

**HUMANITARIAN LOGISTICS INTEGRATION AND DISASTER RESPONSE FOR
HUMANITARIAN ORGANIZATIONS IN MOGADISHU, SOMALIA**

BY

AHMED MOHAMED NUR

**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILLMENT FOR THE REQUIREMENTS FOR MASTER OF
BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, AND
UNIVERSITY OF NAIROBI**

2018

DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed: _____ Date: _____

Ahmed Mohamed Nur

D61/6385/2017

This research project report has been submitted for examination on approval as the University Supervisors.

Signed: _____ Date: _____

Salome Richu,

Lecturer, Department of Management Science

School of Business, University of Nairobi

Signed: _____ Date: _____

Michael Chirchir,

Lecturer, Department of Management Science

School of Business, University of Nairobi

DEDICATION

I would like to dedicate this project to my brother, Liban, for his moral and financial support throughout my studies.

ACKNOWLEDGEMENT

First of all, I would like to thank Allah for everything I have achieved in life and for enabling me to go through this process smoothly.

Secondly, I would also like to give a special thanks to my Supervisors, Salome Richu and Michael Chirchir, for the incredible guidance, supervision, and dedication throughout this project.

Thirdly, I would like to express sincere appreciation to my family my mother, Habibo, my father, Mohamed, and all my brothers and sisters for their support and prayers throughout my life.

Last but not least, I would like to thank the administration of the University of Nairobi specially School of Business, Department of Management Science for the opportunity to study this program at a distinguished university.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABBREVIATION AND ACRONYMS	ix
ABSTRACT	x
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study.....	1
1.1.1 Humanitarian Logistics Integration.....	2
1.1.2 Disaster Response	3
1.1.3 Humanitarian Organizations in Mogadishu.....	5
1.2 Research Problem	6
1.3 Research Objectives.....	9
1.4 Value of the Study.....	9
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Theoretical Framework	11
2.2.1 Material Flow Theory.....	11
2.2.2 Systems Theory.....	12
2.2.3 Network Theory	13
2.3 Humanitarian Logistics Integration	13
2.4 Disaster Response	16
2.5 Relationship between Humanitarian Logistics Integration and Disaster Response	17
2.6 Summary of Literature Review.....	18
2.7 Conceptual Framework	20
CHAPTER THREE: RESEARCH METHODOLOGY.....	21
3.1 Introduction	21
3.2 Research Design.....	21
3.3 Target Population.....	21
3.4 Data Collection	21
3.5 Data Analysis.....	22

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION.....	23
4.1 Introduction	23
4.2 Response Rate.....	23
4.3 General Information	23
4.4 Extent of Humanitarian Logistics Integration	25
4.5 Disaster Response	29
4.6 Relationship between Humanitarian Logistics Integration and Disaster Response	30
4.7Challenges of Implementing Humanitarian Logistics Integration.....	32
4.8 Discussion of the Findings	33
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	36
5.1 Introduction	36
5.2 Summary of the Findings	36
5.3 Conclusion.....	38
5.4 Recommendations of the Study	39
5.5 Limitations of the Study.....	40
5.6 Suggestions for Further Studies.....	40
REFERENCES	41
APPENDICES.....	44
APPENDIX I: QUESTIONNAIRE	44
APPENDEX II: LIST OF HUMANITARIAN ORGANIZATIONS IN MOGADISHU	48

LIST OF TABLES

Table 4.1: Response Rate	23
Table 4.2: Position Held by Respondents	24
Table 4.3: Years of Experience	24
Table 4.4: Level of Education	25
Table 4.5: Planning	26
Table 4.6: Inventory Management.....	26
Table 4.7: Transport Management.....	27
Table 4.8: Information Technology	28
Table 4.9: Ranking Independent Variables	28
Table 4.10: Disaster Response	29
Table 4.11: Model Summary.....	30
Table 4.12: Analysis of Variance	31
Table 4.13: Coefficients	31
Table 4.14: Challenges of Implementing Humanitarian Logistics Integration	32

LIST OF FIGURES

Figure 2.1: Conceptual Framework	20
--	----

ABBREVIATION AND ACRONYMS

FEMA:	Federal Emergency Management Agency
HL:	Humanitarian Logistics
HLI:	Humanitarian Logistics Integration
ICRC:	International Committee of the Red Cross
IFRC:	International Federation of Red Cross
NGOs:	Non-governmental Organizations
UN:	United Nations
UNDP:	United Nations Development Program
WFP:	World Food Program

ABSTRACT

Disaster whether its man-made in the form of terrorist attacks or natural in the form of earthquakes are happening around the world and the next one might be closer than we think. Mogadishu has been experiencing one of its worst moments in the history. Since 2010, there have been a number of terrorist attacks, which is a man-made disaster, and they cost the lives of many civilians and injured many more with the financial cost uncounted. The study sought to determine the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia. The study was informed by the following specific objectives; to determine the extent of humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia, to establish the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia and to investigate the challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia. The study adopted a quantitative method of inquiry with a descriptive research design. The population of the study comprised of 35 humanitarian organizations in Mogadishu, Somalia and a census was employed thus the sample size was not large. The study collected primary data using questionnaires. To analyze data, both descriptive and inferential statistics were employed. The study had four independent variables i.e. planning, inventory management, transportation, and information technology. The study established that there was integration in those humanitarian logistics elements for humanitarian organizations ranked as follows: information technology (M=3.89), inventory management (M=3.83), transport management (M=3.82) and lastly planning (M=3.70). All the independent variables had positive and significant relationship with disaster response as shown by the results that is Planning ($\beta=0.150$, $p=0.012<0.05$), Inventory management ($\beta=0.475$, $p=0.000<0.05$), transport management ($\beta=0.182$, $p=0.034<0.05$) and information technology ($\beta=0.404$, $p=0.001<0.05$). The most significant challenges in humanitarian logistics integration included donor pressure (M=3.99), lack of finance (M=3.87), poor infrastructure (M=3.73), organizational culture (M=3.66) and resistance to change (M=3.63). The study concludes that there was information technology, inventory management, transport management and lastly planning. Planning, inventory management, transport management and information technology has a positive and significant relationship with disaster response among humanitarian organizations. The most significant challenges in humanitarian logistics integration included donor pressure, lack of finance, poor infrastructure, organizational culture and resistance to change. The study recommends that the senior management team of all the humanitarian organizations in Mogadishu, Somalia should increase their support and commitment towards logistics integration to enhance timely response to disasters. The government of Somalia should also invest in improving and restructuring of infrastructure in order to improve on timely response to disasters among humanitarian organizations.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Disasters are inevitable and unpredictable regarding striking at any moment, anywhere and to any extent, and no planning efforts are capable of preventing them from happening. So what makes a difference is the level of preparedness and response humanitarian organizations can provide once it struck. Once a disaster happens, many humanitarian organizations engage the disaster response phase, and so many in-efficiencies in operations are created(Simpson,2005). So there is a need to integrate their humanitarian logistics elements so that they would respond more effectively and efficiently.

Humanitarian logistics is a new sub-field of logistics, and it has gained exceptional attention from both logistics practitioners and academics after the Asian Tsunamis of 2004 (Kovács & Spens, 2007). It is also a challenging area because of its limited ability to plan the needs of the beneficiaries since it is associated with unpredictable time and location of disasters. Humanitarian logistics has been a significant factor for relief operations, and logistics efforts count to about 80 percent of disaster relief operations(Trunick, 2005). Organizations use logistics to evaluate the difference between successful and failed operations in disaster relief efforts and it is considered to be the most common factor that makes the difference(Wassenhove, 2006).

Humanitarian logistics integration is about integrating all the different humanitarian logistics elements such as planning, inventory management, transportation, information technology, and infrastructure to achieve an overall improvement for the relief operations by delivering the needed aid to the right beneficiaries. The integration of these elements would lead to coherence of the operation since the focus is not one element rather than the whole process. The concept of integration throughout the supply chain is very real and as observed by

Christopher (2010). Swink (2007) argues that the integration process is concerned with activities that need the sharing of strategic information and knowledge with other parties outside the focal organization(Swink, 2007). Once an organization succeeds in integrating its humanitarian logistics elements, there is a need to create external humanitarian logistics integration among different organizations involving in the disaster relief operations.

1.1.1 Humanitarian Logistics Integration

The Fritz Institute, which is a San Francisco-based non-profit, planning, implementing and controlling the efficient, cost-effective flow and storage of products and information, from the point of origin to the point of consumption with the aim of relieving the sufferings of vulnerable people is what is termed as humanitarian logistics. In addition, Thomas and Kopczak (2005) noted that HL is the process that entails planning, implementing, and controlling the efficient, cost-effective flow and storage of goods and relevant information, from the point of origin to the point of consumption to meet the end beneficiary's requirements. According to Aruna (2009),HL is a special branch of logistics that is involved in the management of response SC of critical supplies and services that are towards countering challenges such as demand surges and uncertain supplies (Aruna, 2009).

Main activities of HL include, but not limited, preparedness, planning, procurement and transportation. There is an emergency management model, which is made up of four main stages: mitigation; preparedness; response, and recovery. Mitigation phase involves activities that are intended to avoid a disaster, minimize the probability of its occurrence, or reduce its consequences. Preparedness stage also involves all the plans and actions before the disaster. The response phase involves all the actions taken to save lives once a disaster strikes. The final stage of the model is the recovery phase, and it is about all the actions carried out to return to a normal and stable situation Ahmet (2014).

Integration is the level to which separate parties can work together cooperatively to get to adequate results(O’Leary-Kelly and Flores, 2002). The concept of integration is not new in the commercial logistics within the business and between as observed by Christopher (2010), but the acceptance of its validity by managers is. A humanitarian organization’s ability to improve the lives of the world’s most vulnerable communities, therefore, relies heavily upon its ability to integrate and coordinate its SCM functions to get the desperately needed goods, works, and services to the targeted communities. Rodman (2004) states that without sustainable, efficient, transparent and well-coordinated procurement and logistics processes, the humanitarian sector is at risk of unnecessary costs and delays which put their vision, efforts and determination to improve the lives of the less fortunate, at risk, hence poor performance.

1.1.2 Disaster Response

A disaster can be described as a disruption in the normal functioning of a society or a community which causes a widespread material, environmental, human and economic losses that exceed the potential scope available for the community affected in coping with while using their resources at disposal, (Ministry of Special Programs, 2009). On the other hand, disaster management refers to the process which aims at using operational skills, organizational skills, administrative directives and operational capacities in implementing strategies, improve capabilities and create policies aimed at lessening the adversely negative impacts brought by these hazards or even the chances of a disaster, (Ministry of Special Programs, 2009).

As much as it is difficult to predict any possible occurrence of a disaster, it is only the well-prepared community that can sustain the impact that is brought about by such disasters. Amongst the many constituent components of a well-instituted disaster management framework is the logistics and supply chain process. This helps to acquire, manage, and

deliver the required components to the beneficiary population at the scene of a disaster, (Tysseland, 2009). However, conflict(s) usually arise between one or more key players. If such is the case, the ultimate objective of supplying humanitarian aid to vulnerable community is largely affected; ties that would have accustomed a smooth flow of activities across the chain of the process is cut down, inefficiencies and disruptions occur, conflicts of interests emerge up, and discontents become the order, (Kovacs & Spens, 2011). Finally, the objective of the process is compromised. The vulnerable society is left hanging without the aid and support it ought to have got. Blame game emerges; however, the most interesting thing is that the logistics and supply chain framework is cut down, (Ergun, et al., 2009).

People's behavior and response to disaster preparedness are influenced by various factors which may be categorized as socio-demographic factors that describe the qualities, characteristics, and composition of the community where these people belong. A language barrier is one of the factors that may influence disaster preparedness and response. Communication is an important tool in dealing with various issues that concern us in our daily lives. Language barrier and difficulties in a community may cause misunderstanding, and this may cause misunderstanding of the team (Luhtans, 2002).

According to Van Wassenhove (2006), mitigation, preparedness, response, and rehabilitation is what makes up a complete cycle of disaster management. Responses management in disasters is a very complex issue to manage. Situations of unknown timings, location, level and the magnitude of disasters is an issue that faces humanitarian organizations as compared to the private sector where all demands are known with certainty. They do not know the demand and supply during relief operations. With the unexpected events involved in the humanitarian logistics, sometimes humanitarians have to leave one disaster to attend another one. Considering the difficult circumstances, this puts extra pressure on people that are

working with humanitarian organizations, and organizations have to put much emphasis and funds in not only learning but also skills improvement. The onset of a disaster activates the need for an immediate response by making available the right quantity of goods, supplied at the right time, to the right place and delivered to the right people. As such, we can consider the onset of the disaster response as the beginning of five essential flows which are: materials, information, finance, people, and knowledge (Wassenhove, 2006).

1.1.3 Humanitarian Organizations in Mogadishu

Humanitarian organizations are those working under the humanitarian space where three widely accepted principles of humanity, being neutral in their operations and impartiality-guide their actions (Tomasini & Wassenhove, 2009). These principles are present in the decision-making of humanitarian organizations, and they set the parameters for action. The first principles, humanity refers to that human sufferings should be relieved wherever found, and this is the main reason human organizations exist. The second principle, neutrality, means that humanitarian relief should be given to beneficiaries without bias. So if a humanitarian organization feels that it cannot avoid bias in providing relief, it could be a basis of not participating in that relief operation. Finally, there is the impartiality principle, which implies that humanitarian relief must be given without discrimination while, at the same time, priority given to the neediest people (Tomasini & Wassenhove, 2009).

In Mogadishu, there are a number of humanitarian organizations operating under the humanitarian space, and they can be grouped into three categories: United Nations (UN) affiliated organizations such as WFP and UNDP, and international NGOs such as ICRC, and local NGOs such as Warda. However, the focus of this study will be international organizations because of their working experience in humanitarian logistics. According to the Somalia Federal Interior Affairs ministry, the number of registered humanitarian organizations working in Mogadishu as of 2018 is 35 and their focus is on different areas

such as relief, health and development. Most of those organizations started working in Mogadishu in 1991 since the collapse of the former government. These humanitarian organizations face challenges in finding skilled humanitarian logisticians to manage the operations and endure the difficulties in working the high volatile environment whereas retaining these skilled employees is much harder than the attraction (Wassenhove, 2009). However, these humanitarian organizations are still running their operations to help the affected people.

1.2 Research Problem

Disaster whether its man-made in the form of terrorist attacks or natural in the form of earthquakes are happening around the world, and the next one might be closer than we think(Overstreet, Hall, Hanna, & Kelly Rainer, 2011). In a HL operation, the main priority is to prepare and respond to those untimely disasters effectively and efficiently to reduce the human fatalities and sufferings. Humanitarian logistics has to face and deal with those disasters having minimal resources in terms of finance and labor, high uncertainty and above all urgency,(Tomasini & Wassenhove, 2009).

Mogadishu has been experiencing one of its worst moments in the history. Since 2010, there have been a number of terrorist attacks, which is a man-made disaster, and they cost the lives of many civilians and injured many more with the financial cost uncounted. According to Esri Terrorist Attacks website, the number of attacks and fatalities happened in Mogadishu since 2016 is 113 and 1,298 respectively because of man-made disasters. With this scale of a catastrophe, humanitarian organizations operating in Mogadishu find it difficult to respond to the disaster because their humanitarian logistics elements are not fully integrated.

There have been a number of studies researched in relation to HL. Kovács & Spens (2007) conducted a study on humanitarian logistics in disaster relief operations. The study concluded

by creating a framework distinguishing the different key actors, phases and logistical process of disaster relief operations. However, the paper was entirely in conceptual, and it calls for empirical research to support the study. Overstreet, Hall, Hanna, & Kelly Rainer (2011), researched on HL, and they concluded that the HL literature shows that the researchers in the field have started to put the foundation of it. They also concluded that most of humanitarian logistics research is focused on the planning aspect. So the paper is a literature review type lacking empirical evidence. Ojwang (2016) carried out a study and concluded the existence of a relationship between information technology (IT) usage and HL effectiveness of relief organizations in Kenya. However, the focus of the study was one element, IT usage. Peres, Brito Jr., Leiras, & Yoshizaki (2012) carried out a study on Humanitarian logistics and disaster relief research. The study established that for further studies, there is need for adopting modern research into the issue of HL by collaborations between research firms and the humanitarian firms. This study, however, was based on the trends in research over the years and failed to bring out humanitarian logistics challenges facing humanitarian firms in Mogadishu.

On the Other hand, studies have been carried out on disaster response. Benivegna (2007) conducted a study titled “Disaster response: improving effectiveness,” and he found improvements of disaster response in an organization, management, and speed of response. However, the study was limited to three disasters in the United States. Similarly, Munguti (2013) study established that most non-governmental organizations operating in Kenya had different disaster response operations. However, the study was from a supply chain perspective rather than humanitarian logistics. In addition, Keith (2008) study about disaster management and response found that the more emergency management agencies compile a list, the easier to manage the response and recovery phase. However, the study focused on the natural disasters only. Similarly, Akumu (2011) researched on disaster awareness and

preparedness of secondary schools in Homa Bay County, Kenya where he established that most high schools in Homa Bay County were not adequately prepared to face disasters. The study was, however, solely based in Homa Bay and hence the findings could not be applicable in Mogadishu and did not examine on the response phase.

From humanitarian organizations studies, Moeing and Mokhlesi (2011) carried out a study that established that the success of any humanitarian aid organization is because of their proper supply chains. However, the study was based on a developed country, not like Somalia. Besides, Mungatia (2010) study also established that World Vision-Kenya was responsive to disasters in Kenya. However, the study only targeted one humanitarian organization. Sandwell (2011) did a study on humanitarian organizations, and he concluded that the operational issues confronted in the humanitarian logistics are indicative of more significant issues affecting humanitarian organizations. However, the study had a low sample size, which was chosen because of their working experience with the Haiti earthquake. Gitonga (2013) carried out a study and concluded that the majority of humanitarian organizations in Kenya have an information governance policy and guidelines in place and that there was a great extent of information sharing among humanitarian organization in Kenya. However, the focus of the study was limited to information sharing with no other variable.

From the above studies, there exists a gap in knowledge based on the fact that no research has been carried out on humanitarian logistics integration and disaster response in Mogadishu. To address the literature gap identified above, the study sought to answer for the following research questions. What is the extent of humanitarian logistics integration for humanitarian organizations in Mogadishu? What is the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu? What are the

challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu?

1.3 Research Objectives

The objectives of this study were as follows:

- i. To determine the extent of humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia
- ii. To establish the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia
- iii. To investigate the challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia

1.4 Value of the Study

First of all, the study would have significance for the humanitarian organizations by examining and recommending the relationship between humanitarian logistics integration and disaster response in Mogadishu. With the help of the study recommendations, the humanitarian organizations would be able to develop humanitarian logistics integration programs that would facilitate their collaboration in responding to disasters more quickly and efficiently. Similarly, the research would inform the humanitarian organizations that the achievement of humanitarian logistics integration could be possible. Also, the study will give useful recommendations for overcoming the challenges the humanitarian organizations could face when they do humanitarian logistics integration programs.

On the other hand, the originality of this study would pave the way for other researchers to further the academic contributions of this unique field and help them set up research agendas derived from the recommended areas of further research. They would be able to examine

different aspects of this field by introducing new elements and variables of interests to be investigated.

Finally, on the policy aspect, this study would give recommendations for government policy-makers to encourage the integration of humanitarian logistics elements so that the response of the humanitarian organizations can be optimized by delivering the goods and services to beneficiaries on time and in the right condition.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discussed the literature review relating to humanitarian logistics integration and disaster response in humanitarian organizations in Mogadishu. The areas reviewed include humanitarian logistic elements such as planning, inventory management, transportation, and information technology, disaster response, and the relationship between humanitarian logistics and disaster response. The chapter concludes with a literature review that brings out the knowledge gap this study addresses and a conceptual framework that guides the study.

2.2 Theoretical Framework

This study uses a theoretical framework, and the theories that will be used as a basis are materials flow theory, systems theory, and network design theory.

2.2.1 Material Flow Theory

The material flow (MF) theory was put forward by Xu in 2002, and he defined it as “the flow of macroscopic and microscopic elements” (Xu, 2002). Material Flow is about the assessment of the flow of materials within a system that has a specified space and time. MF is abroad theory and it has different dimensions i.e. economic dimension, social dimension, and natural dimension. Among these dimensions, the economic one is the most significant for material flow while the other dimensions are basics. The MF theory has a number of key elements and they include material, flow, owner, region, and time. Among these five elements, material is considered to be the most important one, and the other elements are associated with it. There would be no material flow if one of the elements is missing. MF in the economics context is concerned with the flow of materials (Xu, 2002).

This theory has a relevance to the study in a number of ways. First of all, material is the core principle in MF theory and from humanitarian logistics perspective, material flow is the

whole premise of logistics operation. In this context, the five key elements of the theory i.e. material, flow, owner, region, and time, are all related to the humanitarian logistics operations. In a relief operation, there are materials to be moved from the warehouses to the disaster locations, and there is a specific time to be delivered the goods to the right location. Secondly, there are different dimensions of the theory just as to humanitarian logistics operation, and they include the economic, the social and natural dimensions. The economic aspect relates to minimizing costs and achieving efficiency in the relief operations. The social aspect is about the need of saving as many people as possible, whereas the natural dimension is concerned with minimizing the effects of the disaster on the nature and environment.

2.2.2 Systems Theory

The system theory was advanced by L. von Bertalanffy (1984). The theory is about explaining the organization of a system, its components and how they relate each other. A system includes input, output, process, feedback and environment. The theory emphasizes the interdependence and interconnectedness of the components in the system rather looking them in isolation. According to systems theory, a system is made up of subsystems which work together to ensure that the system works properly and meet its goals (Bertalanffy, 1984). Humanitarian logistics can be considered as a system whereas the HL elements are subsystems, which are interdependent on each other.

According to the systems theory, the focus is on the arrangement and the relationship between the parts or the elements of a system to connect them into a whole integrated system. From that context, the theory relates to humanitarian logistics in a number of ways. First, the theory explains that every system has sub elements. Then humanitarian logistics is the system whereas the HL elements are the sub elements of the system. It also explains the relationship among the elements of the system. Secondly, the focus of the theory is how the elements can be integrated so that the whole system works effectively and efficiently, and this study is

concerned with integrating the humanitarian logistics elements so that the system can respond to disasters efficiently.

2.2.3 Network Theory

Network theory is about representing a set of nodes joined by a set of lines graphically. The theory has a long history, but Leonhard laid its foundations in 1736. The theory provides a way of explaining a structure in a system and the connectivity among the different nodes. The network can be divided into a number of connected components, and it is categorized according to the features of nodes and edges (Estrada & Knight, 2015).

The theory is related to the study in three important ways. First, with the use of the theory, humanitarian logistics can develop the most cost-effective route for moving goods from one place to another while delivering the goods at the right time. The network simplifies the mapping of different routes and finding the best route regarding shorter time and cost. It can also be used to establish well-connected warehousing facilities in different locations to facilitate the movement of goods and reach the disaster areas more effectively and efficiently. The cooperation among the facilities can be improved so that the overall system works together. Thirdly, the theory is a network and humanitarian logistics can be considered as a network with different elements that are interconnected and work together to achieve one objective, which is delivering the right product to the right beneficiaries.

2.3 Humanitarian Logistics Integration

According to Thomas and Kopczak (2005), humanitarian Logistics entails that process that is involved in the planning, implementation and controlling of timely, low cost flow of and storage of not only products but also relevant information, and this is done from the original point to the final destination to facilitate meeting of the customer's needs. According to humanitarians, the systems that are engaged in organizing people, resources, and talent to help the vulnerable affected people by disasters is what is referred to as logistics. HL entails

different activities that include planning, procurement, transportation, inventory management, and information sharing, (Long, 1997). The focus in humanitarian operation is getting the right goods, place and time to save as much people as possible(Wassenhove ,2006). Humanitarian logistics has so much unpredictable situations to deal with regarding the availability of supplies and demands whereas business logistics has somewhat predictable environment where demands can be forecasted with some degree of certainty (Cassidy, 2003).

The concept of integration has been applied in the business logistics, but it has not come to the humanitarian logistics context. Humanitarian logistics faces a much more volatile environment than business logistics, and it has to be agile and integrated its elements so that the system can deal with such uncertainty in a manner that would save lives. After reviewing humanitarian logistics literature, Overstreet et al developed six humanitarian logistics elements- organization's personnel, infrastructure, transportation, information technology, and planning and inventory management (Overstreet et all, 2011). For this study, the focus will be four of the key humanitarian logistics elements- planning, inventory management, transportation and information technology, and they will be discussed in the following sections.

Due to the dynamic nature of humanitarian logistics, where need for goods and services are sudden and unpredictable, planning comes in hand for managing the response. Proactive techniques involving preparedness is a requirement during planning, (Longo, 2005). There is a need for use of technology in planning to facilitate efficiency of the whole disaster management process support (DeJohn, 2005). However to some extent, the underdeveloped regions that are prone to disasters, they experience challenges in the use of technology since it is usually destroyed whenever disasters occur (Chandes and Pache, 2010). Based on views

of many researchers, planning has been inhibited in the organizations by various factors which include donors strict rules and regulations that resources, money to be used in disasters has to be released and planned for only after the disasters have occurred (Murray, 2005). According to Whiting and Ayala-Ostrom (2009) stated donors provide funding expecting tangible results from disasters, but they failed to realize that preparedness is crucial for responding disasters more effectively and efficiently. In a humanitarian operation, planning is very significant, and no one appreciates the impact of poor logistical planning.

Inventory management is mainly focused with not only storage, procurement but also handling how well inventory is used with aim of ensuring inventory is always available when required (Mathur, 2010). Humanitarian organizations face challenges in fulfillment of relief operations due to lack of inventories available at the right time and place. Most at times there exist irregularities in the humanitarian supply chains in terms of size, timings, and locations. Due to dynamics in the environment, the level and magnitude of global emergencies has arose leading to a high need for inventory management methods that are fit and adapt to these challenges. Issues to do with control of stock the material or inventory level not the same when comparing business and humanitarian logistics (Mathur, 2010).

Through transportation management, goods and products can be moved from upstream to downstream level by providing while at the same time ensuring this is done timely and at a low cost hence ensuring value addition (Carbone & Soifer, 2009). Humanitarian logistics is characterized by complex transportation and accessibility issues. Lack of mobility and high transportation costs during disasters is a key challenge that faces transportation in Humanitarian logistics. In most disaster scenarios, humanitarian organizations typically rent local vehicles and drivers, which may be extremely scarce and/or characterized by sudden high demand, leading to inflated rental cost. Poor road infrastructure is a key challenge that

faces various humanitarian firms in the transportation of relief foods to the organizations (Balcik et al., 2009). In HL management of transport is a critical issue. In order to gain and use transport management in disaster reliefs, there is need to come up with a model from the military context, on ways that transport can be used in disaster relief. To gain much of transportation, there is need to optimize packaging Aruna (2009).

Communication networks in humanitarian logistics is very key in ensuring coordination of activities to meet a sudden high demand for resources in the humanitarian set up poor communication during disasters is a key impediment to responsiveness factor of humanitarian supply chain. Humanitarians in their operations deal with different stakeholders, and those have different agendas. They include large numbers of donors, governments, media, military and beneficiaries. This possesses challenges in coordinating them all and providing adequate communication (Wassenhove, 2009). The nature of most disasters demands an immediate response, hence HL needs to be designed and deployed to good communication (Beamon, 2004). Many humanitarian systems, like logistics, organizational learning, among others are supported by use of ICT. Opportunities for a quick sharing of information which is vital in the humanitarian logistics have been facilitated by new technological advancements in ICT and new social networks trends have presented. Use of ICT has improved the responsiveness and disaster management in humanitarian logistics (Howden, 2009).

2.4 Disaster Response

A disaster according to Federal Emergency Management Agency (FEMA) is an event which results to loss of lives or injuries to 100 people or damage worth US\$ 1 million. In order for a firm to be well prepared for disasters, there is need for proper management of the logistics function. Responses planned for various disasters must be tailored to the features that are shown by the specific disaster (Aruna, 2009). Over the years, there has been a shift from having an isolated technological solutions to a more engaging wider system of which it

facilitates the consideration and addressing of the full socio-technical aspect of humanitarian logistics issues (Aruna, 2009).

This current trend in HL is the adoption of capacity building, which focused on the need to the larger contexts to work in an effective way that is different from the traditional direct aid. Failure to adopt the incorporation of a larger context into technology-based humanitarian projects, results to situations that leads to short term unsustainable technical solutions. To achieve efficiency and effectiveness, there is need for integration of the technical perspective and humanitarian logistics on matters to do with humanitarian help (Kovac & Spens, 2007). To attain good responses during disasters, there is need for adequate scheduling of various functions in humanitarian organizations like inventory, IT, transportation among others. For location decisions based on where to locate: distribution centers, warehouses, and medical clinics need to be decided upon on the basis of how far or near are they to high-population areas and transportation hubs. Distribution of critical supplies and services under situations of high uncertainties highly depends on Facility location, location of distribution centers, for the last mile distribution and warehousing strategies involving prepositioning of needed supplies Aruna (2009).

2.5 Relationship between Humanitarian Logistics Integration and Disaster Response

Information integration in humanitarian supply chain enhances supply chain and logistics operations that involve procurement, storage and distribution of supplies to beneficiaries. It also enhances effective functionality of humanitarian logistics and coordination with actors throughout the entire operation. Inability to integrate the most required and appropriate information on a real-time basis with the supply chain leaves the organization confused about what supplies needs to be delivered to what segment of beneficiaries at what quantity and in what location (Howden, 2009).

An uncertainty in location decisions is a leading contributor to activities that involve preparedness such as relief materials and infrastructure developments. Since humanitarian organizations deal with sudden occurrences, it is hard to predict either when or where a disaster will happen (Kovács & Spens, 2007). This therefore makes affected locations to be dynamic and hard to plan for operations. However logistics integration helps meet and counter these challenges by provision of real time information on the various disaster situations (Ozlem et al., 2014).

Logistics integration helps improve disaster response through instantaneous communications and information sharing in disaster related operations and helps avoid challenges faced in the coordination of a big supplier network (Long and Wood, 1995). In fact, matching the supply with the unpredictable demand while achieving the last mile problem of delivering needed materials to disaster affected people comes out as a major challenge of meeting immediate responses which is countered by use of humanitarian logistics integration (Beamon, 2004). Demand management as part of humanitarian logistics integration involves demand assessments after a disaster (Beamon, 2004). Through this it enhances prompt disaster responses to the affected areas. The primary mission of humanitarian organizations is to work with disasters and respond to them immediately to save lives. However, humanitarian organizations have to also comply with the donor requirements because without their financial support they would not be able to serve the affected communities (Trunick, 2005).

2.6 Summary of Literature Review

Many studies have been carried out on the issue of humanitarian logistics integration and disaster response. Overstreet et al. (2011) conducted a study about research in humanitarian logistics. The objectives of the study were to establish the primary focus, the model used, and future research in humanitarian logistics, and the study was a literature review paper. The paper concluded that researchers have started writing about the topic, but the focus is one the

planning aspect. Ojwang (2016) carried out a study about information technology usage on humanitarian logistics of relief organizations in Kenya. The study was empirical in nature, and it concluded that there is a positive relationship between information technology (IT) usage and HL effectiveness of relief organizations in Kenya. Spens and Konvas (2007) carried out a study on HL in disaster relief operations. The study's aim was to understand planning and carrying out logistics operations in disaster relief. Topical literature review of academic and practitioner journals was used in the study. The study established that there is need for adoption of logistics planning and management to facilitate meeting of customer needs in disasters.

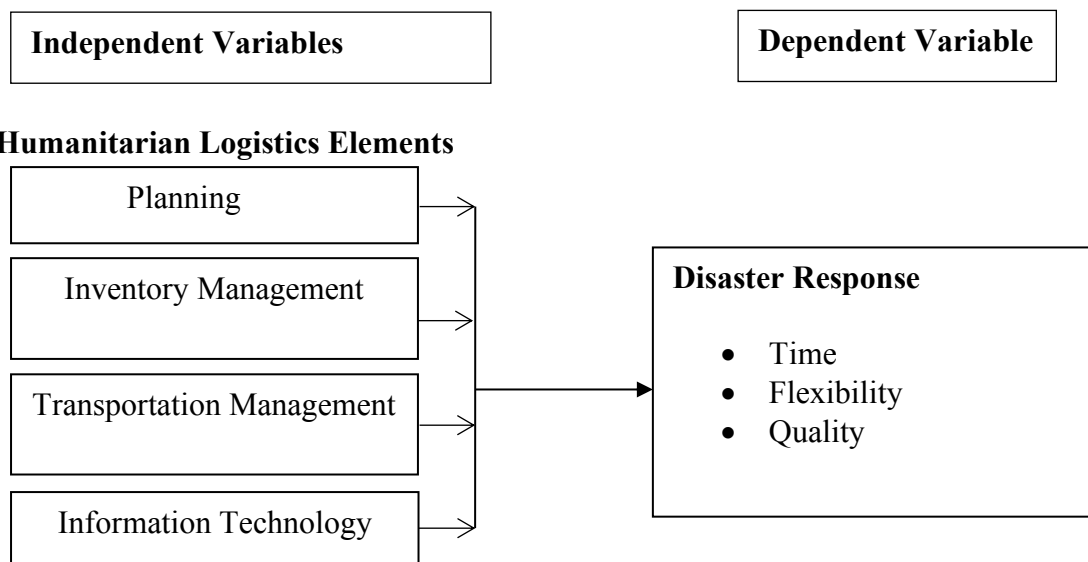
Jahre and Jensen (2010) carried out a study on Coordination in HL through clusters. The study purpose was to use supply chain coordination and inter-cluster coordination in contributing to a greater understanding of the potential of cluster concepts. The study adopted the case study approach in its methodology. These results indicated that between various types of coordination, the horizontal coordination tends to draw attention away from important issues of the supply chain and hence there is need for coordination among clusters. Sandwell (2011) carried out a qualitative study exploring the challenges of humanitarian organizations, and the purpose of the study was to identify the challenges faced by humanitarian organizations at the Haiti Earthquake. He concluded that the operational issues confronted in the humanitarian logistics are indicative of bigger issues affecting the humanitarian organizations. The study however was solely based on the experience at the Haiti earthquake. Peres and Brito (2012) carried out a study on Humanitarian logistics and disaster relief research. The study used a literature survey to investigate the objectives of the study. The study established that for applied research on humanitarian firms' responses in disasters to be effective, there is need for collaboration between humanitarian firms and researchers. Munguti (2013) carried out a study on SCM practices in disaster response among

international humanitarian organizations in Kenya. The aim of the study was to establish the SC practices and disaster response in international humanitarian organizations in Kenya. Study adopted use of descriptive statics in collection of data from a sample size of 19 firms. The findings indicated that the various humanitarian firms had to a great extent adopted the various SC practices.

2.7 Conceptual Framework

The conceptual framework shows the independent variable i.e. humanitarian logistics integration. Overstreet et al (2011) developed six key elements in humanitarian logistics- organization’s personnel, infrastructure, transportation, information technology, planning and inventory management (Overstreet et al, 2011), and this framework focused on four of those elements to establish a relationship with the dependent variable, disaster response as shown figure 2.1 below:

Figure 2.1: Conceptual Framework



Source; Researcher (2018)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter contains information relating to the design of the research, the target population of the study, the data collection tools, and how data was analyzed when collected.

3.2 Research Design

This study used a quantitative approach of inquiry with a descriptive research design in meeting the study objectives, (Mugenda & Mugenda, 2008). The use of this design was necessitated by the research questions and objectives of the study and the fact that the study was primarily concerned with describing phenomena.

3.3 Target Population

The population of the study was humanitarian organizations in Mogadishu, which was 35 in number (Appendix II). A census was adopted for this study based on the fact that the study population was not large. The respondents were humanitarian logisticians, supply chain officers, procurement officers, or their equivalents.

3.4 Data Collection

The study employed a structured questionnaire as a tool of collecting data from respondents. The questions in the questionnaire were structured to capture the necessary details for achieving the objectives of the study. The questionnaire was administered through a drop and pick later method and email. The questionnaire consisted of four sections, and each section focused on important information that is relevant to one of the objectives of this study. Section A contained background information that provides general knowledge on the field, Section B concerned about information measuring the extent of humanitarian logistics integration whereas section C contained information relating to the disaster response. The final section D was about information concerning the challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu.

3.5 Data Analysis

Data collected was screened for accuracy, consistency, uniformity and completeness in preparation for analysis. Sections A, B, C, and D were analyzed using descriptive statistics and regression analysis to show the descriptive aspect of the data as well as the relationship between the humanitarian logistics integration and disaster response. The regression model is as indicated below:

$$Y = \beta_0 + \beta_1X_1+ \beta_2X_2+ \beta_3X_3+ \beta_4X_4 +e$$

Where;

Y= Disaster response

X₁= Planning

X₂=Inventory Management

X₃=Transportation

X₄= Information Technology

β₀= the Y- Intercept

β₁, β₂, β₃, β₄ are the independent variables of X₁, X₂, X₃and X₄ respectively. e is the error term

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

The chapter presents the findings of the analysis on the collected data. Primary data was collected using questionnaires. The collected data was coded into SPSS software for analysis. Descriptive and inferential statistics played an important role in the analysis of the findings. Tables were employed in presenting the findings.

4.2 Response Rate

A total number of 35 questionnaires were issued to humanitarian logisticians, supply chain officers, procurement officers, or their equivalent positions from humanitarian organizations in Mogadishu. Out of this, 29 questionnaires were completely filled up and returned back. This gave a response rate of 82.9% as indicated in Table 4.1.

Table 4.1: Response Rate

	Frequency	Percentage
Response	29	82.9
Non-Response	6	17.1
Total	35	100

Source; Research Data (2018)

According to the table 4.1, the response rate of this study was adequate enough for data analysis and making conclusions, and it is concurred with the stipulation of Mugenda and Mugenda (2003) who argued that for adequate presentation of the findings, the response rate should be over 70%.

4.3 General Information

This section is about general information that relate to the organization and the respondents of the questionnaire. The information asked in the questionnaire include name of the organization, age, position held by the respondent, experience and education level of the respondents. The findings are shown in subsequent sections.

4.3.1 Length of Organizational Existence

The second general information assessed the age that the organization had been in existence. From the findings, all the studied organizations had been in existence for over 20 years. This shows that the studied organizations had been in operations for a relatively longer period of time and thus had put in place various logistics integration for effective disaster response that the study sought.

4.3.2 Position Held by Respondents

The researcher also assessed the positions held by respondents that were involved in the study. The findings are shown in Table 4.2.

Table 4.2: Position Held by Respondents

	Frequency	Percentage
Humanitarian logisticians	21	72.4
Supply Chain Officers	3	10.3
Procurement Officers	5	17.3
Total	29	100

Source; Research Data (2018)

Table 4.2 shows that most of the respondents 72.4% were Humanitarian logisticians, 17.3% were procurement officers and 10.3% were supply chain officers. This finding indicate that respondents were drawn from various positions within the organizations and thus diverse views on logistics integration and disaster response were sought for the study.

4.3.3 Years of Experience

In order to determine the level of experience that respondents had gained, the researcher sought to establish the number of years that they had worked in their organization. The findings are shown in Table 4.3.

Table 4.3: Years of Experience

	Frequency	Percentage
1-5 Years	4	13.8
6-10 Years	10	34.5
11-15 Years	9	31.0
Over 16 Year	6	20.7
Total	29	100

Source; Research Data (2018)

As indicated in Table 4.3, most of the respondents 34.5% had worked for a period of 6-10 years, 31.0% for 11-15 years, 20.7% for over 16 years and 13.8% for 1-5 years. This shows that respondents who participated in the study had worked in their organization for a relatively longer period of time and thus were knowledgeable and informed on humanitarian logistics integration in their organizations and how this affected disaster response.

4.3.4 Level of Education

The researcher assessed the highest level of education of respondents who took part in the study. The findings are shown in Table 4.4.

Table 4.4: Level of Education

	Frequency	Percentage
Professional Diploma	9	31.0
Degree	17	58.6
Higher Degree	3	10.4
Total	29	100

Source; Research Data (2018)

The findings in Table 4.4 indicate that most of the respondents 58.6% had degrees, 31.0% had professional diplomas and 10.4% had higher degrees. This implies that respondents who took part in the study generally were educated and thus could read and interpret the research questions sought by the study.

4.4 Extent of Humanitarian Logistics Integration

The first objective of the study was to determine the extent of humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia. The findings are shown in subsequent sections.

4.4.1 Planning

The researcher carefully identified several statements on planning and how it influenced disaster response among humanitarian organizations. Respondents were asked to indicate the extent of their agreement with each of the statements on five-point Likert scale where 1=not at all and 5=very great extent. Table 4.5 presents the findings.

Table 4.5: Planning

	Mean	Std. Dev
You plan for transportation of products to disaster centers when they occur	3.73	0.873
Your organization plans for transportation services during disasters	3.89	0.962
Your organization works with inventory managers, transport managers in planning and preparing for disasters	3.61	0.765
Planning involves transportation, inventory management, and IT together to achieve efficient disaster response	3.59	1.065
Overall Mean Score	3.70	0.916

Source; Research Data (2018)

From the findings in Table 4.5, most of the respondents agreed that their organization planned for transportation services during disasters (M=3.89). Respondents further agreed that they planned for transportation of products to disaster centers when they occurred (M=3.73). The study established that the organizations worked with inventory managers, transport managers in planning and preparing for disasters (M=3.61). Respondents also slightly agreed that planning involved transportation, inventory management, and IT together to achieve efficient disaster response (M=3.59). These statements have low values of statement signifying convergence of the agreement of respondents. On average, planning was practiced in most of the studied firms as supported by a mean of 3.70 and a low standard deviation of 0.916.

4.4.2 Inventory Management

The study sought to determine how inventory management affected disaster response among humanitarian organizations. The findings are shown in Table 4.6.

Table 4.6: Inventory Management

	Mean	Std. Dev
The inventory system is integrated with the IT to respond to disasters more effectively and efficiently	4.07	0.765
Inventory management is part of the planning process	3.69	0.543
The inventory management system coordinates with transportation to ensure disasters being responded timely	3.98	0.652
The inventory management system works completely with planning, transportation, and information technology to respond disaster on time	3.59	1.089
Overall Mean Score	3.83	0.762

Source; Research Data (2018)

As shown in Table 4.6, most of the respondents agreed that inventory system was integrated with the IT to respond to disasters more effectively and efficiently (M=4.07) and that the inventory management system coordinated with transportation to ensure disasters being responded timely (M=3.98). The study further established that inventory management was part of the planning process (M=3.69) while other respondents slightly agreed that inventory management system worked completely with planning, transportation, and information technology to respond disaster on time (M=3.59). On average, it was clear (M=3.83) that most of the studied firms embraced inventory management so as to improve on disaster response.

4.4.3 Transportation Management

The study sought to determine how transport management influenced disaster response. The findings are shown in Table 4.7.

Table 4.7: Transport Management

	Mean	Std. Dev
Information from the planning, inventory management, and IT is used to schedule for vehicles to be used in transportation of products to areas of disasters	3.87	0.779
Transportation is integrated with the inventory management to ensure that goods are transported to points of disasters on time	3.85	0.537
Transportation system is integrated with the IT to identify disaster areas that need relief food and services	3.75	0.883
Overall Mean Score	3.82	0.733

Source; Research Data (2018)

Table 4.7 shows that information from the planning, inventory management, and IT was used to schedule for vehicles to be used in transportation of products to areas of disasters (M=3.87) and that transportation was integrated with the inventory management to ensure that goods were transported to points of disasters on time (M=3.85). The study further established that transportation system was integrated with the IT to identify disaster areas that needed relief food and services (M=3.75). These statements had low values of standard deviations showing the level of convergence of respondents' agreement on them. On average,

it can be inferred that transport management (M=3.82) was one of the logistics integrations among humanitarian organizations.

4.4.4 Information Technology

The study sought to determine how information technology influenced disasters response among humanitarian organizations. The findings are shown in Table 4.8.

Table 4.8: Information Technology

	Mean	Std. Dev
Information technology facilitates getting information on the stock requirements during disasters	4.13	0.592
Information technology is used to carry out planning ahead of disasters	3.96	0.694
Information technology is integrated with planning, inventory management, and transportation to achieve improved disaster response	3.58	1.028
Overall Mean Score	3.89	0.771

Source; Research Data (2018)

As shown in Table 4.8, majority of the respondents agreed that information technology facilitated getting information on the stock requirements during disasters (M=4.13) and that it was used to carry out planning ahead of disasters (M=3.96). Respondents, however, slightly agreed that information technology was integrated with planning, inventory management, and transportation to achieve improved disaster response (M=3.58). On overall, the study found out information technology played an important role as far as disaster response was concerned (M=3.89).

4.4.5 Ranking Independent Variables

The researcher sought to rank the independent variables on the basis of their average means and standard deviations. The findings are presented in Table 4.9.

Table 4.9: Ranking Independent Variables

	Mean	Std. Dev
Information Technology	3.89	0.771
Inventory Management	3.83	0.762
Transport Management	3.82	0.733
Planning	3.70	0.916

Source; Research Data (2018)

As shown in Table 4.9, information technology was the most significant humanitarian logistics integration for humanitarian organizations followed by inventory management, transport management and lastly planning as shown by overall means of 3.89, 3.83, 3.82 and 3.70 respectively. The values of overall standard deviations are all less than 1 showing that there was strong convergence in the agreement of respondents on humanitarian logistics integration among the studied organizations.

4.5 Disaster Response

The dependent variable of the study was disaster response. The study findings of the dependent variable i.e. disaster response measured in terms of time, flexibility and quality are shown in Table 4.10.

Table 4.10: Disaster Response

	Mean	Std. Dev
My organization delivers emergency materials to disaster responses on time.	3.73	0.690
my organization takes days or weeks to deliver materials to disaster sites	3.53	1.076
My organization never deliver aid materials to disaster sites	3.05	1.053
my organization checks the quality of the goods before they are sent to the beneficiaries	3.75	0.529
the aid materials meet the expectations of the beneficiaries and standards of my organization	3.87	0.633
my organization has the capacity to deal with different scales of disasters	3.60	0.845
my organization has the necessary resources to meet with changes in demand from disaster sites	3.59	0.763
my organization is capable of deploying enough personnel to disaster sites to help the beneficiaries	3.67	0.668
Overall Mean Score	3.59	0.782

Source; Research Data (2018)

As shown in Table 4.10, the study revealed that the aid materials met the expectations of the beneficiaries and standards of the organization (M=3.87). The organization checked the quality of the goods before they were sent to the beneficiaries (M=3.75). The organization delivered emergency materials to disaster responses on time (M=3.73). The organization was capable of deploying enough personnel to disaster sites to help the beneficiaries (M=3.67)

with capacity to deal with different scales of disasters (M=3.60). Respondents however slightly agreed on whether the organization had the necessary resources to meet with changes in demand from disaster sites (M=3.59) or took days or weeks to deliver materials to disaster sites (M=3.53). On average, the study established that there was slightly high response to disasters among the studied organizations. This could be attributed to by the logistics integration in place.

4.6 Relationship between Humanitarian Logistics Integration and Disaster Response

The study sought to investigate the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia. The findings are shown in subsequent sections.

4.6.1 Model Summary

The findings of coefficient of correlation and coefficient of determination are as indicated in Table 4.11.

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.847 ^a	.717	.706	1.57292

a. Predictors: (Constant), planning, inventory management, transport management, information technology

Source; Research Data (2018)

From Table 4.11, the coefficient of correlation R is 0.847, showing that humanitarian logistics integration has a strong influence on disaster response for humanitarian organizations. The coefficient of determination R square is 0.717, which implies that 71.7% change in disaster response among humanitarian organizations is explained by the change in humanitarian logistics integration variables in the model. This means that this is a very good predicting model.

4.6.2 Analysis of Variance

An ANOVA was carried out at 5% level of significance. A comparison between $F_{\text{Calculated}}$ and F_{Critical} was carried out. The findings are as indicated in Table 4.12.

Table 4.12: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	645.837	4	161.459	15.206	.000 ^b
Residual	254.830	24	10.618		
Total	900.667	28			

a. Dependent Variable: Disaster Response

b. Predictors: (Constant), planning, inventory management, transport management, information technology

Source; Research Data (2018)

An Analysis of Variance (ANOVA) at 5% level of significance indicated that the value of F calculated 15.206 while F critical is 2.776. Thus, the value of F critical is less than F calculated. Based on this, it can be inferred that the overall regression model was significant.

4.6.3 Coefficients

Table 4.13 presents the findings on the beta coefficients and the p values. The interpretation of p values was done at 5% level of significance (0.05).

Table 4.13: Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.732	1.246		2.193	.031
Planning	.150	.058	.206	2.568	.012
Inventory management	.475	.086	.487	5.506	.000
Transport Management	.182	.084	.170	2.151	.034
Information technology	.404	.117	.441	3.449	.001

a. Dependent Variable: Disaster Response

Source; Research Data (2018)

From Table 4.13, the established equation becomes;

$$Y = 2.732 + 0.150X_1 + 0.475X_2 + 0.182X_3 + 0.404X_4$$

Where;

Y= Disaster response

X₁= Planning

X₂= Inventory Management

X₃= Transportation

X₄= Information Technology

From Table 4.13, planning ($\beta=0.150$, $p=0.012<0.05$) had a positive and significant relationship with disaster response. This shows that an increase in planning would result into timely response to disasters among humanitarian organizations. Inventory management ($\beta=0.475$, $p=0.000<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations.

Transport management ($\beta=0.182$, $p=0.034<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations. Information technology ($\beta=0.404$, $p=0.001<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations.

4.7 Challenges of Implementing Humanitarian Logistics Integration

The study sought to determine the challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia. The findings are shown in Table 4.14.

Table 4.14: Challenges of Implementing Humanitarian Logistics Integration

Statement	Mean	Std. Dev
Lack of training	3.42	0.694
Lack of management support and understanding	3.51	0.703
Resistance to change	3.63	0.801
Lack of finance	3.87	1.053
Donor Pressure	3.99	0.629
Poor infrastructure	3.73	0.747
Organizational culture	3.66	0.865
Lack of clear communication	3.05	0.764
Government regulations	3.59	1.004
Overall Mean Score	3.60	0.806

Source; Research Data (2018)

As indicated in Table 4.14, the most significant challenges in humanitarian logistics integration included donor pressure (M=3.99), lack of finance (M=3.87), poor infrastructure (M=3.73), organizational culture (M=3.66) and resistance to change (M=3.63). The other

underlying challenges included government regulations (M=3.59) and lack of management support and understanding (M=3.51). However, lack of training (M=3.42) and lack of clear communication (M=3.05) were significant challenges in implementing humanitarian logistics integration.

4.8 Discussion of the Findings

On the first objective of the study was to establish the extent of humanitarian logistics integration for humanitarian organizations, the study established that there was information technology, inventory management, transport management and lastly planning. Rodman (2004) states that without sustainable, efficient, transparent and well-coordinated procurement and logistics processes, the humanitarian sector is at risk of unnecessary costs and delays which put their vision, efforts and determination to improve the lives of the less fortunate, at risk, hence poor performance.

In view of planning, most of the respondents agreed that their organization planned for transportation services during disasters and for products to disaster centers when they occurred. DeJohn (2005) argued that due to the dynamic nature of humanitarian logistics, where need for goods and services are sudden and unpredictable, planning comes in hand for managing the response. Proactive techniques involving preparedness is a requirement during planning. On inventory management, most of the respondents agreed that inventory system was integrated with the IT to respond to disasters more effectively and efficiently and that the inventory management system coordinated with transportation to ensure disasters being responded timely. Mathur (2010) revealed that inventory management is mainly focused with not only storage, procurement but also handling how well inventory is used with aim of ensuring inventories is always available when required.

With regard to transport management, the study established that information from the planning, inventory management, and IT was used to schedule for vehicles to be used in transportation of products to areas of disasters and that transportation was integrated with the inventory management to ensure that goods were transported to points of disasters on time. Carbone and Soifer (2009) indicated that through transportation management, goods and products can be moved from upstream to downstream level by providing while at the same time ensuring this is done timely and at a low cost hence ensuring value addition. With reference to information technology, majority of the respondents agreed that information technology facilitated getting information on the stock requirements during disasters and that it was used to carry out planning ahead of disasters. According to Howden (2009), many humanitarian systems, like logistics, organizational learning, among others is supported by use of ICT. Opportunities for a quick sharing of information which is vital in the humanitarian logistics have been facilitated by new technological developments in ICT and the new trends in social networks have presented. Howden further indicated that the use of ICT has improved the responsiveness and disaster management in humanitarian logistics.

The study established that planning ($\beta=0.150$, $p=0.012<0.05$), Inventory management ($\beta=0.475$, $p=0.000<0.05$), transport management ($\beta=0.182$, $p=0.034<0.05$) and information technology ($\beta=0.404$, $p=0.001<0.05$) all had positive and significant relationship with disaster response among humanitarian organizations. Howden (2009) revealed that information integration in humanitarian supply chain enhances supply chain and logistics operations that involve procurement, storage and distribution of supplies to beneficiaries. It also enhances effective functionality of humanitarian logistics and coordination with actors throughout the entire operation.

The study established that the common significant challenges in humanitarian logistics integration included donor pressure, lack of finance, poor infrastructure, organizational culture and resistance to change. The finding is consistent with Murray (2005) who indicated that based on views of many researchers, planning has been inhibited in the organizations by various factors which include donor's strict rules and regulations that resources, money to be used in disasters has to be released and planned for only after the disasters have occurred. The other underlying challenges included government regulations and lack of management support and understanding. Balcik et al. (2009) established that poor road infrastructure is a key challenge that faces various humanitarian firms in the transportation of relief foods to the organizations.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the analysis as informed by the study objectives. The key findings are then used to make relevant conclusions in line with the objectives. The recommendations are provided in line with the findings of the study. The limitations and suggestions for further studies are also clearly indicated.

5.2 Summary of the Findings

The purpose of the study was to investigate the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia. The study was informed by the following specific objectives; to determine the extent of humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia, to establish the relationship between humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu, Somalia and to investigate the challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu, Somalia.

The study was guided by the Material Flow Theory, System and Network theories. A descriptive design was adopted with a population of 35 humanitarian organizations. The study used questionnaires to collect data. Out 35 questionnaires issued to respondents, 29 of them were completely filled and returned resulting into a response rate of 82.9%. The response rate was consisted with Mugenda and Mugenda (2003) stipulation that adequate response rates should be 70% and above.

On the first objective of establishing the extent of humanitarian logistics integration for humanitarian organizations, the study established that there was information technology (M=3.89), inventory management (M=3.83), transport management (M=3.82) and lastly planning (M=3.70). In view of planning, most of the respondents agreed that their organization planned for transportation services during disasters. Respondents further agreed that they planned for transportation of products to disaster centers when they occurred. The study established that the organizations worked with inventory managers, transport managers in planning and preparing for disasters.

On inventory management, most of the respondents agreed that inventory system was integrated with the IT to respond to disasters more effectively and efficiently and that the inventory management system coordinated with transportation to ensure disasters being responded timely. The study further established that inventory management was part of the planning process.

With regard to transport management, the study established that information from the planning, inventory management, and IT was used to schedule for vehicles to be used in transportation of products to areas of disasters and that transportation was integrated with the inventory management to ensure that goods were transported to points of disasters on time. The study further established that transportation system was integrated with the IT to identify disaster areas that needed relief food and services. With reference to information technology, majority of the respondents agreed that information technology facilitated getting information on the stock requirements during disasters and that it was used to carry out planning ahead of disasters.

With regard to the second objective of determining the relationship between humanitarian logistics integration and disaster response for humanitarian organizations, the study

established that planning ($\beta=0.150$, $p=0.012<0.05$) had a positive and significant relationship with disaster response. Inventory management ($\beta=0.475$, $p=0.000<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations. Transport management ($\beta=0.182$, $p=0.034<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations. Information technology ($\beta=0.404$, $p=0.001<0.05$) had a positive and significant relationship with disaster response among humanitarian organizations.

In respect to the third objective of investigating the challenges of implementing humanitarian logistics integration for humanitarian organizations, the study established that the common significant challenges in humanitarian logistics integration included donor pressure, lack of finance, poor infrastructure, organizational culture and resistance to change. The other underlying challenges included government regulations and lack of management support and understanding. However, training and clear communication were not significant challenges in implementing humanitarian logistics integration.

5.3 Conclusion

On the extent of humanitarian logistics integration for humanitarian organizations, the study concludes that there was information technology, inventory management, transport management and lastly planning. Most of the organizations planned for transportation services during disasters. The inventory system was integrated with the IT to respond to disasters more effectively and efficiently and that the inventory management system coordinated with transportation to ensure disasters being responded timely. The information from the planning, inventory management, and IT was used to schedule for vehicles to be used in transportation of products to areas of disasters and that transportation was integrated with the inventory management to ensure that goods were transported to points of disasters

on time. Information technology facilitated getting information on the stock requirements during disasters and that it was used to carry out planning ahead of disasters.

In view of the relationship between humanitarian logistics integration and disaster response for humanitarian organizations, the study concludes that planning has a positive and significant relationship with disaster response. Inventory management has a positive and significant relationship with disaster response among humanitarian organizations. Transport management has a positive and significant relationship with disaster response among humanitarian organizations. Information technology has a positive and significant relationship with disaster response among humanitarian organizations.

Concerning the challenges of implementing humanitarian logistics integration for humanitarian organizations, the study concludes that the most significant challenges in humanitarian logistics integration included donor pressure, lack of finance, poor infrastructure, organizational culture and resistance to change. The other underlying challenges included government regulations and lack of management support and understanding.

5.4 Recommendations of the Study

The study recommends that the senior management team of all the humanitarian organizations in Mogadishu, Somalia should increase their support and commitment towards humanitarian logistics integration to enhance timely response to disasters. Proper change management strategies should be adopted in humanitarian organizations to reduce resistance to change and thus increase humanitarian logistics integration which would translate into timely response to disasters.

The study further recommends that the government of Somalia formulates sound and efficient rules and regulations that encourage humanitarian organizations to improve on their

humanitarian logistics integration. This would lead to timely response to disaster. The government should also invest in improving and restructuring of infrastructure in order to improve on timely response to disasters among humanitarian organizations.

5.5 Limitations of the Study

The current study focused on humanitarian logistics integration and disaster response for humanitarian organizations. Specifically, the study focused on organizations in Somalia. The study was limited to 35 humanitarian organizations. Thus, results obtained if a sample of humanitarian organizations was drawn across the members of East Africa would be different from what the study established. The study was current study majorly focused on primary data that was collected using questionnaires. Thus, similar studies done but with different data would yield inconsistent results.

5.6 Suggestions for Further Studies

The coefficient of determination R square in the current study was 0.717, which shows that 71.7% change in disaster response among humanitarian organizations is explained by their logistics integration. It therefore implies that there exist other factors that influence disaster response which future studies should focus on. Primary data was collected in the current study by the help of questionnaires. Future studies should consider using both primary and secondary to complement each other. Similarly, other studies should also look at two other humanitarian logistics elements i.e. organizational personnel and infrastructure, which this study did not focus to incorporate with their influence on the disaster response..

REFERENCES

- Akumu, M. (2011). *Disaster awareness and preparedness of secondary schools in Homa Bay County, Kenya*. Unpublished MBA project, University of Nairobi.
- Apta, A. (2009). Humanitarian Logistics: A New Field of Research and Action. *Foundations and TrendsR in Technology, Information and Operations Management*, 3(1), 1-100.
- Balcik, B., Beamon, B. M., Krejci, C. C., Muramatsu, K. M., & Ramirez. (2010). Coordination in humanitarian relief chains: practices, challenges, and opportunities,. *Journal of Production Economics*,, 12(6), 22-34.
- Beamon, B. (2004). Humanitarian relief chains: issues and challenges. *Proceedings of the 34th International Conference on Computers and Industrial Engineering*,. San Francisco, CA, November 14-16.
- Benivegna, M. P. (2007). *Disaster response improving effectiveness*. Unpublished Thesis, Naval Postgraduate School.
- Bertalanffy, L. v. (1968). *General Systems Theory: Foundations, Development, Application*. New York, USA: George Braziller, Inc. .
- Christopher, M. (2011). *Logistics and Supply Chain Management* (Vol. 4th Edition). Prentice Hall.
- Estrada, E., & Knight, P. A. (2015). *A First Course In Network Theory*. Oxford, UK: OXFORD University Press.
- Gitonga, M. A. (2013). *Information Sharing Among Humanitarian Organizations in Kenya*. Unpublished MBA Project, University of Nairobi.
- Jahre, M., & Jensen, L.-M. (2010). Coordination in humanitarian logistics through clusters. *International Journal of Physical Distribution & Logistics Management*, 40(8), 657-674.
- Keith, H. D. (2008). *Disaster Management and Response: A lifelines Study for The Queenstown Lakes District* . Unpublished MSC Thesis, University of Canterbury.

- Kovács, G., & Spens, K. (2011). Trends and developments in humanitarian logistics – a gap analysis. *International Journal of Physical Distribution & Logistics Management*, 41(132-45).
- Kovács, G., & Spens, K. M. (2007). Humanitarian logistics in disaster relief operations. *International Journal of Physical Distribution and Logistics Management*, 37(2), 99-114.
- Leary-kelly, S. W. (2002). The integration of manufacturing and marketing / sales decisions : impact on organizational performance. *Journal of Operations Management*, 20, 221-240.
- Long, D. (1997). Logistics for disaster relief: engineering on the run. *IIE Solutions*, 29(6), 26-9.
- Long, D.C., & Wood, D.F. (1995). The logistics of famine relief. *Journal of Business Logistics*, 16(1), 213-29.
- Michael C. Whiting Beatriz E. Ayala-Öström. (2009). Advocacy to promote logistics in humanitarian aid. *Management Research News*, 32(11), 1081-1089.
- Moeiny, E., & Mokhlesi, J. (2011). *Management of Relief Supply Chain & Humanitarian Aids Logistics through Supply Chain Resilience* . Unpublished MSC Thesis, University of BORÅS.
- Mungatia, L. (2010). *Effectiveness of Supply Chain Strategy in Disaster Management in World Vision Kenya*. Unpublished MBA Thesis, University of Nairobi.
- Munguti, R. M. (2013). *Supply Chain Management Practices in Disaster Response among International Humanitarian Organizations in Kenya*. Unpublished MBA Project, University of Nairobi.
- Murray, S. (2005, January 7). "How to deliver on the promises: supply chain logistics: humanitarian agencies are learning lessons from business in bringing essential supplies to regions hit by the tsunami". 9.
- Ojwang, J. S. (2016). *Information Technology Usage on humanitarian logistics of relief organizations in Kenya*. Unpublished MBA Project, University of Nairobi.

- Overstreet, R. E., Hall, D., Hanna, J. B., & Jr, R. K. (2011). Research in Humanitarian Logistics. *Journal of Humanitarian Logistics and Supply Chain Management*, 1(2), 114-131.
- Peres, E. Q., Brito Jr, I., Leiras, A., & Yoshizaki, H. (2012). Humanitarian logistics and disaster relief research: trends, applications, and future research directions. *4th International Conference on Information Systems, Logistics and Supply Chain*. Quebec (Canada): Creative Logistics for an Uncertain World.
- Sandwell, C. (2011). A qualitative study exploring the challenges of humanitarian organisations. *Journal of Humanitarian Logistics and Supply Chain Management*, 1(2), 132-150.
- Simpson, G. (2005). "Just in time: in year of disasters, experts bring order to chaos of relief; logistics pros lend know-how to volunteer operations; leasing a fleet of forklifts; bottlenecks on the tarmac",. A1. Wall Street Journal (Eastern Edition).
- Thomas, A., & Kopczak, L. R. (2005). From Logistics to Supply Chain Management: The Path Forward in the Humanitarian Sector,. *Fritz Institute, San Francisco, CA*.
- Tomasini, R., & Wassenhove, L. V. (2009). *Humanitarian Logistics*. Basingstoke , Hampshire, UK: Palgrave Macmillan.
- Trunick, P. (2005). "Special report: delivering relief to tsunami victims",. *Logistics Today*, 46 (2), 1-3.
- Tysseland, B. E. (2009). Maintenance and spare parts inventories in man-made humanitarian disasters. 32(11), 1065-1080.
- Wassenhove, L. V. (2006). Blackett memorial lecture humanitarian aid logistics: Supply chain management in high gear. *Journal of the Operational Research Society*, 57(5), 475-489.

APPENDICES

APPENDIX I: QUESTIONNAIRE

This questionnaire is intended to provide information for the study on humanitarian logistics integration and disaster response for humanitarian organizations in Mogadishu. Please note that the information provided will be used for academic purposes only and will be treated with utmost confidentiality.

Please answer the following questions by ticking (√) in the appropriate box or by giving the necessary details in the spaces provided.

PART A: GENERAL INFORMATION

1. Age of the organization:

- a) 1-5
- b) 6-10
- c) 11-15
- d) 16- 20
- e) 21 and over

2. Position of the respondent: _____

3. Duration of Work:

- a) 1-5 years
- b) 6-10 years
- c) 11- 15 years
- d) 16 and over

4. Academic qualification

- a) High school Diploma
- b) University Degree
- c) Professional Diploma

d) Higher degree (Masters or PHD)

[]

e) None

PART B: HUMANITARIAN LOGISTICS INTEGRATION

Please indicate the extent your firm has integrated the following humanitarian logistics elements. Tick where appropriate.

(1)-Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

Planning	1	2	3	4	5
You plan for transportation of products to disaster centers when they occur					
Your organization plans for transportation services during disasters					
Your organization works with inventory managers, transport managers in planning and preparing for disasters					
Planning involves with transportation, inventory management, and IT together to achieve efficient disaster response					
Inventory management					
The inventory system is integrated with the IT to respond to disasters more effectively and efficiently					
Inventory management is part of the planning process					
The inventory management system coordinates with transportation to ensure disasters being responded timely					
The inventory management system works completely with planning, transportation, and information technology to respond disaster on time					
Transport management					
Information from the planning, inventory management, and IT is used to schedule for vehicles to be used in transportation of products to areas of disasters					
Transportation is integrated with the inventory management to ensure that goods are transported to points of disasters on time					
Transportation system is integrated with the IT to identify disaster areasthat need relief food and services					
Information technology					
Information technology facilitates getting information on the stock requirements during disasters					
Information technology is used to carry out planning ahead of disasters					
Information technology is integrated with planning, inventory management, and transportation to achieve improved disaster response					

SECTION C: DISASTER RESPONSE

Indicate to what extent humanitarian logistics integration affects disaster response

(1)-Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	1	2	3	4	5
My organization delivers emergency materials to disaster responses on time.					
My organization takes days or weeks to deliver materials to disaster sites					
My organization never deliver aid materials to disaster sites					
My organization checks the quality of the goods before they are sent to the beneficiaries					
The aid materials meet the expectations of the beneficiaries and standards of my organization					
My organization has the capacity to deal with different scales of disasters					
My organization has the necessary resources to meet with changes in demand from disaster sites					
My organization is capable of deploying enough personnel to disaster sites to help the beneficiaries					

SECTION D: CHALLENGES OF IMPLEMENTING HUMANITARIAN LOGISTICS

INTEGRATION IN HUMANITARIAN ORGANIZATIONS IN MOGADISHU

Please indicate the level of agreement to which your organization experiences the following challenges of implementing humanitarian logistics integration for humanitarian organizations in Mogadishu.

(1) Not at all (2) Small extent(3) Moderate extent(4) Great extent (5) Very great extent

No	Challenge	1	2	3	4	5
1.	Lack of training					
2.	Lack of management support and understanding					
3.	Resistance to change					
4.	Lack of finance					
5.	Donor Pressure					
6.	Poor infrastructure					
7.	Organizationalculture					
8.	Lack of clear communication					
9.	Government regulations					

Any other (please specify).....

Thank you for your cooperation

APPENDIX II: LIST OF HUMANITARIAN ORGANIZATIONS IN MOGADISHU

No	International Humanitarian Organization	No	UN AFFILIATED AGENCIES
1	ICRC: International Committee of the Red Cross	22	WFP
2	DRC: Danish Refugee Council	23	UNDP
3	ARC: American Refugee Council	24	ILO
4	Concern Worldwide	25	OCHA
5	NRC: Norwegian Refugee Council	26	IOM
6	Handicap International	27	UNHR
7	International Aid Services	28	UNCDF
8	International Medical Corps	29	UNDSS
9	Islamic Relief	30	UNEP
10	IRC: International Rescue Committee	31	UNFPA
11	Intersos	32	UNHCR
12	Qatar Charity	33	UN-HABITAT
13	Mercy Corps	34	UNICEF
14	Norwegian Church Aid	35	WHO
15	Oxfam International		
16	Relief International		
17	Save the Children		
18	World Vision		
19	CooperazioneI nternazionale		
20	Diakonia Sweden		
21	IFRC: International Federation of Red Cross		

Source: Ministry of Interior and Federal Affairs, 2018.