

**LOGISTICS PREPAREDNESS AND DISASTER RESPONSE OF
INTERNATIONAL HUMANITARIAN ORGANIZATIONS IN KENYA**

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DECLARATION

This research paper is my original work and has not been presented in any other academic institution for a degree.

Signed: _____ Date _____

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D67/8539/2017

This paper has been submitted for examination with my consent as the University of Nairobi supervisor.

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DEDICATION

This work is a special dedication to my mum, Mutindi. She has seen me through my education and she has been pivotal in my life. I also wish to dedicate it to my spouse Stanley, your support during the period of study cannot be quantified. To my lovely son, Mutayh Jaylen, you came to this world while I was doing this work and bore with me all through. To my mother in law, Maria, you are just God sent, you agreed to look after my son just to give me ample time to complete my course work.

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ABBREVIATIONS

ICNL -International Center for Not-for-Profit Law

IFRC -International Federation of Red Cross

IHO -International Humanitarian Organization

NGO -Non-Governmental Organization

ABSTRACT

Humanitarian organizations in Kenya focus on helping to uplift the life of Kenyans especially where and when disasters happen. However, there are various challenges facing these humanitarian organizations in Kenya which have been affecting their delivery of humanitarian services. One of the challenges is lack of proper logistics preparedness. This study, thus, is aimed at assessing humanitarian logistics preparedness and disaster response of humanitarian organizations. The study used descriptive research design and focused on 57 international humanitarian organizations in Kenya. It used primary and secondary data to accomplish its objective. The study used descriptive statistics to analyze the data and to establish the correlation between logistics preparedness by humanitarian organization and disaster response, a regression model was used. The study revealed that humanitarian organization logistics preparedness enhances disaster response. The study concluded that management and control, logistics operations, recipient community and response network efforts significantly and positively affect disaster response by IHOs in Kenya. The study recommended that humanitarian organizations should undertake policy measures such as hiring qualified and specialized logistics staff, prior planning, involving affected communities and coordinating with other stakeholders for information sharing and avoiding duplication of response efforts. These measures aimed at increasing logistics preparedness enhances disaster response.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The number of disasters has increased worldwide creating a complex and multi-agency disaster response operations. This led to raise in challenges such as efforts duplications, insufficient funding and resources, limited information and transparency, and accountability and coordination issues (Jahre, Pazirandeh, & Van Wassenhove, 2016). These challenges have prompted a need to re-look disaster response efforts in order to increase efficiency in operations, reduce duplications of efforts, and manage resources better. Therefore, it is indisputably important for agencies to enhance disaster preparedness by setting up suitable structures before the disaster occurs (Holguín-Veras, Jaller, Van Wassenhove, Pérez & Wachtendorf, 2012).

There has been an advocate for healthier preparedness by humanitarian organization and researchers for disaster response. The paper also suggests that in the humanitarian world, only one percent of the total humanitarian aid is spent on disaster preparedness. Although there seems to be a consensus on the significance of disaster preparedness, small number humanitarian organizations actually do it. Because disaster response logistics expenses can be about 80% of the entire budget (Van Wassenhove, 2006), this makes prior preparedness for logistics principally significant for improving the efficiency and effectiveness of disaster response (International Federation of Red Cross Annual Report, 2015).

This research is based on the two theories which are the Resource Based Theory and the Relief Coordination Theory. In the humanitarian organizations context, the Resource Based theory can be taken as a pack of resources that are distributed across with lasting variances between them. Resources in this theory refer to resources such as equipment, expertise, knowledge and other organizational resources. The Relief Coordination Theory suggests that it is possible to coordinate the efforts of different organizations (Seybolt, 1997; McEntire, 1997). This concept can be defined as mobilization resources, accountability assurance and information management in humanitarian context.

1.1.1 Humanitarian Logistics Preparedness

Humanitarian organizations goal during disaster is to provide as much assistance as possible and prevention of further damage when disaster occurs. In order to achieve this, response time

reduction is an important a very important aspect of disaster response (Karanja, Mairura & Ombui, 2015). According to Safeer, Anbuudayasankar, Balkumar & Ganes (2014), humanitarian logistics involves the efforts in planning, executing and regulating the movement and storing of goods and equipment and the associated information from origination source to the affected community with an objective of providing maximum assistance. Humanitarian organizations logistics encompasses the process of resources and people mobilization as well as knowledge and skills to help the people affected by disasters. Logistics is also among the most costly part of the humanitarian disaster response operation (Daud, Hussein, Nasir, Abdullah, Kassim, Suliman, & Salu-din, 2016).

Humanitarian logistics preparedness refers to processes that occur prior to a disaster. It includes approaches of execution of an effective disaster response operation (Karanja et. al., 2015). Logistics preparedness is important since it is the stage where which the design of network, information systems, and partnership efforts are established. Further, the phase of preparation includes elements such as disaster response plans updates, disaster relief and medical supplies stocking, vulnerabilities identification and information arrangements for the local community (Lehrer, 2015). With this in mind, humanitarian logistics preparedness research should not be confined to the stage prior to a disaster event in the linear disaster management cycle nor to the prevalent sectoral silos of relief and development. According to Jahre (2017), it is posited that humanitarian logistics preparedness is a key determinant of the overall disaster risk management activities through which continuous and concurrent efforts related to mitigation of disaster risk and response/relief to disaster event are made.

Humanitarian logistics preparedness can be measured using a framework suggested by Jahre et al., (2016) where the logistics preparedness in humanitarian organizations is clustered intra-organizational and inter-organizational where intra-organizational includes of management and control, which entails management of knowledge, human resources, strategy and planning, financial resources, management of information, and measurement of the performance; and logistics operations which includes assessment of needs, procurement, storage, and transport and distribution. The inter-organizational consists of response network, which includes other humanitarian organizations, firms, governments, and stakeholders

involved; and recipient community, which includes to involving local community as well as local resilience and infrastructures development.

1.1.2 Disaster Response

The main aim of logistics in a humanitarian context is to implement operations and responses that promote efficiency and timeliness in delivering assistance (Cozzolino, 2012). This can be achieved when staff is mobilized, goods and equipment for providing the support, evacuating victims are organized and resettling those in need of such an assistance, and more importantly helping the beneficiaries get back to a life free of the disaster (Beamon, 2004). Disasters cause disruptions in the normal functioning of a community which leads to a widespread environmental, material, human and economic losses that exceed the potential scope available for the community affected in coping with while using their resources at disposal (International Federation of Red Cross Annual Report, 2015).

Disaster response should aim at using operational skills, organizational skills, administrative and operational abilities to implement strategies, improve capabilities and create policies aimed at lessening the adversely negative impacts brought by these hazards or even the chances of a disaster (International Federation of Red Cross Annual Report, 2015). It is not easy to foresee any possible occurrence of a disasters and only the well prepared community can sustain the impact that is brought about by such disasters. A well instituted disaster response mechanism should have an efficient logistic process. This helps to acquire, manage, and deliver the required components to the beneficiary population at the scene of a disaster (Tysseland, 2009). However, a conflict may arise between key players which can affect the supplying of humanitarian aid to disaster stricken community (Munguti, 2010). This can lead to inefficiencies and disruptions as conflicts of interests emerge up and discontents become the order hence compromising the objective of the process (Kovacs & Spens, 2011). The vulnerable society is left hanging without the aid and support it ought to have got.

1.1.3 Humanitarian Organizations in Kenya

Kenya is prone to numerous of disasters which consist of famine brought about by droughts, floods, conflicts, outbreak of diseases such as cholera as well as internal conflicts. This substantiates the large presence IHOs that take part in humanitarian work in different parts of the country. There are 57 IHOs present in Kenya (Kenya Relief Web, 2016). IHOs in Kenya

have a promise to human dignity values and take part in disaster response when disasters occur.

The Kenya NGO Council controls the operations of all the IHOs operating in the country. The NGO Board, which falls under the NGO coordination of 1990 registers and regulates all the NGOs. The initial application for registration is done by the first three officials. The responsibilities and functions by these organizations are guided by the 1995 NGO Code of Conduct (Kameri-Mbote, 2000). In Kenya, IHOs are categorized into two groups which include operational NGOs, those that are involved in the designing and implementing of projects related to developments and advocacy NGOs, are those that engage in promoting or defending a specific cause. All IHOs in Kenya have a hierarchy of operations, with strategic operations such as budgeting, reporting, project planning as well as communication and information control to other institutions been done from the main headquarters (Munguti, 2010).

However, in their process of giving assistance, these organizations have been faced with various challenges such as insecurity in conflicts and harsh zones, low funding from their mother organizations and other donors, poor strategic planning, conflicting interests between them and that of the Kenya government, hostility from the from the community especially in the North Eastern Part of Kenya, poor governance, harsh climatic conditions which derail their operations at times, corruption, political upheavals, limited capacity and, religious and cultural conflicts from the areas they are required to deliver humanitarian assistance (Omondi, Ombui & Mungatu, 2013).

1.2 Research Problem

The IHOs in Kenya focuses on helping to uplift the life of Kenyans especially where and when disasters happen. However, there are various challenges facing these humanitarian organizations in Kenya which have been affecting their delivery of humanitarian services. One of the challenges is lack of proper logistics preparedness. Though there is a rising consciousness and interest by the humanitarian organizations on the type of uncertainties in response context, the existing approaches to logistics preparedness are often ad hoc, varying and disjointed (Metcalf, Martin, & Pantuliano, 2011).

Humanitarian organizations have no common approach to logistics preparedness (Poirier, Swink & Quinn, 2007). There has been duplication of efforts which has led to resources wastage and disaster response delays. This has, in turn, led to humanitarian organizations being unable to meet their objectives. Karanja et al., (2015) on their study on factors that determine the effective coordination of logistics activities among humanitarian organizations in Nairobi, found that one of the major challenges that all humanitarian organizations face is inexistence of good coordination among the organizations. This has led to the less sharing of information among themselves to enhance synchronization of their efforts for their common goal. Even with these challenges, there has been little efforts by these organizations in Kenya to ensure sufficient logistical preparedness before disasters strike.

Limited studies have focused on IHOs preparedness and disaster response in Kenya. In his study, Nyamu (2012) finds that organization that prepare for their logistics in advance have higher success rate in disaster response than those who don't. However, his attention was mainly focused on the problems international humanitarian encounter in their supply chain management in Kenya. Likewise, Mohamed (2012) research was crucial because it expounded on how supply chain activities can enhance the delivery of service by these organizations in Kenya. The study, however, was restricted to the association between logistics and the level of service which these organizations service offer. A more recent study by Karanja et al. (2015) finds inexistence of platform where humanitarian organizations in Nairobi can share information, they do not share pre-conditions for building partnerships, information networks do not exist and they have minimal rate of specialization. However, their study only focused on coordination of humanitarian organizations in Nairobi County and not overall preparedness.

Therefore, the study sought to accomplish an objective which was finding out the IHO logistics preparedness in Kenya and how this affects their disaster response. The study wanted to determine the extent to which IHO prepare for logistics in Kenya. The study also tried to establish the effect logistics preparedness on IHOs disaster response in Kenya.

1.3 Research Objectives

This study sought to determine the international humanitarian organizations logistics preparedness in Kenya and its effect on disaster response. The specific objectives included;

1. To find out the extent of logistics preparedness of the IHOs in Kenya.

2. To establish the effect of logistics preparedness on IHO disaster response in Kenya.

1.4 Value of the Study

Humanitarian organizations are behind the private sector in terms of realization of the importance of logistics preparedness. Humanitarian organizations have started recognizing logistic as a key to relief operations (Wassenhove, 2006). This study will help a number of stakeholders such as the humanitarian organizations, the Kenyan government, students, academicians and educationist. It will assist the top management of the humanitarian organizations to prepare logistically in advance for efficiency disaster response during emergencies by highlighting a framework that they can refer where preparing logistically for disasters in Kenya.

Furthermore, it will provide useful framework to the Kenya government when developing Emergency Humanitarian Response Plan for the country by providing a methodology for logistics preparedness and determining how this affects disaster response. The government will be able to identify and seal loopholes in addressing the logistics risks faced by the humanitarian organizations and advice accordingly. In addition, the study will add value to the discipline of humanitarian logistic. It will of assistance scholars who want to undertake research on logistics preparedness and efficient disaster response by humanitarian organizations in the country and beyond.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focuses on theoretic work undertaken and the conceptual framework. It aims to document critical definitions and knowledge around humanitarian logistics preparedness and disaster response. The chapter looks at the theories under which this study was anchored and describes the humanitarian logistics preparedness and the disaster response and conceptual framework.

2.2 Theoretical Foundation

This study was based on the two theories. These theories include Resource Based View and the Relief Coordination Theory.

2.2.1 Resource Based View

This view was first suggested by Wernerfelt (1984) and supported by Barney (1986). Resource mobilization should be an integral part of the humanitarian organizations' disaster preparedness (Karanja et al., 2015). The organization should have or in a position acquire sufficient resources so as to respond to disasters efficiently. Resource Based Theory suggests that any organization has a bundle of resources that are allocated to the different needs of the organization (Eisenhardt & Martin, 2000). The theory suggests that an organization should have efficient resources to stay relevant and make sure it does well (Rungtusanatham et al., 2003). According to Eisenhardt and Martin (2000), these resources refer to things like equipment, expertise and knowledge among others. These resources enable humanitarian organizations to be competitive in their operations as they combine them with capabilities to form their core competencies.

Resource Based Theory is important to humanitarian organizations due to its capability in logistics because logistics is expensive and because capability is a source of viable competitive advantage the organizations can have and whose understanding is attached to the feasibility of taking advantage of the resources that they have and how efficient they can use them (Zacharia et al., 2011). To get valuable resources for competitiveness humanitarian organizations have been outsourcing most of their services (Karanja et al., 2015). According to Zacharia et al. 2011) coordination enable organizations to create more competitiveness as thy access complementary resources.

2.2.2 Relief Coordination Theory

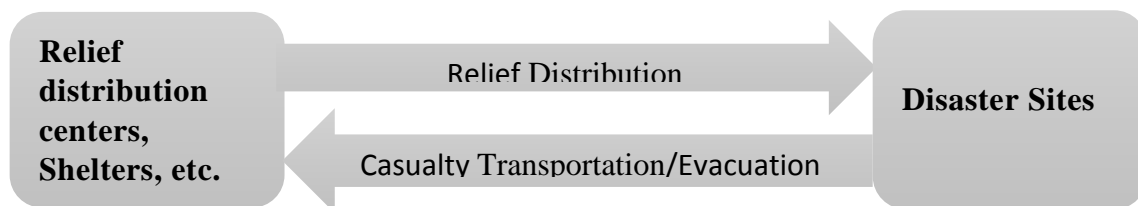
Malone and Crownston (1990) were among the first people to emphasize on coordination theory. According to Jahre et al. (2016), for disaster response, there is need for inter-organizational collaboration. This inter-organizational involves recipient community, which involves local community involvement and collaboration local infrastructure as well as resilience; and response network, which involves other stakeholders such as firms, governments and other humanitarian organizations (Jahre et al., 2016). According to Relief Coordination Theory suggests that it is possible to coordinate the efforts of different organizations and their activities (Seybolt, 1997; McEntire, 1997). The Humanitarianism operation provides a more specific concept as information management, resource mobilization and accountability, functional division of labour coordination and leadership provision (Minear, 2002).

Researchers also suggest that in order to effectively provide services, coordination is important (Karanja et al., 2015). Effectiveness is mostly highlighted as the motive why stakeholder coordinate in providing service (Minear, 2002). Reducing duplication of efforts is also given as a basis as to why these organizations should always enhance coordination during their emergency response processes (McEntire, 1997).

2.3 Humanitarian Logistics Preparedness

There are been an extensive definitions of humanitarian logistics with Thomas and Mizushima (2005) definition being referred by many authors. According to Safeer et al. (2014), these organization's logistics involves the efforts towards planning, executing and regulating the movement and storing of goods, equipment and resources from origination location to the affected community with an objective of providing maximum assistance. Jahre et al. (2016), argues that humanitarian logistics includes prior planning, advance procurement, transport arrangements, warehousing and distribution.

Figure 1: Humanitarian logistics



Source: Safeer et.al. (2014)

Likewise, according to Jahre et al. (2016), currently, the definition the term 'logistics preparedness' is not clear especially in the humanitarian context. Rather, most of the approaches to this generic concept are broad and unclear and, employing a mixed array of vocabulary from 'preparedness' to 'disaster preparedness' and 'emergency preparedness' (Jahre et al., 2016). The authors offer a comprehensive meaning of the logistics preparedness in the humanitarian context based on their analysis of publicly available documents from disaster relief organizations and their review of extant researches on humanitarian logistics and preparedness as the implementation of processes, working on the local community systems and structures connections and involving other stakeholders in designing for effective, well-organized and responsive human, financial, material as well as other resources for information mobilization during disasters. This involves assessment of all logistics elements for the main objective of giving maximum assistance. This definition comprehensively covers the fundamental aspect of humanitarian logistics preparedness.

Previous disasters experiences made practitioners and researchers appreciate the importance of disaster preparedness (Thomas & Kopczak, 2005). Different researches have associated poor logistics to poor disaster response operations. Research has shown that humanitarian organization often overlook logistics preparedness and they rarely include it in their preparedness plans (Chaikin, 2003). The main reason for this is insufficient funds. It is difficult for humanitarian organizations to get funds for disaster preparedness since funding is usually reserved for specific operations (Jahre et al. 2016). As a result, donor attention to preparedness efforts needs to be increased (Majewski, et al. 2010).

2.4 Disaster Response

According to the Lehrer (2015), communities are predisposed to disasters. Therefore, efficient disaster response means that during such disasters the humanitarian organizations are able to supply the appropriate goods or services to the victim of disasters, where they should be supplied within the shortest time possible (Russell, 2005). Humanitarian organizations should give the disaster victims the much needed assistance as quickly as possible. There is an escalation in the number of catastrophes against resource shortage and funding rivalry which require well-organized and transparent disaster response procedures (Minear, 2002).

The measure of the disaster responses can be done by a set of variables as follows: First, the assistance for emergency which is provided to individuals in order to alleviate distress or personal

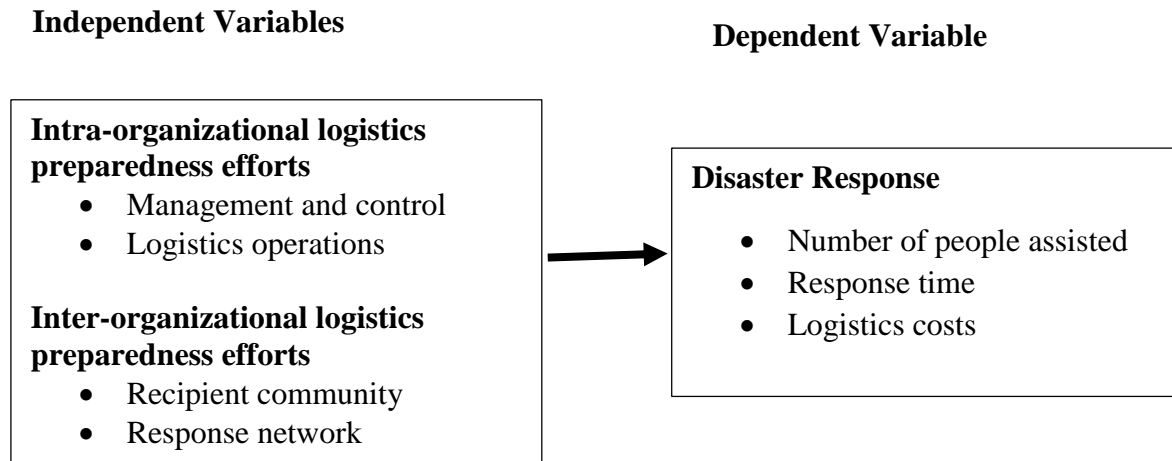
hardships emanating from a natural disaster; second, the assistance provided to the vulnerable community for “restoration or replacement of certain essential public assets damaged as a direct result of a natural disaster, and counter disaster operations for the protection of the general public” (Australian Government, 2011); third, recovery package for the community for supporting “a holistic approach to the recovery of regions, communities or sectors severely affected by a natural disaster” (Australian Government, 2011); fourth, the relief or recovery for alleviating distress or damage in a disaster circumstances (Australian Government, 2011).

Generally, IHOs have emphasized on the need for ensuring that logistic modalities are set up to standard to ensure that the procurement, resources allocations, storage, tracking, planning and coordination meets the most optimal concern as possible. This indeed has been achieved through the development of structures that embody their framework for material procurement, storage and transport as well as distribution, during disaster management in humanitarian concerns (Mungatia, 2010).

2.5 Conceptual Framework

Disaster response (dependent variable) in international humanitarian logistics is as a result of a set of two independent variable; intra-organizational and inter-organizational logistics preparedness efforts. The intra-organizational efforts encompass control and management, which involves human resources as well as management of knowledge, strategy and planning, financial resources, management of information, and measurement of performance; and logistics operations, comprising of assessment of needs, procurement, storage as well as transport and distribution. On the other hand, the inter-organizational includes recipient community, which involves local community involvement and collaboration and resident resilience and infrastructure development; and the response network, relating to firms, administrations, as well as the other humanitarian organizations. Below is a conceptual representation of this argument.

Figure 2: Conceptual Framework



Source: Jahre et al. (2016)

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The preceding chapter reviewed literature that concentrated on the theoretical foundations and discussed the study concepts in detail. It further explained the conceptual framework that guides the study. This paved way for the researcher to proceed to methodology chapter. The chapter gives research design description, the size of the population the study targeted, they type of data and data collection methods as well as the data analysis methods used in this study.

3.2 Research Design

Descriptive research design was used in this study and aims to collect evidence on the current conditions without making alterations to the real observation (Creswell, 1994). Karanja et al. (2015) used this research design to identify the factors effecting logistics synchronization among the different humanitarian organizations in Nairobi.

The aim of this study, therefore, was to collect statistics from the IHOs in Kenya which shows their real situation. However, there was need to be careful of reactivity in this type of research because some respondents might behavior differently when they being observed or provide responses that are considered desirable. This study mitigated this by dropping the questionnaire and picking it once filled as opposed to responding while being observed. This mitigated the change in behavior (Miles, 1985).

3.3 Population of Study

There are 57 IHO in Kenya (Relief Web Kenya, 2016). These organizations comprise of humanitarian organization with a promise to serve while upholding human dignity values while taking part in service to people who need their assistance. Therefore, this study's population covered all the 57 IHOs in Kenya as per the appendix 1 attached.

3.4 Data Collection

To achieve the study objective, the researcher used primary and secondary data. The researcher administered the questionnaire by dropping and picking them later at a time agreed between researcher and the respondents. The secondary data was obtained from sources that were recommended by logistic or supply chain managers when filling the questionnaire and included

websites, annual reports, and all relevant literature. For triangulation purposes, the study used the secondary data.

Primary data was given by the logistics or supply chain managers or their equivalents. They were selected because they understand the logistics operations at their organizations and they are at the center of logistics operations. Therefore, knowledgeable and in good position to respond the questions in the questionnaire regarding the issue under study. Where the position does not exist, a manager from the department that handles logistics was interviewed. Since specific information was being collected, only one respondent was picked in each organization to avoid duplication of information.

3.5 Data Analysis

Before data analyses, all completed questionnaires were checked to make sure they were properly filled. Descriptive statistics such as standard deviation and mean were used to investigate the extent of logistics preparedness of the IHOs in Kenya.

Regression analysis was done to explore the correlation between logistics preparedness and disaster response by these organizations. Disaster response was a function of the intra-organizational efforts included control and management, which involved human resources as well as management of knowledge, strategy and planning, financial resources, management of information, and measurement of performance; and logistics operations, comprising of assessment of needs, procurement, storage, and transport and distribution. On the other hand, the inter-organizational included recipient community, which involves local community involvement and collaboration and resident pliability and development in infrastructures; and response network comprised of firms, administrations, and organizations involved. The relationship below applied:

Disaster Response (DR) = f (Logistics preparedness); which can be described as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y=Disaster Response (number of beneficiaries, response time and logistics costs)

β_0 = Constant

$\beta_1 - \beta_4$ = Regression coefficients

$X_1 - X_4$ = Disaster Preparedness efforts where;

X_1 = Management and control (human resources, management of knowledge, strategy and planning, financial resources, management of information, and measurement of performance)

X_2 = Logistics operations (assessment of needs, procurement, storage, and transport and distribution)

X_3 = Recipient community (local community collaboration and resilience and infrastructures development)

X_4 = Response network (firms, administrations, and other humanitarian organizations)

ε = Error term

CHAPTER FOUR: DATA ANALYSIS, RESULTS, AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter offers the results of the analysis of data exercise. It also discusses the findings from the study data analysis.

4.2 Response Rate

The researcher targeted 57 IHOs in Kenya where questionnaires were used for collecting data. The study managed to collect data from 49 organizations using questionnaires thus the rate of response was 86% was achieved, which was considered adequate for this study. According to Babbie (2004), a 50% rate of rate is satisfactory for data analysis as well as publication while 60% is considered good and 70% can be considered as excellent. Table 4.1 shows the rate of response results

Table 4.1: Response Rate

Response	Frequency	Percent
Returned questionnaires	49	86.0
Unreturned questionnaires	8	14.0
Total	57	100.0

Source: Study Data, 2019

4.3 General Information of the Organizations

This section indicates the findings on the period the entities had been in operation, presence of a logistics management department in the organizations and the respondents' managerial levels. The results were as follows

4.3.1 Period in Operations

This section wanted to find the period the organization had been in operation in Kenya. The period the firms have been in operation is important since it indicates the level of experience and expertise accumulated over the years. Table 4.2 shows the findings

Table 4.2: Period in Operations

Period	Frequency	Percent
< 20 years	17	34.7
21 – 40 years	18	36.7
> 41 years	14	28.6
Total	49	100.0

Source: Study Data, 2019

Table 4.2 indicates that 34.7% of the IHOs in Kenya had in the country for less than 20 years and 36.7% have been in the country for between 21-40 years. Also, the results further indicate that 28.6% of the organizations had been conducting humanitarian work in the country for over 40 years. These results indicate that big number of the organizations had been in conducting humanitarian work in the country for more than 20 years. Hence, this indicates that these organizations had accrued adequate experience on the operations in the country.

4.3.2 Presence of a Logistics Management Department

The section sought to determine whether the organization had a logistics management department. Table 4.3 indicates the results

Table 4.3: Presence of a Logistics Management Department

Response	Frequency	Percent
Yes	49	100.0

Source: Study Data, 2019

The discoveries on table 4.3 shows that all organizations had a logistics management department. The finding thus indicates that IHOs in Kenya usually have a logistics department in charge of any activities on disaster response.

4.3.3 Managerial Level

This section aimed at determining the respondents' managerial levels. Table 4.4 shows the results

Table 4.4: Managerial Level

Level	Frequency	Percent
High Level management	12	24.5
Middle level management	17	34.7
Low level management	20	40.8
Total	49	100.0

Source: Study Data, 2019

Table 4.4 shows that 40.8% of those who provided the data were low level managers whereas 34.7% were in the middle level management. Also, 24.5% of those who provided the data were high level managers. The finding thus indicates that the respondents belonged to various management levels.

4.4 Logistics Preparedness Efforts

This section assessed various statements on disaster preparedness efforts. The section focused on management and control, logistics operations, recipient community and response network. The results were as follows.

4.4.1 Management and Control

This section assessed various statement on management and control among IHOs in Kenya. The study adopted a 1 to 5 scale where 1 indicated very small extent, 2 denoted small extent, 3 indicated moderately, 4 denoted great extent and 5 indicated very great extent respectively. Table 4.5 shows the results.

Table 4.5: Management and Control

Categories	Preparedness Efforts	Mean	Std. Deviation
Human resources	General disaster response training of the staff	4.51	.649
	General disaster response staff hiring	4.40	.887
	Hiring and training leadership	4.32	1.044
	Local logistics staff hiring	4.30	1.044
	Training local staff	4.22	1.046
	Logistics staff training	4.08	1.057
	Emergency roster	4.02	1.089
	Hiring logistics specialists	3.95	1.135
Knowledge management	Cooperation with academia	4.33	.944
	Lessons learnt (e.g., in training)	4.04	1.171
Disaster planning and strategy	Disaster strategy development	4.47	.738
	Insurance systems such as supply/facilities	4.46	.819
	Decision making models	4.38	.975
	Contingency planning	3.96	1.171
	Planning for security of personnel	3.75	.924
Financial resources	Securing and streamlining disaster funds	3.67	.898
	Securing specific funding (e.g., for ICT)	3.51	.915
Information management	Information technology (field data)	4.22	.797
	Increase visibility	3.91	.885
	Communication technology (inter-org)	3.87	.904
Overall mean		4.12	

Source: Study Data, 2019

Table 4.5 indicates that human resource efforts comprising of training staff for general disaster response (mean=4.51, SD=0.649), training logistics staff (mean=4.08, SD=1.057), emergency roster (mean=4.02, SD=1.089) and training local staff (mean=4.22, SD=1.046) affected disaster preparedness at a great extent. In addition, the results show that hiring staff for general disaster response (mean=4.40, SD =0.887), hiring local logistics staff (mean = 4.32, SD=1.008) and hiring and training leadership (mean = 4.32, SD=1.008) also affected disaster preparedness at a great

extent. The results further indicate that hiring logistics specialists (mean =3.95, SD=1.135) affected disaster preparedness at a moderate extent respectively.

The results on knowledge management indicate that the lessons learnt (mean=4.04, SD=1.171) and cooperation with academia (mean = 4.33, SD=0.944) affected disaster preparedness at a great extent respectively. The results on disaster planning and strategy indicate that contingency planning (mean = 3.96, SD=1.171) and planning for security of personnel (mean = 3.75, SD=0.924) affected disaster preparedness at a moderate extent respectively. Further, the findings indicate that decision making models (mean = 4.38, SD=0.975), disaster strategy development (mean=4.47, SD=0.738) and insurance systems (mean=4.46, SD =0.819) affected disaster preparedness at a great extent respectively

The findings on financial resources indicate that securing and streamlining disaster funds (mean=3.67, SD=0.898) and securing specific funding (mean=3.51, SD=0.915) affected disaster preparedness at a moderate extent respectively. The results on information management indicated that communication technology (mean=3.87, SD=0.904), and increase visibility (mean=3.91, SD=0.885) affected disaster preparedness at a moderate extent whilst field information technology (mean=4.22, SD=0.797) affected disaster preparedness at a large extent respectively. The overall mean value of 4.12 indicates that IHOs in Kenya largely used management and control efforts during disaster response.

4.4.2 Logistics Operations

The section assessed various statement on logistics operations among IHOs in Kenya. The study adopted a 1 to 5 scale where 1 signified very small extent, 2 denoted small extent, 3 indicated moderately, 4 denoted great extent and 5 indicated very great extent respectively. Table 4.5 shows the results

Table 4.6: Logistics Operations

Categories	Preparedness Efforts	Mean	Std. Deviation
Needs assessment	Emergency items catalogue	4.20	.706
	Pre-specification of supply	4.04	.705
	Rapid analysis/planning (e.g., GIS)	3.95	.934
	Modularization/standardization of supply	3.87	.934
Procurement	Procurement process/system	4.13	.857
	Forecasting	4.12	1.013
	E-procurement	3.97	1.050
	Partnerships in supply (e.g., agreements)	3.91	.996
Warehousing	Inventory management systems	4.08	1.057
	Prepositioning	4.02	1.010
Transport and Distribution	Increased transport fleet	4.12	1.073
	Pre-disaster distribution centers	4.04	1.040
	Partnerships with LSPs (e.g., agreements)	3.87	1.013
	Track and trace technology	3.83	1.073
	Distribution plans	3.71	1.258
	Reserve air transport capacity	3.32	1.281
Overall mean		3.95	

Source: Study Data, 2019

Table 4.6 shows that needs assessment efforts comprising of modularization/standardization of supply (mean=3.87, SD=0.971) and rapid analysis/planning (mean=3.95, SD=0.934) moderately affected disaster preparedness while emergency items catalogue (mean=4.20, SD=0.706) and pre-specification of supply (mean=4.04, SD=0.705) affected disaster response at a large extent respectively. The finding on procurement efforts show that procurement supplier partnerships (mean=3.91, SD=0.996) and e-procurement (mean=3.97, SD=1.050) moderately affected disaster response while procurement process/system (mean=4.13, SD=0.857) and forecasting (mean=4.12, SD=1.013) affected disaster response at a large extent respectively. The overall mean value of 3.95 indicates that IHOs in Kenya moderately used logistics operations efforts during disaster response.

4.4.3 Recipient Community

This section assessed various statement on recipient community disaster preparedness efforts among IHOs in Kenya. Under the section, the study adopted a 1 to 5 scale where 1 signified very small extent, 2 denoted small extent, 3 indicated moderately, 4 denoted great extent and 5 indicated very great extent respectively. Table 4.5 shows the analysis results.

Table 4.7: Recipient Community

Categories	Preparedness Efforts	Mean	Std. Deviation
Collaboration & involvement	Community involvement in implementation	4.36	2.759
Resilience	Early warning systems	4.18	.833
	Temporary housing units	4.17	.882
	Raising awareness	4.12	.832
	Understanding local laws and policies	4.12	.780
	Evacuation routes	4.02	.853
	Disaster resistant shelters	3.93	.987
	Mapping community capacity/ resilience	3.75	1.127
Overall mean		4.08	

Source: Study Data, 2019

The finding on collaboration and involvement indicated that community involvement in implementation (mean=4.36, SD=2.759) affected disaster response at a large extent respectively. The results on resilience indicated that mapping community capacity/resiliency (mean=3.75, SD=1.127) and disaster resistant shelters (mean=3.93, SD=0.987) had a moderate effect on disaster response respectively. Further, the results showed that early warning systems (mean=4.18, SD=0.833), raising awareness (mean=4.12, SD=0.832), temporary housing units (mean=4.17, SD=0.882), evacuation routes (mean=4.02, SD=0.853) and understanding local laws and policies (mean=4.12, SD=0.780) largely affected disaster response respectively. The overall mean value of 4.08 indicates that IHOs in Kenya largely used recipient community efforts during disaster response.

4.4.4 Response Network

The section assessed various statement on response network efforts among IHOs in Kenya. The study adopted a 1 to 5 scale where 1 signified very small extent, 2 denoted small extent, 3 indicated moderately, 4 denoted great extent and 5 indicated very great extent respectively. Table 4.5 shows the results.

Table 4.8: Response Network

Categories	Preparedness Efforts	Mean	Std. Deviation
Government	Agreements with local governments	4.29	.735
	Coordination with host government	4.26	.707
Firms	Public private partnerships	4.32	.688
Humanitarian organizations	Inter-org knowledge sharing platform	4.26	.784
	Logistics cluster membership	4.20	.790
	Inter-agency agreements (e.g., service provider)	4.18	.754
	Inter-org communication systems/processes	4.12	.780
	Network mapping	4.02	.777
	Coordination training of logisticians	3.95	.789
Overall mean		4.18	

Source: Study Data, 2019

Table 4.8 indicates that agreements with local governments (mean=4.29, SD=0.735) and coordination with host government (mean=4.26, SD=0.707) as well as public private partnerships (mean=4.32, SD=0.688) largely affected disaster preparedness respectively. The results further indicate that inter-agency agreements (men=4.18, SD=0.754), logistics cluster membership (mean=4.20, SD=0.790), inter-org knowledge sharing platform (mean=4.26, SD=0.784), inter-org communication systems/processes (mean=4.12, SD=0.780) and network mapping (mean=4.02, SD=0.777) largely affected disaster preparedness respectively.

The results however indicate coordination training of logisticians (mean=3.95, SD=0.789) moderately affects disaster preparedness respectively. The overall mean value of 4.18 indicates that IHOs in Kenya largely use response network during disaster response.

4.5 Disaster Response

The section assessed various measures of disaster response among them number of people/communities provided with emergency/humanitarian assistance while in distress situation form disasters, average time taken to respond to disasters and logistics costs incurred during disaster response. Table 4.9 shows the findings

Table 4.9: Disaster Response

Measure of disaster response	Indicator	Frequency	Percent
Number of people/communities provided with emergency/humanitarian assistance while in distress situation form disasters	<10,000	3	6.1
	10,000-20,000	19	38.8
	>20,000	27	55.1
	Total	49	100.0
		Frequency	Percent
Average time taken to respond to disasters	<5 days	33	67.3
	6-10 days	11	22.4
	>11 days	5	10.2
	Total	49	100.0
		Frequency	Percent
Logistics cost incurred during disaster response (Kes)	<10 Million	8	16.3
	>10 Million	41	83.7
	Total	49	100.0

Source: Study Data, 2019

Table 4.9 shows that 38.8% of the respondents indicated that they had assisted more than 20,000 people/communities with emergency/humanitarian assistance when they are in distress situation in form disasters while 28.8% indicated they had assisted between 10,000-20,000 people while 6.1% indicated they had assisted less than 10,000 people. The findings also show that 67.3% of all the respondents specified that the average time taken to respond to disasters was less than 5 days while 22.4% indicated it was between 6-10 days whereas 10.2% indicated it was more than 11 days. The findings also showed that 83.7% of the respondent showed that the average logistics costs incurred during disaster response was more than 10 million shillings while 16.3% indicate it was less than 10 million respectively.

4.6 Regression Analysis

The second objective of the research wanted to establish the effect of logistics preparedness on IHO disaster response in Kenya. To get the correlation of between the humanitarian logistics preparedness efforts and disaster response, a regression model was used. Disaster response indicators such as the number of people assisted, time taken and costs incurred during the disaster response were used as the dependent variables while humanitarian preparedness efforts such as management and control, logistics operation efforts, recipient community involvement and response networks were used as the model's explanatory variables.

The findings are discussed in the sections below;

4.6.1: Model Summary

Table 4.10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.422	.369	.30498

a. Predictors: (Constant), Response network , Recipient community , Management and control , Logistics operations

Source: Study Data

Table 4.10 indicates that the R square value is 0.422 which shows that the explanatory variables (response network, recipient community, management and control and logistics operations) explain 42.2% of the changes in the dependent variable (disaster response). Thus, 57.8% of the variation is accounted for by other factors that the study did not consider and the error term. The R-value of 64.9% indicates that the correlation among the study variables is strong.

4.6.2 Analysis of Variance

Table 4.11: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.985	4	.746	8.024	.000 ^b
Residual	4.093	44	.093		
Total	7.078	48			

a. Dependent Variable: Disaster Response

b. Predictors: (Constant), Response network, Recipient community, Management and control, Logistics operations

Source: Study Data, 2019

Table 4.11 shows that the F statistics value of 8.024 is statistically significant as shown by the P value of $0.000 < 0.05$ respectively which means that there is 5% probability that the null hypothesis is true. This is significance level is used in all the study hypotheses. The finding, therefore, indicates that the model used in the regress is fit and a good predictor of the relationship among the variables under study.

4.6.3 Coefficients

Table 4.12: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.052	.116		9.101	.000
Management and control	.009	.003	.321	2.746	.009
Logistics operations	.050	.013	.484	3.994	.000
Recipient community	.057	.015	.448	3.743	.001
Response network	.033	.015	.259	2.228	.031

a. Dependent Variable: Disaster Response

Source: Study Data, 2019

Table 4.12 indicates that there is a positive ($B=0.009$) and significant (P value = $0.00 < 0.05$) correlation between management & control on disaster response while the relationship between logistics operations and disaster response was positive ($B=0.050$) and statistically significant (P value = $0.000 < 0.05$) respectively. The results also show that there was a significant (P value = $0.001 < 0.05$) and positive ($B= .057$) correlation between the recipient community and disaster response while response network had a positive ($B = 0.033$) and a significant (P value = $0.031 < 0.05$) correlation with disaster response respectively.

4.7 Discussion of the Findings

The study findings seem to agree with those that have been done previously in this area. For example, the study revealed that management and control efforts and disaster response had a positive and significant relationship. The findings thus indicate that an increase in management

and control efforts significantly enhanced disaster response. This finding is in line with the findings by Cozzolino (2012) and Lenher (2015) having the right team which is well trained and up to the task increases the success rate of any disaster response.

Additionally, the findings indicate that an increase in logistics operations efforts significant enhances disaster response. This finding agrees with Tysseland (2009) who found that planning how to deliver goods and services in disaster prone areas makes it easier to do so when disasters finally strikes. Jahre et al. (2016), argues that humanitarian logistics includes prior planning, advance procurement, transport arrangements, warehousing and distribution.

Further, the findings show that increase in collaboration and involving recipient community in disaster response significantly increases the success rate of the response. Therefore, efficient disaster response means that during such disasters the humanitarian organizations should be able to involve local community for the success of the operation. Again, these findings are in line with those of Lehner (2015), who found that involving local community reduces response time as they know the topology and geography of the area affected and they can help with the best response routes and they know where help is needed most.

Lastly, the study also revealed that increasing response network coordination efforts significant enhances disaster response. This supported by a study by Karanja et, al. (2015) who found that improper coordination among humanitarian organizations in Nairobi led to lack of information sharing and poor service delivery

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the research findings and provides conclusions as well as the study recommendations. The chapter further highlights the study limitations and areas that require additional research.

5.2 Summary

The main objective of this research was to determine the IHO logistics preparedness in Kenya and its effect on disaster response. The study logistics preparedness by humanitarian organizations in Kenya enhances disaster response. For instance, the study revealed that increase in management and control efforts which involves efforts to move goods, people and material to from origination point to disaster areas significantly enhanced disaster response.

Additionally, the study revealed that advance logistics operations efforts such as prior planning, advance procurement, transport arrangements, storage and distribution increased the number of victims assisted and reduced the time taken to respond to disasters. Furthermore, the study revealed that involving and collaborating with local community enhanced the success rate of a disaster response.

Lastly, the study also revealed that increasing response network coordination efforts significant enhances disaster response. These response networks could be other humanitarian organizations and government agencies. Coordination leads to information sharing and avoids duplication of response activities.

5.3 Conclusions

Given the above findings, the results conclude logistics preparedness efforts by humanitarian organizations enhances disaster response. These logistics preparedness efforts include management and control efforts, logistics operations efforts, recipient community involvement and coordinating with other organizations involved in the response.

Management and control efforts involves having the right team which well trained and prepared for logistics operations during disaster response. This is important since it ensures the team is efficient hence they can handle the logistics matters efficient while following the standard policies

and procedures. On the other hand, logistics operations efforts ensure goods and materials needed during disaster response ready. This involves even the goods, materials that are needed by the victims. This is crucial since once disaster strikes, there is will be no time wasted trying to locate the sources of these goods, materials and equipment and how they will reach the victims of the disaster.

As the study indicates, it is important to involve the local communities as they can give important insights that can help during the disaster response. This could be inform of information or even guidance. Lastly, coordination among organizations and other agencies involved is important since it leads to information sharing and avoids response activities duplication.

5.4 Recommendations

The study concluded that logistics preparedness enhances humanitarian organization disaster response. The study thus recommends that the IHOs should undertake policy measures such as having a set minimum number of the qualified logistics officers and frequent refresher training to their staff to improve their preparedness for disaster response.

Also, the study recommends that the organizations should put in place appropriate logistics operation efforts and continually review the existing logistics operations. This will help the organizations to respond effectively to disasters. Again, the study recommends that these organizations should always involve the recipient community members. This is because they are of great assistance during disaster response and they can provide important information and guidance on the extent of the disaster and assistance required.

Finally, the study recommends that the management of humanitarian organizations should work together with other organizations and networks including the government agencies and authorities during disaster response as this would boost their efforts, increase information sharing and avoid duplication of response efforts.

5.5 Limitations of the Study

The researcher used primary data collected through questionnaires which were issued to one person per humanitarian organizations thus the views of the various employees in the sampled organizations were not incorporated. Also, a cross sectional survey was used which supports the collection of data from diverse respondents at one point in time. Thus, the study did not assess the

disaster preparedness efforts over a period of years to assess how they affected disaster response. The study target was 57 humanitarian organizations. However, complete data was only obtained from 49 organizations thus a 100% response rate was not achieved.

The researcher also faced a number of logistical challenges among them absenteeism of the key respondents at the scheduled research time. However, such challenge was addressed by choosing an equivalent to respond to the study instrument. Additionally, there was some resistance in some of the humanitarian organizations as some of the respondents thought the research was an audit. However, the purpose of the study was clearly explained such respondents in addition to attaching an authorization letter from the university.

5.6 Suggestions for Further Research

The study model summary established that 42.2% of the variations in disaster response was explained by the explanatory variables which comprised of response network, recipient community, management and control and logistics operations. This means several other variables affect disaster response by IHOs in Kenya. The study based on this observation recommends an additional research on other determinants that affect disaster response by IHOs in Kenya.

This study focused on response network, recipient community, management and control and logistics operations as the only disaster preparedness efforts. A similar study can be carried on how other disaster preparedness efforts affect disaster response by IHOs in Kenya. This study also used the classical regression model for analysis, however there are other non-parametric techniques like the chi square, independent tests and the comparison of means as well as other parametric techniques like the structural equation modeling and factor analysis. The study thus recommends a similar study which used other statistical tools for analysis.

This study used cross sectional research and collected data through a questionnaire from a single individual in every humanitarian organizations in Kenya. This means that the views of the other employees working in those organizations were not incorporated. The study thus recommends a case study which includes detailed and very intensive and conclusive study of a single unit and collection of data through interviews.

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APPENDICES

Appendix I: List of IHOs in Kenya

1. United States Agency for International Development (USAID)
2. United Nations Environmental Programme (UNEP)
3. Caritas International
4. International Maritime Organization (IMO)
5. United Nations Development Program (UNDP)
6. International Federation of Red Cross (IFRC)
7. United Nations Children's Fund (UNICEF)
8. Refugees International
9. United Nations Office for Project Services (UNOPS)
10. Save the Children (UK)
11. US Committee for Refugees (USCR)
12. United Nations Political Office for Somalia (UNPOS)
13. Concern Worldwide
14. Action Against Hunger (AAH)
15. International Civil Organization (ICAO)
16. Emergency Nutrition Network (ENN)
17. Interaction
18. Lutheran World Federation
19. Oxfam
20. World Health Organization (WHO)
21. United Nations Humanitarian Air Services (UNHAS)
22. African Medical Research Foundation (AMREF)
23. Danish Refugee Council
24. United Nation Human Settlement Programme (UN-Habitat)
25. Catholic Relief Services (CRS)
26. Food for The Hungry International (FHI)
27. United Nations Drug Control Program (UNDCP)
28. International Organization for Migration (IOM)
29. United Nations Joint Programme on HIV/AIDS (UNAIDS)

30. United Nations Population Fund (UNFPA)
31. The Office of U.S. Foreign Disaster Assistance (OFDA)
32. World Vision International
33. United Nations Centre for Regional Development Africa Office (UNCRD)
34. European Commission for Humanitarian Aid
35. CARE International
36. International Labour Office (ILO)
37. United Nations Development Fund for Women (UN Women)
38. International Committee of the Red Cross (ICRC)
39. Office of the United Nations High Commissioner for Refugees (UNHCR)
40. Mennonite Central Committee (MCC)
41. Refugees International
42. United Nations Centre for Regional Development (UNCRD)
43. United Nations Office for Coordination for Humanitarian Affairs (UNOCHA)
44. Agency for Cooperation and Research in Development (ACORD)
45. GOAL
46. Food and Agricultural Organization for the United Nations (FAO)
47. Doctors Without Borders (MSF)
48. Hunger Plus, Inc
49. United Nations Educational Scientific and Cultural Organization (UNESCO)
50. International Rescue Committee (IRC)
51. Mercy Corps (MC)
52. Relief International
53. Action Aid
54. Centre for Conflict Resolution
55. Norwegian Refugee council
56. World Relief
57. World Food Program (WFP)

Source: Kenya Relief Web (2016)

Appendix II: Research Questionnaire

Section A: General Information

1. Indicate the period your organization has been in operation (Please tick where applicable)

Less than 20 years [] 21 – 40 years []
 Over 41 years []

2. Does your organization have a logistics management department?

Yes [] No []

3. What is your managerial level? _____

Section B: Logistics Preparedness Practices

Intra-organizational

Logistics preparedness efforts happening within the organization.

4. Indicate the extent to which your organization exercises the following management and control efforts within its logistics functions (Use the scale 1= Very small Extent; 2= Small extent; 3=Moderately; 4=Great extent; 5=very great extent)

Management & Control						
Categories	Preparedness Efforts					
Human resources	Training staff for general disaster response	(1)	(2)	(3)	(4)	(5)
	Training logistics staff	(1)	(2)	(3)	(4)	(5)
	Emergency roster	(1)	(2)	(3)	(4)	(5)
	Training local staff	(1)	(2)	(3)	(4)	(5)
	Hiring logistics specialists	(1)	(2)	(3)	(4)	(5)
	Hiring staff for general disaster response	(1)	(2)	(3)	(4)	(5)
	Hiring local logistics staff	(1)	(2)	(3)	(4)	(5)
	Hiring and training leadership	(1)	(2)	(3)	(4)	(5)
Knowledge management	Lessons learnt (e.g., in training)	(1)	(2)	(3)	(4)	(5)
	Cooperation with academia	(1)	(2)	(3)	(4)	(5)
	Contingency planning	(1)	(2)	(3)	(4)	(5)

Disaster planning and strategy	Decision making models	(1)	(2)	(3)	(4)	(5)
	Disaster strategy development	(1)	(2)	(3)	(4)	(5)
	Insurance systems (e.g., supply/facilities)	(1)	(2)	(3)	(4)	(5)
	Planning for security of personnel	(1)	(2)	(3)	(4)	(5)
Financial resources	Securing and streamlining disaster funds	(1)	(2)	(3)	(4)	(5)
	Securing specific funding (e.g., for ICT)	(1)	(2)	(3)	(4)	(5)
Information management	Communication technology (inter-org)	(1)	(2)	(3)	(4)	(5)
	Information technology (field data)	(1)	(2)	(3)	(4)	(5)
	Increase visibility (e.g., SC electronic systems)	(1)	(2)	(3)	(4)	(5)

Logistics preparedness efforts happening within the organization.

5. Indicate the extent to which your organization exercised the following logistics operations efforts within its logistics functions (Use the scale 1= Very small Extent; 2= Small extent; 3=Moderately; 4=Great extent; 5=very great extent)

Logistics Operations						
Categories	Preparedness Efforts					
Needs assessment	Modularization/standardization of supply	(1)	(2)	(3)	(4)	(5)
	Emergency items catalogue	(1)	(2)	(3)	(4)	(5)
	Pre-specification of supply	(1)	(2)	(3)	(4)	(5)
	Rapid analysis/planning (e.g., GIS)	(1)	(2)	(3)	(4)	(5)
Procurement	Supplier partnerships (e.g., agreements)	(1)	(2)	(3)	(4)	(5)
	Procurement process/system	(1)	(2)	(3)	(4)	(5)
	Forecasting	(1)	(2)	(3)	(4)	(5)
	E-procurement	(1)	(2)	(3)	(4)	(5)
Warehousing	Prepositioning	(1)	(2)	(3)	(4)	(5)
	Inventory management systems	(1)	(2)	(3)	(4)	(5)
	Pre-disaster distribution centers	(1)	(2)	(3)	(4)	(5)
	Partnership with LSPs (e.g., agreements)	(1)	(2)	(3)	(4)	(5)
	Track and trace technology	(1)	(2)	(3)	(4)	(5)

Transport and Distribution	Increased transport fleet	(1)	(2)	(3)	(4)	(5)
	Reserve air transport capacity	(1)	(2)	(3)	(4)	(5)
	Distribution plans	(1)	(2)	(3)	(4)	(5)

Inter-organizational

Logistics preparedness efforts happening in collaboration with other stakeholders.

6. Indicate the extent to which your organization exercise the following recipient community involvement practices (Use the scale 1= Very small Extent; 2= Small extent; 3=Moderately; 4=Great extent; 5=very great extent)

Recipient community						
Categories	Preparedness Efforts					
Collaboration & involvement	Community involvement in implementation	(1)	(2)	(3)	(4)	(5)
Resilience	Mapping community capacity/resiliency	(1)	(2)	(3)	(4)	(5)
	Early warning systems	(1)	(2)	(3)	(4)	(5)
	Raising awareness	(1)	(2)	(3)	(4)	(5)
	Temporary housing units	(1)	(2)	(3)	(4)	(5)
	Disaster resistant shelters	(1)	(2)	(3)	(4)	(5)
	Evacuation routes	(1)	(2)	(3)	(4)	(5)
	Understanding local laws and policies	(1)	(2)	(3)	(4)	(5)

Logistics preparedness efforts happening in collaboration with other stakeholders.

7. Indicate the extent to which your organization exercise the following response network practices (Use the scale 1= Very small Extent; 2= Small extent; 3=Moderately; 4=Great extent; 5=very great extent)

Response network						
Categories	Preparedness Efforts					
Government	Agreements with local governments	(1)	(2)	(3)	(4)	(5)
	Coordination with host government	(1)	(2)	(3)	(4)	(5)
Firms	Public private partnerships	(1)	(2)	(3)	(4)	(5)
Humanitarian organizations	Inter-agency agreements (e.g., service provider)	(1)	(2)	(3)	(4)	(5)
	Logistics cluster membership	(1)	(2)	(3)	(4)	(5)
	Inter-org knowledge sharing platform	(1)	(2)	(3)	(4)	(5)
	Inter-org communication systems/processes	(1)	(2)	(3)	(4)	(5)
	Coordination training of logisticians	(1)	(2)	(3)	(4)	(5)
	Network mapping	(1)	(2)	(3)	(4)	(5)

Section C: Disaster Response

8. Please provide us with the following data to help us determine the disaster response rate. Please provide us (if possible), all or part of the existing literature with respect to how your organization has responded to disasters over the past, maybe things like journal, magazines, annual reports, and all relevant literature that you may have in your possession and which may deem reputable for us to gather more information relation to our study.

Measure of disaster response	Latest available information
Number of people/communities provided with emergency/humanitarian assistance while in distress situation form disasters	
Average time taken to respond to disasters	
Logistics cost incurred during disaster response	