitigation Phase at NDRMC

Based on various literatures reviewed the following were taken as the challenges of mitigation in performing humanitarian relief operations: shortage of qualified human resources availability for relief operation, fund rising problem for a relief operation, inadequate use of information technology for a relief operation, inventory management practice problem, lack of coordination and collaboration among players in relief operation, unstable security existence in the disaster-affected area, inadequate infrastructure in performing relief operation during and social barrier which affect the relief operation.

4.3.1.1 Descriptive Data Analysis of Challenges during Mitigation Phase at NDRMC

Table 7: Humanitarian relief operation challenge during mitigation phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There is shortage of human resource in mitigation phase	1	2	2	7	42	9	3.87	.81
There is fund rising problem in mitigation phase	1	1	5	8	38	10	3.82	.85
There is inadequate use of information technology in mitigation phase	0	0	7	7	35	14	3.88	.88
There is inventory management practice problem in mitigation phase	0	1	6	7	46	3	3.69	.77
There is lack of coordination and collaboration in mitigation phase	1	2	9	11	30	10	3.59	1.03
There is unstable security existence in mitigation phase	1	1	10	8	32	11	3.67	1.00
There is inadequate infrastructure in mitigation phase	1	1	9	11	33	8	3.61	.94
There is social barrier in mitigation phase	0	2	7	13	34	7	3.58	.94
Grand Mean							**3.71**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

With related to the shortage of human resource during the mitigation phase has a mean score value of 3.87 with a standard deviation value of .81 which imply the existence of a shortage of human resource in the mitigation phase. The availability of qualified manpower to execute the mitigation practice are below what is expected to have an implication on the performance of the relief operation. With related to this finding Demeke Wolde (2016), indicated that there is a lack of coverage of specific humanitarian logistics courses in local universities and colleges in Ethiopia.

The mean value of fund rising problem in mitigation phase 3.82 with a standard deviation of .85 which indicates the existence of fund rising problem during the mitigation phase in the

organization. This shows that donors prefer to spend their funds on response rather than to mitigate disaster which is aligned with the finding of Goli, Bakhshi, and Tirkolaee (2017), resource availability in terms of a fund to be the major challenge identified.

Concerning whether the organization has inadequate use of information technology in mitigation phase the mean value was 3.88 with standard deviation .88 which imply the organization has inadequate use of information technology in mitigation with related to these findings Goli, Bakhshi, and Tirkolaee (2017), stated that emergency organizations create challenges for information management and coordination among relief activities, crisis relief planning, and communications as well as trust development management.

Regarding the inventory management practice problem in the mitigation phase the mean value was 3.69 with a standard deviation value of .77 which imply the organization has inventory management practice problem in the mitigation phase. This indicates that because relief items are not positioned of stocks at, or near, the locations where they will be used is thought to diminish the delivery lead-time. This is similar with the findings of Mebrahtom Tesfay (2016) which states that lead to an increment in the warehouse cost for storing goods in the surroundings of the relief and emergency area is highly contributed to supply chain inefficiency in the delivery of the relief supplies.

The mean value of lack of coordination and collaboration in mitigation phase 3.59 with standard deviation of 1.03 which implies the organization has a lack of coordination and collaboration in the mitigation phase which is consistent with the findings of Goli, Bakhshi, and Tirkolaee (2017), indicated the existence of challenges for information management and coordination among relief activities, crisis relief planning, and communications as well as trust development management.

With related to unstable security in the mitigation phase mean score value was 3.67 with a standard deviation of 1.00 which implies the organization experience unstable security in the

mitigation phase. This is consistent with the finding of the interview conducted with NDRMC staff.

Regarding the inadequate infrastructure in mitigation, the phase mean score value of 3.61 with a standard deviation of .94 which implies the organization experience inadequate infrastructure in the mitigation phase. The result was in line with Wassenhove (2006), which indicates that humanitarian logistics operate in such areas where roads are often inadequate, with fragmented technology and poorly defined manual processes.

With related to the social barrier in the mitigation phase the mean value was 3.58 with the standard deviation of .94 which implies the organization experience social barrier in the mitigation phase. This is much more prevalent in developing countries that illiteracy of community and fragile operating conditions hindered performance in logistics (Altay *et al.*, 2009; Kunz and Reiner 2012; Choi, Beresford, Pettit & Bayusuf, 2010; Thomas & Kopczak, 2005)

4.3.1.2 Rank Order Analysis of Challenges during Mitigation Phase of Relief Operation (Kendall's. Wallis Coefficient of Concordance of the Rank Order Analysis Model)

Table 8 Rank of challenge during mitigation phase

Item N=58	Mean Rank	Rank
Social barrier in mitigation Phase	4.14	1st
Lack of coordination and collaboration in mitigation phase	4.23	2nd
Inadequate infrastructure in mitigation phase	4.31	3rd
Inventory management practice problem in mitigation phase	4.34	4th
Fund rising problem in mitigation phase	4.51	5th
Unstable security existence in mitigation phase	4.69	6th
Shortage of human resource in mitigation phase	4.71	7th
Inadequate use of information technology in mitigation phase	5.08	8th

Kendall's W[a]	= .028
Chi-Square	= 11.33
df	= 7
Asymp. Sig.	= .125

Kendall's Coefficient of Concordance

Source own survey 2019

Based on the above table we can conclude that the respondent agreement or concordance is due to chance regarding the challenge of humanitarian relief operation during the mitigation phase as P>0.05 with a W=.028

As shown by the table challenge during mitigation phase were ranked as social barrier which affect the relief operation, lack of coordination and collaboration among players in relief operation, inadequate infrastructure in performing relief operation, inventory management practice problem, fund rising problem for a relief operation, unstable security existence in the disaster-affected area, shortage of qualified human resources availability for relief operation, inadequate use of information technology respectively. The implication of these challenges at the mitigation phase is that they have negative effects on the preparedness phase. On the other hand findings by Baidoo (2018) and Okoampa (2007), ranked major challenges in mitigation phase as peoples' behavior and perception towards disasters, lack of political will-power to execute disaster mitigation projects, lack of effective planning, lack of common standards, lack of funding and inappropriate donations, lack of effective coordination and corporation with other disaster relief originations

Conclusively in the descriptive data analysis the grand mean value for humanitarian relief operation challenge during the mitigation phase is found to be 3.71 articulating on inadequate use of information technology, shortage of human resources, fund rising problem whereas, in the inferential data analysis using Kendall's coefficients the top three challenges during mitigation phase were social barrier, lack of coordination and collaboration and inadequate infrastructure.

4.3.2 Humanitarian Relief Operation Challenge during Preparedness Phase at NDRMC

Based on various literatures reviewed the following were taken as the challenges of preparedness in performing humanitarian relief operations: poor infrastructure in the areas of operation during preparedness stage, inadequate funding for relief operation during preparedness stage, inadequate use of information technology for relief operation during preparedness stage, poor inventory management practice for relief operation during preparedness stage, lack of coordination and collaboration among players in relief operation during preparedness stage, unstable security existence in the disaster-affected area during preparedness stage, shortage of qualified human resources availability during preparedness stage and social barrier which affect the relief operation during preparedness stage.

4.3.2.1 Descriptive Data Analysis of Challenges during Preparedness Phase at NDRMC

Table 9: Humanitarian relief operation challenge during preparedness phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There is poor infrastructure in preparedness phase	0	1	8	8	33	13	3.77	.97
There is inadequate funding in preparedness phase	1	2	13	13	27	7	3.38	1.04
There is inadequate use of information technology in preparedness phase	1	0	13	9	36	4	3.50	.90
There is poor inventory management in preparedness phase	0	2	21	13	24	3	3.07	1.02
There is lack of coordination and collaboration in preparedness phase	0	5	18	6	30	4	3.15	1.15
There is unstable security in preparedness phase	1	1	9	13	32	7	3.56	.93
There is shortage of human resource in preparedness phase	0	2	12	6	36	7	3.53	1.02

There is social barrier in preparedness phase	3	2	7	10	30	11	3.68	1.01
Grand Mean							**3.45**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

Regarding the poor infrastructure in the preparedness phase mean score value of 3.77 with a standard deviation of .97 which denotes the organization experienced inadequate infrastructure during preparedness phase which is consistent with a study by Mebrahtom Tesfay (2016), the result indicated that, the humanitarian aid organizations are highly experienced with infrastructural challenges.

The mean value of inadequate funding in the preparedness phase was 3.38 with a standard deviation of 1.04 which implies the existence of inadequate funding in the preparedness phase. The previous study conducted by Demeke Wolde (2016), observed that donors are not investing money for preparedness which prevents humanitarian organizations from developing processes and systems to improve relief efficiency.

Concerning whether the organization has inadequate use of information technology in the preparedness phase the mean value was 3.50 with standard deviation .90 which indicates the organization has inadequate use of information technology in preparedness. This is consistent with the finding of the interview with the NDRMC staff.

Regarding the poor inventory management in the preparedness phase the mean value was 3.07 with a standard deviation value of 1.02 which asserts the organization has poor inventory management in the preparedness phase. The finding is aligned with the finding of Owusu-Kwateng, Abdul Hamid and Debrah (2017), which states the existence of a lower level of effective inventory management practice for disaster relief operations.

The mean value of lack of coordination and collaboration in preparedness phase 3.15 with a standard deviation of 1.15 which implies the organization has a lack of coordination and

collaboration in the preparedness phase. The finding is aligned with the finding of Goli, Bakhshi, and Tirkolaee (2017) and Russell (2005), in which they state as collaboration is still a challenge among the humanitarian organization.

With related to unstable security in the preparedness phase mean score value was 3.56 with a standard deviation of .93 which convey the organization has unstable security in the preparedness phase. This is consistent with the finding of the interview conducted with NDRMC staff.

With related to shortage of human resource in preparedness phase has a mean score value of 3.68 with standard deviation value of 1.02 which imply the existence of a shortage of human resource in preparedness phase this finding is consistent with Thomas & Kopczak (2005), which state that the logisticians come from diverse and varied backgrounds and acquired their humanitarian skill through trial and error.

With related to social barrier in preparedness phase the mean value was 3.58 with the standard deviation of 1.01 which denote the organization experience social barrier in preparedness phase which is consistent with the findings of Demeke Wolde (2016), which states the socioeconomic factors situational factors indicated that suitability of these factors where IRC Ethiopia works was found below the moderate extent.

4.3.2.2 Rank Order Analysis of Challenges during Preparedness Phase of Relief Operation (Kendall's. Wallis Coefficient of Concordance of the Rank Order Analysis Model)

Table 10 Rank of challenges during preparedness phase

Item N=59	Mean Rank	Rank
Poor inventory management in preparedness phase	3.78	1st
Lack of coordination and collaboration in preparedness phase	3.82	2nd
Inadequate funding in preparedness phase	4.37	3rd
Unstable security in preparedness phase	4.47	4th

Inadequate use of information technology in preparedness phase	4.62	5th
Shortage of human resource in preparedness phase	4.71	6th
Social barrier in preparedness phase	4.93	7th
Poor infrastructure in preparedness phase	5.33	8th
Kendall's W[a] = .102 Chi-Square = 42.00 df = 7 Asymp. Sig. = .000 Kendall's Coefficient of Concordance		

Source own survey 2019

Based on the above table we can conclude that the agreement or concordance among the respondent is not due to chance regarding the challenge of humanitarian relief operation during the preparedness phase as $P<0.01$ with a $W=.102$

As shown by the table preparedness challenges were ranked poor inventory management practice for relief operation, lack of coordination and collaboration among players in relief operation, inadequate funding for relief operation, and unstable security existence in the disaster-affected area, inadequate use of information technology for relief operation, shortage of qualified human resources availability, social barrier which affect the relief operation, poor infrastructure in the areas of operation respectively. Contrary to the finding Kovacs and Spens (2007) and Baidoo (2018), major challenges faced in their study were lack of early warning systems, coordination and collaboration among disaster relief organizations and lack of ICT facilities, lack of funding and inappropriate donations, people's behavior and perception about disasters and lack of logistics.

In conclusion the descriptive data analysis of the grand mean value for humanitarian relief operation challenge during the preparedness phase is found to be 3.45 emphasizing on the poor infrastructure, social barrier and unstable security on the other hand, in the inferential data analysis using Kendall's coefficients the top three challenges during preparedness phase were poor inventory management, lack of coordination and collaboration and inadequate funding.

4.3.3 Humanitarian Relief Operation Challenges during Response Phase at NDRMC

Based on various literatures reviewed the following were taken as the challenges of response in performing humanitarian relief operations: poor infrastructure in the areas of the relief operation, fund rising problem in the relief operation, inadequate use of information technology in the relief operation, poor inventory management practice problem in the relief operation, unstable security existence in the disaster-affected area, shortage of qualified human resources availability, lack of coordination and collaboration among players in relief operation and social barrier which affect the relief operation .

4.3.3.1 Descriptive Data Analysis of Challenges during Response Phase at NDRMC

Table 11: Humanitarian relief operation challenges during response phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There is poor infrastructure in response phase	0	0	10	10	23	20	3.84	1.05
There is fund rising problem in response phase	0	3	21	7	23	9	3.22	1.19
There is inadequate information technology in response phase	0	0	7	10	34	12	3.80	.87
There is poor inventory management in response phase	0	0	17	14	21	11	3.41	1.07
There is unstable security in response phase	0	0	7	7	28	21	4.00	.95
There is shortage of human resource in response phase	1	0	14	11	28	9	3.51	1
There is lack of coordination and collaboration in response phase	0	3	20	11	22	7	3.15	1.13
There is social barrier in response phase	3	2	6	9	29	14	3.78	1.02
Grand Mean							**3.59**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

Regarding the poor infrastructure in the response phase mean score value of 3.84 with a standard deviation of 1.05 which implies the organization experience inadequate infrastructure in the response phase. Which is aligned with the finding of Tigst Yegezu (2016) stated the existence of poor infrastructure in areas of operation as a result of geographic characteristics of the affected region; also the finding of Tomasini & Van Wassenhove (2009), stated that the challenge of infrastructure encompass road network, railway, airports, power supply, warehouses, communications lines, etc. that are damaged in the disaster or were non-existent to begin within the affected region become a great obstacle for the performance of humanitarian logistics.

The mean value of fund rising problem in response phase was 3.22 with a standard deviation of 1.19 which indicates the existence of fund rising problem in response phase which is consistent with the finding of Atshipara (2016), which stated the existence of inadequate funding.

Concerning whether the organization has inadequate use of information technology in response phase the mean value was 3.80 with standard deviation 87 which asserts the organization has inadequate use of information technology in the response phase. This is consistent with the finding of the interview conducted with NDRMC staff.

Regarding the poor inventory management in the response phase, the mean value was 3.41 with a standard deviation value of 1.07 which convey the organization has poor inventory management in the response phase which is aligned with the finding of Tigist Yegezu (2016), poor storage facilities affect the condition of the products and poor operational management may derail the delivery of products at the right time.

With related to unstable security in the response phase mean score value was 4.00 with a standard deviation of .95 which implies the organization experience unstable security in the response phase. Which is aligned with finding of Walton, *et al.,* (2011), despite humanitarian workers efforts to strengthen operational security in insecure environments, attacks that have led

to death, kidnapping or serious injury, continue to exact a heavy toll on humanitarian personnel preventing the wounded and sick from receiving the care and protection they require

With related to shortage of human resource in response phase it has a mean score value of 3.51 with standard deviation value of 1.00 which denote the existence of a shortage of human resource in response phase the previous study of Atshipara (2016), revealed that hiring of staff is a challenging task in a relief operation; also Russell (2005), indicated that there were not enough trained workers available.

The mean value of lack of coordination and collaboration in response phase 3.15 with a standard deviation of 1.13 which implies the organization has a lack of coordination and collaboration in the response phase. The previous study of Tigest Yegezu (2016), stated that the supply network is remote and complicated with numerous players (donors, NGOs, government, military, and suppliers), and it is difficult to coordinate all of them along with all the items that need to be delivered also Russell (2005), stated competing supply chains caused bullwhip effects in procurement and congestion throughout the network.

With related to the social barrier in response phase the mean value was 3.78 with the standard deviation of 1.02 which implies the organization experience social barrier in the response phase. This finding is consistent with other related studies which suggested that socio-economic challenges have a great impact on the humanitarian operation. In this respect, the findings are aligned with (Jahre, M. and Jensen, L.M. 2010).

4.3.3.2 Rank Order Analysis of Challenges during Response Phase of Relief Operation (Kendall's. Wallis Coefficient of Concordance of the Rank Order Analysis Model)

Table 12 Rank of challenge during response phase

Item N=59	Mean Rank	Rank
Lack of coordination and collaboration in response phase	3.51	1st

Fund rising problem in response phase	4.01	2nd
Poor inventory management in response phase	4.08	3rd
Shortage of human resource in response phase	4.20	4th
Social barrier in response phase	4.81	5th
Inadequate information technology in response phase	4.92	6th
Poor infrastructure in response phase	5.12	7th
Unstable security in response phase	5.34	8th
Kendall's W[a] = .102 Chi-Square = 42.00 df = 7 Asymp. Sig. = .000 a. Kendall's Coefficient of Concordance		

Source own survey 2019

Based on the above table we can conclude that the agreement or concordance among the respondent is not due to chance regarding the challenge of humanitarian relief operation during the response phase as $P<0.01$ with a $W=.102$

As shown by the table response challenges were ranked as lack of coordination and collaboration among players in relief operation, fund rising problem in the relief operation, poor inventory management practice problem in the relief operation, shortage of qualified human resources availability, social barrier which affect the relief operation, inadequate use of information technology in the relief operation, poor infrastructure in the areas of the relief operation, unstable security existence in the disaster-affected area. On the other hand, Baidoo (2018), found out the major challenges during the response phase were delays in responding to disaster relief operations, poor infrastructure, lack of coordination and corporation, lack of information, lack of HR capacity and lack of information communication technology facilities.

Conclusively, the descriptive data analysis of the grand mean value for humanitarian relief operation challenge during the response phase is found to be 3.59 articulating on the presence of unstable security, poor infrastructure, and inadequate information technology on the contrary, in the inferential data analysis using Kendall's coefficients the top three challenges during preparedness phase were lack of coordination and collaboration, inadequate funding and poor inventory management.

4.3.4 Humanitarian Relief Operation Challenges during Recovery Phase at NDRMC

Based on various literatures reviewed the following were taken as the challenges of recovery in performing humanitarian relief operations: inadequate funding for a disaster recovery operation, inadequate use of information technology, poor inventory management practice for relief operation, shortage of qualified human resources, lack of coordination and collaboration among players in relief operation, unstable security existence in the disaster-affected area, social barrier which affect the relief operation and poor infrastructure in the areas of the relief operation.

4.3.4.1 Descriptive Data Analysis of Challenges during Recovery Phase at NDRMC

Table 13: Humanitarian relief operation challenge during recovery phase

Item N=63	Missing Value	SD	D	N	A	SA	Mean	Std.Dev
There is inadequate funding in recovery phase	2	0	7	6	44	4	3.73	.75
There is inadequate information technology in recovery phase	2	3	7	11	36	4	3.50	.95
There is poor inventory management in recovery phase	0	0	1	9	43	10	3.98	.60
There is shortage of human resource in recovery phase	2	0		4	44	13	4.14	.51
There is lack of coordination and collaboration in recovery phase	1	2	11	17	28	4	3.33	.95
There is unstable security in recovery phase	0	2	4	7	37	13	3.87	.92
There is social barrier in recovery phase	0	1	5	11	36	10	3.77	.86
There is poor infrastructure in recovery phase	0	2	10	18	23	10	3.46	1.04
Grand Mean							**3.72**	

SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Agree

Source: Own Survey, 2019

The mean value of fund rising problem in recovery phase was 3.73 with a standard deviation of .75 which implies the existence of fund rising problem in recovery phase which is consistent with the finding of Owusu-Kwateng , Abdul Hamid and Debrah (2017), which states the existence of particular concern on the availability of fund for reconstruction.

Concerning whether the organization has inadequate use of information technology in the recovery phase the mean value was 3.50 with standard deviation .95 which conveys the organization has inadequate use of information technology in the recovery phase. A similar pattern of the result was obtained through an interview conducted with NDRMC staff.

Regarding the poor inventory management in the recovery phase the mean value was 3.98 with a standard deviation value of .60 which implies the organization has poor inventory management in the recovery phase. The findings are directly in line with the findings of an interview with NDRMC staff.

With related to the shortage of human resource in recovery phase it has a mean score value of 4.14 with a standard deviation value of .51 which denote the existence of a shortage of human resource in the recovery phase. A similar pattern of the result was obtained by Chaikin (2003), which stated that many volunteers, often temporarily comes from various professional backgrounds, which may involve crisis management and disaster relief operation indirectly.

The mean value of lack of coordination and collaboration in recovery phase 3.33 with standard deviation of .95 which implies the organization has lack of coordination and collaboration in recovery phase the findings are similar to Mebrahtom Tesfay (2016), which states there is disharmony in the humanitarian organization between actors belonged to the organization and involved in supply chain

With related to unstable security in a recovery phase mean score value was 3.87 with a standard deviation of .92 which indicates the organization experience unstable security in the recovery phase in line with the finding of the interview conducted with NDRMC staff.

With related to the social barrier in the recovery phase the mean value was 3.77 with the standard deviation of .86 which implies the organization experience social barrier in recovery phase which is aligned with the finding of Mebrahtom Tesfay (2016), which indicates a high level of socio-economic challenges.

Regarding the poor infrastructure in the recovery phase mean score value of 3.46 with a standard deviation of 1.04 which conveys the organization experience inadequate infrastructure in the recovery phase. In this respect the findings are aligned with Andreas Wieland, Carl Marcus Wallenburg (2012), which is infrastructure challenges have a negative impact on the organizational performances.

4.3.4.2 Rank Order Analysis of Challenges during Recovery Phase of Relief Operation (Kendall's. Wallis Coefficient of Concordance of the Rank Order Analysis Model)

Table 14 Rank of challenge during recovery phase

Item N=57	Mean Rank	Rank
Lack of coordination and collaboration in recovery phase	3.58	1st
Poor infrastructure in recovery phase	3.81	2nd
Inadequate information technology in recovery phase	4.04	3rd
Inadequate funding in recovery phase	4.42	4th
Social barrier in recovery phase	4.68	5th
Unstable security in recovery phase	4.89	6th
Poor inventory management in recovery phase	5.18	7th
Shortage of human resource in recovery phase	5.40	8th

Kendall's W[a]	= .119
Chi-Square	= 47.62
df	= 7
Asymp. Sig.	= .000

a. Kendall's Coefficient of Concordance

Source own survey 2019

Based on the above table we can conclude that the agreement or concordance among the respondent is not due to chance regarding the challenge of humanitarian relief operation during the recovery phase as $P<0.01$ with a $W=.119$

As shown by the table response challenge were ranked as lack of coordination and collaboration among players in relief operation, poor infrastructure in the areas of the relief operation, inadequate use of information technology, inadequate funding, social barrier which affect the relief operation, unstable security existence in the disaster-affected area, poor inventory management practice for relief operation, shortage of qualified human resources. However, the finding of Baidoo (2018), states that major challenge during the recovery phase is of aid dependency, lack of funding, lack of common standards of operations, absence of legislation, absence of in-country warehousing, lack of ICT facilities, lack of coordination and collaboration among disaster relief organizations.

Conclusively, the descriptive data analysis of the grand mean value for humanitarian relief operation challenge during the recovery phase is found to be 3.72 emphasizing on shortage of human resource, poor inventory management, and unstable security on the other side, in the inferential data analysis using Kendall's coefficients the top three challenges during preparedness phase were lack of coordination and collaboration, poor inventory management and inadequate information technology.

4.4 Inferential Statistics Data Analysis of the Challenges during Relief Operation

4.4.1 Rank Order Analysis of Humanitarian Relief Operation Challenges (Kendall's. Wallis Coefficient of Concordance of the Rank Order Analysis Model)

In order to analyze the concordance or agreement among the respondent and to rank the challenges faced during the four phases of humanitarian relief operation mainly mitigation, preparedness, response, and recovery the Kendall's. Wallis coefficient of concordance of the rank order analysis model was used to determine the challenges of the relief operation.

On the assumption that the value of Kendall's W is always between 0 and 1 given W=0 means perfect disagreement and W = 1 perfect agreement

Therefore the findings show there are agreement or concordance W=0.076 among the respondent with P<001 on the challenges of the humanitarian relief operation

Table 15: Overall rank of humanitarian relief operation challenges during mitigation, preparedness, response, and recovery phases

Item N=47	Phase	Mean Rank	Rank
Poor inventory management	Preparedness	11.35	1st
Fund rising problem	Response	13.19	2nd
Lack of coordination and collaboration	Preparedness	13.24	3rd
Lack of coordination and collaboration	Response	13.46	4th
Lack of coordination and collaboration	Recovery	13.77	5th
Poor infrastructure	Recovery	13.96	6th
Inadequate use of information technology	Preparedness	14.61	7th
Poor inventory management	Response	14.86	8th
Inadequate funding	Preparedness	14.89	9th
Inadequate information technology	Recovery	14.99	10th
Social barrier	Mitigation	15.77	11th

Unstable security	Preparedness	15.80	12th
Shortage of human resource	Response	15.90	13th
Inadequate infrastructure	Mitigation	16.12	14th
Inventory management practice problem	Mitigation	16.39	15th
Inadequate funding in recovery phase	Recovery	16.52	16th
Shortage of human resource	Preparedness	16.64	17th
Lack of coordination and collaboration	Mitigation	16.77	18th
Social barrier	Preparedness	16.86	19th
Fund rising problem	Mitigation	17.20	20th
Social barrier	Recovery	17.40	21st
Inadequate information technology	Response	17.86	22nd
Unstable security existence	Mitigation	17.91	23trd
Shortage of human resource	Mitigation	18.41	24th
Unstable security	Recovery	18.41	25th
Poor infrastructure	Preparedness	18.51	26 th
Poor inventory management	Recovery	18.52	27 th
Social barrier	Response	18.86	28 th
Inadequate use of information technology	Mitigation	18.91	29th
Poor infrastructure	Response	19.84	30th
Shortage of human resource	Recovery	20.35	31st
Unstable security	Response	20.70	32nd
Kendall's W[a] = .076 Chi-Square = 110.7 Df = 31 Asymp. Sig. = .000 a. Kendall's Coefficient of Concordance			

Source own survey 2019

As shown above the table the top five mean ranks are as follows: first) poor inventory management during the preparedness phase with mean rank value of 11.35, second) fund rising problem in response phase with mean rank value of 13.19, thirdly) lack of coordination and collaboration in preparedness phase with mean rank value of 13.24, fourth) lack of coordination and collaboration during response phase with mean rank value of 13.46, fifth) lack of coordination and collaboration in recovery phase with mean rank value of 13.77 were found to be the top five ranked challenge across the four stages of disaster management cycle. This shows that major challenges are inventory management and coordination and collaboration among the

relief actors with the implication of if NDRMC works in improving the aforementioned challenge the performance will improve. Overall these findings are in accordance respectively with findings reported by Richardson *et al.,* (2010), Özpolat, (2012/2013) and Maon, Lindgreen, Vanhamme (2008-2009); holding the right amount of inventory is very critical in preparation for an emergency response and crisis management process, inefficiencies of funds because most relief agencies are funded by public resources and them are subject to constraints in their procurement and logistics policies and coordination during disaster relief operations, as well as among disaster relief actors, often remains limited.

4.5 Relief Operation Performance Management of the NDRMC at the Gedio-Guji Relief Operation

The Gedio-Guji conflict displacement was one of the complex relief operations the country ever encountered. The inter-communal conflict has caused displacement on more than one million people from both Gedio and Guji zone since April 1, 2018. This section will evaluate the performance of NDRMC on the relief operation of Gedio-Guji from round 1-5 using the scorecard model developed by (Davidson, 2006)

Throughout the 5 rounds, NDRMC has handled round 1 and round 3 solely and JEOP (Joint Emergency Operation) handles round 4 and round 5 solely while round 2 was handled jointly

Table 16. Gedio-Guji relief operation response

Operation Name: Gedio-Guji Conflict Displacement				
Status update: Ongoing Current Date May 2019	**Operation Total**	**Food**	**Non Food Item & Emergency Shelter**	**Total Operation Target**
Total Number of items Requested				
Round 2	N/A	102390 MT	138288 Kits	N/A
Total number of items Donors have Pledged				
Round 2	N/A	8619 MT	13848 Kits	N/A

Round 4	N/A	6474 MT		N/A
Round 5	N/A	6119 MT		N/A
Total number of items Delivered				
Round 2	N/A	8619 MT	11211 kits	N/A
Round 4	N/A	6064 MT		N/A
Round 5	N/A	4617 MT		N/A
Time for an item to be delivered after donor pledged in days	240 Days	14days	20 days	N/A
Budgeted birr	3,019,244,021.80	2,408,054,901.80	611,189,120.00	N/A
Actual Spent birr	1,130,342,909.00	1,094,415,000.00	35,927,909.00	N/A
Total Transportation Cost	138,249,810.00	73,690,610.00	64,559,200.00	N/A
Total Product Cost	941,826,190.00	801,841,390.00	139,984,800.00	N/A
Revised Operation Budget	3,019,244,021.80	2,408,054,901.80	611,189,120	N/A
Original Operation Budget	1,041,185,015.00	429,995,895.00	611,189,120.00	N/A
N.B: The total operation target column has been left N/A (Not Available) because an organization actually using this system must first define and set the target it wants to achieve in order to compare targets to actually result and NDRMC doesn't use the score card model				

Source: Own survey score card developed, 2019

According to OCHA- United Nation Office for the Coordination of Humanitarian Affairs (2019), reported that different humanitarian organization has involved during the relief operation of Gedio- Guji which includes nine head organization, 16 NGO representative, security focal point being run by UNDSS and over all coordination was performed by OCHA.

Table 17. Scorecard for the Gedio-Guji relief operation

Operation Name Gedio-Guji Conflict Displacement				
Status Update Ongoing Current Date May, 2019	**Operation Total (Weighed)**	**Food (MT)**	**Non Food Item & Emergency Shelter (Kits)**	**Total Operation Target**

Appeal Coverage				
Percent of Appeal Coverage	N/A	20.71%	10.01%	N/A
Percent of Item Delivered	N/A	18.84%	8.10%	N/A
Donation Delivery Time				
Mean	240 Days	14days	20 days	N/A
Financial Efficiency				
Donor Cost-Budget Cost/Budget Cost	-62.50%	-54.55%	-94.10%	N/A
Actual Birr Spent-Budgeted Birr	-1,888,901,112.80	-1,313,639,901.80	- 575,261,211	N/A
Total Transportation Cost/Total Product Cost	15%	9.10%	46.11%	N/A
Assessment Accuracy				
Revised Budget/Original Budget	289.9%	560%	100%	N/A
N.B: The total operation target column has been left N/A (Not Available) because an organization actually using this system must first define and set the target it wants to achieve in order to compare targets to actually result and NDRMC doesn't use the score card model				

Source: Own survey score card developed, 2019

4.5.1 Appeal Coverage Relief Operation Performance

This indicator uses two specific metrics: percent of appeal coverage and percent of the item delivered. This two metrics together indicate how well an organization is in finding donors and how well is at following up on the delivery of relief item to the disaster-affected community (Larrea, O., 2013).

- **Percent of Appeal Coverage** defined as the percentage of the number of items that donors have pledged out of the total number of items requested for the operation at a given point in time (Larrea, O., 2013). It is expressed in factional form as follows.

$$\text{Percent of Appeal Coverage} = \left\{ \frac{\text{Quantity of items pledged}}{\text{Total items requested}} \right\} * 100 \quad \text{.....Eqn -1}$$

The purpose of this metric is to indicate to the organization how well and how quickly they are finding pledges for the requested items. In order to calculate the percent of appeal coverage total of items pledged and the total item requested have to be calculated.

Accordingly based on the data collected and compiled from the NDRMC which involved under the round one to round five Gedio-Giji relief operation shows that the total food item pledges were 21,212 metric tons and total food item requested were 102,390 metric tons, therefore, percent of appeal coverage were:

$$\left\{ \frac{21{,}212}{102{,}390} \right\} * 100 = 20.71\%$$

For NFI and shelter pledge by the donors were 13848 kits and total NFI and shelter requested were 138,288

$$\left\{ \frac{13848}{138{,}288} \right\} * 100 = 10.01\%$$

Table 18. Appeal coverage performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	Relief Operation	Requested	Pledge	Gap	Appeal Coverage Performance
Appeal Coverage Performance	Food Items (MT)	102,390 MT	21,212 MT	81,178 MT (79.29%)	20.71%
	NFI and shelter (kits)	!38,288 (Kits)	13,848 Kits	122, 4440 Kits (89.99%)	10.01%

Source: Own survey score card developed, 2019

Over the operation period, donors have pledged to donate 20.71% of the food items requested by NDRMC and 10% of the non-food item and shelter. The donor pledge weighted for the total of the operation is left blank because of the units of measurement for food (MT) and NFI (Kit) quite impossible to add up. The finding implies that donors have pledged a very small amount of what they have been requested. Similarly, the interview has been made with NDRMC staff reveals consistent findings for appeal coverage which states the existence of drastically decreasing appeal from donors throughout the year which indicated the low performance of the organization on finding pledges for the requested items.

- **Percent of Item Delivered**: defined as the percentage of items that have actually been delivered on-site out of the total number of items requested for the operation at a given point in time (Larrea, O., 2013). This metric is expressed in factional form as follows:

$$\text{Percent of Item Delivered} = \left\{\frac{\text{Quantity of items delivered}}{\text{Total items requested}}\right\} * 100 \ldots\ldots\ldots\ldots\ldots\ldots \text{Eqn-2}$$

Source: Larrea, O., 2013

To calculate the percent of food item delivered for Gedio-Guji relief operation quantity food item delivered and food item requested should be known therefore percent of the item delivered were:

$$\left\{\frac{19{,}300}{102{,}390}\right\} * 100 \quad = 18.84\%$$

To calculate the percent of NFI and shelter delivered for Gedio-Guji relief operation quantity of NFI and shelter delivered and quantity of NFI and shelter requested should be known therefore percent of the item delivered was

$$\left\{\frac{11{,}211}{138{,}288}\right\} * 100 \quad = 8.10\%$$

Table 19. Delivery performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	**Relief Operation**	**Requested**	**Delivered**	**Gap**	**Delivery Performance**
Delivery Performance	Food Items (MT)	102,390 MT	19,300 MT	83,090 MT (81.16%)	18.84%
	NFI and shelter (kits)	!38,288 (Kits)	11,211Kits	127, 077 Kits (91.9%)	8.10%

Source: Own survey score card developed, 2019

From what was requested the donors has delivered in percent are the following for food item only 18.84 % are delivered for NFI and shelter 8.1% delivered the result implies that the amount of item delivered from the donors pledge is very

low which aligned with the findings of Larrea, O., (2013), which states both forced migration operation and Choco-flooding operation, donors did not give enough to cover the initial expected budget

4.5.2 Donation Delivery Time

The second performance indicator measures how long it takes for an item to be delivered after a donor has pledged to donate it (Davidson, 2006).

It has taken 14 days for the first food item to reach the disaster site and 20 days for the NFI and shelter to reach the disaster overall operation till round 5 has taken 240 days (8 Month) on average.

The findings imply that donors have taken longer time to delivery since internationally accepted time is 72 hours due to unstable security existence in the Gedio-Guji area which is consistent with the finding of Larrea, O., (2013), stated that access to the site where the migrants were housed is hampered by insecurity and threats presented by the same armed groups that caused the migration it took more than 72 hours to reach.

4.5.3 Financial Efficiency

Three metrics are included as part of the indicator of financial efficiency.

A. **First Financial Efficiency Metrics** The first financial efficiency metric is defined as:

$$\left\{\frac{\text{Donor cost-Budget cost}}{\text{Budget cost}}\right\} *100 \text{……..Eqn-3}$$

This metric expresses the amount under or over budget as a percentage of budget cost (Larrea, O., 2013).

For Food Item

Donor cost or in this case actual spent for food item were 1,094,415,000 and the Budget cost or the budget expense for food item were 2,408,054,901.80

$$\left\{\frac{1{,}094{,}415{,}000 - 2{,}408{,}054{,}901.80}{2{,}408{,}054{,}901.80}\right\} * 100 = -54.55\%$$

For Non Food Item & Shelter

Donor cost or in this case actual spent for NFI and shelter item was 359, 279, 09 and the Budget cost or the budget expense for NFI and shelter item was 611,189,120

$$\left\{\frac{35{,}927{,}909 - 611{,}189{,}120}{611{,}189{,}120}\right\} * 100 = -94.1\%$$

Operation Total (weighed)

Total donor cost or in this case actual spent for both food item and NFI & shelter were 1,130,342, 909 and the total budget cost is for the food item and NFI & shelter were 3,019, 244, 021.80

$$\left\{\frac{1{,}130{,}342,\ 909 - 3{,}019,\ 244,\ 021.80}{3{,}019,\ 244,\ 021.80}\right\} * 100 = -62.5\%$$

Table 20. First financial performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	Relief Operation	Donor cost	Budget cost	Gap	First Financial Performance
First Financial Performance	Food Items (MT)	1,094,415,000	2,408,054,901.80	45.45%	-54.55%
	NFI and shelter (kits)	35,927,909	611,189,120	5.99%	-94.1%
	Operation Total	1,130,342, 909	3,019, 244, 021.80	37.95%	-62.5%

Source: Own survey score card developed, 2019

The first financial efficiency metrics are interpreted as positive percentage indicates that the donor cost exceeds the budget cost. The negative percentage indicates that the budgeted cost exceeds the donor cost. To meet the budget exactly the value should be 0%.

In the food item, the budgeted cost exceeds the donor cost by 54.55% and for the non-food item and shelter, the budget cost exceeds the donor cost by 94.1%. The operation in total indicates that the budget cost exceeds the donor cost 62.5%. The finding indicated that the actual budget is much greater than the actual spent in terms of percentage which is consistent with the finding of Larrea, O., (2013), which stated that the budgeted cost exceeded by far the donor´s cost.

B. Second Financial Metrics express differences to budget in more absolute terms (Larrea, O., 2013). The second financial efficiency metric is defined as:

Actual birr spent – Budgeted birr ……..Eqn-4

For Food Item

Actual birr spent or in this case actual spent for food item were 1,094,415,000 and the budgeted birr for food item were 2,408,054,901.80

1,094,415,000 – 2,408,054,901.80= -1,313,639,901.80

For Non Food Item & Shelter

Actual birr spent for NFI and shelter item were 359, 279, 09 and the budgeted birr or the budget expense for NFI and shelter item was 611,189,120

359, 279, 09 – 611,189,120= - 575,261,211

Operation Total (weighed); is defined as

Total actual birr spent – Total budgeted birr ……Eqn-5

Source: Larrea, O., (2013)

Total actual birr spent for both food item and NFI & shelter were 1,130,342, 909 and the total budget cost is for the food item and NFI & shelter were 3,019, 244, 021.80

1,130,342, 909 -3,019, 244, 021.80 = -1,888,901,112.8

Table 21. Second financial performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	Relief Operation	Actual birr spent	Budgeted birr	Second Financial Performance
Second Financial Performance	Food Items (Birr)	1,094,415,000	2,408,054,901.80	-1,313,639,901.80
	NFI and shelter (Birr)	35,927,909	611,189,120	- 575,261,211
	Operation Total	1,130,342, 909	3,019, 244, 021.80	-1,888,901,112.8

Source: Own survey score card developed, 2019

The second financial efficiency metrics are expressed in birr. For food items, it can be seen that the actual spend is less than the budgeted birr by 1,313,639,901.80 and for non-food items and shelter the actual spend is less than the budgeted by 575,261,211 and the total operation weighed 1,888,901,112.80. The finding implies that actually spent is less than the budgeted in terms of birr which is inconsistent with the finding of Larrea, O., (2013), which states the actual spend exceeded the budgeted spend.

C. **Third Financial Metrics Efficiency** incorporates the transportation costs of delivering the goods to the beneficiaries (Larrea, O., 2013). It is expressed at a given point in time as:

$$\left\{\frac{\text{Transportation costs}}{\text{Product costs}}\right\} *100 \text{ ……..Eqn-6}$$

For Food Item

Transportation cost for food item were 73,690,610 and product cost for food item were 801,841,390

$$\left\{\frac{73,690,610}{801,841,390}\right\} *100 = 9.10\%$$

For Non Food Item & Shelter

Transportation cost for NFI and shelter item were 64,559,200 and product cost for NFI and shelter were 139,984,800

$$\left\{\frac{64,559,200}{139,984,800}\right\} *100 = 46.11\%$$

Operation Total (weighed)

Total transportation costs or in this case actual spent for both food item and NFI & shelter were 138,249,810 and the total product costs are for the food item and NFI & shelter were 941,826,190

$$\left\{\frac{138,249,810}{941,826,190}\right\} *100 = 14.7\%$$

Table 22. Third financial performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	Relief Operation	Transportation costs	Product costs	Third Financial Performance
Third Financial Performance	Food Items (Birr)	73,690,610	801,841,390	9.10%
	NFI and shelter (Birr)	64,559,200	139,984,800	46.11%
	Operation Total	138,249,810	941,826,190	14.7%

Source: Own survey score card developed, 2019

The third financial efficiency metric incorporates the transportation costs of delivering the goods to the beneficiaries. In delivering food to beneficiaries 9.1% of the cost was incurred by transportation and for non-food items and shelter 46.11% of the cost for delivering to beneficiaries was incurred by transportation. The overall total weighted transportation cost was 15%. The result implies that transportation cost delivering the goods to beneficiaries for non- food items are much greater than the cost of transportation for the food item.

4.5.4 Assessment Accuracy: The purpose of a metric related to assessment accuracy is to measure how much the operation´s final budget changed over time from the operation´s original budget (Larrea, O., 2013). This metric is expressed in the form of a percentage:

$$\left\{ \frac{\text{Revised operation budget}}{\text{Original operation budget}} \right\} * 100 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Eqn-7}$$

For Food Item

The revised budget for food item were 2408054901.8 and original budget were 429995895

$$\left\{\frac{2408054901.8}{429995895}\right\} *100 = 560\%$$

For Non Food Item & shelter

The revised budget for NFI and Shelter were 611189120 and original budget was 611189120

$$\left\{\frac{611189120}{611189120}\right\} *100 = 100\%$$

Operation Total (weighed); is defined as

$$\left\{\frac{\text{Total revised operation budget}}{\text{Total original operation budget}}\right\} *100 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{Eqn-7}$$

Source: Larrea, O., (2013)

Total original operation budget for both food item and NFI & shelter were 1,041,185,015 and the total revised operation budget for the food item and NFI & Shelter were 3,019,244,021.8

$$\left\{\frac{3{,}019{,}244{,}021.8}{1{,}041{,}185{,}015}\right\} *100 = 289\%$$

Table 23. Assessment accuracy performance of the NDRMC Gedio-Guji relief operation

Performance Dimension	Relief Operation	Revised operation budget	Original operation budget	Assessment accuracy performance
Assessment accuracy performance	Food Items (Birr)	2,408,054,901.8	429,995,895	560%
	NFI and shelter (Birr)	611189120	611189120	100%
	Operation Total	3,019,244,021.8	1,041,185,015	289%

Source: Own survey score card developed, 2019

The metrics are interpreted as 100% being there was no revised budget while less than 100% is the revised budget is less than the original budget and more than 100% is interpreted as the revised budget has increased more than the original budget.

For food items the original budget has increased 560% over the operation and for non- food items and shelter there was no revised budget in another words the budget stayed the same as the original, the total over weighted result a budget increment of 289.9%. The finding implies that the original budget for food item was exceeded in great amount while the original budget for non- food item and shelter was the same since non- food item was distributed once throughout the relief operation. Similarly, the interview which has been made with NDRMC staff reveals consistent finding which states the existence of a double and triple increase in the original budget as relief operation progress through time.

4.6 Summary of the Chapter

This chapter has presented results, discussion and interpretation of the study on the humanitarian relief operation practices challenges and performance of the NDRMC in crisis management. The findings were analyzed in the form of descriptive statistics by computing mean and standard deviation, inferential statistics by Kendals. Wallis coefficient of concordance of the rank order and relief operation performance measurement scorecard model by Davidson (2006), presented using a table.

The descriptive data analysis show that there is a good practice of relief operation amongst the four phase whereas challenges of the relief operation has a held different result while analyzed using both descriptive data analysis and inferential data analysis on the identification of the major challenges faced during mitigation, preparedness, response and recovery. The relief operation performance management of the NDRMC at the Gedio-Guji relif operation were evaluated using the Davidson score card which was based on the four metrics namely appeal coverage, donation to delivery time, financial metrics and assessment accuracy in which the performance of the NDRMC found to be low in all the four metric.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary, conclusion and recommendation of the study on the humanitarian relief operation practice challenge and performance of the National Disaster and Risk Management Commission in crisis management

5.1 Summary of Major Finding

The study was analyzed into four parts a) using a descriptive approach to identify practice and challenge of the relief operation; b) using inferential statistics namely, Kendals. Wallis coefficient of concordance of the rank order to determine and rank of challenges faced during the relief operation; c) using the scorecard model developed by Davidson, (2006), to evaluate the performance of NDRMC in Gedio-Guji relief operation; and d) using qualitative analysis to triangulate data.

Based on various literature challenge for NDRMC relief operation were computed using the following affecting factor; inadequate funding, inadequate information technology, poor inventory management, shortage of human resource, lack of coordination and collaboration, unstable security, social barrier, poor infrastructure

According to the Kendals.Wallis coefficient of concordance of the rank order analysis model the top five challenges ranked was: poor inventory management in preparedness, fund rising problem in the response phase, lack of coordination and collaboration in preparedness phase, lack of coordination and collaboration in the response phase, lack of coordination and collaboration in recovery phase respectively.

1. The major challenge ranked during the mitigation phase were social barrier which affect the relief operation, lack of coordination and collaboration among players in relief

operation, inadequate infrastructure in performing relief operation, inventory management practice problem, fund rising problem for a relief operation, unstable security existence in the disaster-affected area, shortage of qualified human resources availability for relief operation, inadequate use of information technology respectively.

2. The major challenge ranked during the preparedness phase were poor inventory management practice for relief operation, lack of coordination and collaboration among players in relief operation, inadequate funding for relief operation, and unstable security existence in the disaster-affected area, Inadequate use of information technology for relief operation, shortage of qualified human resources availability, social barrier which affect the relief operation, poor infrastructure in the areas of operation respectively.

3. The major challenge ranked during the response phase was lack of coordination and collaboration among players in relief operation, fund rising problem in the relief operation, is poor inventory management practice problem in the relief operation, shortage of qualified human resources availability, social barrier which affect the relief operation, inadequate use of information technology in the relief operation, poor infrastructure in the areas of the relief operation, unstable security existence in the disaster-affected area.

4. The major Challenge during recovery phase were lack of coordination and collaboration among players in relief operation, poor infrastructure in the areas of the relief operation, inadequate use of information technology, inadequate funding, social barrier which affect the relief operation, unstable security existence in the disaster-affected area, poor inventory management practice for relief operation, shortage of qualified human resources.

5. According to the results of the descriptive statistics, the application of practice in the four-phase is rated by all respondents with the mean value of above and 3.15 which interpreted as the existence of a very good practice overall.

- Based on the findings the following were taken as the practice for mitigation phase practice; plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster, a process for developing a plan of action to mitigate disaster, adequate human resources available for disaster management, a plan of action to create awareness of disaster risk factors at the community level and public information projects and budget allocated for mitigation for rapid onset relief operation

- According to the finding of the study the following were taken as the practice for preparedness phase practice; training for response personnel/professional, personal preparedness, focuses on preparing equipment and procedures for use when rapid disaster occurs, plan of action for disaster management in relief operation, procurement of relief items before the occurrence of a disaster, evacuating plan of action for disaster threatened populations, programs and procedures for mutual assistance between different humanitarian actors, collaboration and coordination between various players in humanitarian relief operation, procurement of relief items is done locally to achieve effectiveness and efficiency, good inventory/ stock management processes and well-established processes for handling, sorting and packaging relief items for storage or distribution to beneficiaries.

- Based on the findings the following were taken as the practice for response phase practice; initial assessments for a relief operation, comprehensive assessments for a relief operation, within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office, action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible, within 72 hours response are given to the affected community, plan of action for activating the emergency operations center within 72 hours of the

occurrence of a disaster, emergency rescue and search plan and increasing security operations during the occurrence of rapid onset disaster.

- According to the result of study the following were taken as the practice for recovery phase practice; plans to identify needs and define resources, plans to provide housing, restore security, amend infrastructure and promote community restoration, plan of action to incorporate mitigation measures and techniques, procedure of keeping records of past or previous disasters, plan to evaluate the relief operation and to identify lessons learned, plan to develop initiatives to mitigate the effects of future incidents, good inventory (stock) management processes, budget allocated for recovery, reconstruction and rehabilitation.

6. The finding in measuring the performance of the NDRMC in the Gedio- Guji relief operation indicated:

- Appeal coverage and item of delivery from the requested was very low for both food and non-food item indicating NDRMC performed very low in finding donors to pledge and also on making the donors to keep their promise in delivering what they have pledged in the first place with the percentage of 20.71% and 10.01% for food and non-food item and shelter in percent of appeal coverage and 18.84% and 8.10% for food and non-food item and shelter in percent of item delivered respectively .

- Donation to delivery time as a rule of thumb response should be given within 72 hours of the occurrence of a disaster in the case of the Gedio-Guji relief operation donors took average 14 days for food item, 20 days for non- food item and average total operation weighed is 240 (8 Month) which is a very long time to respond.

- Financial efficiency was measured using three metrics;

1. For food item, non-food item and total operation weighed the budgeted cost exceed the donor cost indicating over budgeted with a percentage of 54.55%, 94.1% and 62.5% respectively .
2. For food, non- food and total operation weighed actual spent was very much less than the budgeted birr with amount of 1,313,639,901.80, 575,261,211 and 1,888,901,112.80 respectively.

3. The transportation costs of delivering the goods to the beneficiaries in delivering food to beneficiaries 9.1% of the cost for delivering to beneficiaries was incurred by transportation and for non-food items 46.11% of the cost for delivering to beneficiaries was incurred by transportation when we see the overall total weighted transportation cost was 15%.

- Assessment accuracy for food items the original budget has increased over the operation while for non- food items and shelter there was no revised budget, total over weighted also shows increment though time with a percentage of 560%, 100% and 289% respectively .

5.2. Conclusion

The purpose of this study is to identify the practice and challenge of NDRMC in the four-phase of the relief operation and to evaluate the performance of the Gedio- Guji relief operation. According to this objective, the following conclusion is drawn.

The empirical evidence from this study indicates that practice of the relief operation has been exercised by NDRMC and there are numerous relief operation challenges in the NDRMC. The relief operation challenges highly contributed to the humanitarian relief operation inefficiency in the delivery of the relief supplies as well as it has a negative impact on the daily operations of the NDRMC.

1. In conclusion, the major challenge of a relief operation for the NDRMC during the disaster mitigation phase of disaster management was ranked as a social barrier which affects the relief operation, lack of coordination and collaboration among players in the relief operation, inadequate infrastructure in performing relief operation.

2. The present findings confirm that major challenge of a relief operation for the NDRMC during disaster preparedness phase of disaster management were poor inventory management practice for relief operation, lack of coordination and collaboration among players in the relief operation, inadequate funding for relief operation.

3. Broadly translated the findings indicate that the major challenge of a relief operation for the NDRMC during the disaster response phase of disaster management were lack of coordination and collaboration among players in the relief operation, fund rising problem in the relief operation, is poor inventory management practice problem in the relief operation.

4. The study concluded that the major challenge of a relief operation for the NDRMC during the disaster recovery phase of disaster management were lack of coordination and collaboration among players in the relief operation, poor infrastructure in the areas of the relief operation, inadequate use of information technology.

5. The study concluded that the disaster management cycle practice of the NDRMC during ;

- ✓ **Mitigation practice**; process for developing a plan of action to mitigate disaster, the budget allocated for mitigation for rapid onset relief operation and adequate human resource available for disaster management

- ✓ **Preparedness Practice**; procurement of relief items before the occurrence of a disaster, plan of action for disaster management in relief operation and programs and procedure for mutual assistance between different humanitarian actors

- ✓ **Response Practice**; within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office and comprehensive assessments for a relief operation

- ✓ **Recovery Practice;** plans to identify needs and define resources, plans to provide housing, restore security and good inventory (stock) management processes.

6. In conclusion the performance of the NDRMC in Gedio-Guji relief operation was very low in the appeal coverage and delivery item for the food, non- food and total operation overweighed, donation time to delivery is very longer than the standards time, financial efficiency was very low for the food, non-food and total operation overweighed, assessment accuracy was overrated for food item and total operation overweighed but perfect for non- food item.

5.3 Recommendations

Based on the findings of the study the following recommendations are proposed;

1. The study recommends while performing relief operation during mitigation phase NDRMC should take in to account the affected community culture, language, and religion, also focusing in strengthen the relationship between different actors which involves in the relief operation, building and maintaining infrastructure, modernizing inventory management system, working on successful fundraising events, working with different sector on stabilizing security, hiring qualified adequate manpower and using up-to-date information technology towards the successful achievement of the relief operation.

2. The study recommends during preparedness phase NDRMC should use scientific inventory management, create mutual understanding and trust among the players of relief operation, focus on securing funds, work with the concern parties on security, upgrade the use of information technology, tackle shortage of human resource by training the existence manpower to build their capacity , participating the community on the relief operation to create ownership and lastly making sure infrastructure are mended in time by mobilizing concerned actors.

3. The study recommends during the response phase NDRMC should focus on creating coordination and collaboration between relief operation actors, work on creating sustainable fundraising programs, employee standardized inventory management system, should hire competent and qualified manpower, work hand in hand with the affected community, implement adequate information technology tools, should focus on improving infrastructure and work towards creating stable security.

4. The study recommends during the recovery phase NDRMC should focus on building a healthy relationship between different relief operation actors, should work on the maintenance of infrastructure, upgrade the information technology, work on securing adequate fund, participate the community on the relief activity, remove obstacles which threaten security, implement scientific advanced inventory management system and employee quailed manpower.

5. The study recommends in order to increase the appeal coverage NDRMC should focus intensively on the appeal coverage at the end of the day donor wont delivery what they haven't pledged in the first phase, follow up with donors should be continues to increase delivery of relief items with the quantity they have pledged and the delivery time they have promised accurate assessment and verifying of data should be done to minimize the gap between actual spent and budget for relief operation.

5.4 Limitation and Suggestions for Future Studies

One of the major limitations of this study that worth mentioning is the fact that it does not comprehensively capture all aspects of humanitarian supply chain management system rather it made emphasis in revealing only humanitarian relief operation practice, challenge and performance of the NDRMC in crises management with the four phases of the relief operation. Future studies may consider more dimensions on humanitarian supply chain as a whole, on factors affecting the performance of the relief operation in macro and micro level, practice, challenge and performance of UN agencies/NGO in relief operation on slow onset disaster and also on other humanitarian actors other than the government that haven't been considered in this particular study.

References

Addis Ababa University College of Business and Economics School of Commerce. 2015. Humanitarian Logistics Module No: LSCM 601-3. MA-Logistics and Supply Chain Management Program. pp 228.

American Production and Inventory Control Society (APICS) 2018**.** Score Metrics [Available]at http://www.apics.org/apics-for-business/benchmarking/scormarkprocess/scor-metrics [Accessed 1 Jan 2019].

Angerhofer, B.J. and Angelides, M.C. 2006**.** A model and a Performance Measurement System for Collaborative Supply Chains. Decision Support Systems. Vol. 42 No. 1, pp. 283-301.

Andreas Wieland, Carl Marcus Wallenburg, 2012.Effects of Supply Chain Risk Management (SCRM) on the Performance of a Supply Chain: International Journal of Physical Distribution & Logistics Management, Vol. 42, No. 10, pp. 887–905.

Amit, R. and Schoemaker, P. J. 1993. Strategic assets and Organizational rent. Strategic Management Journal, 13.

Amna.2013. Logistics Support and Its Management During Disaster Relief Operations. International Journal of Scientific Footprints 2013; 1(1): 1–12, Department of Environmental Sciences, International Islamic University.

Arlikatti, S.S., Bezboruah, K.C., & Long, L. 2012. Role of Voluntary Sector Organizations in Post tsunami Relief: Compensatory or Complementary? Social Development Issues, 34(3).

Assessment Capacities Project (ACAPS). 2017**.** Humanitarian Overview: An analysis of key crises into 2018. pp 19.

Atshipara. 2016. An evaluation of the Effectiveness of the Supply chain in Handling Drought Relief Distribution: A case Study of Okatana Constituency, Namibia. Thesis for Partial Fulfillment of the Requirements for the Degree of Master in Disaster Risk Management in the Faculty of Natural and Agricultural Sciences Centre for Disaster Management Training and Education Centre for Africa. University of the Free State.

Bardhan and Dang.2016. Drivers and Indicators of Performance in Relief Chain: An Empirical Study. Global Business Review. 17(1) 88–104.

Baidoo. 2018. Challenges and Strategies for Rapid Response in Disaster Relief Operations in Ghana. Texila International Journal of Management Volume 4, Issue 2, [Available] at

http://www.texilajournal.com/thumbs/article/Management_Vol%204_Issue%202_Article_7.pdf [Accessed 1 Jan 2019].

Barney, J. B. 1991b. “Firm resources and sustained competitive advantage.” Journal of Management, 17

Beamon, B.M. 2004. Humanitarian Relief Chains: Issues and Challenges. Proceedings of the 34th International Conference on Computers and Industrial Engineering, San Francisco, CA, November 14-16.

Beamon. B.M. 1998. Supply Chain Design and Analysis: Models and Methods. International Journal of Production Economics. Vol. 55 No. 3. pp. 281-94.

Beamon. B.M. 1999.Measuring Supply Chain Performance. International Journal of Operations & Production Management. Vol. 19 Nos 3/4. pp. 275-92.

Beamon & Balcik, 2008. Performance Measurement in Humanitarian Relief Chains. International Journal of Public Sector Management. Vol. 21 No. 1. 2008 pp. 4-25.

Beamon. B.M. 2004. Humanitarian Relief Chain: Issues and Challenges. In 34th International Conference on Computers and Industrial Engineering, San Francisco, USA.

Beamon and Kotleba. 2006. Inventory Modeling for Complex Emergencies in Humanitarian Relief Operations. In International Journal of Logistics. Research and Applications 9 (1). pp. 1–18.

Bitweded Mesfin Asefa. 2017. Assessment of Humanitarian Supply Chain Performance of Save the Children International Ethiopia” A Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Blecker. 2009. A Reference Task Model for Supply Chain Processes of Humanitarian organizations. Dissertation for a Doctoral of Economics. University of Paderborn.

Bölsche.D. 2012. Performance Measurement in Humanitarian Logistics. Hochschule Fulda University of Applied Science.

Bryman, A., and Bell, E. 2007. Business research methods (2nd ed). Oxford University press.

CARE International. 2018. Suffering in Silence. The 10 Most Under-Reported Humanitarian Crises of 2017. pp 4-5.

Cozzolino, A., Rossi, S., & Conforti, A. 2012**.** Agile and Lean Principles in the Humanitarian Supply Chain. Journal of Humanitarian Logistics and Supply Chain Management. 2(1). pp 16–33.

Cozzolino,A., Rossi, S., 2012. Humanitarian Logistics Cross-Sector Co operations in Disaster Relief Management.

Council on Supply Chain Management Professionals. 2008. Supply Chain Management and Logistics ManagementDefinitions.[Available] at .http://cscmp.org/aboutcscmp/definitions/definitions.asp [Accessed on 5 Dec 2018].

Daniel Willner and Stavros Zafeiridis. 2013. Challenges and the use of Performance Measurements in Humanitarian Supply Chains: Jonkoping International Business School, Jonkoping University

Davidson. 2006. Key Performance Indicators in Humanitarian Logistics. A Thesis Partial Fulfillment of the Requirements for the Degree of Master of Engineering in Logistics. Engineering Systems Division.

David M. Neal 1997. Reconsidering the Phases of Disaster. International Journal of Mass Emergencies and Disasters. Vol. 15, No. 2, 239-264. Institute of Emergency and Planning [Available]at https://training.fema.gov/hiedu/downloads/ijems/articles/reconstructing%20the%20phases%20of%20disaster.pdf [Accessed on 12 Dec 2018].

Disaster Risk Management Technical Working Group. 2018. Ethiopia: Humanitarian Response SituationReport.No.18.[Available]at https://reliefweb.int/sites/reliefweb.int/files/resources/situation_report_no.18_march_2018_-_final.pdf [Accessed on 12 Dec 2018].

Demeke Wolde. 2016. Factors Affecting the Performance of Humanitarian Logistics . The Case of IRC Ethiopia. A Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

DHS - U.S. Department of Homeland Security. 2008. National Response Framework. Washington.

EFQM. 2003. Introducing Excellence Brussels: European Foundation for Quality Management.

FEMA – Federal Emergency Management Agency. 2006. Principles of Emergency Management. Independent Study. IS230. Washington.

Flick, U. 2017. The Sage Handbook of Qualitative Data Analyisis. Los Angeles: Sage.

Fowler, F. J. 2002. Survey research methods (3rd Ed.). Thousand Oaks, CA: Sage Publications.

Fritz Institute. 2004. Humanitarian Logistics Conference-Africa Region 2004 Proceedings. [Available] at http://www.fritzinstitute.org/prgsc-hlcaf2004-proceedings.htm [Accessed on 12 Dec 2018]

Fredrik Greve and Torvik. 2009. Strategic positioning of inventory for suppliers to Humanitarian Organizations. Master's Degree Thesis. Molde University College.

Ganjali, M., Shirouyehzad, H., &Shahin, A. 2016. Applied Research on Industrial Engineering. Journal of Applied Research on Industrial Engineering. 3(1). 39-48.

Grogg, Richelle S., 2016. NGO Collaboration in Natural Disaster Response Efforts- A Comparative Case Study of Earthquakes in Asia. Senior Honors Projects 2010-Current.

Goli, Bakhshi and Tirkolaee. 2017. A Review on Main Challenges of Disaster Relief Supply Chain to Reduce Causalities in Case of Natural Disasters. Department of Industrial Engineering. University of Yazd, Yazd, Iran.

Gustavsson, L. 2003. Humanitarian logistics Context and Challenges. Forced Migration Review. No. 18. pp. 6-8.

Gyöngyi, K. and Karen, S. 2009. Identifying Challenges in Humanitarian Logistics. International Journal of Physical Distribution & Logistics Management. Vol. 39 No. 6. pp. 506-528.

Gyöngyi, K. and Karen, S. 2007. Humanitarian Logistics in Disaster Relief Operations. International Journal of Physical Distribution & Logistics Management. Vol. 37 No. 2. pp. 99-114.

Hellingrath and Widera. 2011. Bernd Hellingrath and Adam Widera. Survey on Major Challengesin Humanitarian Logistics**.** Proceedings of the 8th International ISCRAM Conference – Lisbon. Portugal.

Hutchinson, J. F. 2000. Disasters and the International Order: Earthquakes, Humanitarians, and The Ciraolo Project. International History Review. [Available] https://www.tandfonline.com/doi/abs/10.1080/07075332.2000.9640890 [Accessed on 25 May 2019].

International Federation of Red Cross and Red Crescent Societies. 2018. World Disaster Report 2018 Leaving No One Behind. pp 9.

Iqbal, Q., Mehler, K. and Yildirim, M.B. 2007. Comparison of Disaster Logistics Planning and Execution for 2005 Hurricane Season. Project Report. Research and Special Programs Administration. Washington DC: Midwest Transportation Consortium.

Isife, Theresa and R.O. 2012. Emergency Management and Disaster Risk Reduction as Tools for Sustainable Development in Nigeria. Journal of Environmental Management and Safety. Institute for Development Studies, Enugu Campus. University of Nigeria. Nsukka.

Jahre, M. and Jensen, L.M. 2010. Coordination in Humanitarian Logistics Through Clusters; International Journal of Physical Distribution and Logistics Management.

Jahre and Heigh. 2008. Does the Current Constraints in Funding Promote Failure in Humanitarian Supply Chains? An International Journal Vol. 9 - N°2 – 2008. Supply Chain Forum.

Jay B. Barney, Valentina Della Corte, Mauro Sciarelli and Asli Arikan. 2012. The role of resource-based theory in strategic management studies: managerial implications and hints for research.

Jon Maether. 2010. The Role of Global Logistics Companies in Disaster Relief Efforts: An investigation in to Benefits, Challenges and Critical Success factors of Cross-Sector Collaboration. A Thesis presented in Partial Fulfillment of the Requirement for the Degree of Master of Logistics and Supply Chain Management .Massey University, Albany, New Zealand.

Ichoua,S. 2010. Humanitarian Logistics Network Design for an Effective Disaster Response. Proceedings of the 7th International ISCRAM Conference. [Available] at https://commons.erau.edu/cgi/viewcontent.cgi?article=1004&context=ww-leadership [Accessed on 12 Dec 2018].

International Federation of Red Cross and Red Crescent Societies. 2018. What is a disaster? [Available] at https://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/ [Accessed on 12 Dec 2018].

International Federation of Red Cross and Red Crescent Societies. 2009. World Disasters Report 2009. Focus on Early Warning, Early Action, Geneva, Switzer-land.

Kaplan, R. S. & Norton, D. P. 1996. The Balanced Scorecard: Translating Strategy into Action. Boston. MA: Harvard Business School Press.

Keegan, D.P, Eiler, R.G and Jones C.R. 1989. Are your performance measures obsolete? Management Accounting. Vol. 70 No. 12 pp 45.

Koray Özpolat. 2012/2013. Redesigning the Upstream Emergency Relief Supply Chain. An Empirical Assessment. William A. Orme Working Paper Series. Ballentine Hall Quadrangle University of Rhode Island, College of Business Administration.

Kovács and Spens. 2007. Humanitarian Logistics in Disaster Relief Operations. In: International Journal of Physical Distribution & Logistics Management 37 (2). pp. 99–114.

Kovács and Spens. 2009. Identifying Challenges in Humanitarian Logistics. International Journal of Physical Distribution & Logistics Management. Vol. 39 Issue: 6. pp.506-528.

Kumar and Havey. 2013. Before and After Disaster Strikes: A relief Supply Chain Decision Support Framework . Int. J. Production Economics 145 (2013) 613–629. Department of Operations and Supply Chain Management. Opus College of Business. University of St. Thomas.

Kunz, N. & Reiner,G. 2012. A meta-analysis of humanitarian logistics research. Journal of Humanitarian Logistics and Supply Chain Management, 2(2), 116 – 147.

Larrea, O. 2013. Key Performance Indicators in Humanitarian Logistics in Colombia. Corporación Universitaria Minuto de Dios. Bello. Colombia. 6th IFAC Conference on Management and Control of Production and Logistics. The International Federation of Automatic Control September 11-13, 2013. Fortaleza, Brazil.

Lee, H. and Zbinden, M. 2003. Marrying Logistics and Technology for Effective Relief. Forced Migration Review. No. 18. pp. 34-35.

Lindenberg, M. and Bryant, C. 2001. Going Global: Transforming Relief and Development NGOs. Kumarian Press. Bloomfield. CT.

Logistic World. 1998. What is logistics? Available at http://www.logisticsworld.com/logistics. [Accessed 12 Dec 2018].

Long, D.C. and Wood, D.F. 1995.The logistics of famine relief. Journal of Business Logistics. Vol. 16 No. 1. pp. 213-229.

Lynch, R. L. & Cross, K. F. 1991. Measure Up! Yardsticks for Continuous Improvement. Basilblackwell. Oxford.

Malcolm E. Baird. 2010. The “Phases” of Emergency Management. Background Paper. Intermodal Freight Transportation Institute (IFTI) University of Memphis. Vanderbilt Center for Transportation Research (VECTOR).

Maon, Lindgreen and Vanhamme. 2008-2009. Cross-Sector Collaboration for Disaster Relief Supply Chain Enhancement: Mingling Corporate Expertise with Humanitarians' Willpower. IAG-Louvain School of Management Working Paper.

Melkamu Beyene. 2018. The External Factors that Affect the Performance of Humanitarian Logistics in Amhara National Regional State, Ethiopia. International Journal of African and Asian Studies www.iiste.org ISSN 2409-6938 An International Peer-reviewed Journal Vol.44, 2018.

Mebrahtom Tesfay 2016. The Effect of Supply Chain Management Challenges on the Performances of Humanitarian aid Organization: The Case Study of Addis Ababa City Administration. Addis Ababa University, Addis Ababa, Ethiopia.

M.Howden. 2011. How Humanitarian Logistics Information Systems can Improve Humanitarian Supply Chains: A view from the field. 6. International ISCRAM Conference, Gutenberg, Sweden.

Ministry of Social Solidarity Secretary of State for Social Assistance and Natural Disasters 2008. National Disaster Management Directorate, pp ii.

Moidunny, K. 2009. The effectiveness of the National Professional Qualifications for Educational Leaders (NPQEL) (Unpublished doctoral dissertation), Bangi: The National University of Malaysia.

Moore, M.H. 2000. Managing for Value: Organizational Strategy in For-profit, Nonprofit, and Governmental Organizations. Nonprofit and Voluntary Sector Quarterly. Vol. 29 No. 1. pp. 183-204.

Munguti 2016. Supply Chain Management Practices in Disaster Response among International Humanitarian Organizations In Kenya. A Research Project Submitted to the School of Business in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration, University of Nairobi.

Mulugeta Abebe 2009. Emerging trends in disaster management and the Ethiopian Experience: Genesis, Reform and Transformation. Department of Public Administration and Development Management. Addis Ababa University. Vol.1 No.2.

Neely, A., Gregory, M. and Platts, K. 1995. Performance Measurement System Design: a Literature Review and Research Agenda. International Journal of Operations & Production Management. Vol. 15 No. 4, pp. 80-116, reprinted in International Journal of Operations & Production Management, Vol. 25 No. 12, 2005. pp. 1228-63.

Neely, A., Adams, C. & Crowe, P. 2001. The Performance Prism in Practice. Measuring Business Excellence. Vol. 5.2. S. pp. 6 - 1 2. Issn 1368-3047. Press. Croton-on-Hudson, Ny.

NFPA - National Fire Protection Association. 2007. NFPA 1600. Standard on Disaster Emergency Management and Business Continuity Programs 2007 Edition. Quincy, Massachusetts: National Fire Protection Association.

NGA - National Governors' Association Center for Policy Research. 1979. Comprehensive Emergency Management: A Governor's Guide. Washington: National Governors' Association.

Nisha de Silva, F. 2001. Providing Special Decision Support for Evacuation Planning: A challenge in Integrating Technologies. Disaster Prevention and Management. Vol. 10 No. 1. pp. 11ff.

OCHA- United Nation Office for the Coordination of Humanitarian Affairs. 2019. Heads-of-Organiztaions_Gedeo-West-Guji[Available]at https://www.humanitarianresponse.info/en/operations/ethiopia/document/heads-organiztaions-gedeo-and-west-guji [Accessed on 22 May 2019].

Oloruntoba, R. 2005. A wave of Destruction and the Waves of Relief: Issues. Challenges and Strategies. Disaster Prevention and Management. Vol. 14 No. 4. pp. 506-21.

Oloruntoba and Gray. 2006. Humanitarian Aid: and Agile Supply Chain? In: Supply Chain Management. An International Journal 11 (2). pp. 115–120.

Oloruntoba and Gray. 2009. Customer service in emergency relief chains. An International Journal of Physical Distribution & Logistics Management Vol. 39 No. 6. 2009 pp. 486-505.

O'Neill, M. and Young, D.R. 1988. Educating Managers of Nonprofit Organizations. Praeger Publishers. New York. NY. pp. 1-21.

Owusu-Kwateng , Abdul Hamid and Debrah. 2017. Disaster Relief Logistics Operation: An Insight from Ghana. International Journal of Emergency Services. Vol. 6 Issue: 1. pp.4-13,

Persson, F. and Olhager, J. 2002. Performance Simulation of Supply Chain Designs. International Journal of Production Economics. Vol. 77 No. 3. pp. 231-45.

Rahel Tarekegne. 2016. Challenges of Humanitarian Logistics Performance in International Non-Governmental Organizations in Ethiopia. A Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Richardson, D., de Leeuw, S. and Vis, I. 2010. Conceptualizing Inventory Prepositioning in the Humanitarian Sector. in Camarinha-Matos. L., Boucher, X. and Afsarmanesh. H. (Eds). Collaborative Networks for a Sustainable World (IFIP Advances in Information and Communication Technology). Springer. Boston. MA. Vol. 336. pp. 149-156.

Robinson, E. P., & Satterfield, R. K. 1998. Designing Distribution Systems to Support Vendor Strategies in Supply Chain Management. Decision Sciences, 29(3), 685-706.

Robert E. , Dianne H. , JoeS B. and R. Kelly. 2011. Jar Journal of Humanitarian Logistics and Supply Chain Management. Vol. 1 No. 2. pp 114-13.

Russel, T. 2005. The Humanitarian Relief Supply Chain: Analysis of the 2004 South East Asia Earthquake and Tsunami. Master Thesis of Engineering in Logistics. MIT Center for Transportation and Logistics. Cambridge. MA.

Samii, R. and Van Wassenhove, L. 2003. The United Nations Joint Logistics Centre (UNJLC): The Genesis of a Humanitarian Relief Coordination Platform. INSEAD Case Study 02/2003-5093.

Schulz and Blecken. 2010. Horizontal Cooperation in Disaster Relief Logistics: Benefits and Impediments. International Journal of Physical Distribution & Logistics Management Vol. 40 No. 8/9, 2010 pp. 636-656.

Scott, J. 1991. Social network analysis: A handbook. London, UK: Sage.

Striteska & Spickova. 2012. Review and Comparison of performance Measurement Systems Journal of Organizational Management Studies. Vol. 2012 (2012), DOI:10.5171/2012.114900.[Available]at www.ibimapublishing.com/articles/JOMS/2012/114900/114900.pdf [Accessed on 13 Jan 2019].

Tigist Yigezu. 2016. Challenges of Humanitarian Supply Chain Management; In the Case of National Disaster and Risk Management Commission of Ethiopia. Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Thomas. A. 2003b. Why logistics? In: Forced Migration Review 18, No. 4. pp 4. [Available] at https://www.fmreview.org/sites/fmr/files/FMRdownloads/en/logistics/thomas.pdf [Accessed on 12 Dec 2018].

Thomas, A. 2003. Humanitarian Logistics: Enabling disaster response. White paper. Fritz Institute.SanFrancisco.CA.[Available]at http://www.fritzinstitute.org/pdfs/whitepaper/enablingdisasterresponse.pdf [Accessed on 12 Dec 2018].

Thomas, A. & Kopczak, L. 2005. From logistics to supply chain management: The path forward in the humanitarian sector. white paper. Fritz Institute. San Francisco. CA., pp 2.

Tomasini,R. M. & Van Wassenhove,L.N. 2009. From Preparedness to Partnerships: Case study research on humanitarian Logistics. International Transactions in Operational Research, 16(5), 549-559.

Torre, L.de.la, Dolinskaya, I. and Smilowitz, K. 2011. Disaster relief routing: Integrating research and practice. Socio-Economic Planning Science. Vol. 46 No. 1. pp. 88-97.

Trunick, P.A. 2005. Delivering Relief to Tsunami Victims. Logistics Today. Vol. 46. No. 2. pp.1–9.

United Nation Office for Disaster Reduction. 2017. Terminology on Disaster Risk Reduction [Available] at https://www.unisdr.org/we/inform/terminology [Accessed on 12 Dec 2018].

United Nations Office for the Coordination of Humanitarian Affairs. 2018. Humanitarian Bulletin Ethiopia Issue 65| 01-14 October 2018.

United Nations Office for the Coordination of Humanitarian Affairs. 2018. Humanitarian Response Plan Snapshot Ethiopia. [Available] at https://reliefweb.int/report/ethiopia/ethiopia-2019-humanitarian-response-plan-hrp-snapshot-march-2019 [Accessed on 16 June 2019]

United Nation Development Program (UNDP). 2006. Logistics: Disaster Management Training Program. 1st ed. UNDP. NY.

Van Wassenhove, Luk N. 2006. Blackett Memorial Lecture Humanitarian Aid Logistics: Supply Chain Management in High Gear. In: Journal of the Operational Research Society 57. pp. 475–489.

Van Wassenhove, L.N. 2006. Humanitarian Aid Logistics: Supply Chain Management in High Gear. Journal of Operational Research Society. Vol. 57 No. 5. pp. 475-89.

Van Wassenhove. 2012. Humanitarian Logistics and Supply Chain Management: A. Cozzolino, Humanitarian Logistics, Springer Briefs in Business, Vol. 2 pp 5-14.

Van Wassenhove, L N, Tomasin,R.M., and Stapleton,O. 2008. Corporate Responses to Humanitarian Disaster Trusted Insights for Business World Wide: The Mutual Benefit of Private Humanitarian Cooperation.

Walton. 2011. Defining Fast: Factors Affecting the Experience of Speed in Humanitarian Logistics: International ISCRAM Conference – Lisbon, Portugal.

Waters, Donald. 2003. Global Logistics and Distribution Planning. Strategies for Management.4th ed. Kogan Page. London.

Wenlin Liu, Anupreet Sidhu, Amanda M. Beacom, and Thomas W. Valente. 2017. Social Network Theory. University of Southern California, USA.

Yurdugül, H. 2008. Minimum Sample Size for Cronbach's coefficient alpha: A Monte-Carlo study. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 35, pp. 397-405.

Questionnaire

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

Questionnaire to be filled by Employees of the National Disaster and Risk Management Commission

Dear Participant,

This questionnaire is developed for an academic purpose, planned for the collection of primary data that will be used to examine practice and challenge of humanitarian relief operation which affect the performance of NDRMC, for the partial fulfillment of the requirements for the Degree of Master of Arts in Logistics and Supply Chain Management from the Addis Ababa University, School of Commerce. The information obtained from this questionnaire will be kept confidential and will not be used for any other purposes. No need of writing your name and you are kindly requested to answer to the questions freely and openly.

Thank you for your cooperation!!!

SelamawitAssefa
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Part One. Demographic Profile of the Respondent

1. Gender

A. Female ☐ B. Male ☐

2. Age

A. 20 -30 Years Old ☐ C. 41-50 Years Old ☐

B. 31-40 Years Old ☐ D. Above 50 Years Old☐

3. Educational Qualification

A. Grade 12 completed☐ C. First Degree ☐

B. College Diploma ☐ D. Second Degree and above ☐

4. Years stayed at the organization

A. 1- 5 Years ☐ C. 11-15 Years ☐ E. Over 20 Years

B. 6-10 Years ☐ D. 16- 20 Years ☐

5. You're Directorate/Department:

A. Resource Mobilization & Fund Administration Directorate☐

B. Logistics Directorate☐

C. Disaster Reduction Directorate☐

D. Response & Rehabilitation Directorate ☐

E. Adama Main Warehouse☐

F. Early Warning & Emergency Response Directorate☐

6. How long have you been working in humanitarian sector/relief operation

A.1- 5 Years ☐ C. 11-15 Years ☐ E. Over 20 Years ☐

B. 6-10 Years ☐ D. 16- 20 Years

Part Two: Humanitarian Supply Chain Practice and its Challenge

Section One: Phase of Humanitarian Relief Operation and its practices.

With regard to humanitarian supply chain management practices of your organization, please tick/mark the appropriate box to indicate the extent to which you agree or disagree with each statement as per rating; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree

I. Practices of Humanitarian Relief Operation During the Disaster Management Phases

No	Phase of Relief Operation	Practice of Humanitarian Relief Operation	1	2	3	4	5
7	Mitigation	There is plan of action for eliminating or reducing the probability of occurrence of rapid onset disaster					
8		There is a process for developing a plan of action to mitigate disaster					
9		There is adequate human resources available for disaster management					
10		There is a plan of action to create awareness of disaster risk factors at the community level and public information projects					
11		There is budget allocated for mitigation for rapid onset relief operation					
12	Preparedness	There exist training for response personnel/professional					
13		There exist personal preparedness, focuses on preparing equipment and procedures for use when rapid disaster occurs					
14		There exists a plan of action for disaster management in relief operation					
15		There is procurement of relief items before the occurrence of a disaster					
16		There exist evacuating plan of action for disaster threatened populations					
17		There exist a programs and procedures for mutual assistance between different humanitarian actors					
18		There exist collaboration and coordination between various players in humanitarian relief operation					
19		The procurement of relief items is done locally to achieve effectiveness and efficiency					
20		There is a good inventory/ stock management processes					
21		There is a well-established processes for handling, sorting and packaging relief items for storage or distribution to beneficiaries					
22	Response	There exist initial assessments for a relief operation					
23		There exist comprehensive assessments for a relief operation					

No		**Practice of Humanitarian Relief Operation**	**1**	**2**	**3**	**4**	**5**
24	Response	Within 72 hours after rapid onset disaster occurrence, initial assessment teams reached to the disaster location and logistics information are collected and communicated to the head office					
25		There is action plan to provide the exact items requested to those who truly need them at minimum cost as quickly as possible					
26		Within 72 hours response are given to the affected community					
27		There exist a plan of action for activating the emergency operations center within 72 hours of the occurrence of a disaster					
28		There exist emergency rescue and search plan					
29		There exist increasing security operations during the occurrence of rapid onset disaster					
30	Recovery	There exist plans to identify needs and define resources.					
31		There exist plans provide housing, restore security, amend infrastructure and promote community restoration.					
32		There is a plan of action to incorporate mitigation measures and techniques.					
33		There is a procedure of keeping records of past or pervious disasters					
34		There exist plan to evaluate the relief operation and to identify lessons learned.					
35		There is a plan to develop initiatives to mitigate the effects of future incidents					
36		There is a good inventory(stock) management processes					
37		There is budget allocated for recovery, reconstruction and rehabilitation					

Section Two: Challenges Affecting the Performance of Humanitarian Relief Operation

With regard to challenges affecting the performance of humanitarian relief operation management of your organization, please tick/mark the appropriate box to indicate the extent to which you agree or disagree with each statement as per rating; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree

No	**Phase of Relief Operation**	**Challenges of Humanitarian Relief Operation**	**1**	**2**	**3**	**4**	**5**
38	Mitigation	There is shortage of qualified human resources availability for relief operation					
39		There is fund rising problem for a relief operation in mitigation stage					
40		There is inadequate use of information technology for a relief operation in mitigation stage					

No	Phase of Relief Operation	Challenges of Humanitarian Relief Operation	1	2	3	4	5
41	Mitigation	There is inventory management practice problem during mitigation stage					
42		There is lack of coordination and collaboration among players in relief operation during mitigation stage					
43		There is unstable security existence in the disaster affected area during mitigation stage					
44		There is inadequate infrastructure in performing relief operation during mitigation stage					
45		There is social barrier which affect the relief operation during mitigation stage					
46	Preparedness	There is poor infrastructure in the areas of operation during preparedness stage					
47		There is inadequate funding for relief operation during preparedness stage					
48		There is inadequate use of information technology for relief operation during preparedness stage					
49		There is poor inventory management practice for relief operation during preparedness stage					
50		There is lack of coordination and collaboration among players in relief operation during preparedness stage					
51		There is unstable security existence in the disaster affected area during preparedness stage					
52		There is shortage of qualified human resources availability during preparedness stage					
53		There is social barrier which affect the relief operation during preparedness stage					
54	Response	There is poor infrastructure in the areas of the relief operation in response stage					
55		There is fund rising problem in the relief operation during response stage					
56		There is inadequate use of information technology in the relief operation during response stage					
57		There is poor inventory management practice problem in the relief operation during response stage					
58		There is unstable security existence in the disaster affected area during response stage					
59		There is shortage of qualified human resources availability during response stage					
60		There is lack of coordination and collaboration among players in relief operation during response stage					
61		There is social barrier which affect the relief operation during response stage					
62	Recovery	There is inadequate funding for a disaster recovery operation					
63		There is inadequate use of information technology during recovery phase of stage of relief operation					
64		There is poor inventory management practice for relief operation during recovery stage					
65		There is shortage of qualified human resources during recovery stage of relief operation					
66		There is lack of coordination and collaboration among players in relief operation					
67		There is unstable security existence in the disaster affected area in recovery stage					
68		There is social barrier which affect the relief operation during recovery stage					
69		There is poor infrastructure in the areas of the relief operation during recovery stage					

Interview Question for Directorate of the National Disaster and Risk Management Commission

1. What is the role of the directorate on the phase of the relief operation namely mitigation, preparedness, response and recovery?
2. What are the challenges faced by the directorate during the four phase of the disaster management cycle?
3. How do you see the humanitarian supply chain practice of the National Disaster and Risk Management Commission?
4. How the National Disaster and Risk Management Commission evaluate its performance and what are the major factors affecting its performance in a relief operation?