

**SUPPLY CHAIN MANAGEMENT PRACTICES AND THEIR
IMPACT ON PERFORMANCE AMONG HUMANITARIAN
ORGANIZATIONS IN KENYA**

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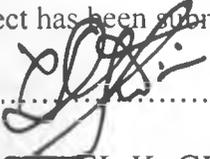
DECLARATION

I declare that this research project is my original work and has never been submitted to any other University for assessment or award of a degree.

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This project has been submitted with my authority as the university supervisor.

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TABLE OF CONTENTS

DECLARATION	ii
LIST OF ABBREVIATIONS & ACRONYMS.....	v
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the Study	1
1.1.1 Supply Chain Management.....	2
1.1.2 Supply Chain Management practices	4
1.1.3 Humanitarian Organizations in Kenya	4
1.2 Research Problem	5
1.3 Research Objectives.....	6
CHAPTER TWO: LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Commercial Supply Chain Management.....	8
2.3 Humanitarian Supply Chain Management.....	10
2.3.1 Global Humanitarian Supply Chain.....	15
2.4 Challenges of Humanitarian Supply Chains.....	16
2.5 Overcoming Humanitarian Supply Chain Challenges.....	18
2.6 Supply Chain Performance	21
2.7 Research Gaps and Conceptual framework	23
CHAPTER THREE: RESEARCH METHODOLOGY	24
3.1 Introduction.....	24
3.2 Research design	24
3.3 Target population.....	24
3.4 Data Collection	24
3.5 Data analysis.....	25

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION.....	26
4.1 Introduction.....	26
4.2 Organizational Profile.....	26
4.3: Supply Chain Management Practices	28
4.3 Relationship between supply chain practices and performance of humanitarian supply chains	33
4.4 supply chain management challenges faced by humanitarian organizations in Kenya.....	37
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.....	44
5.1 Introduction.....	44
5.2 Summary of Findings	44
5.3 Conclusions.....	47
5.4 Recommendations.....	48
5.5 Suggestions for Further Research	49
REFERENCES	50
Appendix I: Research Questionnaire	55
Appendix II: List of relief organizations	59

LIST OF ABBREVIATIONS & ACRONYMS

AIDS	: Acquired Immune Deficiency Syndrome
BRCS	: British Red Cross Society
CRM	: Customer Relationship Management
CRS	: Catholic Relief Services
HIV	: Human Immunodeficiency Virus
HSCM	: Humanitarian Supply Chain Management
ICRC	: International Committee of the Red Cross
IT	: Information System
KRCS	: Kenya Red Cross Society
LWR	: Lutheran World Relief
MSF	: Medecins Sans Frontieres
NGO(S)	: Non Governmental Organizations
KPIs	: Key Performance Indicators
SPSS	: Statistical Package for Social Sciences
SCM	: Supply Chain Management
UNO	: United Nations Organizations
UNDP	: United Nations Development Programme
UNHCR	: United Nation High Commissioner for Refugees
UNICEF	: United Nations Children's Fund
WHO	: World Health Organization

LIST OF TABLES

Table 4.1 Type of the organization	26
Table 4.2 : Operating areas	27
Table 4.3: Logistics department	27
Table 4.4: Effective and efficient internal operations	28
Table 4.5: Regular trainings for various stakeholders in the supply chain	29
Table 4.6: Production process	30
Table 4.7: Use of technology to speed up humanitarian work	30
Table 4.8: Inter-organizational integration.....	32
Table 4.9: Encouraging simplicity in organizational operations.....	32
Table 4.10 Practicing Just in Time in organizational operations	33
Table 4.11: Model Summary.....	34
Table 4.12: ANOVA	34
Table 4.13 : Coefficients	35
Table 4.14: Bulky materials to be transported	37
Table 4.15: Lack of financial resources	38
Table 4.16: Inability to anticipate disaster	39
Table 4.17: Lack of proper planning.....	40
Table 4.18: Demand uncertainty	41
Table 4.19: Supplies uncertainty	42
Table 4.20: Assessment uncertainty.....	42

LIST OF FIGURES

Figure 4.1: Maintaining good supplier relations	28
Figure 4.2: Continuous improvement	29
Figure 4.3: Supply chain integrated functions	31
Figure 4.4: Poor infrastructure	37
Figure 4.5: Customs and habits in the relief area	39
Figure 4.6: Lack of coordination.....	41

ABSTRACT

A study was conducted to establish the supply chain management practices and their impact on performance among humanitarian organizations in Kenya. The study had three objectives to achieve: To establish supply chain management practices among humanitarian organizations in Kenya; to determine the relationship between supply chain practices and performance in humanitarian supply chain management and to identify the supply chain management challenges faced by humanitarian organizations in Kenya.

The researcher adopted a descriptive research design. The population of the study included the 28 humanitarian organizations operating in Kenya. A census was conducted and data was collected through questionnaires from 21 humanitarian organizations. The data was analyzed and presented in tables, graphs and charts. A regression analysis was also conducted to establish the relationship between supply chain management practices and humanitarian supply chain performance.

The study findings indicated that maintaining good supplier relation, effective and efficient internal operations, continuous improvement, flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among the practices prevalent among humanitarian organizations in Kenya. The main challenges include customs and habits in the relief area, Lack of financial resources, inability to anticipate disaster, bulky materials to be transported, demand and supply uncertainty.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Disasters are inevitable: at any point in time cases of either natural or manmade disasters such as famine, floods, earthquakes, tsunami, war, terrorism, hurricane, diseases like HIV/AIDS and extreme poverty among many others are to be found somewhere in the world. Disasters disrupt people's lives through displacements, deaths and injuries. They destruct livelihoods and drain years of economic gains and development. According to Maspero and Ittmann (2008), natural disasters cause loss of lives and property, displacement of people from homes, destruction of infrastructure like roads, rails and telecommunication lines, contamination of water sources causing diseases or depletion of the same altogether and so on, while some crises or disasters provide a modicum of warning, others occur suddenly, shocking the world with destruction and chaos. The companion of disasters is however the deployment of aid: people, equipment, materials, and funds-resources employed to relieve suffering wherever it occurs.

The cyclic nature of natural disasters in Kenya have constantly eroded the recovery capacity of communities especially those living in the arid and semi-arid areas, thus affecting their economic development year in year out. This requires more vigorous attention and planning to mitigate the effects as they have impacted greatly on the country's fight against poverty and efforts to reduce the number of people living below the poverty line. The economic cost of the impact of floods, droughts and landslides in the past have been estimated in millions of shillings (Republic of Kenya, 2004).

The mission of humanitarian supply chain is to get the right materials to the right place at the right time, while optimizing a given performance measure for instance minimizing total operating costs and satisfying a given set of constraints. The way supply chains are operated has a massive impact on the speed and quality of the assistance that can be provided. In addition, supply chain activities from purchasing to the last-mile delivery of items account for a very large share of the cost in a disaster relief operation. Any improvement in the way supply chain management provides humanitarian assistance has the potential to deliver a huge positive impact for people affected by disasters (Tomasini and Wassenhove, 2009).

1.1.1 Supply Chain Management

In general, the ultimate goal of any supply chain management is to deliver the right supplies in the right quantities to the right locations at the right time. Supply chain management comprises all the activities and processes associated with the flow and transformation of goods from the raw material stage through the end user (Beamon and Balcik, 2008).

In the commercial sector, supply chain management involves the coordination of activities and operations of the firm across the wider functional areas of the firm and with customers and suppliers. It represents a major breakthrough in the interconnectivity of information technology, logistics processes, and customer support as well as facilitating alliances with supply chain partners, lean processes, and end-to-end integration of key business processes. Blecker et al. (2006), point out that supply chain management in a commercial context is more than a passing stage in the continuing evolution of management practice. It is a major revolution which is delivering end-to-end visibility, cost reductions, and new levels of performance metrics in

meeting customer requirements. Blecker et al. (2006), further assert many modern commercial supply chains are characterized by networks of interconnected firms rather than simple contractor subcontractor relationships.

On the other hand, according to Oloruntoba and Gray (2005), in the humanitarian supply chain, supplies flow through the relief chain from the donation to the consumers. The structure of humanitarian supply chain management is often unstable. As a result, proper coordination and management of disaster supply chains is highly needed and must be put in place. According to Wassenhove, (2006), the source of revenue for humanitarian supply chain is government funding, charitable donations from individuals and corporation, and in-kind donations. Governments hold the main power with the control they have over political and economic conditions and directly affect to supply chain management processes with their decisions. Donors, public and private organizations are the other significant players in the humanitarian supply chain management. Donors have become particularly influential in prompting humanitarian organizations to think in terms of greater donor accountability and transparency of the whole humanitarian supply chain.

The goal of humanitarian supply chains is to be able to respond to multiple interventions, as quickly as possible and within a short time frame. In addition, performance measurement in the humanitarian supply chains include the intangibility of the services offered, immeasurability of the missions, unknowable outcomes, and the variety interests and standards of stakeholders (Beamon and Balcik, 2008).

1.1.2 Supply Chain Management practices

Supply Chain Management Practices covers a set of activities and processes from upstream and downstream and firm's internal operations. This is in line with Ballou *et al.* (2000) that conceptualise SCM as three dimensions: intra-functional coordination, inter-functional coordination, and inter-organizational coordination. In this research five aspects of SCM practices that were developed from previous research including Perry and Sohal (2000) and Petrovic-Lazarevic *et al.* (2007) are used. These five SCM practices are: supplier and customer relationship, information sharing, internal operation, IT and training.

1.1.3 Humanitarian Organizations in Kenya

There are several humanitarian organizations that currently operate in Kenya. The reasons for the existence of such organizations are diverse. According to Barcelo, Massaud and Davies (2011), there are many situations that warrant humanitarian response. Chronic vulnerability due to food insecurity is likely to lead to the need for humanitarian aid, the existence of informal settlements in cities such as Nairobi where more than 60% of the population in the city resides poses shelter challenges, ethnic related violence and drought.

There are basically four types of humanitarian organizations operating in Kenya. The first category includes government sponsored humanitarian organizations such as the KRCS which was established through an act of parliament in 1965. It operated as the BRCS between 1939 and 1965. The organization has been recognized by ICRC and other international bodies since 1966 (Superbrands, 2012). The second category of humanitarian organizations is those that are privately sponsored and are registered as NGOs with the NGO council. This category also

includes other international organizations such as Oxfam, Save the Children, MSF just to mention but a few.

The third category of humanitarian organizations is those run and funded by religious groups such as churches and mosques. They include the CRS, Adventist relief association, the LWR and many others. The last category of humanitarian organizations is the ones affiliated with the UNO. There are several humanitarian organizations under the umbrella of the UNO such as the UNICEF that deals with children's rights, UNDP which addresses issues concerning development projects in various countries, WHO which handles issues to do with health of people around the world and UNHCR that handles the concerns of refugees including resettlement (Coipuram, 2003).

1.2 Research Problem

In disaster relief supply chains speed is of the essence. The time from donation to delivery of humanitarian aid is very critical to the provision of timely help to those in need. It is the work of supply chains to ensure that humanitarian aid items get to where they are required within the shortest time in order to save lives. Many a time the reverse of the above happens since it takes unusually long to take humanitarian aid to some places. The reasons for this are varied depending on regions supply chain practices of the organizations.

Humanitarian supply chain management is a relatively new area and has attracted few researchers in the last five years. Masspero and Ittmann (2008) in their argument as they discuss the rise of humanitarian supply chains indicate that the area is recent and has attracted few

researchers in the last five years. Rodman (2004) conducted a study on supply chain management in humanitarian relief supply chain. Using grounded theory methodology, the study analyzed barriers to humanitarian supply chain based on academic, organizational, and contemporary literature. Possible solutions to these barriers were selected from available supply chain management literature. Nyamwange and Nyaguthie (2004) carried out a study on logistics challenges facing humanitarian aid organizations focusing on lessons learnt from Somalia. The duo concluded that humanitarian supply chains are faced by many challenges.

The above studies have not adequately addressed research in supply chain management among humanitarian organization since different regions face different challenges particularly in Kenya. This study looked at these challenges in order to bridge the gap that exists. The study aimed to answer the following questions: what are the supply chain management practices among humanitarian organizations in Kenya; what is the relationship between supply chain practices and performance in humanitarian supply chain management and what are the supply chain management challenges among humanitarian organizations in Kenya?

1.3 Research Objectives

- i. To establish supply chain management practices among humanitarian organizations in Kenya.
- ii. To determine the relationship between supply chain practices and performance in humanitarian supply chain management.
- iii. To identify the supply chain management challenges faced by humanitarian organizations in Kenya.

1.4 Value of the Study

The findings of this study will enable humanitarian organizations operating in Kenya to have a clear understanding of the supply chain management practices and incorporate them in the management of their respective supply chains for higher performance.

The study will also be beneficial to those organizations planning to start their operations in the humanitarian sector since they will be able to know beforehand the supply chain management challenges they will meet.

Researchers in the area of humanitarian supply chain management will also be able to find this document appealing since it can be a source of reference for their studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the studies that have been conducted in supply chain management practices in humanitarian organizations. Among the things covered include: commercial supply chain management; humanitarian supply chain; Global Humanitarian Supply Chain; Supply Chain Performance; research gaps and conceptual framework.

2.2 Commercial Supply Chain Management

In today's competitive business there is an increased focus on delivering value to the customer. The focus of most of businesses is providing products and services that are more valuable compared to their competitors. Concurrent to the focus on customer value, the market place in which businesses operate today is widely recognized as being complex and turbulent (Goldman et al., 1995). The growth of supply chain aims to improve profitability, customer response and ability to deliver value to the customers and also to improve the interconnection and interdependence among firms. Due to market expanding from domestic market to global market increase customer demands, for instance demanding lower prices, faster delivery, higher quality products or services and increase the variety of item. According to Towil and Christopher, (cited in Thatte, 2007), the end customer in the marketplace today is determined by the success or failure of supply chain management practices. They stated that getting the right product, at the right price, at the right time to the customer is not only improved competitive success but also the key to survival.

In supply chain management practices, supplier relationship activities play an important role. Long-term relationships refer to intention that the arrangement is not going to be temporary (Chen and Paulraj, 2004). Through close relationship supply chain partners are willing to share risks and reward, and maintain the relationship on long term basis (Cooper and Ellram, 1993). Firms that integrate with customers including: planning, implementing, and evaluating a successful relationship between the provider and recipient of both upstream and downstream of the supply chain. Therefore, CRM is not only focused on inbound customer relationships but also on outbound customer relationships in SCM. Customer relations relate to the company's ability to communicate to the delivery of appropriate products and services to customers locally and globally in the right time, right place, and appropriate of quantity and quality. Customer linkage especially sharing product information with customers, receiving customer orders, interact with customers to manage demand, after placing the order system, share the status of orders with customers on scheduling orders, and product delivery stage (Lee, 2004).

A firm's customer relationship practices can generate the organizational success in supply chain management practices efforts as well as its performance (Scott and Westbrook, 1991). The success of supply chain management encompasses customer integration at the downstream and supplier integration at the upstream, considering that each entity in a supply chain is a supplier as well as a customer (Tan et al., 1999). In the competitive business, better relationship management with customers is crucial for organization success. Good relationship with business partners, including key customers are important role to success of supply chain management practiced by organization. Customer relationship has been recognized as an internal component of an organization's market strategy to increase sales and profits. Close customer relationship

allow product differentiation from competitors, help sustain customer satisfaction and loyalty, and elevated the value provide to customer (Margaretta, 1998).

Simatupang and Sridharan, (2002) defined information sharing as the access to private data between business partners thus enabling them to monitor the progress of products and orders as they pass through various processes in the supply chain. They identified some of element that comprise information sharing, consisting data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and location, order status, cost-related data, and performance status. They also add that information sharing pertaining to key performance metric and process data improves the supply chain visibility thus enabling effective decision making. Information shared in a supply chain is of use only if it is relevant, accurate, timely, and reliable (Simatupang and Sridharan, 2005). Information sharing with business partners enables organizations making better decisions and making action on the basis of greater visibility.

2.3 Humanitarian Supply Chain Management

Humanitarian supply chain is an umbrella term for a mixed array of operations. It covers disaster relief as well as continuous support for developing regions. According to Thomas (2004), humanitarian supply chain entails the processes of planning, implementing and controlling the efficient, cost effective flow and storage of goods and materials as well as related information from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. The function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, customs and clearance.

Natural or man-made disasters of a sufficient scale to warrant an extraordinary response from outside of the affected area are on the increase. Due to various factors such as steady population growth, urbanization and residential densification, these disasters are having greater impacts on lives and livelihoods than ever before. As a result, disaster relief is and will continue to be in a very high demand.

Maspero and Ittmann (2008), assert that the field of humanitarian supply chain is relatively new with significant research only having begun to be undertaken within the recent last few years. According to them, it is a challenging sub-field of where the disaster itself may prevent conventional distribution: in a rapid onset disaster such as an earthquake, flood, tsunami or mudslide, the transportation and communication networks may be damaged or destroyed to such an extent that previously economically unviable transportation options such as air drops of aid may be the only means of accessing the affected population rapidly. At its simplest, a humanitarian supply chain starts with the procurement and dispatch of aid for shipment to the beneficiary region. The aid may be stored in either a national or regional warehouse before it is transported to the extended or then final distribution points where the aid is handed to the beneficiaries.

Chandraprakaikul (n.d.), remarks that in humanitarian supply chains, the flow of goods from donators to affected people often passes through several stages. In such a typical humanitarian supply chain each stage may comprise many facilities. Chandraprakaikul further asserts that the purpose of a humanitarian supply chain is to rapidly provide the appropriate emergency supplies to people affected by natural and man-made disasters so as to minimize human suffering and

death. The design or redesign of supply logistical networks entails taking decisions on a range of issues, including the location and flexibility of distribution centers, the capacities required to fulfill the affected people needs, and the control system to manage all activities. The supply chain logistical systems used in humanitarian relief operations may depend on each situation's characteristics. The distribution of emergency supplies for a typical disaster relief operation involves complex interaction of international actors, governmental bodies, donators or non-governmental offices.

According to McLachlin et al. (2009), humanitarian supply chains tend to be unstable, prone to political and military influence, and inefficient due to lack of joint planning and inter-organizational collaboration. They deal with inadequate logistics infrastructure, along with shifting origins of and/or destinations for relief supplies without warning. Further, donors often request their funds be spent on direct materials and food, and even at a particular disaster location, rather than on crucial but indirect services such as information systems, staff training, and/or disaster preparedness. Therefore, humanitarian supply chains does not only deal with delivering goods, materials or information to the point of consumption for the purpose of alleviating the suffering of vulnerable people, but also needs to manage value to donors and other stakeholders.

Thomas and Kopczak (2005), point out that disaster relief or humanitarian relief is a speedy action that needs to be undertaken immediately after a disaster. Undoubtedly, disaster relief will continue to expand market, as it is forecasted that over the years to come, both natural and man-made disasters will increase five-fold due to environmental degradation, rapid urbanization and

the spread of HIV/AIDS in the developing world. This therefore enhances the need for humanitarian organizations to establish highly responsive supply chains through designing and developing effective and efficient supply chain systems that will ensure acquisition and delivery of requested supplies and services, at the places and times they are needed, whilst ensuring best value for money. In the immediate aftermath of any disaster, these supplies include items that are vital for survival, such as food, water, temporary shelter and medicine, among others. During emergencies, the need to respond quickly and efficiently is paramount thus, an effective and well coordinated logistic operations are crucial in humanitarian supply chains context since they lead to saving lives and diminishing the impact of communicable diseases.

It is equally crucial for humanitarian organizations to develop and design their supply chains in a manner that would enable them to cover the lifespan of a disaster. Their supply chains should equally be flexible in order to enable them to quickly respond to all kinds of disasters. As pointed out by Maspero and Ittmann (2008), disasters can be classified as either a rapid onset disaster such as an earthquake or flood that require immediate interventions of rescue and aid, or a slow onset disaster such as drought and famine which may allow more time to respond. Slow onset disasters present an ideal opportunity to refine the crisis response. These crises also provide an opportunity to strive towards increased coordination of the response with developmental programs. Whatever the nature of the onset, the scale of the response typically follows a lifecycle i.e. the ramp up: when aid and infrastructure e.g. assets and staff are deployed to the area, the sustainment: when the aid and aid infrastructure are employed fully for the period of responding to the crisis and the ramp down: when assets are gradually reduced and withdrawn from the area to be redeployed elsewhere. The ramp down phase does not signal the end of the need for aid,

and it is normal for developmental or long-term aid to ramp up in the area to complement the ramping down of the emergency response. Thus, humanitarian supply chains should be designed in a manner that will enable humanitarian organization to operate effectively and efficiently in the entire lifespan of a disaster in order to achieve utmost performance.

Kovacs and Spens (2007) argue that supply chain is central to disaster relief, generally, according to the authors, it is one of the most expensive parts of a relief effort and this is for several reasons such as: first, it serves as a bridge between disaster preparedness and response, between procurement and distribution, and between the humanitarian organizations' headquarters and the field. Second, it is crucial to the effectiveness and speed of response for major humanitarian programs, such as health, food, shelter, and water and sanitation. Third, since the supply chain department tracks goods through the supply chain, data reflects all aspects of execution, from the effectiveness of suppliers and transportation providers, to the cost and timeliness of response, to the appropriateness of donated goods. Thus, it is critical to performance of both current and future operations and programs of humanitarian supply chains.

A typical humanitarian supply chain usually will constitute a multilateral approach through international agencies and NGOs. The demands in the relief chain are supplies and people, and those demands are lumpy (they occur in irregular amounts and at irregular intervals) and occur suddenly, such that the locations are often completely unknown until the demand occurs. According to McLachlin et al. (2009) Therefore, the management of humanitarian supply chain does not only deal with delivering goods, materials or information to the point of consumption

for the purpose of alleviating the suffering of vulnerable people, but also need to manage value to donors and other stakeholders.

2.3.1 Global Humanitarian Supply Chain

In the first few days after the January 12, 2010 earthquake in Haiti, OCHA indicated that Logistics and the lack of transport remain the key constraints to the delivery of humanitarian aid. OCHA (2010) also pointed out that coordination of assistance is vital in humanitarian supply chains.

Global humanitarian supply chains share some common drivers with their business counterparts. It is critical to get the most out of scarce resources and limited budgets. It is also important to reach more beneficiaries in need and serve them more quickly. However, humanitarian supply chains have their share of unique drivers, such as: increasing awareness; becoming better prepared for the next disaster; gaining more rapid access to accurate information about what is needed; and providing better security in the field. If two or more organizations can save more lives or ease more suffering by working together, they should seriously consider it (McLachlin and Larson, 2011).

Global supply chains also face other challenges especially where natural disasters such as earthquakes occur. For instance the Wenchuan earthquake of May 2008 which took place in a landlocked region of China and the January 2010 earthquake in the island nation of Haiti posed big challenges to humanitarian supply chains. Several multimodal solutions were devised to minimize the risk of supply breakdown. Haiti required substantial external aid and logistics

support, but severe organizational and infrastructural weaknesses rendered the supply chain extremely vulnerable locally. This translated to a mismatch between the volume of aid supplied and logistics capability, highlighting the importance of “last-mile” distribution management. The two earthquakes posed extreme challenges to the logistics operations too, though both required a mix of military and non-military input into the logistics response. Nonetheless, in each case the non-standard logistics solutions which were devised broadly met the requirements for effective aid distribution in extreme environments (Beresford and Pettit 2012).

2.4 Challenges of Humanitarian Supply Chains

The management of humanitarian supply chain can become very complex with the presence of different stakeholders and large quantity of materials to be distributed. Because transportation infrastructures are degraded or destroyed, the distribution of the materials could be quite difficult. Furthermore, there are severe time constraints as people may die if goods are not distributed in time. In humanitarian supply chain environment, humanitarian staff often has to confront with many stakeholders, including large number of donors, the media, governments, the military and the final beneficiaries. Lack of coordination among humanitarian organizations at the scene of a disaster is ordinary, as there can be as many as several hundred humanitarian organizations at the scene to carry out relief operations, all with different political agenda, ideologies and religious beliefs and all fighting for media and donor attention (Wassenhove, 2006). The greatest challenge lies in aligning them and the coordination of logistical activities without compromising their mandates or beliefs. Also, as pointed out by Oloruntoba and Gray (2005), humanitarian supply chain often entails high levels of uncertainty in terms of demand, supplies and assessment. This makes them clearly unpredictable, turbulent and requiring

flexibility. This irregularity presents unique challenges to relief fulfillment system as the number, magnitude, and complexity of global emergencies continue to increase.

Another challenge to the humanitarian supply chain field is the extent to which logisticians can be equipped with the tools they require to perform optimally. There is a high turnover of logisticians in the field, in part due to the high pressure environment but also perhaps due to the absence of clear career paths, associated training and experience transfer. Logisticians are often frustrated by the need to operate in volatile environments. Rodman (2004) quotes Thomas (2003) that organizations may experience as high as 80% annual turnover in field of supply chain personnel. This has huge implications for the organizations' need for experienced logisticians in a field where experience counts every bit as much as knowledge. It also has implications for the post-event knowledge transfer where the aim is to ensure that lessons learnt are captured and transformed into wisdom regarding the type of crisis, region and specific operation.

Performance management particularly the performance of supply chain is equally a challenge for humanitarian organizations. Performance management in the humanitarian supply chain system is not simple. Critical issues remain regarding which measures are the most appropriate indicators of performance and how these factors influence the flow of information for decision making. According to Beamon (2004) performance measurement is vital to humanitarian organizations. This translates directly to an increased focus on supply chain for improved transparency of operations and measurement of supply chain performance. Beamon (2004) goes on to state that nowadays contributors, donor agencies, scholars, and relief and development practitioners are all asking whether NGOs really have mechanism to enable them determine

whether they practice what they preach. Effective and efficient supply chain processes are vital to these organizations and performance measurement is important for their accountability.

Richardson (1994) as quoted by XiuHui (2007), highlights a number of other factors within the physical or geographic environments where disasters strike that deliver a fuller picture of the complexities of humanitarian supply chains logistic thus enhancing the challenges that humanitarian organizations normally encounter. For instance the diversity of factors can make it difficult to understand which factors predominate and can obscure the precise nature of the problem; interactivity among the factors can accelerate the rate at which the disaster might escalate; the ambiguity nature of disasters makes it difficult to know the direction in which the crisis might escalate since the cause-effect relationships are not clear hence making it hard for managers to forecast the implications of their decisions; and the invisibility which comes from the inability to anticipate factors, typically because they are unknown in different dimensions to the managers. The classic example of invisibility according to XiuHui (2007) is when foreign aid workers underestimate the importance of local customs and habits in the relief area. Despite the best efforts to estimate them, without the perspective of a local partner, many important factors will remain invisible leaving the manager unaware of potential damages.

2.5 Overcoming Humanitarian Supply Chain Challenges

Maspero and Ittmann (2008), assert that humanitarian supply chain has the opportunity to increase its contribution to disaster relief and to be recognized for that contribution by implementing initiatives in the areas of knowledge management, technology, measurement, community and positioning. While moving relief items to disaster is an important role for

humanitarian supply chain, the strategic focus must therefore be on providing timely information, analyzing that information to garner insight as to how to improve operations and learning internally and with others. This can be achieved by incorporating IT in the management of activities in the entire humanitarian supply chain. Disaster and crisis situations demand effective communication. Intranet and extranets, electronic data interchange, video conferencing, global positioning system, and even private radio. IT has long been recognized as being important for the support of humanitarian efforts.

Long and Wood (2005) suggest that management of information during a crisis is the single greatest determinant of success. IT assists in integrating activity and providing information to allow the supply chain to operate more effectively. Specific decision support systems and communications and information systems are vital in controlling relief operations. Such systems can assist in crisis, disaster and emergency planning, response and management. It is through the mechanisms of information and community that humanitarian supply chain can find its voice and create its future, rather than limit itself to responding to the present. Thomas and Kopczak (2005), argue that it is imperative for humanitarian supply chain professionals to find ways to communicate to donors and the general public how supply chain effectiveness is improving. Through positive reinforcement that improvements in supply chain have led to improved efficiencies, donors may be more motivated to fund not only operations but improvement initiatives too.

Humanitarian organizations can also adopt and incorporate inventory management methods in order to meet the ever increasing unique challenges to relief fulfillment systems like irregularity

in terms of size, timings, and locations of demand patterns for relief items. Kovacs and Spens (2009), point out that challenges of humanitarian logisticians depend not only on the disaster at hand, but also on the local presence of their organization. According to Balcik et al. (2008), proper supply chain coordination and integration of operations can equally enable the humanitarian organizations to overcome various humanitarian supply chain challenges. Coordination describes the relationships and interactions among different actors operating within the relief environment. Many factors contribute to coordination difficulties in disaster relief, such as the large number and variety of actors involved in disaster relief, and the lack of sufficient resource.

Establishment and provision of proper transportation, model choice and routing systems in disaster circumstances can equally enable the humanitarian supply chain to have stable fleets of vehicles and primarily good infrastructure over which to operate in disaster situation where there is usually destroyed infrastructure. Transport is critical in disaster relief and an important aspect of humanitarian supply chain is the requirement to address mode, utilization of capacity, scheduling, and maintenance in such circumstances. The full range of activities includes consolidation, contract services, payment, local tendering, and outsourcing of transport, strategic alliances, and cost minimization (Kovacs and Spens, 2007).

Equally, it is important to bring the humanitarian supply chain closer to the private sector in terms of accountability, transparency of operations, coordination and collaboration, improved supply chain and streamlined operations. This can be achieved by establishing strong leadership in terms of coordination in the humanitarian sector in order to improve service delivery. Howden

(2009) argues that it is vital that such systems and processes are quickly standardized across the sector to ensure optimal performance of the humanitarian supply chains at its widest. It makes tremendous sense for supply chain to be at the forefront of advancements in the humanitarian supply chains. According to Tomasini and Wassenhove (2009), the potential for big and relatively quick wins by improving humanitarian supply chain is quite large. It is hoped that through a stronger focus on supply chain and especially the professionalization of the humanitarian logistician that this focus will indeed change. If this can be achieved, humanitarian supply chain will have successfully made the transition to humanitarian value chain management where every partner in the chain is committed to the goal of creating and fostering value creation for the poorest, most marginalized and disaster stricken populations on earth.

2.6 Supply Chain Performance

The modern supply chain is incredibly complex. To maximize competitive advantage, organizations must have comprehensive visibility into supply chain performance, as well as the flexibility to respond rapidly to disruptions and risks. At the same time, organizations mostly the humanitarian organizations need ways to identify and adapt to emerging supply chain trends. To proactively manage the overall performance of your supply chain, organizations need to know more than inventory positions, delivery dates, and fill rates. They must understand the impact of supply chain changes on total cost or cash flow and optimize supply chain effectiveness for better corporate results. This requires end-to-end visibility into factors that drive performance – such as cash to-cash cycle time, overall supply chain cost, or perfect order fulfillment (Oloruntoba and Gray, 2005).

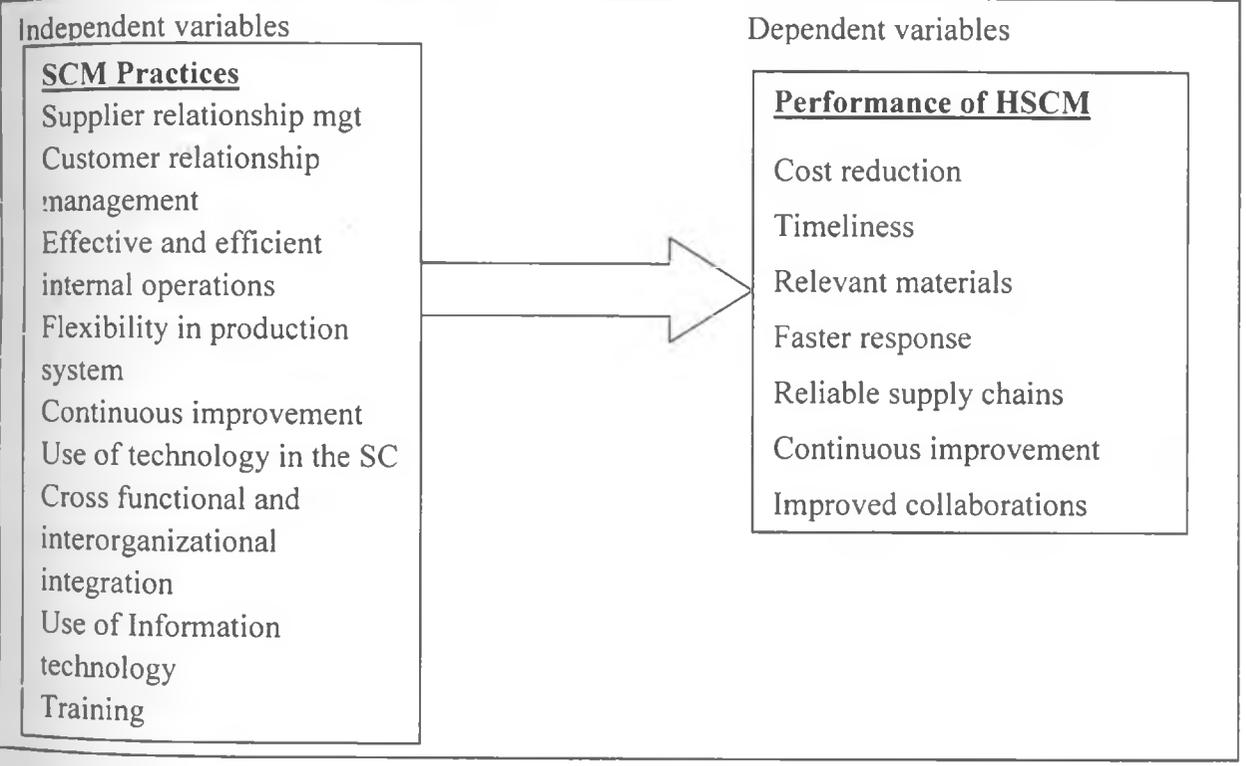
Supply chain performance enables firms to drive rapid change in all aspects of nearly all operations, thus, effective supply chain mastery is a critical factor to achieving high performance. According to Hau and Amaral (2002), companies have looked to globalization to optimize costs and capability, and in the process, they have added considerable complexity to the planning process as executives now must manage far more complicated and extended networks of supply sources. This has forced supply chain managers to account for and manage longer and harder-to-predict lead times while balancing shorter and more complex product life cycles as companies attempt to customize their products and services both globally and locally.

According to Reh (2011), success of supply chain improvement initiative lies in selection of appropriate Key Performance Indicators (KPIs) using best suitable supply chain framework. These performance indicators should be measured, monitored and controlled with proper review mechanism. With clearly defined and documented metrics that are associated with specific individuals in your supply chain network, organizations can foster a heightened level of accountability. In addition, Reh (2011) further asserts that organizations can initiate tasks, assign owners, set alerts based on predefined thresholds, and monitor the execution of tasks assigned to address issues. This not only allows companies to take swifter action to address poor supply chain performance, but it also enhances accountability. By leveraging the diverse functionality of supply chain performance management, organizations can measurably improve the effectiveness of supply chain operations. At the same time, they can better deliver on corporate mandates, such as lowering costs and improving return on working capital.

2.7 Research Gaps and Conceptual framework

There are several research gaps that have been identified from the studies reviewed so far. There is limited research on humanitarian supply chain. Much of the research has focused on the commercial supply chain. The supply chain practices in humanitarian organizations have not been researched on fully. There also lacks research on how to attain sustainability in humanitarian supply chains. Most studies do not address how sustainability in the humanitarian supply chains can be achieved. There is need for studies to be done on sustainable humanitarian supply chains.

Figure 2.1: Conceptual framework



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives the methodology that was used to accomplish the already established research objectives and questions. Here the research design, target population, data collection and data analysis are discussed.

3.2 Research design

The design of this study was descriptive survey. The study was a census type. The design was the most convenient since it ensured the data obtained gave appropriate answers to the research questions. Descriptive survey method is used when a researcher intends to describe a situation or a condition as it is. It also offered the opportunity for a logical structure of the inquiry into the problem of study (Kothari, 2003).

3.3 Target population

The research targeted all the humanitarian organizations currently operating in Kenya. There were 28 humanitarian organizations operating in Kenya during the time of the study. The 28 organizations formed the target population for this study.

3.4 Data Collection

This study used primary data that was collected by use of a questionnaire. The researcher targeted senior managers from supply chain departments. In their absence the deputy manager or any other senior manager who were actively engaged in making supply chain decisions for the

company responded to the questionnaire. The questionnaire had two sections. Section A dealt with the profile of the company, section B contained questions on research objectives.

3.5 Data analysis

The data collected was analyzed using SPSS, and according to descriptive information following research questions. Percentages and frequencies were calculated. The findings are presented in tables, charts and graphs. Regression analysis was also done to establish the relationship between supply chain practices and success in Humanitarian supply chains. The regression equation was multiple in nature and took the form of: $H = a + b_1 x_1 + b_2 x_2 + \dots + b_5 x_5 + e$

Where: H= Performance of humanitarian supply chain; a= value of H when x is zero; X₁ to X₅ represents Effective and efficient internal operations, Continuous improvement, Use of technology in the SC, Cross functional and inter-organizational integration, JIT, b₁ to b₉ = the weights for each of the variables.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

In this chapter, the researcher presents the analyzed data as well as the interpretation of the same. This study had three objectives: To establish supply chain management practices among humanitarian organizations in Kenya; to determine the relationship between supply chain practices and performance in humanitarian supply chain management and to identify the supply chain management challenges faced by humanitarian organizations in Kenya. Data was collected from 21 humanitarian organizations out of the total 28. This was a response rate of 75% which was deemed sufficient for the study.

4.2 Organizational Profile

Table 4.1 Type of the organization

	Frequency	Percent	Valid Percent	Cumulative Percent
Public	4	19.0	19.0	19.0
International	17	81.0	81.0	100.0
Total	21	100.0	100.0	

According to the findings tabulated above in Table 4.1, 81% of the humanitarian organizations were found to be of international origin. These are organizations that have operations in Kenya but their countries of origin are elsewhere in the globe. 19% of the humanitarian organizations are public meaning that they were initiated by the government.

Table 4.2: Operating areas

	Frequency	Percent	Valid Percent	Cumulative Percent
Part of the country	4	19.0	19.0	19.0
All parts of the country	6	28.6	28.6	47.6
Many countries	11	52.4	52.4	100.0
Total	21	100.0	100.0	

The study sought to know the areas where the humanitarian organizations operate. From the findings as illustrated in Table 4.2 above, 52.4% of the humanitarian organizations have operations in many countries around the globe. This explains the reason why most of the humanitarian organizations were found to be of international origin.

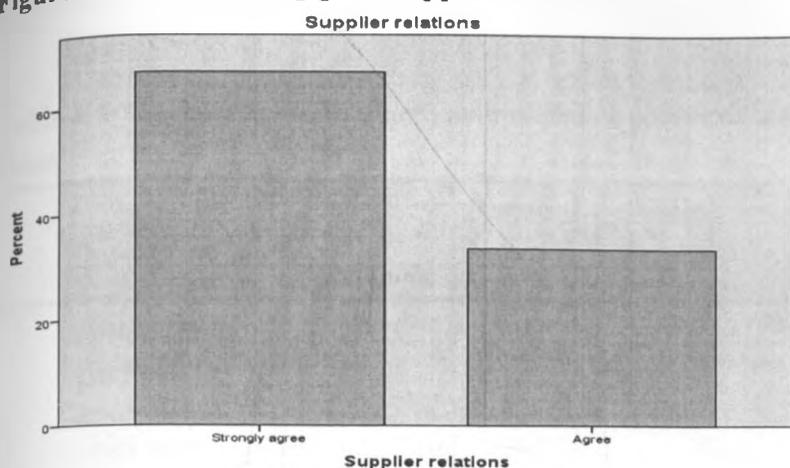
Table 4.3: Logistics department

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	21	100.0	100.0	100.0

It was established that all the humanitarian organizations have in place a well functioning logistics department.

4.3: Supply Chain Management Practices

Figure 4.1: Maintaining good supplier relations



The researcher wanted to know whether humanitarian organizations in Kenya maintain good supplier relations as part of their supply chain management practices. The study established that 66% of the humanitarian organizations maintain good relations with their suppliers.

Table 4.4: Effective and efficient internal operations

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	15	71.4	71.4	71.4
Agree	3	14.3	14.3	85.7
Not sure	3	14.3	14.3	100.0
Total	21	100.0	100.0	

The study sought information from the respondents on whether humanitarian organizations have adopted efficient and effective internal operations as part of their supply chain practices. It is evident from the findings from table 4.4 above that 71.4% of the humanitarian organizations

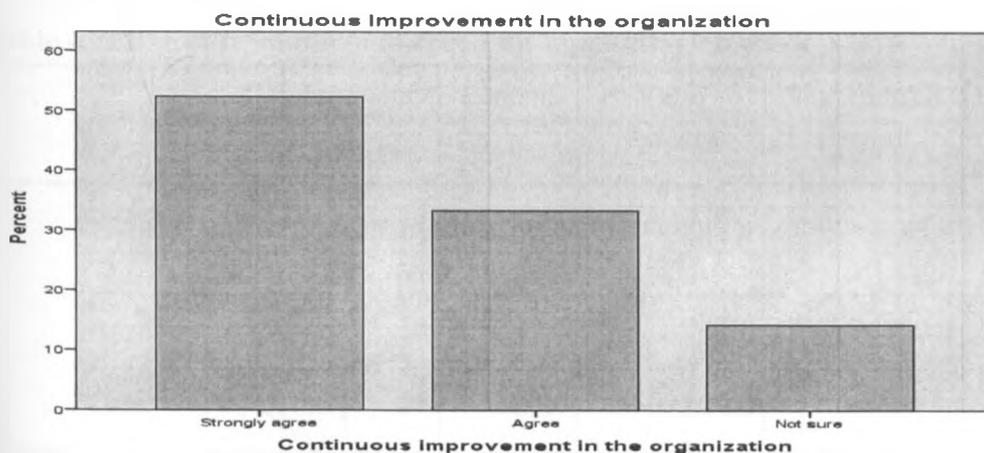
have efficient and effective internal processes as part of their supply chain management practices.

Table 4.5: Regular trainings for various stakeholders in the supply chain

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	8	38.1	38.1	38.1
Not sure	10	47.6	47.6	85.7
Disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

The researcher wanted to know whether humanitarian organizations provide trainings for various stakeholders in their supply chain. The findings in Table 4.5 above indicate that 47.6% of the respondents were not sure whether this was happening. The chances are that this does not happen among humanitarian organizations.

Figure 4.2: Continuous improvement



The study sought to find out from the respondents whether continuous improvement is part of the supply chain management practices adopted by humanitarian organizations in Kenya. The findings illustrated in the above graph confirm that approximately 50% of the organizations practice continuous improvement in their supply chains.

Table 4.6: Production process

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	11	52.4	52.4	52.4
Agree	7	33.3	33.3	85.7
Not sure	3	14.3	14.3	100.0
Total	21	100.0	100.0	

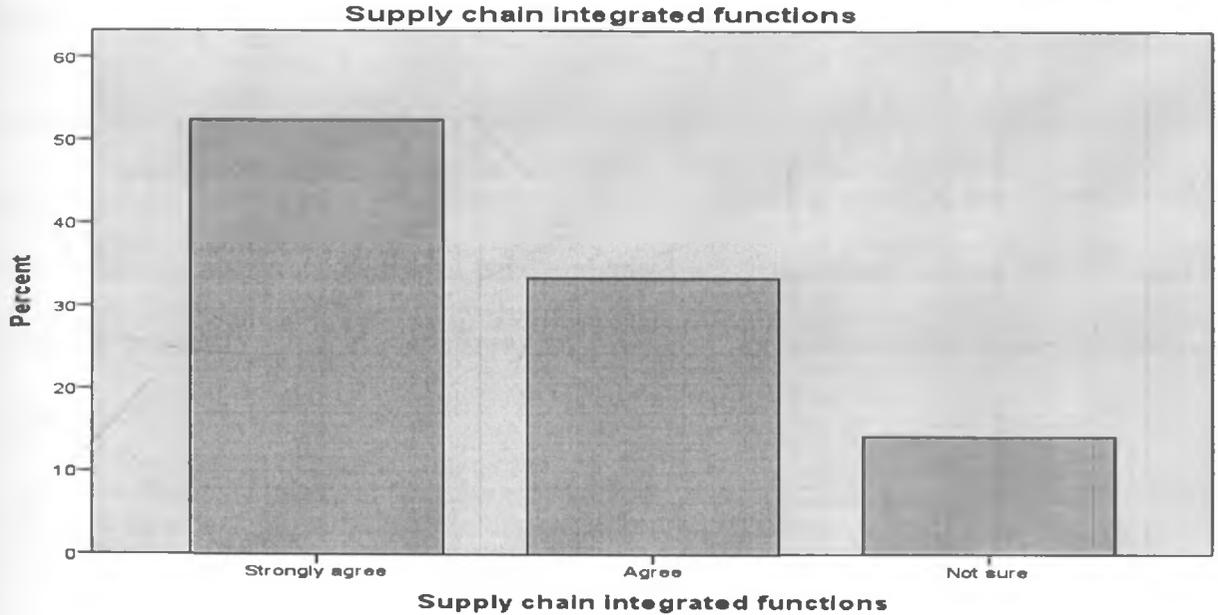
It was also the aim of the researcher to find out whether humanitarian organizations have flexible production processes that can meet any demand requirements. The findings as presented in the above table testify that majority of the humanitarian organizations have in place production processes that are flexible and able to meet any demand requirements.

Table 4.7: Use of technology to speed up humanitarian work

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	11	52.4	52.4	52.4
Agree	10	47.6	47.6	100.0
Total	21	100.0	100.0	

Application of information technology is one of the supply chain management practices that can assist in speeding up humanitarian work. The study sought the views of the respondents concerning application of technology to speed up humanitarian work among humanitarian organizations in Kenya. It is evident as illustrated in Table 4.7 above that all humanitarian organizations use information technology to speed up their operations.

Figure 4.3: Supply chain integrated functions



The researcher wanted to find out whether humanitarian organizations in Kenya have integrated all their supply chain functions as part of supply chain management practice. The findings from Figure 4.3 above indicate that most of the humanitarian organizations have integrated their supply chain functions.

Table 4.8: Inter-organizational integration

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	12	53.4	53.4	53.4
Agree	3	14.3	14.3	66.7
Not sure	6	32.3	32.3	100.0
Total	21	100.0	100.0	

In supply chain management, integration between organizations involved in the supply chain is very crucial for better operations. The study sought to establish from the respondents whether humanitarian organizations in Kenya have integrated with other organizations. The findings as illustrated in Table 4.8 above confirm that 53.4% of the humanitarian organizations have integrated with other organizations.

Table 4.9: Encouraging simplicity in organizational operations

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	13	60.4	60.4	60.4
Agree	4	19.0	19.0	71.4
Not sure	4	20.6	20.6	100.0
Total	21	100.0	100.0	

On encouraging simplicity in organizational operations, the respondents indicated that 60.4% of the humanitarian organizations in Kenya have their operations simplified in order to facilitate fast and efficient flow of information and products.

Table 4.10 Practicing Just in Time in organizational operations

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	11	52.4	52.4	52.4
Agree	7	33.3	33.3	85.7
Not sure	3	14.3	14.3	100.0
Total	21	100.0	100.0	

Practicing JIT or Just in Time may be very instrumental in inventory management hence reducing inventory costs drastically. The researcher wanted to investigate whether humanitarian organizations in Kenya apply the JIT philosophy in their operations. As it can be observed from the findings in Table 4.10 above, most of the organizations agreed that they do apply JIT in most of their operations.

4.3 Relationship between supply chain practices and performance of humanitarian supply chains

The study sought to establish the relationship that exists between supply chain management and the performance of humanitarian supply chains in Kenya. The researcher adopted a regression equation of the form $H = a + b_1 x_1 + b_2 x_2 + \dots + b_5 x_5$. Regression analysis was conducted and the results are discussed below.

Table 4.11: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.923 ^a	.857	.043	.000

a. Predictors: (Constant), Practicing Just in Time in organizational operations, Use of technology to speed up humanitarian work, Continuous improvement in the organization, Inter-organizational integration, Effective and efficient internal operations

b. Dependent Variable: Performance in the supply chain

From the model summary in Table 4.11 above, it is clear that the R square figure is 0.857. This figure represents the variance of humanitarian supply chain performance that is explained by the variation in the five independent variables of practicing Just in Time in organizational operations, Use of technology to speed up humanitarian work, Continuous improvement in the organization, Inter-organizational integration and effective and efficient internal operations. This means that 85.7% of the performance on humanitarian supply chains is attributed to the five variables above. The remaining 14.3% variance on performance can be explained by other factors not covered in this study.

Table 4.12: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.667	5	.933	.	.000 ^b
	Residual	.000	15	.000		
	Total	4.667	20			

a. Dependent Variable: Performance in the supply chain

b. Predictors: (Constant), Practicing Just in Time in organizational operations, Use of technology to speed up humanitarian work, Continuous improvement in the organization, Inter-organizational integration, Effective and efficient internal operations

The ANOVA table above also indicates that the regression has a high and strong significance since any significance value approaching zero implies very high significance.

Table 4.13 : Coefficients^a

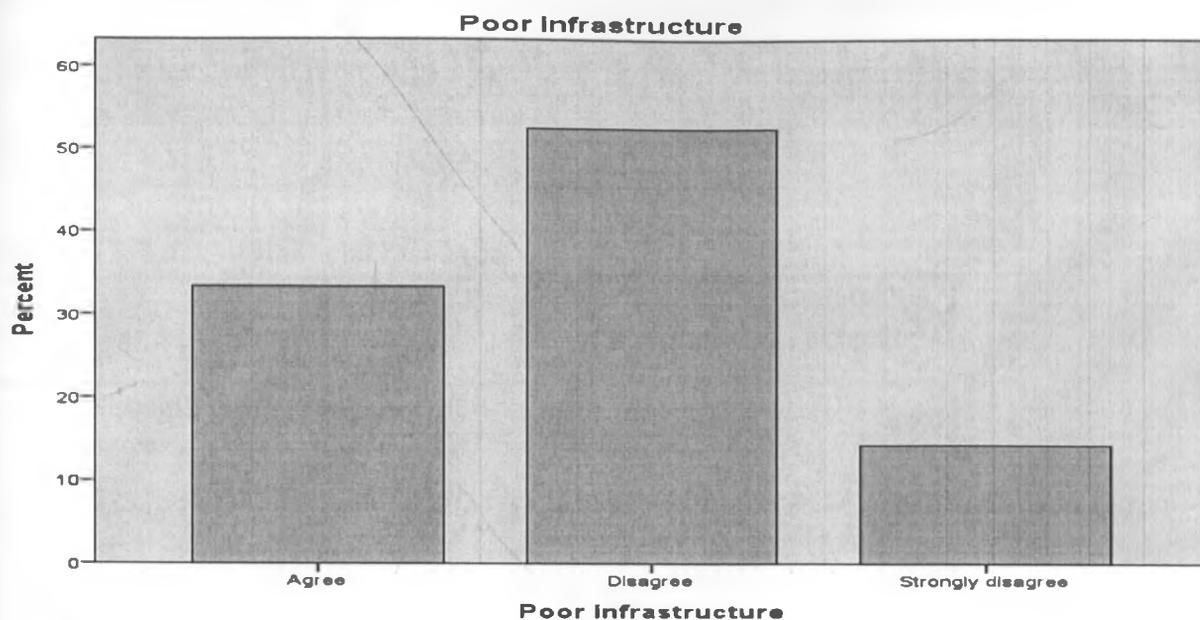
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.308	.000		.	.
Effective and efficient internal operations	.462	.000	.713	.	.
Continuous improvement in the organization	-.538	.000	-.825	.	.
Use of technology to speed up humanitarian work	.077	.000	.081	.	.
Inter-organizational integration	-.231	.000	-.444	.	.
Practicing Just in Time in organizational operations	-.077	.000	-.118	.	.

a. Dependent Variable: Performance in the supply chain

Table 4.13 above shows the values of the independent variables that were considered in the study. The constant is 2.308 and it provides the level of performance in supply chain when the values of the independent variables are zero. It was established that there exists a positive relationship (0.462) between effective and efficient internal operations and performance in the supply chain. Continuous improvement in the organization had a B value of -0.538 which implies that there exists an inverse relationship between the variable and performance in the supply chain. This is an indication that if one is high then the other is low and vice versa. A weak direct relationship of 0.077 was also found between use of technology to speed up humanitarian work and performance in the supply chain. Performance in the supply chain was also found to be negatively correlated to inter-organizational integration with a value of -0.231. This is a weak inverse relationship that may not be very significant. The last independent variable of JIT was also found to have a negative correlation of -0.077 to performance in the supply chain. From the table of coefficients above the following equation was derived: $H = 2.308 + 0.462x_1 - 0.538x_2 + 0.077x_3 - 0.231x_4 - 0.077x_5$. This equation is able to explain 85.7% of the performance of humanitarian supply chain.

4.4 Supply chain management challenges faced by humanitarian organizations in Kenya

Figure 4.4: Poor infrastructure



The study sought to establish whether humanitarian organizations in Kenya consider poor infrastructure as one of the challenges they face in their supply chain management. The findings as illustrated in Figure 4.4 above confirm that more than 50% of the humanitarian organizations do not consider infrastructure as one of the their main challenges in supply chain management.

Table 4.14: Bulky materials to be transported

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	11	52.4	52.4	52.4
Agree	10	47.6	47.6	100.0
Total	21	100.0	100.0	

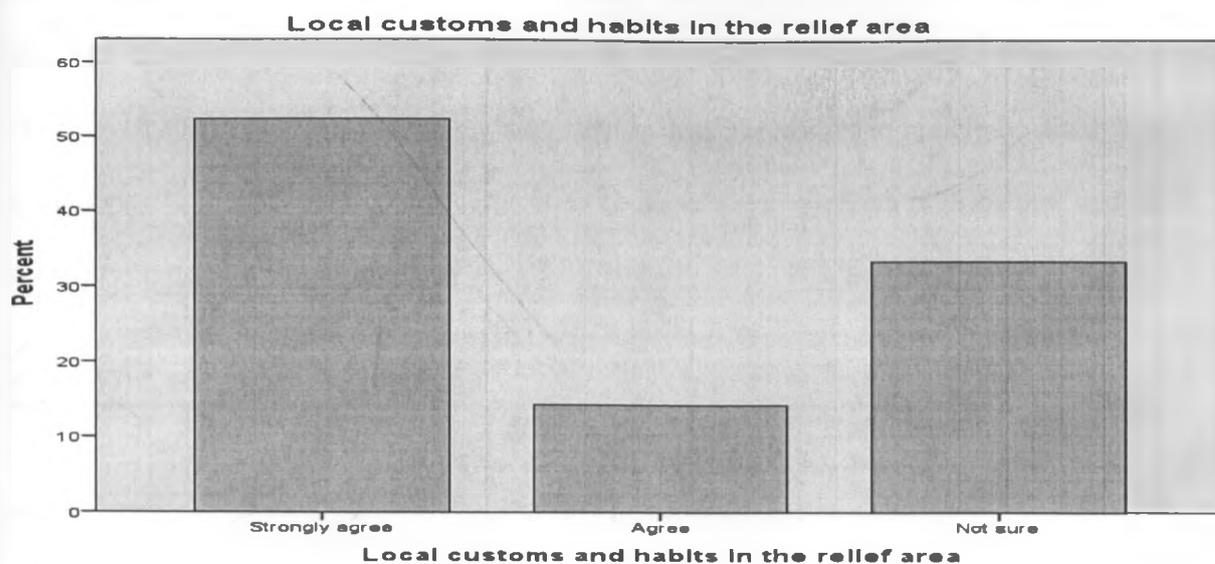
It was significant for the researcher to establish whether bulky materials to be transported are a challenge faced by humanitarian organizations in their supply chains. It is evident from the findings as tabulated in Table 4.14 above that 52.4% of the humanitarian organizations agreed that bulkiness of materials to be transported was indeed a challenge to them.

Table 4.15: Lack of financial resources

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	4	19.0	19.0	19.0
Agree	7	33.3	33.3	52.4
Not sure	3	14.3	14.3	66.7
Disagree	7	33.3	33.3	100.0
Total	21	100.0	100.0	

The study also sought to investigate whether they faced lack of financial resources in their supply chains. From the findings in Table 4.15 above, it is evident that 19% and 33.3% of the respondents strongly agree and agreed respectively that lack of financial resources is a challenge. However, there are 33.3% of the remaining humanitarian organizations which do not consider financial resources as a major challenge.

Figure 4.5: Customs and habits in the relief area



The researcher also sought to investigate whether humanitarian supply chains in Kenya consider local customs and habits in relief areas as a major challenge. The findings illustrated in Figure 4.5 above confirm that 53% of the organizations consider local customs and habits in relief areas as a challenge facing their supply chains.

Table 4.16: Inability to anticipate disaster

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	11	52.4	52.4	52.4
Agree	3	14.3	14.3	66.7
Disagree	4	19.0	19.0	85.7
Strongly disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

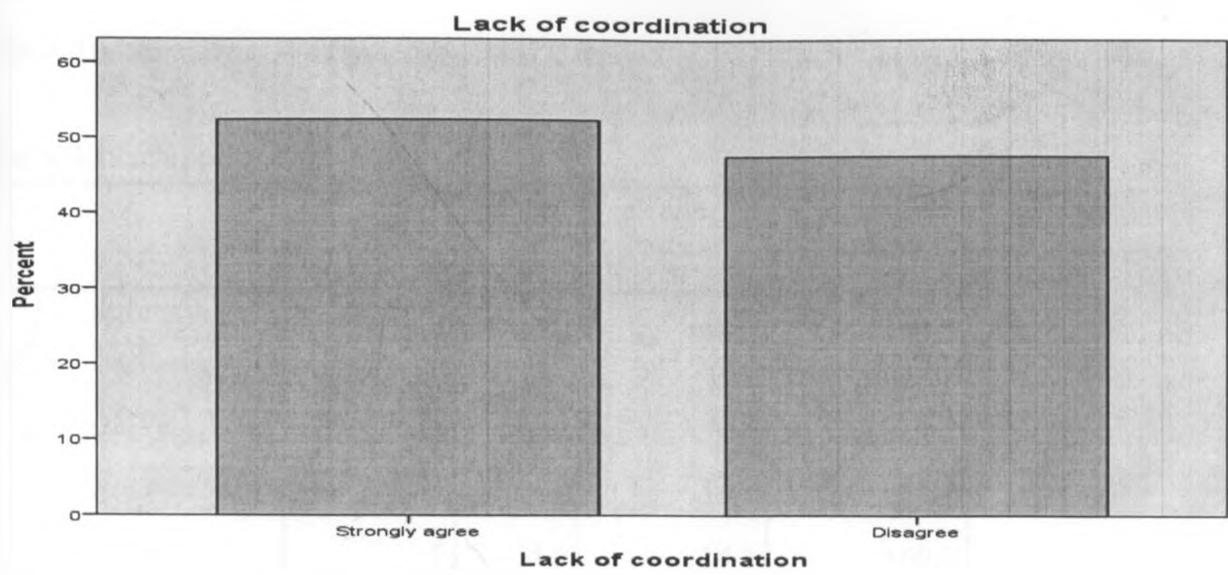
When the respondents were asked to state whether inability to anticipate disaster was among the challenges faced by humanitarian organizations in Kenya, 52.4% of the respondents as illustrated in Table 4.16 above confirmed with certainty that lack of the ability to anticipate disaster posed a big challenge to their supply chains. This is so because some disasters both natural and artificial occur without prior warning or signs.

Table 4.17: Lack of proper planning

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	7	33.3	33.3	33.3
Agree	4	19.0	19.0	52.4
Disagree	7	33.3	33.3	85.7
Strongly disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

The study sought to find out whether lack of proper planning is a challenge facing humanitarian supply chains in Kenya. The findings from the study as tabulated in Table 4.17 above indicate that results for those who consider lack of proper planning as a challenge and those who do not, tie at 33.3%. This is an indication that there are humanitarian organizations that experience lack of proper planning.

Figure 4.6: Lack of coordination



The researcher also investigated whether humanitarian supply chains in Kenya experience lack of coordination. It is clear from Figure 4.6 above that 52% of the humanitarian supply chains face lack of coordination as a challenge. It also important to note that 48% of the humanitarian organizations indicated that they do not face lack of coordination in their supply chains.

Table 4.18: Demand uncertainty

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	8	38.1	38.1	38.1
Not sure	10	47.6	47.6	85.7
Disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

When the researcher asked the respondents to state the extent to which they agreed that demand uncertainty was a challenge facing humanitarian supply chains in Kenya. It is evident from the

findings as tabulated in Table 4.18 above that most of the respondents were not sure whether demand uncertainty was a challenge facing them.

Table 4.19: Supplies uncertainty

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	4	19.0	19.0	19.0
Agree	11	52.4	52.4	71.4
Not sure	3	14.3	14.3	85.7
Disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

The study investigated whether uncertainty in supplies was a challenge faced by humanitarian supply chains in Kenya. The findings illustrated in Table 4.19 above indicate that 52.4% of the humanitarian organizations agreed that uncertainty in supplies is a major challenge facing their supply chains.

Table 4.20: Assessment uncertainty

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	7	33.3	33.3	33.3
Agree	11	52.4	52.4	85.7
Disagree	3	14.3	14.3	100.0
Total	21	100.0	100.0	

Finally the researcher sought to establish whether uncertainty in terms of assessment was a challenge facing humanitarian organizations in Kenya as far as their supply chain management is concerned. It is clear that most of the respondents agreed in Table 4.20 above that assessment uncertainty is a challenge that humanitarian supply chains need to address.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings on supply chain management practices and their impact among humanitarian organizations in Kenya. The study had three objectives it aimed to achieve: To establish supply chain management practices among humanitarian organizations in Kenya; to determine the relationship between supply chain practices and performance in humanitarian supply chain management and to identify the supply chain management challenges faced by humanitarian organizations in Kenya. The chapter also presents the conclusions made from the findings, the recommendations of the researcher based on the findings as well as suggestions for further research.

5.2 Summary of Findings

The findings of the study confirmed that most of the humanitarian organizations operating in Kenya are of international origin. This therefore means that the most humanitarian organizations started from other countries other than Kenya. It was also established that most of the organizations have operations in very many countries around the globe. This explains the reason why most of them were found to have international origin. Very few were found to have operations only in Kenya and in all parts of the country. All the humanitarian organizations were found to have a functioning logistics department.

There are various supply chain management practices that were found to be common among humanitarian organizations in Kenya. Maintaining good supplier relations is one of the supply chain management practices that humanitarian organizations embrace. Due to the nature of their work, there is need for them to maintain good supplier relations since they may require critical supplies at very short notice. The humanitarian organizations were also found to have effective and efficient internal operations thus enabling them to better manage their supply chains. However, the study established that most of the humanitarian organizations do not conduct regular training for stake holders within their supply chain.

It was also evident from the study that humanitarian organizations practice continuous improvement in their supply chains. This enables them to continuously improve the processes and services they offer. The organizations were also found to have flexible production processes which enable them to meet their demand requirements. Use of technology to speed up humanitarian work was also found to be a major practice among humanitarian organizations in Kenya. The reason for using technology is to enable the organizations to speed up humanitarian activities in areas of relief.

The supply chain functions of humanitarian organizations were also found to be integrated. This integration enables easy flow of information and provides real-time processing of any orders that are meant to meet urgent needs. The humanitarian organizations have also developed Inter-organization integrations which enable them to link well with the other organizations in their supply chain. This form of integration ensures better and efficient movement of information and materials. It was also established that the humanitarian organizations have encouraged simplicity

in internal operations. Simplicity in internal operations removes the obstacles of bureaucracy and makes it possible to provide faster response to emergencies. It was found out that humanitarian organizations practice the JIT philosophy whereby they only deliver or purchase what is needed only when it is needed. This assists them to reduce the costs associated with holding too much inventory.

The findings from regression analysis indicate that there is a very strong relationship between the dependent and independent variables. The regression equation adopted is able to explain 85.7% of humanitarian supply chain performance. This makes it a suitable model in explaining the supply chain performance of humanitarian organizations. A weak direct relationship of 0.077 was found between use of technology to speed up humanitarian work and performance in the supply chain. Performance in the supply chain was also found to be negatively correlated to inter-organizational integration with a value of -0.231. The last independent variable of just in time was also found to have a negative correlation of -0.077 to performance in the supply chain. From the table of coefficients above the following equation was derived: $H = 2.308 + 0.462x_1 - 0.538x_2 + 0.077x_3 - 0.231x_4 - 0.077x_5$.

On the challenges affecting the supply chains of humanitarian organizations in Kenya, it was established that poor infrastructure was not perceived as a challenge. The main challenges that were found to be prevalent include lack of financial resources. Some humanitarian organizations indicated that lack of financial resources was a challenge to the supply chains whereas other said financial resources was not a big challenge. It was established that customs and habits in the

relief area was also one of the challenges that faced the organizations. Bulky materials to be transported also posed a big challenge to the supply chains of humanitarian organizations.

It was confirmed that inability to anticipate disaster is one of the biggest challenges of humanitarian organizations in Kenya. Most disasters occur without prior warning. This makes it difficult for humanitarian organizations to effectively manage their supply chains. Demand and supply uncertainty are also challenges facing humanitarian organizations in Kenya. The demand for relief is not consistent nor can it be forecast. When demand cannot be specified, supply cannot also be specified.

5.3 Conclusions

Most of the humanitarian organizations in Kenya are of international origin. They have parent organizations that are registered in other countries. They also operate in very many countries around the globe providing humanitarian support. The humanitarian organizations also have functioning logistics departments that assist with supply chain logistics.

The supply chain management practices that are prevalent among humanitarian organizations in Kenya include: Maintaining good supplier relations, effective and efficient internal operations, continuous improvement, flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations, and simplicity in internal operations. There is a very strong relationship between the dependent and independent variables. The regression equation obtained is able to explain 85.7% of humanitarian supply chain performance.

Challenges affecting humanitarian supply chains in Kenya include: customs and habits in the relief area, lack of financial resources, inability to anticipate disaster, bulky materials to be transported, inability to anticipate disaster, demand and supply uncertainty.

5.4 Limitations of the study

Time was a major constraint to the researcher. There was so little time available for this study to be conducted hence the researcher had to reach those humanitarian organizations within Nairobi.

Due to scarcity of funds, the researcher could only be able to conduct a research that was within his budgetary limitations. This is the reason why the researcher concentrated his efforts within Nairobi.

Some of the findings of this study can only be directly applicable to humanitarian organizations operating in Kenya particularly, Nairobi. They may not be applicable to humanitarian organizations in other places and countries due to variations in situations of different places.

5.5 Recommendations

It is important for humanitarian organizations to train their stakeholders on the nature and functioning of the humanitarian supply chain. This will assist them to work closely with the stakeholders in running an efficient supply chain.

Humanitarian organizations need to come up with mechanisms that will enable them to overcome the various challenges that they face in their supply chains. This will enable them to improve the performance of their supply chains.

It may also be beneficial for humanitarian organizations to put more effort on perfecting the five independent variables: Practicing Just in Time in organizational operations, Use of technology to speed up humanitarian work, Continuous improvement in the organization, Inter-organizational integration, Effective and efficient internal operations which account for 85.7% of their supply chain performance.

5.6 Suggestions for Further Research

There was some unexplained variance of 14.3% on the supply chain performance of humanitarian supply chains. There is need to conduct a study to find out the variables that account for this variance.

It will also be important to carry out a study to find out the best mechanism that humanitarian organizations can use to overcome the challenges that their supply chains face.

A comparative study should be carried out to establish some similarities and differences between supply chain management practices of humanitarian organizations in Kenya and another country.

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APPENDICES

Appendix I: Research Questionnaire

Introduction

This questionnaire is designed to collect data on supply chain management practices among humanitarian organizations. Kindly answer these questions. The information collected will be treated with the highest degree of confidentiality.

SECTION A: ORGANIZATIONAL PROFILE

1. Name of the organization
2. Type of the organization
 - a) Public
 - b) Private
 - c) International
 - d) UN affiliated
 - e) Other (specify).....
3. Areas the organization operates in
 - a) Part of the country
 - b) All parts of the country
 - c) Many countries
4. Do you have a logistics department?
 - a) Yes
 - b) No

SECTION B:

- (i) State the extent to which you agree with the following statements concerning supply chain practices in your organization.

Use the scale of:

1=Strongly agree 2= Agree 3= Not sure 4= Disagree 5= Strongly disagree

No	Practices	1	2	3	4	5
1	My organization maintains good supplier relations					
2	We maintain good customer relations					
3	There is Effective and efficient internal operations in the organization					
4	We conduct regular trainings for various stakeholders in the supply chain.					
5	Continuous improvement is encouraged in the organization so as to provide better services					
6	We have flexible production processes that can meet any demand requirements					
7	We use technology in most of our operations in order to speed up humanitarian work.					
8	Most of our functions in the Supply chain are integrated					
9	We encourage inter-organizational integration to be able to work better					
10	We encourage simplicity in most of our operations					
11	We practice Just in Time in most of our operations.					
12	Other (specify).....					

(ii) State the extent to which you agree with the following statements concerning the impact of supply chain management practices on Supply Chain performance in your organization.

Use the scale of:

1=strongly agree 2= Agree 3= Not sure 4= Disagree 5= strongly disagree

	Impact on SC performance	1	2	3	4	5
1	Leads to supply chain cost reduction					
2	Enables organization achieve timeliness in humanitarian aid					
3	Ensures delivery of relevant humanitarian aid materials					
4	Creates harmony in the organization					
5	Leads to reliability in the supply chain					
6	Increases efficiency in the supply chain					
7	Some supply chain management practices increases the risk of the firm's inability to match demand and supply					
8	The supply chain practices may lead to increase in function specific costs					
9	Supply chain practices may lead to unfair competition among companies					
10	Failure of some of the practices may lead to extinction of the company					
12	May lead to reduction of actual profits in the short run					
13	Other (specify).....					

(iii) State the extent to which you agree with the following statements concerning the supply chain challenges in your organization

Use the scale of: 1=strongly agree 2= Agree 3= Not sure 4= Disagree 5= strongly disagree

	Challenges	1	2	3	4	5
1	Poor infrastructure					
2	Bulky materials to be transported					
3	Lack of financial resources					
4	Local customs and habits in the relief area					
5	Inability to anticipate disaster					
6	Lack of proper planning					
7	Lack of coordination among humanitarian organizations at the scene of a disaster					
8 /	Uncertainty in terms of demand					
9	Uncertainty in terms of supplies					
10	Uncertainty in terms of assessment					
11	Other (specify).....					

Appendix II: List of relief organizations

Action Against Hunger (AAH)

CARE

Caritas International

Catholic Relief Services (CRS - USCC)

Doctors Without Borders

Emergency Nutrition Network (ENN)

Food For The Hungry International (FHI)

Hunger Plus, Inc.

Interaction.

International Committee of the Red Cross (ICRC)

Kenya Red Cross Society(KRCS)

International Federation of Red Cross and Red Crescent Societies (IFRC)

International Organization for Migration (IOM)

International Rescue Committee (IRC)

Lutheran World Federation

Lutheran World Relief(LWR)

Mennonite Central Committee (MCC)

Mercy Corps (MC)

Overseas Development Institute (ODI)

Oxfam

Refugees International

Relief International

Save the Children

The Office of U.S. Foreign Disaster Assistance (OFDA)

United Nations Children's Fund (UNICEF)

United Nations Development Programme(UNDP)

World Health Organization (WHO)

United Nations High Commissioner for Refugees (UNHCR)

United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

US Committee for Refugees (USCR)

World Vision International

<http://www.ngocouncil.co.ke> (Accessed on 15th October, 2012)