CHALLENGES AND PRACTICES OF DISASTER PREPAREDNESS AND ITS EFFECT ON HUMANITARIAN LOGISTICS PERFORMANCE OF THE NATIONAL DISASTER RISK MANAGEMENT COMMISSION OF ETHIOPIA

By

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DECLARATION

I the undersigned declare that this thesis entitled Challenges and practice of disaster preparedness and its effect on humanitarian logistics performance of National Disaster Risk Management Commission of Ethiopia is my original work and has not been presented in any other university or collage for the award of degree and that all sources of materials used for the thesis have been dully acknowledged.

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ABSTRACT

Disasters hit every part of the globe (developing and developed), causing deaths and destructions. The impact of disasters is growing over time. The number of natural disasters has increased in the last decades and is expected to increase by a further multiple of five over the next 50 years. The types of disasters and level of destruction also changed from time to time. Therefore, effective preparedness activities play a significant role in rescuing people in such situations. In recent years, preparedness challenges become predominant and needs effective strategy to combat governments have come under immense pressure from the donors, pledging millions in aid and goods, to prove that they are meeting their objectives in an efficient and effective way. This study, therefore, conducted to identify the challenges of preparedness phase of disaster management Specifically, the study had aimed at assessing the disaster preparedness practices of NDRMC of Ethiopia, identifying preparedness challenges facing the commission in emergencies and identifying preparedness practices that can be adopted to overcome the challenges and to evaluate logistics performance of national disaster risk management commission in terms of comprehensiveness, causal orientation, horizontal and vertical integration, internal comparability and usefulness perspective Descriptive research design applied and data was collected from experts who involved in disaster risk reduction, disaster response and rehabilitation early warning, logistic and warehouse professionals. This thesis examine the management of disasters by disaster risk management commission in the area of disaster preparedness in And the employees were randomly selected the respondent in each directorate from Addis Ababa main office and Adama district warehouse. The analysis was done by using Statistic Package for Social Science (SPSS) and presented using descriptive statistic, Likert scale, mean scores, and standard deviation and presented in the form of tables' frequency and percentages. From the findings, challenges facing the commission were stated. The result of the study puts forth a simple clue for preparedness of disaster during relief operations and examines why governments and other humanitarian organization should considered their use. And finally underpinned conclusions and recommendations for future actions are stated.

Key Word: Disaster preparedness, Humanitarian logistics, Logistics, Ethiopia.

Abbreviations

WFP: World Food Program

NDRMC: National Disaster Risk Management Commission

IFRC: International Federation for Red Cross

NGO: Non-Governmental organizations

DOD: US department of Defense

DRR: Disaster Risk Reduction

UN: United Nations

EW: Early Warning

PAHO: Pan American Health Organization

UNJLC: United Nations Joint Logistics Centre

HR: Human Resource

CRED: Centre for Research on the Epidemiology of Disasters

Table of Contents

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

List of Tables and Figures Page

Figure

CHAPTER ONE

INTRODUCTION

This is a thesis on practices and challenges in disaster preparedness of National Disaster Risk management commission of Ethiopia. This chapter presents the background, problem statement research question objectives, scope, and organization of the study on disaster preparedness, humanitarian logistics and related concepts.

1.1 Background of the study

Disasters hit every part of the globe (developing and developed), causing deaths and destructions. Hurricanes, fire, earthquake, tsunami, flood, drought, volcanic eruptions, landslides, cyclones, wars, oil spills, acts of terrorism, just to name a few, are the natural and man-made disaster events that resulted in untold suffering to the millions of people worldwide. Apparently, most of the developing countries bear the brunt of natural disaster losses. Because of the considerably low coping capacity, physical, social and economic vulnerability developing countries are suffering more from disasters than developed ones. Globally, disaster losses have shown an increasing trend over the past decade.

To mitigate their negative impacts, in particular humanitarian organizations put a lot of effort into helping nations and people to recover from disasters by providing relief commodities. Responding adequately to a disaster is difficult due to highly complex and uncertain nature. Flexible but efficient supply chains are needed, which makes high demands on procurement operations. Within disaster relief logistics, procurement accounts for 65 % of total expenditures. Despite its significance, literature does not specifically focus on problems related to disaster relief procurement, which creates the need to examine this topic further, from theory as well as from practice. **(**Berger and Emmanouil, 2013)

The impact of disasters is growing over time. The number of natural disasters has increased in the last decades and is expected “to increase by a further multiple of five over the next 50 years” (Thomas and Kopczak, 2007). According to the CRED International Disaster Database, the number of disasters affecting the world has grown from “around 220 per year in the mid-1990s, to a current annual figure of some 350- 400” (Tatham and Houghton, 2011).

Humanitarian relief 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 (Thomas and Kopczak, 2005). Indeed, logistics serves as a bridge between disaster preparedness and response (Thomas, 2003); therefore, humanitarian logistics is crucial to the effectiveness and speed of response for major humanitarian programs.

The ultimate goal of humanitarian relief logistics is to deliver the right supplies in the right quantities to the right locations at the right time, so save lives and reduce human suffering within given financial constraints (Beamon and Balcik, 2008). Pre-positioned warehouses at strategic locations are essential for this purpose to ensure the availability of supplies when required and to facilitate faster responses (Balcik*et al.,* 2010).

Disaster management is often described as a process composed of several stages, even though there is disagreement among authors as to the structure and nomenclature of the stages (Kovács and Spens, 2007). However, for the most part, the literature concurs on the existence of the following phases: Mitigation, Preparation, Response, and Reconstruction.

These four phases constitute the disaster management cycle. With the focus on logistics and supply chain management, the process that involves logisticians mainly concerns the preparation, response and reconstruction; together these constitute humanitarian logistics stream. (Altay and Green, 2006)

The humanitarian logistics and relief chain structure includes pre-disaster procurement, stock pre-positioning, post-disaster procurement and transportation. Consideration must be given to the main issues in the humanitarian logistics operations, which are Local procurement is quick, but can cause price increases. International procurement is slower and can also cause destructive price reductions. In-kind donations can also cause chaos and congestion, Pre-positioning stock quickens responsiveness but is costly in terms of inventory costs, Transportation for the last mile has been reported to be difficult, due to limited transportation resources, damaged infrastructure and the large volumes that can be required., The ability to track and trace the flow of goods through a commodity tracking system., Contingency planning and crisis management teams to simulate scenarios and forecast potential changes in design or product, Collaborative relationships with their partners with clear definitions of roles and tasks, Setting up prepositioned goods and buffer inventories., Flexible products and designs (such as kits), and Pre-negotiated agreements with frequently exchanging suppliers (Balcik, *et,al,* 2010).

1.2 Problem statement

In 2016 Ethiopia has experienced one of its worst droughts over the last decades and the increased humanitarian needs are putting a strain on the existing logistics infrastructure capacity. Based on the assessment by WFP in March a number of logistics constrains from port of arrival to final delivery point are making it very challenging for the government of Ethiopia and humanitarian actors to deliver an effective and efficient response (WFP, 2016)

The government of Ethiopia is leading the response to the drought and the National Disaster Risk Management commission has overall responsibility for coordinating the delivery of human assistance. The logistics cluster has been activated to support the response and identify logistics gaps and bottlenecks propose mitigating measures augment the logistics coordination and information management capacity. (WFP, 2016)

The large amount of incoming aid has also been putting a strain on the existing storage capacity, and there is need for additional warehouses and temporary storage facilities. Lastly there is a need to augment staffing, both with expert technical staff and augmentation across all administration levels in order to deal with the current peak requirements. (WFP report, 2016)

For many years, a great deal of efforts and resources were wasted on post-disaster response, recovery and rehabilitation rather than on pre-disaster preparedness and prevention measures. This has invariably caused immense loss of lives and human dislocation. Although the system of disaster management in Ethiopia seems to benefit from a paradigm shift in the field and lessons learned from several decades of experience, and there are still salient problems that disaster preparedness has to reckon with. Active partnership and collaborative relationship among actors in disaster management community appears to be lacking.

Moreover, almost all actors in the disaster management community have invariably been preoccupied with and investing heavily in disaster response. In other words, actors in the realm of disaster management in Ethiopia pay little or no attention to other phases (namely, mitigation, preparedness and rehabilitation and reconstruction) to which critical by providing. More generally, there has been little research, and even probably less has been written, on the problematic of the disaster management system in Ethiopia. This paper attempts to fill this gap

Due to urgency and the high stakes involved, humanitarian agencies may be more comfortable assuming a premium to get the right goods to the right place at the right time.

Early on in a disaster, goods may be flown in from abroad as quickly as possible, despite the expense. Cutter (1996) Later on (the first 90–100 days), the response becomes a mixture of being effective in helping victims and getting it done at a reasonable cost. At this stage, humanitarians might start looking at buying more relief goods locally. (Tomasini and Wassenhove, 2009)

Supply chain studies show that significant amounts of time and resources (sometimes up to 95%) are wasted waiting for goods to arrive on the scene (at customs, in warehouses, etc.). In a field like disaster management, a reduction of this percentage could be turned into lives saved. (Tomasini and Wassenhove, 2009)

Studies in disaster preparedness areas are limited and have not been widely developed. To the best of the researcher knowledge, almost no detail research prevails regarding the major changes that strain the preparation for disaster which has a clear impact on response operations. Except those few researches conducted by Emerging trends in disaster management and the Ethiopian experience: genesis, reform and transformation Mulugeta Abebe2009 and Disaster Preparedness and Response Knowledge, Attitudes, and Training Needs of Health Professionals in Southwest Ethiopia, 2014 Prof. Kifle Woldemichael Hajito Therefore, the researcher's inability to find such studies in this sector is certainly the basic reasons for conducting the present study. In this study, the researcher tries to explore the main challenges that strain logistics preparedness activities with regards to designing the prepositioned network collaboration prepositioned warehouse locations and relief, establishing the communication plan, and building the competencies of disaster relief workers and volunteers

1.2.1 Basic research question

What are the major challenges and practices of National Disaster and Risk management Commission of Ethiopia disaster preparedness phase of disaster management?

1.2.2 Sub research questions

1. What are the practices and challenges of selecting training of relief human resource at NDRMC of Ethiopia?
2. How knowledge management is practiced and forwards the humanitarian relief operations?
3. What are the challenges in logistics preparation activities?
4. What are major challenges in preparing financial resource for relief operations?

1.3 Research Objective

The general objective of this study is to assess practices and challenges in preparedness phase of NDRMC in disaster management

1.3.1 Specific Objectives

Specifically the study aims to:

- ✓ To examinethe practices and challenges of selecting training of relief human resource at NDRMC of Ethiopia.
- ✓ To assess the practice and challenges for stockpiling of relief items.
- ✓ To determine the practice and challenges for training of relief personnel for relief operations.
- ✓ To identify the major challenges in preparing financial resource for relief operations.

1.4 Scope of the study

The geographic scope of this study is limited to the case of National Disaster Risk management commission operations located in Addis Ababa and Oromia region Adama warehouse. Actually the NDRMC has 3 district warehouses located Adama, Diredawa, and Kombolcha but due to the geographically Diredawa and Kombolcha warehouse are too far from Addis Ababa and didn't include in the study. The topical scope of this study is limited to the humanitarian logistics preparedness components including collaboration and integration with logistics providers and technology utilization in humanitarian relief operations, warehouse prepositioning, pre-positioned emergency response stockpiles The prioritisation, transport planning, reception and distribution of emergency supplies.

1.5 Limitation of the study

In common with all research this study suffered from a number of limitations. The study was conducted in one organization and district and it is difficult to generalize based on the results? Disaster preparedness practices of single organization, it is difficult to single out its contribution to existing problems. An emergency preparation has been blamed for many problems, and further detailed analysis is required to determine its contribution. Getting basic information about preparation activities for emergency response was sensitive, and there is a danger of not getting the right responses. In this case, some respondents were reluctant to give the correct information on their economic situation, and based on their experiences of the projects they have been affiliated to previously their responses may have been formed according to an expectation of the provision of support. The study was based on primary data

which has been collected through self-administered and interview questioner by employee of NDRMC. Due to the complex range of actors involved in disaster relief pertains it is not possible with in this study to illustrate the complete scope of practices and circumstance that prevail in the real life. However, efforts were made to get the required information by crosschecking responses using different data collection methods.

1.6 Definition of Terms

Disaster: defined as a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses, which exceed the ability of the affected community/society to cope using its own resources (UN, 2002). (Paton and Johnston, 2001 and Alexander 1997) define disasters as those events that displace the structural, economic, organizational, cultural and spiritual well-being of communities by destroying their means of existence. Disaster could either be human-induced or natural occurrences. Disasters are natural if they just happen without being induced by humans like tsunamis, volcanoes, earthquakes, storms and floods.

Preparedness: defined as the knowledge, capabilities and actions of governments, organizations, community groups, and individuals ‘‘to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions (Department of Defence (DOD), 2002).

Logistics : Logistics mean different things to different people; to the military, it is the science of planning and carrying out the movement and maintenance of forces of military operations that deal with the design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of material (Department of Defence (DOD), 2002).

1.7 Organization of the research paper

This study organized into five chapters. Chapter one deals with background of the study, statement of the problem, objectives, and research questions, scope of the study, significance of the study, delimitations and limitation of the study and Definition of key terms. Chapter two is mainly concerned with review of literatures. It comprises theoretical and empirical literatures, conceptual underpinning. Chapter three focuses on research methodology which comprises rationale for the selection of research area, study design and sampling techniques, data collection methods and analysis. Chapter four presents results and discussion of data. Finally chapter five presents summary of the research finding, concluding remarks and recommendations for future action.

Chapter Two

1. Review of Related Literature

Introduction

This chapter discuss about related literature reviews consists of theoretical framework conceptual framework and identified literature gap of the study, issues like disaster preparedness logistics and emergencies logistics planning and preparedness supply chain logistics and humanitarian logistics performance indicator also reviewed from different perspective.

2.1 Theoretical Literature Review

Behavioral Theory Disaster preparedness is one of the basic components of DRR. Preparedness identifies the steps necessary to increase the likelihood of avoiding or minimizing hazard effect consequences. Preparedness strategies are developed through a hazard identification and mapping, vulnerability analysis and risk assessment with behaviour change strategies being used to inform how the outcome of this process can translate into protective actions.(Altay & Green, 2006) Effective preparedness reduces vulnerability, increases mitigation level, enables timely and effective response to a disaster event and so shortens the recovery period from a disaster, and increases community resilience (Ejeta and Paton, 2015).

Disaster and emergency preparedness efforts focus predominantly on human behaviours. Human behaviours derive from diverse factors that range from people's risk perception to lessons from direct and indirect past experiences of disaster events and emergencies through to interaction between individuals and environment. (Altay & Green, 2006) These factors interact to influence the nature and level of people's disaster and emergency health preparedness level It is also clear from these studies that people within a given area, and who thus generally face comparable levels of risk, differ with regard to the nature and level of their preparedness and how people make choices about how to manage that risk. These efforts focus on how past experiences can be encapsulated in variables whose influence on behaviour can be empirically tested. For example, people's experience in successfully dealing with challenging events in the past can be captured using scores on a measure of self-efficacy. (Ejeta and Paton, 2015).

To be prepared for a disaster is one of the most difficult issues in disaster management, this because of the no predictability of disasters (Altay & Green, 2006). If a disaster occurs, the

governmental capabilities are at test to work as effective as possible to reduce the risks and devastating impact of the disasters (Schenker Wicki*etal*., 2010).

According to (Altay & Green, 2006) it is necessary to invest in recruiting personnel for the emergency services that will respond to the location of the disaster. Also the need of a budget to acquire vehicles and equipment is a preparative measure to get quick and good responds to a disaster.

Next to this is the need of early monitoring and warning systems a must to deal with catastrophic disasters. By setting up an early monitoring and warning system is costly and very demanding; nevertheless can a good warning system have great capabilities to reduce the risks of disasters with catastrophic outcome (Schenker Wicki *etal.*, 2010).

Previous study made on the NDRMC of Ethiopia (Tigist Yigezu, 2016) shows that there is plan of action for preparedness before any disaster occurrence 96.3 % of the respondents that there is a plan of action before any disaster happened the organization conducts initial and comprehensive assessment for logistic information needed for emergency response operations.

2.2 Preparedness challenges

The onset of a disaster triggers cries of help that demand immediate response – the right goods, at the right time, to the right place, and distributed to the right people. As such, we can consider the onset of the disaster response (implementation of strategy when it exists) as the beginning of five essential flows: materials, information, finance, people, and knowledge (Tomasini and Wassenhove, 2009).

2.2.1 Materials

Because of the urgency and the high stakes involved, humanitarian agencies may be more comfortable assuming a premium to get the right goods to the right place at the right time. Early on in a disaster, goods may be flown in from abroad as quickly as possible, despite the expense. Cutter (1996) Later on (the first 90–100 days), the response becomes a mixture of being effective in helping victims and getting it done at a reasonable cost. At this stage, humanitarians might start looking at buying more relief goods locally. (Tomasini and Wassenhove, 2009).

Supply chain studies show that significant amounts of time and resources (sometimes up to 95%) are wasted waiting for goods to arrive on the scene (at customs, in warehouses, etc.). In

a field like disaster management, a reduction of this percentage could be turned into lives saved. (Tomasini and Wassenhove, 2009).

But not every type of good is needed in every disaster, and thus a lot of unsolicited donations may become a burden to the system. Therefore it is important that the flow of goods be monitored and communicated to improve efficiency and efficacy. (Wassenhove, 2006).

2.2.2 Information

Information from this process is needed to identify the pre impact conditions that make communities vulnerable to disaster impacts. Second, information about the disaster impact process can be used to identify specific segments of each community that will be affected disproportionately (e.g., low income households, ethnic minorities, or specific types of businesses). Third, information about the disaster impact process can be used to identify the event-specific conditions that determine the level of disaster impact. Fourth, an understanding of disaster impact process allows planners to identify suitable emergency management interventions. (Cutter, 1996).

Information is very limited at the beginning of a disaster, even if there were good assessments of the area prior to the calamity (which is rarely the case). Early in a disaster it is critical to understand the impact on specific areas and the needs surfacing at different levels. It is essential to design and coordinates the response. Information is critical in designing a supply chain that addresses the needs of the population (water, food, medicines, shelter) and defining the means to meet those needs (warehousing capacity, airport or corridor access, transport capabilities, telecommunications).(Lindell and Prater, 2003).

Information plays a crucial role in disaster management. It is clear that the speed with which the critical information is collected, analysed and distributed by participating agencies will facilitate an effective response and hence more lives can be saved (King, 2005). (Maxwell and Watkins, 2003) also indicated that the emergency preparedness and response stages are driven by information. However, collecting information may be very difficult because of inaccessibility to the affected areas due to the destruction of infrastructure and in some cases the remoteness of disaster-affected areas (King, 2005). Usually a needs assessment is conducted by humanitarian agencies to guide their decisions in a given disaster situation (Darcy and Hofmann, 2003). Effective collaboration between natural disaster response parties including the local population, local government authorities and humanitarian organizations is an essential part of natural disaster management (Oloruntoba, 2005; McEntire, 2002).

(Simatupang*etal*, 2002) indicated that collaboration amongst independent organizations is essential to improve their processes in response to the rapidly changing conditions. However, effective collaboration in humanitarian emergencies is difficult to achieve. The involvement of a vast number of agencies can create obstacles in the coordination efforts at the field level (Pan American Health Organization, 2001). The participating agencies will have their own operating methods and sometimes there is competition amongst them for the limited resources (Long, 1995). The response to a major disaster generally requires the involvement of different national and international agencies (McEntire, 2002). According to (Campbell and Hartnett, 2005), in an emergency situation coordinating the efforts and activities of different national and international organizations requires strong leadership. However, in practice, the various organizations normally tend to work independently (Sommers, 2000).

Smooth coordination and avoidance of duplication of effort relies on information sharing, knowing who will be involved in the disaster response, in what capacity (lead agency, implementing partner, inter-agency coordinator, etc.). (Tomasini and Wassenhove 2009).

2.2.3 Funds

Emergency preparedness and the activities it entails have been articulated clearly by the IASC sub-working-group for preparedness, the UN Office for Disaster Risk Reduction and Development Initiatives (Kellett and Sweeney, 2011). It spans hazard and risk analysis, institutional and legislative frameworks, resource allocation and funding, coordination, information management and communication, contingency, preparedness and response planning, training and exercises, and emergency services, standby arrangements and prepositioning. Structures and funding for conflict preparedness lag significantly behind those that address disasters related to natural hazards (Kellett and Sparks, 2012).

The compelling images emanating from disaster areas are critical to agency fund-raising efforts and the allocation of emergency funds. However, it is naïve to believe that this leads to an equitable distribution on a needs basis In fact; only crises that have great media exposure are able to raise significant funds for an immediate response.

Compounding the challenge is that the public is often quickly fatigued by repeated appeals or distracted by new crises, causing funds for a specific relief operation to dry up earlier than expected. (Wassenhove 2006).

2.2.4 People

Getting the right skill sets to disaster areas is not an easy task either. First, these people need to be available for deployment. During the 2001 earthquakes in El Salvador, as in many other disasters, many of the locally trained staff could not assist as they were themselves victims of the earthquakes. Foreign teams often need to come in to assess and assist in the response. These newcomers will train local and foreign staff for the longer tasks while integrating volunteer sat different levels. These expatriate specialists often leave on a moment's notice for the next crisis. People are also subject to burnout under high physical and emotional demands, working with limited resources in an intense environment. (Tomasini and Wassenhove, 2009).

2.2.5 Knowledge

To plan there is a need for accurate knowledge, for example; it is often assumed that many emergency problems are formed by uncontrollable behaviour of people and panic, research points out this is incorrect (Dynes, 1982; Auf der Heide, 1989). In his research (Auf der Heide, 2005) states: "Many of the problems experienced in planning and responding to disasters seem to be learned over and over again in disaster after disaster". Learning from experience is one thing, but applying this knowledge the next time it is necessary seems a challenge for humanitarian organizations (Wassenhove & Samii, 2002). Competition between organizations and high staff turnover may be the cause of this (Wassenhove, 2005; Weeks, 2007). Wassenhove also thinks that there is a high cross learning potential between humanitarian and private sectors. And (Altay and Green, 2005) note that humanitarians can learn from academic research. Education and training is a major pillar of disaster preparedness (Keeney, 2004; Lai *et al*., 2009; McMahon, 2007; Phillips *et al*., 2006; Tekeli Yeşil, 2006; Wassenhove, 2005). This is because the local community at the scene of the disaster will be the first to carry out help and search and rescue (Auf der Heide, 1996; Lai *et al*., 2009; Thomas, 2006). "It is always better to use a local instead of a foreigner who only speaks Basic English, let alone the local language" (Wassenhove, 2005,) Long and Wood (1995) agrees. If they are well trained and educated, lives can be saved (Lai *et al*., 2009; Thomas, 2006). And in a survey of humanitarian aid workers the majority found that logistics training was vital for their work but only a small group had access to this kind of training (Thomas & Mizushima, 2005).

2.3 Five key building blocks of preparedness

Preparedness (à la IFRC) consists of five key building blocks that have to be in place to produce effective results. They deal with Human Resources, Knowledge Management, Logistics, Financial Resources, and Community. To be better prepared and therefore respond more effectively all five blocks need to be interconnected (Tomasini and Wassenhove, 2009).

The systems and departments need to be set up so that they enable the five flows (material, information, finance, people, and knowledge) to be most efficient; for example, the flow of goods from the entry points where there is adequate absorption capacity onto where they are most needed (material flow), information to ensure collaboration and coordination (information flow), and funds from donor support (financial flows). (Wassenhove, 2006).

2.3.1 Human Resources

This comprises well-selected and adequately trained people. A frequent issue for humanitarian organizations is the limited pool of trained staff or experts, and the limited ability to train staff. The sector is also affected by high staff turnover with a strong reliance on volunteers. In general, the incentives for professionalization are small albeit rising, and thus much of the work is based on devotion and motivation, which is cyclical and hard to channel consistently. As most disaster involves an international staff, HR deals with multicultural issues in their operations that also need to be considered. (Tomasini, 2009).

The employees of humanitarian aid organizations sometimes lack the expertise to conduct relief operations (Lai et al., 2009). Due to the high emotional and physical demands asked from them, burn-outs result in a high turnover of employees (Van Wassenhove, 2005).

Researchers named (Barron, Phipps, and Steinmeyer, 2005) compiled a helpful list of post disaster issues for employers. These issues could be prepared for and dealt with pre-disaster, in the future. Barron et al. state that many employee handbooks do not include “game plans” on how to handle worst-case scenario situations similar to Hurricane Katrina in 2005.

Castro (2011) describes how actions can be taken from a preventative standpoint. She states that it is very important to train employees on how to act and how to create crisis procedures. Employees should be prepared regarding how to act not only in the workplace but also at home. Asking for feedback from employees on performance before and after an emergency can help enhance disaster planning efficiency in the future.

2.3.2 Knowledge Management

(Mohanty*et al*., 2006) define knowledge as, "the fact or condition of knowing something with a considerable degree of familiarity through experience, association or contact''. Basically three forms of knowledge are identified as explicit, tacit and implicit. Explicit knowledge is that which is stated in detail and is termed as codified or formal knowledge. (Mohanty*et al*. 2007) tacit knowledge is that which is understood, implied and exists without being stated. It is housed in the human brain. Implicit knowledge is that which could be expressed, but has not been. Knowledge management is all about getting the right knowledge, in the right place, at the right time. In organisational perspective, knowledge management is about applying the collective knowledge of the entire workforce to achieve specific organizational goals. It is about facilitating the process by which knowledge is created, shared and utilised.

2.3.3 Logistics

Preparedness phase is the most important part of the disaster logistics activities. Preparedness stage includes assessment of the vulnerabilities, making of emergency situation planning, construction of coordination structure, the mobilization of response mechanisms, education and drills. Also procurement and storage of the aid materials, the setup of the early warning systems are part of the preparedness stage. (UN, 1992).In preparedness stage, the installation of the logistics centres where aid materials stored has an important role (Gözaydõnve T. Can, 2013) Pre-positioning of the aid materials has an important place in preparedness stage. Pre-positioned goods are basic humanitarian aid supplies such as food, water, medical supplies, house kits and shelters. Free from the disaster type and socio-economic conditions, basic aid supplies are useful in any disaster situation.(Matthews, 2005) This situation makes standardization of aid supplies easier. In the lack of pre-positioning, during disaster time, the aid materials need to be procured from the international markets. Because disaster hit local suppliers also have hard time during disaster time. Doctors without Borders and Red Cross have prepositioned warehouses. Also these foundations have contracts with suppliers to make use of during disaster time.(Howden, 2009), The procurement processes from the international markets could disrupt aid operations because it is more costly and take more time Appropriate skills in process and logistics management are critical, as logistics earns respect as a central function in the IFRC and other organizations like WFP. Raising operations and process management to such a level at the IFRC required a change in the organizational structure with new divisions; a new strategy (standardizing items and agreements, commodity tracking system, inventory management, etc); and new logistics

functions from procurement all the way down to planning, warehouse management, training, and reporting. (Wassenhove 2009)

2.3.4 Financial Resources

To make humanitarian aid possible it is dependent on financial support. Governments, companies and individuals donate to the hundreds of humanitarian organizations (Wassenhove & Samii, 2002). Without financial aid these organizations have no right of existence. Besides putting money aside for national disasters the wealthier governments donate to the big international aid organizations like the International Federation of Red Cross (IFRC), World Food Program (WFP), World Health Organization (WHO), and many others. The even more numerous smaller organizations rely strongly on the media to spread their name and go door-to-door for any donation. The importance of the media for humanitarian organizations should not be underestimated (Wassenhove, 2005). The more media attention for a disaster the more funds to give aid to that disaster (Auf der Heide, 1989). A quote from IFRC‟s former head of logistics Bernard Chomilier The funding capabilities of our national societies depend very much on the press coverage and reviews we manage to obtain in the immediate aftermath of a disaster (Van Wassenhove &Samii, 2002). This means that the rate of income fluctuates (Oloruntoba & Grey, 2006). The possible size of operations differs over time. A lot of income is linked to a specific disaster, this means that it cannot be spend on another emergency where the funds might be needed more (Thomas, 2006). Hence the most „popular‟ disasters get the most aid (Auf der Heide, 1989; Long & Wood, 1995). In time, media attention for a disaster will decrease and organizations will leave the country due to decreasing income. Because of this, post-disaster contingency aid suffers (Lai *et al*., 2009; (Oloruntoba &Gray, 2006). For the same reasons it is difficult to find the funds to pay for training and preparedness before a disaster has happened (Auf der Heide, 1989). Another quote from Bernard Chomilier: “It is easy to find resources to respond, it is hard to find resources to be more ready to respond.” (Wassenhove, 2005,).

2.3.5 Community

Finding effective ways of collaborating with other key players (governments, military, business, and other humanitarian organizations) that make up the humanitarian ecosystem is increasingly important. In some instances this may mean becoming the “channel captain” for certain issues (or “lead agency,” to use UN terminology), but overall it requires being able to work with and tap into the knowledge and expertise of each group rather than duplicating efforts. (Wassenhove, 2006).

Community participation, generally, refers to the involvement of people in any project to solve their own problems or to develop their socio-economic conditions. They participate in setting goals, and preparing, implementing and evaluating plans and programs. (The United Nations, 1970) defines participation as the collective action by the various strata of people or interest groups. Basically, it is a dynamic group process in which all members of a group contribute, share or are influenced by the interchange of ideas and activities toward problem-solving or decision-making (Banki, 1981, cited in Samad, 2002). The crux of community participation is the exercise of 'voices and choices' of the community and the development of human, organizational and management capacity to solve problems as they arise in order to sustain the improvements made over the time (Samad, 2002). Community participation motivates people to work together where people feel a sense of community and recognize the benefits of their involvement.

2.3.6 Preposition or relief item supplies

Prepositioning supplies is appropriate when the lead-time to respond with supplies exceeds the time frame in which the supplies are needed, or when it is important to preserve transportation assets, such as airlift, for other purposes, such as personnel or higher priority movement. When determining where to preposition supplies, organizations must consider the trade-offs between placing stocks close to a potential disaster area so that the distribution time is reduced, and the risk associated with being adversely impacted by the disaster if they are too close to the potential danger zone. (Campbell and Jones 2011) described a method for determining where to preposition supplies in anticipation of disaster, considering several different scenarios. The authors sought to incorporate the risk associated with placing supplies in an area that might be affected by the disaster, as well as the inventory that is required to respond effectively to a disaster.

2.4 Logistics and Emergencies

Disaster logistics can be defined as "the capability to identify, dispatch, mobilize, and demobilize, and to accurately track and record available critical resources throughout all incident management phases" (GAO, 2006). Disaster logistics include elements such as the staging effort, accountability, the rehabilitation section, and the resources unit. Those working as part of the staging effort to oversee the initial arrivals of unassigned units of materials and supplies. Accountability maintains the tracking of resources and the safety of individuals. The rehabilitation section manages the monitoring of deployed personnel whereas the resource unit oversees all equipment (Lindell, Prater, and Perry 2007).Finding

ways to get supplies to those persons in need during disasters requires flexibility and creativity since the dynamic environment of disasters can be expected to produce highly unpredictable logistical needs. This necessitates constant communication among disaster response agencies in order to deliver supplies in a timely manner to those areas critically affected (Levans, 2005; Sule, 2001; Gooley, 1999). Networks of government agencies at varying levels as well as private sector entities can be effective in the coordination of logistical response to disasters. In fact, private sector practices may be applied to increase logistical performance in managing and responding to disasters (Wassenhove, 2006) There are three phases of research on emergency logistics abroad: before the mid-1990s, from mid-1990s to the start of the 21st century, and since the start of the 21st century (Zuo Ran, and Gu, 2010) But the definition of emergency logistics remains ambiguous. Unlike business logistics which has been clearly defined as logistics is the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming to customers' requirements at the lowest total cost (Cooper and Pagh, 1997) the definition of emergency logistics has not yet been well clarified. Intuitively, the above definition may not fully apply to emergency logistics as the nature of problem, operational purposes, and demand features, e.g., the people served and the urgency of relief needs in emergency logistics is distinctively different from that of business logistics. Accordingly, adapted from the above definition, we tend to clarify emergency logistics as ''A process of planning, managing and controlling the efficient flows of relief, information, and services from the points of origin to the points of destination to meet the urgent needs of the affected people under emergency conditions''(Sheu, 2007)

2.4.1 Demand management

Disasters are unpredictable in many respects. Many therefore argue that some form of demand management is necessary to generate early warnings and therefore to be prepared (Kovacs &Spens, 2007; Perry, 2007). Several authors (for example Beamon 2004; Kovacs &Spens, 2007) mainly consider demand management as a process of making an inventory of requests for products and capacities after a disaster has struck. To ensure preparedness, it is necessary to make predictions of needs before a disaster strikes in order to ensure timely availability of materials and capacities. Though disasters are unpredictable, so-called slow-onset disasters such as floods do have a degree of predictability.

2, 4.2 Supply management:

The management of procurement and associated suppliers is crucial to maintain high emergency response levels. First of all it needs to be decided what activities to keep in-house and what to outsource; this is a challenge that also relates to humanitarian operations. (Cottam*etal*., 2004) show for example that transport outsourcing during emergency relief may be beneficial, in particular if sudden surges of demand occur, but there are mixed results with the effectiveness of it. Just like in commercial supply chain management, good preparation of supply would mean having for example alternative suppliers (Wassenhove 2006) as many items are needed frequently. It therefore also makes sense to make long-term agreements with suppliers (Kovacs & Spens, 2007; Thomas, 2003). Coordination of supply between agencies involved in disaster relief is challenging (Beamon, 2004) and also required during the aftermath of a disaster as (Quarantelli, 1997) points out, However, it is of highest relevance between disasters as few links exist between organisations between disasters. This could result in redundancies in preparation of logistics activities such as setting up warehouses (Thomas & Kopczak 2007). The preparation phase typically is the time to develop collaborative platforms (Kovacs & Spens, 2007). Other aspects relevant in ensuring proper supply when disasters strike are mutual aid agreements and memorandums of understanding between agencies about who does what, setting up information systems and acquiring emergency equipment (Altay & Green, 2006).

2.4.3 Inventory management

Inventory management of materials some items are required so often that it makes sense to preposition these (Altay & Green 2006; Thomas, 2003) argues that disaster planning is centred on disaster inventories and therefore acquisition, storage and distribution of products are the key. However, little research is available on inventory management in humanitarian disaster related environments (Ozbay & Ozguven, 2007). Organisations have to make a distinction between goods that are needed in any kind of disaster, such as drinking water and medicines (response-generated needs) vs. goods which are only needed with a specific kind of disaster, such as sandbags, called agent-generated needs (Quarantelli, 1997). The difference between these two types of needs is that the response-generated needs can be kept in stock (e.g. sand bags), because they are needed with every (flood) emergency activity. (Ozbay & Ozguven, 2007) have developed a stochastic model for safety stock levels of these commodities. The agent generated needs are so specific for each disaster that it is much more difficult to determine which to keep in stock and how much. (Balcik*et al.*2008) discriminate

between two types of items along similar lines: type 1 consists of critical items where demand usually occurs at the beginning of the disaster.

2.4.4 Resource management:

In order to manage disaster response, a large pool of resources is needed for a variety of tasks. They need to operate under complex conditions (Wassenhove, 2006). Most of the literature on emergency logistics planning emphasizes how to distribute items into an area after a disaster has struck (Chang et al. 2007). Both (Özdamar*et al*. 2004) and (Yi *et al.*,2007) for example describe an operational model focused on vehicle routing in disaster response to ensure shortest delivery times possible within a planning horizon considered and (Balcik*et al*., 2008) discuss the last mile problem during disaster response. (Chang *et al.*, 2007) are one of the few to develop a flood preparation planning tool. They describe an approach to develop an infrastructure for distribution of rescue resources during disaster response, including location of rescue resource warehouses, allocation of resources over these warehouses and the distribution of these resources. Good resource management requires well thought through recruitment of personnel. Relief organizations will have to select people who are capable of cooperating in a relief organization, and they have to be trained (Wassenhove, 2006). For this training, special programmes have to be developed (Paton & Jackson, 2002) in which the people learn to cooperate and to coordinate with each other and other agencies in order to be prepared for a disaster. Community volunteer groups are essential elements of preparedness (Altay & Green, 2006). Public education and disaster exercises (Altay & Green, 2006) play an essential role in getting people accustomed to providing aid.

2.5 Logistics Planning and Preparedness

Logistics Planning is extremely important to cover all aspects of planning in anticipation of disaster. Humanitarian logistics planning in case of disaster predominantly includes shipping critical supplies and services to affected areas and evacuate affected population. An overall model encompassing logistics planning in emergency situation integrating natural disaster logistics decision support system is developed by (Ozdamar*et al.*, 2004) this research, we believe, is one of the first of the kind addressing dynamic time-dependent transportation problem for on-going aid delivery incorporating new requests for supplies and availability of modes of transportation. Though very operational in nature the model is meant for emergency planning. The authors model the situation as a hybrid of multi-commodity network flow problem and vehicle routing problem. The model can be decomposed into two multi

commodity problems, first a linear model for conventional commodities and second for vehicle flow and hence an integer model.

Good planning makes it possible to increase organization, efficiency and effectiveness of an aid operation (Keeney, 2004; TekeliYeşil, 2006). There is however some challenges (Dynes, 1982). An important point is the segmentation of planning. Every disaster has its own emergency plan, be it tornado or flood. Dynes states that it is important to look at the attributes of disasters, instead.

2.6 Performance Measurement in Humanitarian Logistics and performance prism

Neely, Gregory and Platts (1995, 1229) define performance measurement as the process of quantifying the efficiency and effectiveness of an action using a set of performance metrics. the purpose of measuring organizational performance is (1) to identify success; (2) to identify whether customer requirements are met; (3) to help understand organizational processes; (4) to identify problems, bottlenecks, waste etc.; (5) to ensure decisions are based on facts rather than on supposition or emotion and (6) to show whether planned improvements actually happened.

Performance measurement is particularly important in the humanitarian sector, where limited resources have to be used in the most efficient and effective way (Abidi and Scholten 2015, 257). Furthermore, the increased frequency and severity of natural and manmade disasters, the costs involved in humanitarian supply chain operations as well as the growing competition for scarce resources and donor funding, make performance measurement vital for all organizations involved in disaster management (Beamon and Balcik 2008, & Santarelli *et al.* 2013).

According to (Poister, 2003,) effective performance measurement systems can help public and non-profit managers to make better decisions, to improve performance and to provide accountability. Furthermore, performance measures provide feedback on agency performance and help redirect resources more effectively. Performance measurement therefore allows for greater control over operations while increasing flexibility at the operating level (Beamon and Balcik 2008).

Yet, performance measurement systems have not been systematically implemented in the humanitarian supply chain (Beamon and Balcik 2008, 5). According to (Blecken, 2010) 55 % of all humanitarian organizations do not monitor any form of performance indicators for their

supply chain, while 25 percent only use a few performance indicators. Merely 20 percent of all humanitarian organizations consistently measure the performance of their supply chains.

In a systematic literature review, (Abidi, De Leeuw and Klumpp 2014) evaluate the current state of research on performance management in humanitarian supply chains. They conclude that even though there are a variety of approaches, there is still a long way to go in research on performance measurement in humanitarian supply chains. Only few performance measurements frameworks have been empirically tested and likewise, relatively few humanitarian organizations have contributed to research projects in the field.

Furthermore, result-based management is often very difficult to implement in humanitarian organizations, as it is often problematic to determine the relationships between inputs and activities as well short-term outputs, midterm outcomes and long-term outcomes (Abidi, De Leeuw and Klumpp: 2014). Moreover, standard indicators are often unsatisfactory, as cultural nuances that have an impact on activities are often not adequately accounted for (Abidi, De Leeuw and Klumpp, 2014,).

Even though various performance measurement frameworks (e.g. SCOR Model or Performance Prism) and indicators exist for traditional supply chains, the distinct characteristics of the humanitarian environment cause many of these to be inappropriate or irrelevant (Beamon and Kotleba 2006,; Abidi, De Leeuw and Klumpp, 2014). However, performance measurement frameworks from the commercial sector are a useful starting point for the non-profit sector, and thus for the humanitarian organizations (Moxham, 2009).

(Schiffling and Piecyk, 2014) develop a performance measurement framework that reflects the views and characteristics of the key stakeholders of humanitarian organizations. To identify these key stakeholders, the authors conduct a systematic review of academic literature on humanitarian logistics and adopt the stakeholder salience framework developed by (Mitchell *et,al*, 1997), which classifies stakeholders according to their power, the legitimacy of their claim as well as the urgency of their claim. The resulting stakeholder typology reveals that donors and beneficiaries are the two external stakeholders with the highest salience in the humanitarian supply chainof the nature, and similarities can be seen.

Four common principles concerning performance measurement systems can be drawn from business strategy management control and the managerial accounting literature. First a measurement system.

Humanitarian performance is “the effective collective performance of a complex system of international, national and locally-based organisations, which works to save lives, alleviate suffering and maintain human dignity both during and in the aftermath of man-made crises and natural disasters, as well working to prevent and strengthen preparedness for the occurrence of such situations.”(Mitchell, 2009) In addition effective performance means undertaking work in ways that are consistent with humanitarian principles, mobilising and deploying sufficient financial, material and human resources in ways that are relevant, well-managed, accountable, impartial, durable and ensure good quality.(Arnold, 2008).

(Chow *et al*., 1994).indicated that performance is multi-dimensional, because one measure is not sufficient for a logistics performance – logistics performance has to be seen as subsection of the larger conception of firm or organizational performance (Chow *et al*., 1994). To know the meaning of performance there are two central organizational and logistics goals which have to be defined. These are divided in two dimensions: The simplest dimension and which affect the performance in particular logistics performance is to differentiate between (i) efficiency and (ii) effectiveness (Gleason and Barnum, 1986) in performing logistics activities. Generally efficiency is “doing the things right” and effectiveness is defined as “doing the right thing” (Gleason and Barnum, 1986). Logistics effectiveness has to be viewed as the extent to which the logistics function’s goals – e.g. fulfilment time or in-stock availability – are accomplished (Mentzer and Konrad, 1991). Logistics efficiency is the ratio of resources utilized against the results achieved. In a broader sense it indicates the measurement of how well the resources consumed are utilized (Mentzer and Konrad, 1991). Neely et al. supported this two dimensional perspectives later on (Neely et al., 1995).

Appeal Coverage: This indicator is comprised of two specific metrics: 1) percent of appeal coverage and 2) percent of items delivered. The first metric is the quantity of items that have been pledged by donors out of the total number of items requested for the operation. Its purpose is to indicate how well and how quickly the organization is finding pledges for the requested items. The second metric is the percentage of items that have actually been delivered on-site out of the total number of items requested for the operation. Together, these two metrics indicate how well the organization is meeting its appeal for an operation in terms of both finding donors and delivering items. (Davidson, 2006).

Donation to Delivery Time: This indicator is a measure of how long it takes for an item to be delivered to the destination country after a donor has pledged to donate it. Both the mean and median number of days are reported on the scorecard, which is a practice used in the U.S. Army's performance measurement system (Dumond, 2000). These two metrics help gauge both the average and the consistency of the delivery lead times.

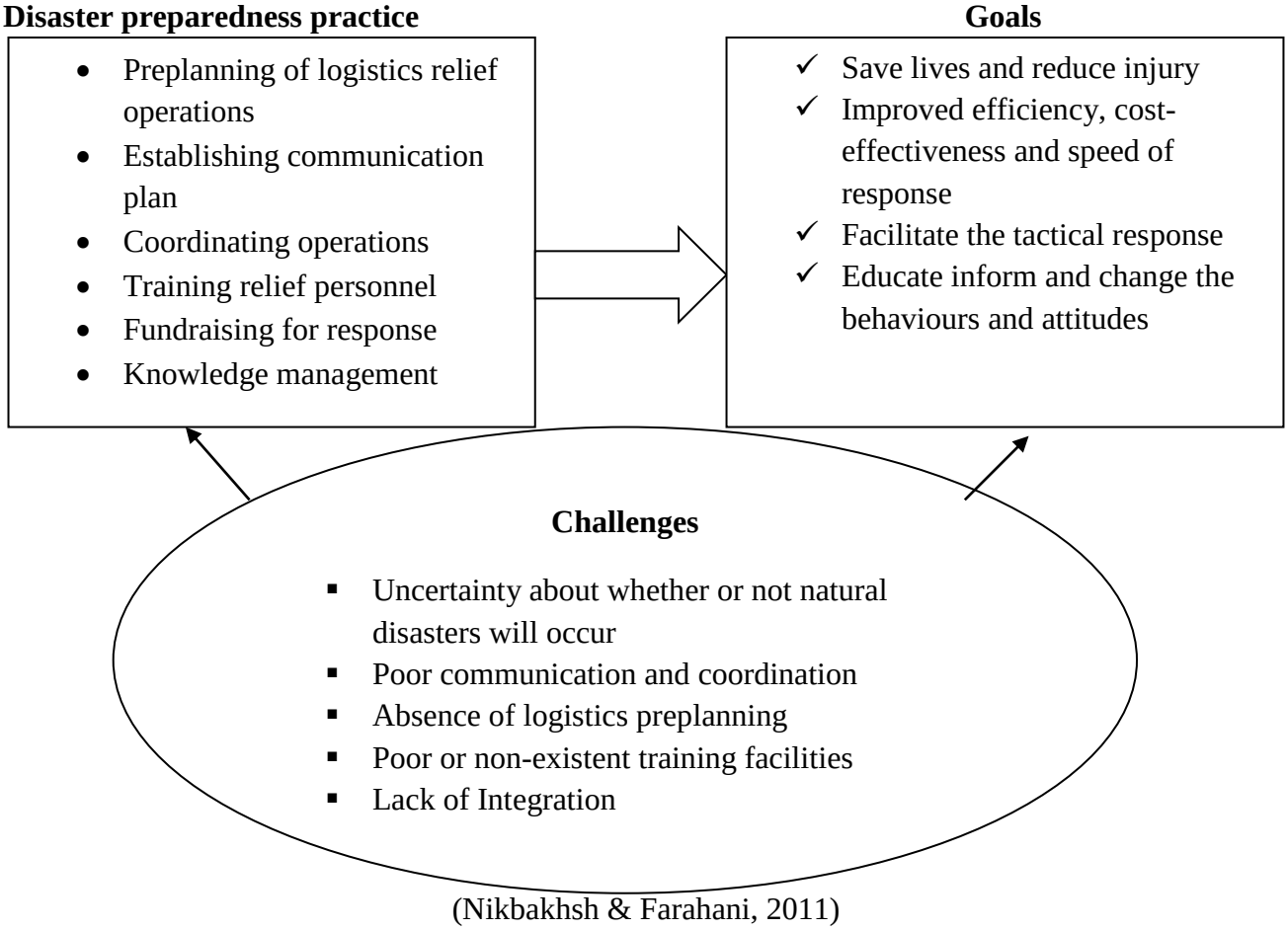
Financial Efficiency: Three metrics comprise the indicator of financial efficiency. The first two metrics use two methods (one relative and one absolute) to compare the budgeted prices to the actual prices paid for items delivered in the operation. The third financial efficiency metric incorporates the transportation cost of delivering the goods to the beneficiaries. This metric is expressed as a ratio of the total transportation costs incurred over the total costs for delivered items at a point in time. The value of this ratio should decrease over time, as less expensive transport methods are used after the initial delivery phase and as more items are delivered on-site. (Davidson, 2006).

Assessment Accuracy: How quickly donations are pledged and goods are delivered to beneficiaries relies on how accurately the field personnel assessed the needs of the population affected after a disaster. Assessment accuracy therefore indicates how much the operation's final budget changed over time from the original budget. This metric contextualizes the values of the other metrics on the scorecard. For example, if it appears on the scorecard that the delivery leads time of a specific type of item was longer than average in an operation, the assessment accuracy metric will indicate if the long lead time of that item was caused by an initially low estimation of the quantity needed. (Anne Leslie, 2006).

2.7 Conceptual framework

The concept of disaster preparedness encompasses measures aimed at enhancing life safety when a disaster occurs, such as protective actions during an earthquake, hazardous materials spill, or terrorist attack. It also includes actions designed to enhance the ability to undertake emergency actions in order to protect property and contain disaster damage and disruption, as well as the ability to engage in post-disaster restoration and early recovery activities.(Sutton and Tierney, 2006).

Although natural disasters are difficult to predict, some regions are prone to prepare for particular risks .Logistics in Preparedness consists of fleet management, preposition of goods, warehouse location, inventory management, and vehicle replacement policies. The preplanning of the logistics of relief operations, establishing communication plans, defining the responsibilities of each participating relief organization, coordinating operations, and training relief personnel are of equal importance and a necessity to be taken into consideration in the preparation phase (Nikbakhsh & Farahani, 2011).



(Nikbakhsh & Farahani, 2011)

Figure 1: conceptual framework for Disaster Preparedness

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter discuss about the methodology to be used in the study. It consists of the study design, Population of the study, sample size and sampling, sample size determination, source of data, data collection and method of data analysis ethical consideration, validity and reliability instrument.

3.1 Research Design

Descriptive study designed regarding the practices and challenges of disaster preparedness within NDRMC was adopted for the study in order to carry out an in-depth assessment on its impact on humanitarian logistics performance adopted by NDRMC in disaster management. Not with standing its weakness of limited extrapolation, this design was adopted because it is one of the best for obtaining reliable and relevant research results for application to similar organizations (Saunders *et al*, 2007).

3.2. Population of the study

This study focuses on practices and challenges of disaster preparedness in NDRMC of Ethiopia operating in disaster situations. This organization is responsible for emergency preparedness and response for disaster management through provision of emergency suppliers. They are in most cases the first to respond during disasters in the country.

The total population of the study is 110 staff members consisting of 4 directorates and 1 district warehouse. This are logistics Directorate consists of 35 staff, early warning directorate 18, disaster rehabilitation and response 19 staffs, disaster risk reduction 17and finally one of the main stores located in Adama warehouse with the population of 21 respectively

Senior and medium level experts', directorate directors, and warehouse coordinators form Early Warning, logistic, disaster risk reduction, disaster rehabilitation and response and warehouse departments will be in the population of the study. Those are directly involved in preparedness, transportation and warehousing, practices.

3.3 Sample size and sampling.

From 110 staff members a total of 86 samples were selected for the study.Proportional sampling used to select sample size.

At the first stage, respondents will be selected from NDRMC various departments who are directly involved in disaster preparedness process to know the practices and challenge, In the second stage, the warehouses of NDRMC Adama district warehouse purposively selected due to the facts that the district is frequently susceptible to recurrent drought (WFP, 2016).

3.4. Sample Size Determination

Simplified formula provided by Cochran, (1997) is used to determine the required sample size at 95% confidence level, 5% degree of variability and 8% level of precision. Accordingly, 110 samples from staff members a total of 86 samples were selected for the study from 4 directorates and 1 warehouse inclusion in the analysis.

Prior to determining sample size of the study, all logistics and SCM experts used stratified based on their location and involvement; From NDRMC staff 13Early warning Professional, 28 logistic staff, 15 staffs from Disaster rehabilitation and response 14 Disaster risk reduction will be selected, and from Adama warehouse 10 warehouse coordinator and 6 employees used as sample.

There are about 110 core function staff members in NDRMC of Ethiopia. Eventually, the total sample size was determined using the following formula (Cochran, 1997).

$$n_o = \frac{z^2 pq}{d^2} \longrightarrow n = \frac{n_o}{1+\frac{n_o-1}{N}}$$

Is the desired sample size when the population is greater than 10,000

- n is number of sample size when population is less than 10,000
- Z is 95% confidence limit i.e. 1.96
- p is 0.1 (proportion of the population to be included in the sample i.e.10%)
- q is 1-0.1 i.e. (0.9)
- N is total number of population
- d is margin of error or degree of accuracy desired (0.05)

Using simple random sampling technique, proportional to the number of staff members in the core operation of NDRMC study sample are selected from the core department's staff member's total number is 110. This is due to their direct involvement in disaster relief

practices which is from 16 early warning, 36 Logistics, 18 Disaster risk reduction directorates19 staffs from Disaster rehabilitation and response and 21 Adama warehouse. The samples were selected 13, 28, 14, 15, and 16 respectively. A total of 86 staff members considered for primary data collection to triangulate the result using questioner additionally, in order interview used staff with directors and senior experts from the four functional areas.

3.5 Source of Data and Method of Data Collection

The research targets the preparedness practices and challenges in NDRMC of Ethiopia. Both primary and secondary data are used as a source of data in the research. The primary data is collected from respondents who are directly related with the issue under studied through questioners and interview. The target respondents within each target population were selected from NDRMC of Ethiopia related to disaster preparedness operations.

Data were collected using structured self-administered questionnaire and interview. Structured self-administered questionnaire for NDRMC staff and management, respondent in NDRMC related to disaster preparedness operations selected for structured questionnaire using both close-ended and open ended questionnaire. Perception statements using Likert scale were adopted from Russel (2005) and other literature related to humanitarian logistics. These were adapted to suit the Ethiopian Socio-cultural situation. The items on the beneficiary interview questionnaire had options that best suited the extent to which they agreed with the statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree).

3.6 Ethical Considerations

A letter from Addis Ababa University Graduate school of Commerce department of Logistic and supply chain Management will be used, to have permission of the selected staff who are involved in humanitarian logistics preparedness from federal NDRMC, to collected data from experts. Prior to filling the questionnaire each of the respondents are given detail explanation about the objective and significance of the study. Then experts asked for their informed consent to participate by explaining the fact that they had the right to decline to respond/fill the questionnaire. In addition, the sensitive nature of the study also explained to the respondent when obtaining their consent.

They will assured about the confidentiality of the information by explaining the fact that interviews held in private with them and no names recorded on the individual interviews; instead questionnaires identify exclusively using codes on the cover pages. Moreover,

confidentiality on the information kept after the completion of the interview and will not be transferred to any other third party or used for any other purpose.

3.7 Method of data analysis

The data collected were analysed with the aid of SPSS package. The techniques included descriptive statistics with significance tests. Descriptive statistics includes frequency and percentage and measures of central tendency (mean and standard deviation). Inferential statistic will be used. The information collected through literature search, which involved reviewing available materials such as organization information, journals, manuals and other published materials. To achieve objective two, which was to identify challenges facing disaster preparedness emergencies, an interview questionnaire used to collected primary data on the challenges facing disaster preparedness process in NDRMC the questionnaire focused on collecting data on the disaster preparedness challenges and its effect on the humanitarian logistics performance of the commission. This questionnaire target managers in Preparedness department, EW expert, Procurement experts, Warehouse coordinator. A questionnaire distributed to logistic department or equivalent department or those to provide possible solutions to challenges faced during Disaster preparedness process. Literature search from journals, on line databases and other publications used in order to obtain possible solutions to Disaster Preparedness challenges.

3.8 Validity and Reliability of Instruments

Validity and reliability are two basic concepts that are essential to define and measure bias and distortion of any study. This study uses a blend of qualitative and quantitative methods (Questionnaire and personal observation) that helps me to avoid any kind of biases and ensure their validity. On the other hand, information of the respondents was cross-checked and triangulated to ensure validity also use to employ the whole processes of the research work based on the research questions, objectives, and theories that helps me to confirm the validity of the study.

The study use a multiple sources of information to ensure the reliability of the data and used government official, experts and various ways of data collection techniques such as, Questionnaire, interviews, and observation to make this study more reliable and realistic. In order to secure the validity and reliability of the research, personally observe what was exactly happing and interviewed the informants being in the field and discuss the issues with experts and other informants, crosscheck the validity and reliability of the information by asking probing questions and triangulated information by crosschecking others. It is also

attempted to rule out the possibility of distortion and inconstancies by checking informants' information by asking respondents. Thus it used to argue that it could make the research results dependable and credible.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1. Demographic Profile of the Respondents

Demographic Characteristics		Department						
		Early warning	Disaster Risk Reduction	Warehouse	Logistics	Other	Total	%
Sex of the respondent	Female	6	6	8	9	4	33	38.4
	Male	7	8	8	19	11	53	61.6
	Total	13	14	16	28	15	86	100
Age	18-25	0	0	0	0	1	1	1.2
	26-30	3	1	4	6	3	17	19.8
	31-40	6	6	8	12	5	37	43
	Above 40	4	7	4	10	6	31	36
	Total	13	14	16	28	15	86	100
Education Level	Below Grade 12	0	0	0	0	0	0	0
	Grade 12 completed	0	0	0	0	0	0	0
	College Diploma	0	1	7	3	0	11	12.8
	First Degree	8	5	9	16	7	45	52.3
	Second Degree and above	5	8	0	9	8	30	34.9
	Total	13	14	16	28	15	86	100
Years stayed in NDRMC	Mean							
Experience in Humanitarian	Less than 2 years	0	0	0	0	0	0	0
	2-5 years	3	3	3	7	4	20	23.3

Sector	6-10 years	6	4	9	8	3	30	34.8
	Over 10 years	4	7	4	13	8	36	41.9
	Total	13	14	16	28	15	86	100

This section discusses the age, sex, occupation and educational status of respondent's; it goes further to compare the sex with age and occupational distribution of the respondents.

Table 1: Demographic profile of the respondent

Table 3 shows the sex distribution of respondents. Data collected from the staffs shows that 53(61.6%) are male and 33(38.4%) are female.

Data collected from the staff's shows that 1(1.2%) of the respondents representing fall within the ages of 18 to 25 Years. 17 (19.8 %) fall within the age 25 to 30years. 37(43%) falls within the ages of 31 to40 years and 31(36%) fall within above 40years.

The Humanitarian sector distribution of respondents out of the 86 respondents, all 100% has more than 2 years of experience in Humanitarian sector.

Table 2: Educational qualification of the respondent * sex of the respondent * age of the respondent Cross tabulation

Count

age of the respondent			sex of the respondent		Total
			Female	Male	
18-25	Educational qualification of the respondent	first degree		1	1
	Total			1	1
26-30	Educational qualification of the respondent	college diploma	0	1	1
		first degree	8	8	16
	Total		8	9	17
31-40	Educational qualification of the respondent	college diploma	2	2	4
		first degree	9	10	19
		second degree and above	5	9	14
	Total		16	21	37
above 40	Educational qualification of the respondent	college diploma	0	6	6
		first degree	1	8	9
		second degree and above	8	8	16
	Total		9	22	31
Total	Educational qualification of the respondent	college diploma	2	9	11
		first degree	18	27	45

		second degree and above	13	17	30
	Total		33	53	86

The above table indicates that there is none existence of female respondents between ages 18 to 25, 8 between the ages of 26 to 30 years, those between the ages of 31 to 40 years are 16 and 9 0f them are aged above 40 The number of male respondents falling between ages 18 to 25 years is 1, 26 to 30 are 9, from 31 to 40 years are 14 and 22 of male are above 40 years.

Table shows compares the sex and education distribution of respondents 9 male and 2 females has college diploma. The number of female with first degree is 18, while the number of males with first degree is 27. 13 female had in second degree and above and 17 males has second degree and above. Further observation reveals that the ration of sex to education that is male to female is 53:33.

Table 3: Department distribution of respondents

Working Departments	Frequency	Percent
Risk Reduction	14	16.3
Logistics	28	32.6
Warehouse	16	18.6
Early warning	13	15.1
Other (Disaster response and rehabilitation)	15	17.4
Total	86	100.0

The table shows that data collected from the staff members of NDRMC of Ethiopia shows that 14 (16.3%) of the respondents representing Disaster risk Reduction directorate 28 (32.6%) from Logistics directorate 16 (18.6%) warehouse coordinators and distribution experts 13(15.1%) are early warning staffs and 15(17.4%) are from Disaster Response and Rehabilitation Directorates.

4.2 Practices in Humanitarian relief operations at the disaster management preparedness stage

In this phase of disaster management the NDRMC of Ethiopia has perform different activitiesThe first phase of the SCM is the preparation stage which involves forecasting demand for, and pre-positioning of relief items. NDRMC undertook disaster impact assessment in the areas affected. This enabled it to know the immediate, medium and long term needs of the victims. (NDRMC 2016).

4.2.1: Warehouse prepositioning practice of NDRMC of Ethiopia

Akkihal (2006) identifies optimal locations for ware housing non-consumable inventories required for the initial deployment of aid. The most important underlying assumptions are: *i*) every disaster requires a response from a warehouse (its closest warehouse), and *ii*) warehouses always have enough inventory to satisfy the demand.

Balcik and Beamon (2007) address the issue of pre-positioning relief supplies. They find the optimal warehouse locations and capacities when demand for relief supplies can be met from suppliers and warehouse.

Table 4: Warehouse prepositioning practice of NDRMC

Warehouse Prepositioning practice	Frequency	Percent
Disagree	5	5.8
Neutral	19	22.1
Agree	41	47.7
Strongly Agree	21	24.4
Total	86	100.0

Logistics in Preparedness consists of fleet management, preposition of goods, warehouse location, inventory management, and vehicle replacement policies (Nikbakhsh & Farahani, 2011) The above table indicates that data collected from the staffs shows41 (47.7%) and 21(24.4%) totally 62 (72.1%) of the respondents agree and strongly agree respectively on there is a practice of Pre-positioned warehouses at strategic locations to ensure the availability of supplies when required. This implies the commission strategically select the location warehouses closer to disaster areas. Especially, while responding to sudden onset disasters, natural disasters that occur without a transitional phase such as flood and land slide, an established prepositioning network would be most beneficial by eliminating the procurement phase of the response that will take place after the onset of the disaster. Otherwise that will facilitate the response activities and provide quick relief item supplies for the victims.

4.2.2 Commodity tracking system of relief items

Commodity tracking system provides updated and current information regarding the status of relief items. The implementation of such technologies could make relief operations easier for the logistics service providers in terms of tracking and tracing their shipped or delivery items (Monsreal *etal.*, 2011).

Table 5: Commodity tracking system of relief items in NDRMC of Ethiopia

Tracking system practice	Frequency	Percent

Disagree	5	5.8
Neutral	25	29.1
Agree	54	62.8
Strongly Agree	2	2.3
Total	86	100.0

Commodity tracking and tracing system will provide better support and increase the quality of information. According to above the above table 54 (62.8%) of the respondents agree there is a tracking system to track and trace the flow of relief materials which enables the logisticians to prepare emergency response plans for the coming disasters but 25(29.1) of them are neutral which expressed doubtfulness of its complete application.

4.2.3 Pre-negotiating contract with logistics providers

Investing in disaster management capabilities, such as training staff, Pre-negotiating agreements with suppliers and logistics providers (Altay et al., 2009; Duran et al., 2011; Kovács and Spens, 2007; Van Wassenhove, 2006), pre-negotiating customs agreements with countries prone to disasters, or harmonizing import procedures with local customs clearance procedures.

Table: 6 pre-negotiation of contract with logistics providers in NDRMC of Ethiopia

Pre negotiation of contract	Frequency	Percent
Strongly disagree	2	2.3
Disagree	35	40.7
Neutral	27	31.4
Agree	22	25.6
Total	86	100.0

Table 16 describes the practice of pre negotiation of contracts with logistics providers in NDRMC of Ethiopia. According to the respondents 35 (40.7%) Disagree, 27(31.4%) are neutral and only 22(25.6%) of the respondents agree on the contract which provides better logistics performance in response phase of the disaster management. Based on the assessment by WFP in March 2016 a number of logistics constrains from port of arrival to final delivery point are making it very challenging for the government of Ethiopia and humanitarian actors to deliver an effective and efficient response (WFP, 2016) one constraint was this unavailability practice of pre negotiating contract with logistics provides.

4.2.4 Training of relief personnel to immediately deploy in to disaster site

Education and training is a major pillar of disaster preparedness (Keeney, 2004; Lai *et al*., 2009; McMahon, 2007; Phillips *et al*., 2006; Tekeli Yeşil, 2006; Wassenhove, 2005). Relief organizations will have to select people who are capable of cooperating in a relief organization, and they have to be trained (Wassenhove, 2006).

The aim of disaster management training is to build the capacity of National Societies' staff and volunteers, and that of International Federation delegates, to improve preparedness and response at all levels before during and after disasters and to give all components of the Movement the means to work together in a coordinated manner(IFRC,2017).

Table 7: Training of relief personnel to immediately deploy personnel

Training of relief Personnel	Frequency	Percent
Strongly disagree	1	1.2
Disagree	10	11.6
Neutral	51	59.3
Agree	23	26.7
Strongly Agree	1	1.2
Total	86	100.0

After selection and recruitment of professional and volunteers for disaster different types of trainings are very critical, it enhance the trainees' capacity and knowledge of different types of disasters. As shown here the majority of the respondents 51 (59.3) are neutral and 10(11.6) are disagree on the practice of training of relief personnel to immediately deploy personnel are used. This indicates the practice isn't in full scale; there are trainings for the relief personnel's that used them to take actions immediately when disaster occurs but not for immediate deployment when disaster happens.

4.2.5 Practice of predicting risk prone area to play disaster mitigation role

The aim of early warning systems (EWS) is to enable individuals and communities threatened by hazards to act effectively and in sufficient time to reduce the likelihood of death, injury and damage to property and the environment.

Table 8: predicting risk prone area for disaster mitigation

Prediction of risk prone area	Frequency	Percent
Disagree	1	1.2

Neutral	4	4.7
Agree	54	62.8
Strongly Agree	27	31.4
Total	86	100.0

Table 8 shows the NDRMC of Ethiopia build a system to predict which areas are prone to disaster according to the risk analysis by which 54(62.8%) agreed and 27(31.4%) are strongly agree this implies the commission build a sustainable and organized early warning system to reduce the destruction level.

Table 9: Summary of practices in Humanitarian relief operations at the disaster preparedness stage

No	Practices in Humanitarian relief operations	Mean	Std. Deviation
1	Practice of pre negotiating contract with logistics suppliers	2.8	0.852
2	Ability to track and trace the flow of goods through a commodity tracking system	3.62	0.636
3	Training of relief personnel to immediately deploy personnel	3.15	0.678
4	Pre-positioned warehouses at strategic locations	3.91	0.835
5	Practice of predicting risk prone area	4.24	0.593
	Average	**3.544**	**0.7188**

Disaster preparedness activities contains hazard and risk analysis, institutional and legislative frameworks, resource allocation and funding, coordination, information management and communication, contingency, preparedness and response planning, training and exercises, and emergency services, standby arrangements and prepositioning. Structures and funding for conflict preparedness lag significantly behind those that address disasters related to natural hazards (Kellett and Sparks, 2012).

As shown in the table 9 the averages mean of the practices in humanitarian relief operations at disaster preparedness stage is 3.544 which indicates the practices are in somehow presented and on-going also some practices are not in placed during the preparedness stage of disaster management. Practice like Pre negotiation of contract with logistics providers (2.80 mean) are not in proper application and in somehow it's already missing in disaster logistics preparedness. While the NDRMC of Ethiopia has a good practice and build the capacity to predict which areas are prone to which type of disaster based (4.24 mean) on risk analysis.

4.3 Practices of selection and training of relief human resource (Personnel)

The relief pool make-up is to reflect the skills required to work and relieve in the areas being covered. There may need to be cluster relief pools where specialist skills/knowledge is required. All relief pool staff is to receive training prior to commencing their relief duties. This training is to be structured and cover the range of skills required for relieving. The training program for relief staff is to be documented and developed by the coordinator of the relief pool, in conjunction with the supervisor/s of those work areas where relief is to be provided. When on-the-job training is required, such training is to be provided by an appropriately skilled and authorised person in line with the administrative training framework.

Table 10: Summary of Selection and training of relief personnel

No	practice of selection and training of relief personnel	Mean	Std. Deviation
1	Preparedness plan describe how personnel and volunteers are recruited and trained for disaster preparedness and response	3.51	0.732
2	There are a clear Procedures for recruitment, selection, training, field support, and follow up of relief workers	3.93	0.682
3	Trainings can provide ability to rapidly adapt to changes in culture, working and living conditions, language and professional practice and standard	3.55	0.645
4	Professionals specialized with different types of disaster are identified and trained	2.8	0.779
5	Recruitment methods used at NDRMC of Ethiopia aim to attract the widest pool of suitably qualified candidates	2.74	0.87
	Average	**3.306**	**0.7416**

As the above table describes the average mean for the selection and training of relief personnel are 3.30. This indicates the NDRMC of Ethiopia the selection training of human resource practices are not completely in place. some practices are on set but some also missing. There are clear procedures to make the selection and recruitment as the average mean 3.93 from all respondents proves. On other hand the commission recruitments methods can't provide suitable and qualified candidates to the selection process which expressed 2.74 averages mean by the respondents. Also average mean for a practice of identification and training of professionals who are specialized in different types of disasters are 2.8 and this indicates the commission has some gaps by identifying and assigning of disaster specialists for different types of disasters

4.4 Knowledge management practice towards the humanitarian relief operations

Knowledge management is all about getting the right knowledge, in the right place, at the right time. In organisational perspective, knowledge management is about applying the collective knowledge of the entire workforce to achieve specific organizational goals. It is about facilitating the process by which knowledge is created, shared and utilised (Tomasini and Wassenhove, 2009).

Codification systematically all lessons learned in the past and disseminates them in modules so that staff can adapt them to the different circumstances they face in the field.Relevant information should be included in the emergency response system prior to the actual disaster situation. This is to ensure that emergency responders have sufficient information to guide decision-making processes when responding to an emergency (Terry Ryan *et,al*. 2006).

Table 11: Summary of Knowledge management practice towards the humanitarian relief operations

No	knowledge management practices	Mean	Std. Deviation
1	Collective knowledge of the entire workforce to achieve specific organizational goals.	3.6	0.656
2	Getting the right knowledge, in the right place, at the right time	3.77	0.607
3	Proper knowledge flow among different humanitarian experts beneficiaries and the targeted communities	3.55	0.663
4	Codification systematically all lessons learned in the past and disseminates them in modules so that staff can adapt them to the different circumstances they face in the field.	2.62	0.77
	Average	**3.385**	**0.674**

As shown in the above table the average mean for Knowledge management practice on the humanitarian relief operations are 3.38 which indicates some activities are missed out throughout the process. The practice of codification of lessons from the previous disasters and disseminating the information's for relief personnel has gaps which is expressed by 2.62 average mean from the respondent. Even though the employees get the right knowledge at the right time and right place which is 3.77 average mean there are some gaps in the application of collective knowledge (3.6 mean) and proper flow of knowledge among experts beneficiaries and targeted communities (mean 3.55) have some gaps.

4.5 Preparation activities in operation and process management

The preparation refers to various operations that occur before a disaster strikes by incorporating the strategies of implementation, of a successful operational response. According to (Mimi Suriani *et,al*, 2016). During the preparedness phase, plans are set up in

case a disaster occurs (e.g. pre-planning of logistics operations, stockpiling of relief items, establishing communication plans, and training of relief personnel).(Cozzolino, 2012).

Humanitarian organizations must enhance their emergency response capacity and preparedness to natural disasters and to ensure that there is higher availability of relief supplies is by pre-positioning, or stockpiling inventory, pre-planning of logistics operations, arranging long-term agreements with suppliers predicting the type of risk and level of its severity, preparing a system that help stakeholders (NGO's governmental organizations suppliers to share their experiences, Transportation for the last mile has been reported to be difficult, due to limited transportation resources, damaged infrastructure and the large volumes that can be required.

Table 12: Summary of disaster preparation activities and process management

No	Preparation activities and process management	Mean	Std. Deviation
1	Stock piling of relief item to immediately dispatch to disaster area	4.02	0.686
2	Pre-planning of logistics operations are in place	4.09	0.644
3	Long-term agreements with suppliers is widely accepted	2.76	0.88
4	Practice of predicting the type of risk and level of its severity	4.24	0.702
5	System that help stakeholders (NGO's governmental organizations suppliers to share their experiences	4.4	0.638
	Average	3.902	0.71

The above table describes the preparation activities are in full scale except some activities are missing. The average mean is 3.90 which are closer to agree by the respondent. The commission performs Stock piling of relief item mean 4.02; preplanning of logistics operations mean 4.09, of predicting the type of risk and level of its severity mean 4.21 and built a system to different stakeholders to share their experience on pre and post disaster activities mean 4.40 are in place except the long term agreement with suppliers regarding supply of relief materials which is 2.76 average mean this indicates the NDRMC of Ethiopia has some gaps in terms of building sustainable partnership with relief item suppliers.

4.5 Upstream collaboration action towards relief operations

Successful disaster management cooperation involves the will and capability of the participating organizations to work together in an optimal way Coordination in crisis

situations is also difficult due to incompatibilities in infrastructure and difficulty in filtering and validating the typical flood of information generated during disaster events.

Table: 13 Summary of upstream collaboration action towards relief operations

No	Upstream collaboration action	Mean	Std. Deviation
1	Established communication plan that works vertically /horizontally	3.62	0.617
2	Establishing cooperation with the government office or ministry, responsible for customs clearance on road, sea and airports	3.31	0.83
3	Collecting, analysing, and disseminating logistics information relevant to the on-going humanitarian operation	3.16	0.824
	Average	**3.36**	**0.757**

The above table summarizes the result of upstream collaboration action towards relief operations in NDRMC of Ethiopia as it indicates the average mean 3.36 which indicates the level of upstream collaboration medium and in some actions there is low cooperation towards the relief operations. The commission established the communication plan that works both vertically and horizontally as average mean of 3.62 proves. And the cooperation between government offices, which are responsible for customs clearance, at dry ports, and airports is not as it expected as the mean 3.31 indicates there are some bottlenecks. At the same time a practice of logistics information collected analysed and disseminate isn't in proper or expected level as the mean 3.16 indicates some activities are in place and some are not.

4.6 Preparation on financial resources

To make humanitarian aid possible it is dependent on financial support. Governments, companies and individuals donate to the hundreds of humanitarian organizations (Wassenhove & Samii, 2002; Whybark, 2007). Without financial aid these organizations have no right of existence. Besides putting money aside for national disasters the wealthier governments donate to the big international aid organizations like the International Federation of Red Cross (IFRC), World Food Program (WFP), World Health Organization (WHO), and many others.

Table 14: Preparation on financial resources

No	preparing financial resource for relief items	Mean	Std. Deviation
1	Donations for a disaster are earmarked for relief	3.84	0.717
2	Ability to fundraise during the disaster for the post-disaster and continuous preparedness phases	2.6	0.83
3	Prioritization criteria' of funds allocation towards relief operations	3.58	0.86
	Average	**3.34**	**0.802**

The above table describes the NDRMC of Ethiopia has some draw back by finding the resource for relief operations. The average mean shows 3.34 which indicate in some mechanisms are able to raise fund and some are not. As the mean 3.58 shows the commission has criteria to prioritize fund that allocated to support the relief operations. On the other hand Donations and funds are earmarked in nature the mean 3.84 shows most donations pledged are directly mobilized to relief response activities only they didn't consider the pre disaster mitigation and preparedness activities which needs much financial emphasis and consideration.

4.8 Disaster preparedness practices in NDRMC

Pre Disaster phase (These are the activities we undertake to prevent man-made disasters and minimize the effect of natural one). (NDRMC 2016).

These activities included;

- Identification of hazards or emergency situations that may degenerate in to disasters.
- Education and Training for awareness creation and skill acquisition for disaster prevention and management.
- Acquisition of relevant data and basic reference materials designing and equipping of emergency operations and casualty centres and earmarking of spaces for relocation of victims.
- Identification, acquisition and storage of resources needed in relief programmes.
- Purchase and storage of relief items.
- Identification and preparation of data base on collaborating institutions or agencies.
- Formation and training of volunteer. Corps.
- Recommendations on storage of supplies and emergency care training needs of health personnel and volunteers.(NDRMC,2016).

4.9 Humanitarian Logistics Performance prism

The performance measurement evaluation aspects of (Caplice and Sheffi 1995) to evaluate the indicators developed six criteria to evaluate performance measurement systems that are used in organizations to assess their logistics performance. First, a performance measurement system should involve all stakeholders, as well as all institutions (comprehensive), secondly it has to capture all activities and indicators that

weight the current and future logistics performance (causally oriented). Furthermore a performance measurement system should be connected to a reward system and give an overview of the overall organization strategy (vertically integrated), and it should consider all activities as well as departments along a process (horizontally integrated). Finally a performance measurement system should recognize and allow for trade-offs between the different dimensions of performance (internally comparable), it should guide decision makers to take the right action and be understandable (useful) the major performance to measure the quantity of items that have been pledged by donors out of the total number of items requested for the operations, how long it takes for an item to be delivered to the destination country after a donor has pledged to donate it, how quickly donations are pledged and goods are delivered to beneficiaries relies on how accurately the field personnel assessed the needs of the population affected after a disaster.

Table 15: Humanitarian Logistics Performance prism

No	Humanitarian logistics performance indicators	Mean	Std. Deviation
	Comprehensiveness perspective		
1	Humanitarian operations accommodate the different stakeholders involvement in its service	3.55	0.607
2	Strategic field level coordination and prioritisation of stakeholders	3.52	0.731
3	Strong partnerships with UN bodies, NGOs and local authorities to improving its relief operation	3.66	0.696
	Average	3.58	0.678
	Causal Orientation perspective		
1	In NDRMC of Ethiopia Consideration of capabilities and stakeholders contribution are met to achieve certain impact (stakeholder needs)	3.88	0.742
2	There is future oriented financial indicators and consider outcome, adaptability, accountability and impact of its services	3.94	0.709
3	Organizational process creates a balanced picture of the organization by considering different resource input while ensuring outcomes are met	3.03	0.789
	Average	3.62	0.747
	Vertical Integration perspective		
1	Needs are not conflicting to humanitarian organizations mission, operating continental and global wise	3.29	0.611
2	Linkages between the defined humanitarian supply chain strategy with the overall humanitarian organizational strategy	3.08	0.739
3	Alignment of strategy and practice with vision and mission set to ensure internally and externally with collaborative partners	3.59	0.709
	Average	**3.32**	**0.686**
	Horizontal Integration Perspective		
1	Organizations and functions are seen as set of process	3.63	0.633
2	In all activities functions and departments along the process during preparedness set to be collaborated with continuous improvement	3.34	0.729

3	Process orientation which renders integrated system as all activities, functions and departments during preparedness, immediate response and recovery phases	3.73	0.64
	Average	**3.57**	**0.667**
	Internal Comparability perspective		
1	Considers all stakeholders to have the same goal across the different functional area	3.6	0.691
2	Clear set of management process across different organizational units	3.29	0.78
3	Management processes provide visibility as well as accountability to the organizations and support decision makers in their activities	3.37	0.633
	Average	**3.42**	**0.70**
	Usefulness perspective		
1	Link between performance metrics with the actual humanitarian operation	3.01	0.744
2	Performance metrics are set to support decision makers to their decisions	3.31	0.619
3	Evaluation framework which is easily understood and worked out with the employees at each level	3.24	0.65
	Average	**3.19**	**0.671**

As shown in the above table the mean 3.57 indicates logistics performance from comprehensiveness perspective is agreed by the respondent and the NDRMC humanitarian operations accommodate stakeholder involvements, working strategically, there is practice of prioritisation of stakeholders, and the commission built a strong partnership with UN bodies specially WFP, NGOs and local organizations in order to improve the relief operations.

The above table indicates humanitarian logistics performance from causal orientation perspective. As the average mean 3.61 indicates most respondents agree on consideration of capabilities and stakeholders contribution, future orientated financial indicator, but the mean 3.03 proves the commission has average performance on placing organization process to create a balance picture of the organization.

According to the above table average mean of 3.32 identifies the performance of the NDRMC from vertical integration perspective in average level specially the link between the humanitarian supply chain strategy and the overall humanitarian organizational strategy is neutral as showed in the mean 3.08. As the mean 3.29 proves the commission some of needs are conflicting to different humanitarian organization mission that operates both continental and global wise level. But the mean 3.59 indicates the NDRMC align its strategy and practice with vision and mission set to ensure internally and externally with collaborative partners.

Table showed the Humanitarian Logistics performance from Horizontal integration perspective. As the mean proves 3.56 the commission has good performance by strong Horizontal integration of different functional departments. From the mean 3.63 it show

organizational functions and process are set clearly, at the same time the mean 3.73 proves the NDRMC of Ethiopia set process orientation which renders integrated system as all activities, functions and departments during preparedness, immediate response and recovery phases.

In Table the average mean of 3.42 for humanitarian logistics performance of the NDRMC of Ethiopia from internal comparability perspective indicates some functions are not internally comparable. The commission management process across different organizational units is not clear in some activities which expressed by 3.29 mean, and the mean for Management processes provide visibility as well as accountability to the organizations and support decision makers in their activities is 3.37 that identify average level of accountability and visibility in the management process. But the mean 3.6 indicates management process considers all stakeholders to have the same goal across the different functional area.

In Table 16 average mean of 3.18 shows the NDRMC logistics performance from usefulness perspective is average. The mean 3.01 proves there are some gaps in linking performance metrics and actual humanitarian operation. And also mean of 3.32 indicates some of the performance metrics that set to support decision makers are not in pace, finally mean of 3.24 indicates in some points the Evaluation framework isn't easily understood and worked out with the employees at each level.

4.10 Challenges in Preparedness phase of disaster management

According to the data collected respondents responses from the semi structured interview regarding challenges they face in the daily operations of disaster preparedness activities the followings are major challenges in disaster preparedness stage of disaster management

- Challenge in selection and recruitment of appropriate and professional aid worker this makes the commission unable to assign the right person to the right position and affects the response operations.

- Training centres are not established to enhance the skill of relief worker in order to provide continuous and refreshment trainings. And the training didn't accommodate the different types of disaster experts.

- High level of employees turnover due to the hardship nature of the job, very low salary, and uncomfortable environment specially for newly recruited staffs

- Inadequate level of integration and communication with government offices and authorities. There is no a single channel prepared by the customs authority to facilitate the customs clearance of relief items and other supporting material.

- Low effort to raise funds for relief operations as well as mitigation activities. Unable to full fill the needs and preconditions set by the donors and ineffective resource mobilization render to preparation activities/process management.
- High dependency on foreign aid and budget constraint.
- Inadequate efforts to identify the root cause of disaster and forecast its impact.
- Low utilization and access for information technology specially to forecast and early identification of hazards.
- Low transportation network and access due to geographical hindrances and infrastructural problem.
- Warehouse inadequacy, high rent fee and very high building cost.

The study assess the main practices in disaster preparedness phase of disaster management its challenge and measure the logistics performance from comprehensiveness, causal orientation vertical and horizontal integration internal comparability and usefulness perspectives.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study revealed that are the major practices in preparedness stage were warehouse preposition, procurement of relief items, selection and training of relief personnel, setting upstream collaboration network and finding funds for relief response operations. The various practices and challenges in this phase of disaster management summarizes as follows:

The data gathered from the staff members of NDRMC of Ethiopia shows

The practice of warehouse preposition is taken place at the disaster preparedness stage. 72.1 % of the respondents agreed the commission place warehouses strategically to make the response operation effective. 65.1 % of the respondents agreed that the commission set a system to track and trace the movement and flow of relief items which enables to update status of relief item which are supplied to both on-going operations and for stockpiled in warehouses but 29.1 % of the respondent are neutral and this shows the practice is not in full scale and has some constraints to perform.

One function that takes place in the preparedness is having contractual agreement with logistics providers. As the data collected from different staff members 40.7% of the respondents disagree on the availability of this contract, and 31.4 % neutral thus unavailability of pre negotiated contact will cause inadequacy of transportation access during pre, on-going, and post disaster operations and also provides fluctuation of transport charge.

Regarding the training of relief personnel as the data indicates more half of (59.3) and 11.6 % the respondents are neutral and disagree respectively This shows the NDRMC has a gap to identify what type of trainings are needed, who are concerned, what types of training to whom, and similar issues.

On predicting risk prone area by using risk analysis the data gathered shows 62.8 % of respondents agree 31.4 % are strongly agree totally 94.2 % of the respondents are agree on the existence and application of this system, therefore the NDRMC has set up good early warning system to predict hazardous areas what type of disaster will happen, its severity level and what type of response needed, at the same time the system works to warn the community around to be ready reduce the level of destruction and the those concerned in prevention this system inform them to make prevention actions.

Another activity in preparedness phase of disaster management is selection recruitment of relief personnel's. Even if the commission has a clear procedures to screening recruitment, field support, and follow up of relief workers, its practical application has some limitations including screening of professional experts who has adequate experience on different types of disaster, those who can share their experiences. Recruitment criteria's didn't attract the widest pool of suitably qualified candidates. On the hand the collected data proves Preparedness plan of NDRMC of Ethiopia clearly describe how personnel and volunteers are recruited and trained for disaster preparedness and response, and trainings can provide ability to rapidly adapt to changes in culture, working and living conditions, language and professional practice and standard as the mean of 3.51 and 3.55 shows.

To summarize the knowledge management practice of the commission most practices are in place including Collective knowledge of the entire workforce to achieve specific organizational goals, getting the right knowledge, in the right place, at the right time, proper knowledge flow among different humanitarian experts beneficiaries and the targeted communities with average mean of 3.77, 3.60, and 3.55 respectively. But the commission failed to codify systematically all lessons learned in the past and disseminates them in modules so that staff can adapt them to the different circumstances they face in the field. Only 12.8% of the respondents agree the remaining 40.9% neutral, 41.9% disagree, 4.7% strongly disagree, this lessons from previous disaster didn't collect, summarize and used as a module for the coming disaster. This helps relief workers to immediately identify what type of prevention strategy to follow.

Preparation activities in operation and process management functions are in place. As the respondents data shows 4.02, 4.09, 4.24, 4.40 Stock piling of relief item, Pre-planning of logistics operations, predicting the type of risk and level of its severity, and setting up system that help stakeholders (NGO's governmental organizations suppliers to share their experiences respectively. with the exception of long-term agreements with suppliers which is

most not is widely accepted. It provides long procurement lead time of relief items, price inflation, and stock out of items this will be a limitation for response operations.

Upstream collaboration network of the commission shows the established communication plan both vertically and horizontally but the level of cooperation with the government office or ministry, responsible for customs clearance on road, sea and airports is favourable for making collecting, analysing, and disseminating logistics information relevant to the on-going humanitarian operation also have some practical weakness.

In preparing financial resource for disasters according to the data collected from the respondents 39.5% the respondents are disagree and 40.7% neutral and 7% are strongly disagree. This proves NDRMC has weakness in its ability to fundraise during the disaster, post-disaster and continuous preparedness phases. Donations are earmarked which are pledges when disaster occurs for specific response operation not for pre disaster preparedness works.

Finally the humanitarian logistics performance as summarizes as follows

Data gathered from the respondents shows that the logistics performance from comprehensiveness perspective the commission performance is high and perform well by accommodating stakeholders' involvement, strategically select and prioritize stakeholders, building strong cooperation with different organizations.

From causal orientation perspective the performance also high by accommodating future oriented financial indicators, consideration of capabilities and stakeholder's contribution, creating a balanced picture of the organization.

From vertical integration perspective the logistics performance indicator shows its average due to needs of NDRMC is conflicting to humanitarian organizations mission, poor linkages between humanitarian supply chain strategies with the overall humanitarian organizational strategies.

The Horizontal integration indicator showed the performance is high it places organization functions process orientation provides integrated system to all activities functions and departments.

The internal comparability of process of NDRMC of Ethiopia is average performance due to unclear set of management process across different organizational units and Management

processes provide visibility as well as accountability to the organizations and support decision makers in their activities.

The usefulness performance of NDRMC is also Average Link between performance metrics with the actual humanitarian operation Performance metrics are set to support decision makers to their decisions Evaluation framework which is easily understood and worked out with the employees at each level.

Over all the performance of NDRMC by the above 6 perspective is average from which the number of respondents % of the respondent are neutral on the indicators.

Disaster preparedness challenges can be seen from human resource, Logistics, knowledge management, coordination and financial resource. The major human resource related challenges were inability to select and recruit professional with adequate disaster experience. The respondents also agreed that it was hard to find specialized professional.

Logistics challenges were identified as lack of capital investment to build and rent warehouses high cost of supplies during disaster periods and high level of uncertainty in demand, low transportation access and network, domestic barriers, knowledge management practice includes lessons lack of access to codify lessons learned in the past to use in the future disaster, coordination challenges identified as inadequate communication strategies, customs producers, and lack of prioritization for relief items.

Financial challenges were donors precondition, and pledging earmarked donations, and stringent donor rules and guidelines on financial policies, high dependency on foreign aid and budget constraint.

The study also identified challenges included poor infrastructure in areas of operation, geographic characteristics of the affected region, inadequate transportation modes and domestic barriers such as country specific policies.

The study also revealed that the organization employed various methods to improve the humanitarian logistics performance these include, adoption of technology in the early warning systems, improving tendering process by prequalifying the suppliers as well as training the purchase.

A long-term, strategic coordination and management of disaster response has challenging problems. The relief operations are 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. However collaboration, coordination, professionalism and accountability are important factors on which the performance of the relief operations relies on.

5.2. Conclusions

The study concludes that disaster preparedness activity of NDRMC of Ethiopia is faced by numerous challenges such as finding specialized professionals, high employees turnover rate. The challenges are threatening the future humanitarian operations during emergencies. The organization is therefore opting to engage in putting a mechanism to attract disaster specialists and professional as to emergency operations. Long term development projects are more structured and predictable hence reducing some of the preparedness challenges faced during disasters or emergencies.

It is hardly observed that the logistics activities are highly depended on external logistics providers. Thus the commission has to develop and signed pre-negotiated contract with logistics providers in order to enhance the humanitarian logistics performance.

Successful implementation of upstream collaboration action provides effective humanitarian operations. The study identifies the coordination with different state governments and other concerned authorities are very weak especially with customs authorities regarding the clearance of relief items. The commission needs to engage in upgrading the communication level with local and federal authorities.

Funds and donations are the back bone for humanitarian operations. The NDRMC of Ethiopia has gaps to allocate and raise funds and donations from local and abroad. The commission has to accommodate its interest and donors preconditions towards raising funds.

The study identified in most of the relief operations UN bodies NGOs WFP etc… are the leading actors. The commission has to play the key role in disaster response activities. Three years ago the commission was under the ministry of Agriculture as one directorate this shows how much the government is not intended in Disaster response activities.

Emergency relief operation is dynamic and time sensitive every hour of delay in supply of materials is a question between life and death of the affected population. The speed and efficacy of disaster response depends on severity of the event, location, nature of disaster and availability of alternative channels. In an emergency situation, the existing logistic network is disrupted to a great extent and there is a need to establish an alternative mechanism to deliver the supplies.

5.3. Recommendations

The government needs to give much emphasis to the humanitarian relief works by strengthen the commission by revising its organizational structure by adding more functional departments and employees and by allocating and assigning more budget. This makes the commission to play more roles in the disaster relief operations

Due to the multi nature of disaster the commission needs to establish its own training centre which gives continuous and refreshment trainings to both newly recruited and existing employees, apparently the commission need to revise its selection and recruitment methods and methods that attract qualified personnel's

The commission should adopt pre-positioning of relief items stocks in strategic location, especially near disaster-prone areas to enhance the disaster response efficiency. In the meantime, the commission can make greater investments in information technology to enhance tracking and tracing of relief items

They should also give more visibility to preparedness in logistics, since logistics were takes large portion of the expenditure on relief operations, the logistics cluster has to be set in a cost wise manner, as well as training to enhance relief logistics works

The commission has to find new ways to raise fund from donors and negotiate with them about the pre-conditions to fulfil.

They should develop and signed pre-negotiated contract with logistics providers in order save time and money that will deliver effective logistics supplies when disaster occurs

Therefore, some recommendations will be offered for continued improvement as below:

Cooperation with Local Governments: Local governments played a key role in decision making and implementation of the humanitarian aids logistics and relief supply chain operations and closer cooperation with the local governments are set against the backdrop of the humanitarian aids processes

Cooperation with Federal Authorities***:*** Better linkages and cooperation with airports road authorities and port authorities regarding logistic operations

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APPENDEX A

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

MA PROGRAM

Questionnaire to be filled by staff members of National Disaster Risk Management Commission of Ethiopia

Dear Participant,

This questionnaire is developed for an academic effort planned for the collection of primary data that will be used to assess the challenges of disaster preparedness and its effect on humanitarian logistics performance of the National Disaster Risk Management Commission of Ethiopia, in partial fulfilment of the requirements for the Degree of Master of Arts in Logistics and Supply Chain Management, Addis Ababa University, School of Commerce.

The information obtained from this questionnaire will be kept confidential and will be used for any academic purposes. Hence, I, kindly request you respond to the questions freely and openly to share your experience and knowledge with me.

Thank you for your cooperation!

Jateni Chaka

Cell Phone: 0912369544

E-mail: jah1030@gmail.com

General Instructions

- It is not necessary to write your name
- Try to address the entire question given below
- Where answer options are available, please tick (√) in the appropriate box for PART-I and circle for your response to each statements of PART-II. And write down shortly your answers for section three

PART-I: General Information

This part of the questionnaire, tries to gather some general information about the background of the respondent and the organization.

1.1 Sex

1. Female ☐ 2. Male ☐

1.2 Age

1. 18-25 years☐ 2. 26-30 years ☐

3. 31-40 years☐ 4. Above 40 years ☐

1.3 Educational Qualification:

1. Below grade 12 ☐ 2. Grade 12 completed ☐

3. College Diploma ☐ 4. First Degree ☐

5. Second Degree and above ☐

1.4 Your department/work unit:

1. Risk Reduction ☐ 2. Logistics ☐

3. Warehouse ☐ 4. Early warning ☐

5. Other Specify_____

1.5 Years stayed at the NDRMC: _____

1.6 How long have you been working in humanitarian sector/relief chain operation?

1. Less than 2 Years ☐ 3. 6-10 Years ☐

2. 2-5 Years ☐ 4. Over 10 Years ☐

PART-II: Instruments for disaster preparedness practices

This part of the questionnaire relates to information on disaster preparedness practices, challenges and humanitarian logistics performance of National Disaster Risk Management Commission of Ethiopia.

Section One: Disaster preparedness practices

With regard to disaster preparedness practices of your organization, please circle the appropriate number 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.

	Practices in Humanitarian relief operations at the disaster management preparedness stage	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	There is a practice of Pre-positioned warehouses at strategic locations to ensure the availability of supplies when required	1	2	3	4	5
2	There is an ability to track and trace the flow of goods through a commodity tracking system	1	2	3	4	5
3	There is a practice of pre negotiating contract with logistics suppliers to provide better logistics performance	1	2	3	4	5
4	Training of relief personnel to immediately deploy personnel are used	1	2	3	4	5
5	There is the practice of predicting risk prone area to play disaster mitigation role	1	2	3	4	5

A	**Practices of selection and training of relief human resource (Personnel)**					
1	Preparedness plan describe how personnel and volunteers are recruited and trained for disaster preparedness and response	1	2	3	4	5
2	There are a clear Procedures for recruitment, selection, training, field support, and follow up of relief workers	1	2	3	4	5

3	Trainings can provide ability to rapidly adapt to changes in culture, working and living conditions, language and professional practice and standard	1	2	3	4	5
4	Professionals specialized with different types of disaster are identified and trained	1	2	3	4	5
5	Recruitment methods used at NDRMC of Ethiopia aim to attract the widest pool of suitably qualified candidates	1	2	3	4	5

B	**Knowledge management practice towards the humanitarian relief operations**					
1	Application of collective knowledge of the entire workforce to achieve specific organizational goals.	1	2	3	4	5
2	There is a practice of getting the right knowledge, in the right place, at the right time.	1	2	3	4	5
3	There is a proper knowledge flow among different humanitarian experts beneficiaries and the targeted communities	1	2	3	4	5
4	There is a practice of codification systematically all lessons learned in the past and disseminate them in modules so that staff can adapt them to the different circumstances they face in the field.	1	2	3	4	5

C	**Preparation activities in operation and process management**					
1	Stock piling of relief item to immediately dispatch to disaster area	1	2	3	4	5
2	Pre-planning of logistics operations are in place	1	2	3	4	5
3	There is a practice of predicting the type of risk and level of its severity based on risk analysis	1	2	3	4	5
4	Long-term agreements with suppliers is widely accepted	1	2	3	4	5
5	There is a system that help stakeholders (NGO's governmental organizations suppliers to share their experiences	1	2	3	4	5

D	**Upstream collaboration action towards relief operations**					
1	There is established communication plan that works vertically /horizontally	1	2	3	4	5

2	There a practice of establishing cooperation with the government office or ministry, responsible for customs clearance on road, sea and airports for relief logistics(items)	1	2	3	4	5
3	There is a practice of collecting, analysing, and disseminating logistics information relevant to the on-going humanitarian operation	1	2	3	4	5

E	**Preparing financial resource**					
1	Donations for a disaster are earmarked for relief and not for training and investment in preparedness strategies	1	2	3	4	5
2	There is an ability to fundraise during the disaster for the post-disaster and continuous preparedness phases	1	2	3	4	5
3	There is prioritization criteria' of funds allocation towards relief operations	1	2	3	4	5

Section Two: Humanitarian Logistics performance indictors

With regard to humanitarian logistics performance indicators of your organization, please circle the appropriate number 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.

	Humanitarian logistics performance from comprehensiveness perspective	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	The NDRMC of Ethiopia Humanitarian operations accommodate the different stakeholders involvement in its service	1	2	3	4	5
2	Strategic field level coordination and prioritisation of stakeholders	1	2	3	4	5
3	The NDRMC of Ethiopia has developed Strong partnerships with UN bodies, NGOs and local authorities to improving its relief operation	1	2	3	4	5

	Humanitarian logistics performance from casual orientation perspective					
1	In NDRMC of Ethiopia Consideration of capabilities and stakeholders contribution are met to achieve certain impact (stakeholder needs)	1	2	3	4	5
2	There is future oriented financial indicators and consider outcome, adaptability, accountability and impact of its services	1	2	3	4	5
3	Organizational process creates a balanced picture of the organization by considering different resource input while ensuring outcomes are met	1	2	3	4	5

	Humanitarian logistics performance from vertical integration perspective					
1	The NDRMC of Ethiopia needs are not conflicting to humanitarian organizations mission, operating continental and global wise	1	2	3	4	5

	Humanitarian logistics performance from internal comparability perspective	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	The NDRMC of Ethiopia considers all stakeholders to have the same goal across the different functional area	1	2	3	4	5
	Humanitarian logistics performance from horizontal integration perspective					
2	There is clear set of management process across different organizational units	1	2	3	4	5
1	The NDRMC of Ethiopia organizations and functions are seen as set of process	1	2	3	4	5
3	Management processes provide visibility as well as accountability to the organizations and support decision	1	2	3	4	5
2	In all activities functions and departments along the process during preparedness set to be collaborated with continuous improvement	1	2	3	4	5
3	There is process orientation which renders integrated system as all activities, functions and departments during preparedness, immediate response and recovery phases	1	2	3	4	5
2	There is linkages between the defined humanitarian supply chain strategy with the overall humanitarian organizational strategy	1	2	3	4	5
3	There is an alignment of strategy and practice with vision and mission set to ensure internally and externally with collaborative partners	1	2	3	4	5

	makers in their activities					

	Humanitarian logistics performance from usefulness perspective					
1	There is a link between performance metrics with the actual humanitarian operation	1	2	3	4	5
2	Performance metrics are set to support decision makers to their decisions	1	2	3	4	5
3	There is an evaluation framework which is easily understood and worked out with the employees at each level	1	2	3	4	5

Section Three: Disaster preparedness challenges

With regard to disaster preparedness challenges of your organization, please write down shortly major challenges for NDRMC of Ethiopia in its disaster preparedness stage of humanitarian logistics performance.

A. Major challenges faced during the preparation phases of disaster management

_____

_____

_____

B. Challenges related to training and selection of relief workers

_____

_____

_____

C. Challenges related to knowledge management practice

_____

_____

_____

D. Challenges related to preparation activities and process management

_____

_____

_____

E. Challenges related to upstream collaboration action towards relief operation

F. Challenges related to preparing financial resource

If any comment you well come:

Many Thanks! I really appreciate for your time