

**INFORMATION TECHNOLOGY USAGE ON HUMANITARIAN LOGISTICS OF
RELIEF ORGANISATIONS IN KENYA**

BY

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DECLARATION

Declaration by the student

This research project is my original work and it has not been submitted for the award of a degree in any other university.

Signed.....

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Declaration by the supervisor

This research project has been submitted for examination with my approval as University Supervisor.

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DEDICATION

To my beloved Spouse Leah Cheron, children: Janelle, Juanita and Jeremy, lastly parents Hannington Oyoo and Judith Anyango. I am forever grateful for your unending prayers, encouragement and support.

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ABBREVIATIONS AND ACRONYMS

EHRP	Emergency Humanitarian Response Plan
ID	Identity Card
IDP	Internally Displaced Persons
IT	Information Technology
NGOs	Non-governmental Organisation
OCHA	Office of the Coordination of Humanitarian Affairs
SMS	Short Text Messages
SPSS	Statistical Package for Social Sciences
UN	United Nation
WWW	World Wide Web

ABSTRACT

The general objective was to evaluate information technology usage and logistics on humanitarian logistics of relief organisations in Kenya. The study specifically aimed; to evaluate the usage level of information technology relief in organisations in Kenya and to evaluate the impact of information technology usage on logistics of relief organisations in Kenya. This study took a cross-sectional survey research design. The population of interest was 53 relief organizations operating in Kenya. Census method was method was used. The study targeted head of logistics and head of IT in the relief organisations. The researcher used a semi structured questionnaire as the primary data collection tool. The strength of the resultant relationships, between the variables whether positive or negative, was tested using both parametric and non parametric statistical methods such as the Pearson's Product moment correlation coefficient and multiple regression analysis. The study found that IT usage increased efficiency on decisions support systems, management information systems and transaction processing systems in the organizations. The regression equation has established that holding the factor (IT usage) constant, factors affecting relief logistics effectiveness. The findings presented also shows that taking all other independent variables at zero, a unit increase in IT usage will lead to an increase in the scores of the relief logistics effectiveness. The study also established a significant relationship between relief logistics effectiveness and the independent variables IT usage. The findings show that there is a relationship between IT usage and relief logistics effectiveness. Thus, there is a mutual relationship between IT usage and relief logistics effectiveness. This relation is positive, meaning an increase in IT usage resulting in higher relief logistics effectiveness. The study concludes that, IT usage ensured effective coordination between the relief organisations, the affected people as well as the stakeholders involved. The coordination is as a result of increased automation, flexibility, information flow, and resource planning and response relationship. The study concludes that taking all other independent variables at zero, a unit increase in IT usage will lead to an increase in the scores of the relief logistics effectiveness. The study also established a significant relationship between relief logistics effectiveness and the independent variable IT usage. The study further concludes that there is a relationship between IT usage and relief logistics effectiveness. This supports a mutual relationship between IT usage and relief logistics effectiveness. The relation is positive, meaning an increase in IT usage resulting in higher relief logistics effectiveness. The study recommends that to successfully and effectively raise the effectiveness of iads logistics the management should invest more on IT usage and its application. Training is key so as to familiarize themselves with the new apps that have revolutionaries ICT usage worldwide, this will have a positive effect on their logistics operations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Information Technology is a powerful force in today's global society (Maiers, Reynolds and Haselkorn, 2013). The coming on of computers and Information Technology (IT) has been possibly the one great force affecting organizations in the past several years. Information Technology or IT is developing all ways of living. Certainly it has set a fresh sense to the convenience globally. Information Technology has suddenly become one of the most essential factors of today's industrial culture. The successful use of IT is vital factor of contending in a fast growing, information founded economy. Information Technology is the main contributor to the success of the growing countries (Heaver and Henriksson, 2010).

Information Technology is crucial to relief organisations efforts (Blecken and Hellingrath, 2008). Lindenberg and Bryant (2011) argue that information systems are the absolute most imperative considers deciding the achievement or disappointment of a catastrophe relief operation. The utilization of IT in relief help is assorted. To make a solid connection between the help inventory network units, relief co ordinations data frameworks can enhance the adequacy of the stream of data among the accomplices. As of late, numerous frameworks have been produced to bolster relief co ordinations. Illustrations incorporate electronic emergency mapping frameworks for recognizing places where help is required, data frameworks for social insurance, satellite imaging and GIS as specialized instruments for benefactors and help laborers, emergency early cautioning frameworks, and so on. These innovations can possibly enhance the nature of the reaction to the emergency.

IT for logistics automate the logistics function allowing companies to standardize, share and update data as well as plan and forecast information in the entire supply chain (Giunipero and Brand, 2011). IT is a logistical information system which is involved in managing these processes. While other information systems focus on internal operations of an organization, logistics information systems capture, process and transmit data across the entire supply chain which starts from the donor and moves to the organization, the supplier and finally to

the beneficiaries. The relevance, accuracy, timeliness and reliability of the information will determine the success of the logistics activities.

In Kenya, the Kenyan Red Cross Society and the Northern Kenya Caucus, similar to many other organizations, utilize the prospective of the new technology in its functions. Both organizations have put into practice IT as a fresh basis of information and near the beginning caution, for training and constant education of their volunteers, to bond and engage people at risk and to lift knowledge and finances. The growth of additional technology adjustments by the two Kenyan Red Cross Society and the Northern Kenya Caucus have been essential in improving information gathering, analysis and coordination action.

1.1.1 Information Technology for Logistics

Information technology has largely revolutionized logistics operations (Lin, 2006). Information technology components encompass computer hardware, software, electronics, internet and other telecommunication equipment which enable storage, retrieval, transmission and manipulation of data. Information technology is a key enabler for logistics since the flow of information in operations is highly critical. Information technology gather, process, store and distribute information for use by the various players using the systems. Information technology for logistics automate the logistics function allowing companies to standardize, share and update data as well as plan and forecast information in the entire supply chain (Shrock, 2008).

Information technology in logistics therefore needs to have some specific functionality for it to achieve maximum results (Davis and Fugate, 2012). The documentation functionality is to enable the users to key in important data and to be able to quickly and easily retrieve it when required. The reporting functionality is necessary so that various reports can be generated to be shared with the various players involved in operations. This increases accountability and transparency in operations. The planning functionality is required to be able to plan on why, when and where resources will be required and how they will be availed where they will be required. The cross-linking of systems functionality is necessary to interlink the various functions of the organization as well as the various regions that the organization is operating in. If, for instance, there is a regional office in charge of programs in several countries then the systems should be linked so that there is visibility between the regional office and the countries. The software should also be able to provide linkage to supplier, donors and other

players in the logistics function. Finally, the following and tracing functionality allows guessing and appropriate adjustment of appearance moment for instructions (Whiting and Öström, 2009).

In Kenya today information technology (IT) has largely revolutionized logistics operations in relief organizations (Kovács and Spens, 2011). Information technology components encompass computer hardware, software, electronics, internet and other telecommunication equipment which enable storage, retrieval, transmission and manipulation of data. Information technology is a key enabler for relief logistics since the flow of information in relief operations is highly critical. Information systems gather, process, store and distribute information for use by the various players using the systems.

1.1.2 Relief Organisations Logistics

Wisner (2012) define relief co-ordinations as an inventory network concentrated on both proficient and successful circulation of administrations, merchandise and data, which its point is to decrease the torment of influenced individuals. The present study has utilized the word help for all the compassionate organizations. Help organization co ordinations should help those individuals who are affected by the fiascos (Prendergast, 2013). The essential point is that simply those individuals who genuinely require this help must get the help and it must be given in light of the extent of their needs. To guarantee that right part of the populace will get those guides, checking of the procedures from the capacity to the dissemination step is required. As Wisner (2012) recommend, it should be possible through ID cards or giving ladies heads of foods for the relatives.

The process of organizing, realizing and controlling the beneficial, clever stream and limit of stock and materials and associated data, as of the reason for source to the point of usage with the ultimate aim of meeting the end recipient's necessities and reducing the affliction of helpless individuals is characterized as relief co-ordinations (Wassenhove, 2006). Appropriate reaction to the relief needs if there should arise an occurrence of debacles is thought to be relief and fulfilling the underlying and crucial needs of the survivors. It must be done in the briefest time utilizing minimal measure of the assets to lessen the loathsome impacts of the catastrophe (Larson and Khan, 2009).

Relief organisation co-ordinations have sporadic request and supply process and quantities of successful considers those cases are unprecedented. Wellsprings of these debacles can be

normal or man-made. Be that as it may, all operations take after a similar objective, which is sparing individuals. These operations are done in a questionable circumstance and destabilized foundations. A large portion of these catastrophes are capricious and there is no estimation of the volume of helps that will be requested (Kovács and Spens, 2011). In cases of emergencies, coordination and communication are vital. The relief organizations need to not only ensure that there is adequate and timely communication, their activities must also be well coordinated to ensure that they respond to the emergency in good time and with the appropriate supplies and personnel to remedy the situation and ensuring maximum impact of their activities (Heaver and Henriksson, 2010).

1.1.3 Relief Organisations in Kenya

Relief organisations are involved in the provision of relief help with the types of sustenance, water, solution, safe house, and supplies to influenced populaces at whatever point calamities strike (Abdifatah, 2012). Relief organizations are included in an extent of activities that consolidate availability, organizing, securing, transport, warehousing, taking after and taking after, and customs freedom (Kinyua, 2013). Relief organizations participate in two expansive sorts of exercises; relief exercises which incorporate arrangement of help for casualties of substantial scale crises and include transient measures that concentrate on arrangement of products and ventures to minimize impending danger to human wellbeing and survival.

According to Office of the Coordination of Humanitarian Affairs (OCHA), overall relief needs increased in 2013 with contributions of \$ 12.2 billion, (almost equivalent to Kenya's 2015/2016 national budget) and targeting 40 million people. In this growth 4,000 additional jobs were advertised in 2013 (OCHA, 2014). According to OCHA (2014) report, relief IT funding continues to grow over a 10 year trend since 2001 with an estimated \$4.3 billion increase between 2006 and 2010. Further, the report shows that since 2006, Africa (excluding the extra-large natural disaster responses experienced elsewhere) has the largest portion of relief expenditure with nearly 60% of recipients being in drought and floods emergencies. It goes on to show in its report the big players of relief operations as the large international organizations (55%), UN agencies (22%) and Red Cross (8%), with rest shared amongst other organisations.

Relief organization intervenes when they are requested by the Kenyan Government or as mandated under Chapter VII of the United Nations Charter (Mulama, 2012). In the past

decade the relief system in Kenya has had to respond to several normal tragedies and complex disaster of increasing severity like drought, post-elections violence in early 2008, the Lamu killings in Coastal Kenya, and displacement among others. Due to these experiences there has been an attempt to increase coordination amongst relief actors and improve coherence in relief response, where the United Nations had tried to implement a coordination mechanism called the Cluster Approach. (Abdifatah, 2012) This was encouraging relief actors to consider longer term objectives into their life-saving work integrated into the work of all clusters in the relief response and the Emergency Humanitarian Response Plan (EHRP) for Kenya by adopting modern IT.

The 2010 Kenya Emergency Humanitarian Response Plan brought up the requirement for help accomplices to cooperate to build up a typical relief technique in light of the investigation of the specific circumstance, help organizations needs and anticipated situations for the coming year (World Disasters Report, 2015). General type needs were recognized to bolster compelling and opportune help to populaces in need in Kenya. The general vital targets for 2010 were to: accomplish national and worldwide guidelines in the arrangement of convenient help relief help and security to every single defenceless gathering influenced by crises; accomplish an adjusted and comprehensive coordination environment, and fortify linkages between sectorial, national and sub-national coordination structures; enhance checking and data administration to impact basic leadership and powerful relief activity; incorporate catastrophe chance diminishment approaches and early recuperation into relief activity to enhance readiness, upgrade strength to stuns and guarantee linkages to advancement needs. However, it does not give specific operations policies that will be adopted so as to attain the set goals (Nyamu, 2012).

Technology has also been key to enhancing early cautioning frameworks, even if it is the World Food Program body on cell phone based small texts (SMS) to explain food expenses at the market, or the UNESCO enhancing dry spell checking and figure frameworks for northern and some portion of eastern district in Kenya (Mohamed, 2012). In any case, the nonattendance of more across the board appropriation of innovation reflects to a limited extent an absence of deliberate assessment and dissemination endeavours, additionally the way that help mechanical advancements are raising to a great extent outside of customary relief performers. These on-screen characters might be groups at hazard or influenced by fiasco that are gone up against with particular difficulties, making open doors for

advancements. This is, for example, the case of Ushahidi, a typical society response to the 2008 post-constituent violence in Kenya to engage texts as of various bases, with SMS, email, Twitter and the web, having references from the surrounding, to be recorded and supplied as a wellspring of data (Heaver and Henriksson, 2010).

All the more as of late, it is the situation of uses for cell phones intended to go with help from volunteers and with those in need (Lindenberg and Bryant, 2011). Efforts in different fields of practice that have comparative however unmistakable necessities may likewise be a wellspring of relief mechanical advancement. A good illustration is computerized information gathering which has generally risen up out of the wellbeing and sociologies, yet has coordinate pertinence for relief help information accumulation. Different cases incorporate online networking and instruction stages whose unique objectives are not to fill relief needs, but rather which are particularly appropriate to improve help activity (Kovács and Spens, 2011).

1.2 Problem Statement

The country's demand for relief aid has been on a sharp rise, which has been attributed to the increasing state of disasters such as droughts, foreign refugees, especially in Kakuma refugee Camp, floods, terrorist attacks, accidents, and disease outbreaks among other disasters (World Disasters Report, 2015). There have been various active conflicts in the country, which have increased the vulnerability of instabilities that call for relief support. The most current being natural disasters as a result of draught in modern history, it's also the one that's been receiving the most aid in form of donation and relief actions. In the logistics supply chain, information flows from the program managers who communicate the need for supplies based on assessment done on the ground, then on to the Logistics function which undertakes the sourcing, transportation, custom clearance and distribution to the location where the suppliers are required. However these have been coupled by gaps which include; slow mobilization, lack of information and coordination between government, government aid agencies and non-government agencies is generally poor. The agencies have been overwhelmed with aid, some lacked completely from aid, agencies are uncoordinated, resulting in redundancies mandate and aid and the willingness of sharing information with other agencies has been poor (Rinehart and Eckert, 2014).

Various studies have been done in relation to relief assistance. Jahre (2012) study was significant in addressing the context of IT and disaster organisations in the developing countries. They found out that IT systems are less complexity ensuring a better relief organisation performance as a result of lower costs and fewer shortages of stocks. However, their study did not address the IT usage used by international organizations in providing relief aid in general. Additionally, Salvage (2007) did a study, on the risks associated with IT systems in relief aid support. The findings were basically affirmative that there is a negative correlation between IT usage and the level of donor support in relief aid. However, the study could not divulge other issues that are related to relief aid such as logistics. Either, the environment of study, Afghanistan, is way far different from the Kenyan context.

Nyamu (2012) carried out another significant study. He found out that there is a positive correlation between information systems and the scope of service delivery to the people by relief organizations. His research however dealt purely on the IT on the supply chain management challenges that affect relief organizations in Kenya. His work was limited to the scope of logistics and supply chain practices though. Mungatia (2010) study established that World Vision Kenya was responsive to disasters based on the evidence of the many cases that the organization helped in disasters. However, the use of World Vision Kenya as the only case study of disaster response by NGOs limited the way other NGOs responded. Mohamed (2012) study shows how supply chain management practices help in the service delivery by relief organizations. However, his study was limited to the performance relationship between supply chains and the service which relief organizations deliver to the people. Moeiny and Mokhlesi, (2011) study established that the success of any relief aid support is only through properly endowed information systems. However, the economic and political setting of their study was benchmarked on a developed nation, unlike in a developing nation like Kenya.

Arising from the findings of the above studies, it is clear that, there are many areas about achieving effective communication through technology among relief organisation that have not yet been fully addressed. It is for this reason that this study seeks to evaluate information technology usage and relief logistics of relief organisations in Kenya. This study therefore sought to respond the research subjects of: - to what extent information technology used in relief organisations in Kenya? And what is the impact of information technology on relief logistics of relief organisations in Kenya?

1.3 General Objective

To evaluate information technology usage and logistics on humanitarian logistics of relief organisations in Kenya

1.3.1 Specific Objectives

- i. To evaluate the usage level of information technology relief in organisations in Kenya
- ii. To evaluate the impact of information technology usage on logistics of relief organisations in Kenya

1.4 Importance of the Study

The results of the research are expected to be of immense value to a number of audiences. Relief organisations operating in Kenya will find the study findings relevant in their understanding of how information technology influence relief in logistics operations and identify areas for improvement.

The study will also highlight to the government, benefits of joint planning and inter-organisational collaboration with relief organisations to create the necessary synergy in disaster management.

Consultants will also gain from this study by enlightening their customers on the benefits realised in developing and implementing good information technology systems.

The study also hopes to stimulate more research in the field of relief Logistics as well as act as a reference tool.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a theoretical review of the study subject. It also reviews other literature as done by other scholars in the same area of study and summarises the literature reviewed. The chapter presents the research gaps that the study seeks to fill and concludes with a conceptual framework from reviewed literature.

2.2 Theoretical Framework

This study is based on the Social Network Theory and Relief Coordination Theory as discussed below.

2.1.1 Social Network Theory

Social Network Theory which is also called the Network theory; network analysis has nodes and links as independent construct and node size, density, link strength as dependent constructs. Its proponents include Stanley Milgram (little world's issue, six degrees of division), Mark Granovetter (the quality of powerless ties) and Barnes who was the first to study informal organizations. It is a theory informal organization theory that spotlights on the numerous ways that individuals interrelate and impart by means of the different long range interpersonal communication stages. As per Haythornthwaite (1996), informal organization hypothesis comprehends social connections regarding centre points and ties. Centre points are the persons on-screen characters inside the frameworks, and ties are the organizations between the performing specialists. There can be various sorts of ties between the centre points. The way that these sorts of ties can differ in force and significance is only one of the numerous factors that can consider informal organization theory. Frequently the examination of a system will include spots of shifting sizes and hues associated by lines of varying lengths and thicknesses. An interpersonal organization investigator will take a stab at changing factors and taking a gander at the organizations in different approaches to find concealed connections and patterns in the system.

These frameworks offer ways to deal with easing relationship to collect information, debilitate competition, and even sort out in setting operational techniques. As indicated by Scholten, Scott and Fynes (2010) the capability of IT selection in overseeing data stream, encouraging operational procedures and frameworks and supporting basic leadership can be measured by looking at how IT affects co-ordinations execution.

McEntire (2007) expressed that the IT and data sharing capacities directly affect the production network mix capacity of the co-ordinations framework. Moment data sharing gives electronic connections that bolster correspondence and cooperation among the production network accomplices. The data gave to administrators as an after effect of IT incorporation helps in ideally assigning and using accessible assets for expanding the proficiency and viability of day by day co-ordinations operations and enhances basic leadership handle. Over the long haul, IT with wise frameworks helps the organization to break down business data keeping in mind the end goal to bolster and enhance administration basic leadership over an expansive scope of business exercises (Ketokivi and Jokinen, 2006).

2.1.2 Relief Coordination Theory

This theory posits that it is possible to orchestrate the expressed that the IT and data sharing capacities directly affect the production network mix capacity of the co-ordinations framework. Moment data sharing gives electronic connections that bolster correspondence and cooperation among the production network accomplices. The data gave to administrators as an after effect of IT incorporation helps in ideally assigning and using accessible assets for expanding the proficiency and viability of day by day co-ordinations operations and enhances basic leadership handle. Over the long haul, IT with wise frameworks helps the organization to break down business data keeping in mind the end goal to bolster and enhance administration basic leadership over an expansive scope of business exercises.

A push to lessen duplication, regularly surrounded as securing or enhancing hierarchical proficiency, is additionally as often as possible offered as a method of reasoning for why relief organizations ought to look to organize their help operations (McEntire, 2007). This theory sets that an organization ought to protect a capable bundle and stream of the right kind of advantages from its working surroundings to stay appropriate and prop up its execution (Rungtusanatham et al., 2003). In lieu of this, upper hand can come about because of having a mutual responsibility for way in to, unique/expensive assets like transport, innovations, and

barriers to relief resources. It is through the coordination of this resource that can enable relief organizations to have leverage for competitiveness in the relief operations through the combination of such resources and capabilities in a way that forms the core competencies of each individual relief organization.

According to Nijs and Renard (2009) relief coordination competency is a wellspring of manageable upper hand that relief organizations be able to have above a timeframe and whose acknowledgment is pegged on the practicability of exploiting the assets that an organization needs to accomplish proficiency and viability by using even the assets it doesn't possess. Relief organizations have accordingly depended on outsourcing to get to other organization's profitable coordination assets in the focused market. With the developing requirement for such assets, relief organizations seeking and giving such administrations turn out to be correspondingly adjusted towards each other and more esteem ward. The theory along these lines recommends that coordination empowers firms to be open to corresponding assets and make a great deal more focused asset groups, giving them an upper hand (Zacharia, 2001).

2.3 Usage Level of Information Technology

Information technologies give intense vital and strategic devices for relief organizations, which, if legitimately connected and utilized, this acquire incredible points of interest advancing and reinforcing their aggressiveness (Porter, 2001). IT is used as a means of facilitating communication and the exchange of information and/or facilitating knowledge sharing between various departments' functions in the relief organization. In this light IT act as an enhancer of collaboration and a networking tool amongst employees, beneficiaries and partners because it removes the barriers to real-time communication and effective information sharing (Scott, 2001).

IT helps relief organisations innovate through fusion of new technologies with society and response thus enabling the creation of new knowledge and discovery (Diem, 2007). IT is being used by relief organizations to improve performance, communication, motivate employees, increase response time and improve operations dynamics (Hagen, 2010). In the relief organisations, IT has become both a means to process information and store contacts, and a focused weapon that can change an industry's structure. Galliers (1994) recommended that as a result of the fast pace of mechanical advances and the effect of data innovation on

the changing aggressive environment, relief organizations are compelled to fundamentally assess their administration of data and innovation assets keeping in mind the end goal to accomplish their key targets.

It is broadly acknowledged among numerous creators and specialists in the hierarchical field that data innovation significantly affects the execution of the organization's exercises (Kothari, 2004; Nachmias and Nachmias, 1996). For instance, data innovation applications can be utilized to enhance the level of proficiency of authoritative capacities in an organization and to improve the viability of administrative exercises. These applications are likewise utilized as devices to force better organization on undertakings and to give better data to chiefs.

2.4 Information Technology Applications for Relief Organisations

The effects the application coordination of IT help mediations which happened in sustainance of evacuees and IDP in the midst of 1998-99 was more vital than upon those having happened as of now in alleviation theaters, for instance, Somalia (1992-93), Bosnia (1994-95) and Rwanda (1994) (Kreidler, 2013). This was an eventual outcome of changing IT machine in the course of the blend of electronic organizations ascending out of the automated change which ascended in the in front of timetable to mid 1990's and appeared in the no matter how you look at it determination of the Internet as an information and particular mechanical assembly. This IT trades progress engaged help organizations to get to shared alleviation information, examine slightly with ground staff (establishment permitting) and widely organize help involvement limits. Accordingly, routine help activities and systems were phenomenally changed (Davis and Fugate, 2012).

Anywhere help associated information recuperation and cover or intra correspondence among organizations and staff as achieved utilizing old techniques (visits to libraries, letters, redesigns, and so forth), the essential times of the progress of an electronic data medium that is the web and the World Wide Web and its ensuing broad decision by the two business and private endeavor opened up new potential results (Ibarra and Andrews, 2013). Online joint effort between adornments ought to be conceivable over the globe timelier than had ahead of time been conceivable with standard postal mail, phones, faxes, wires and organizations. Never again was it basic to take faxes or wires to organization suppliers, (for example, a mail

station) for communication. The PC and modem empowered the transmission of such electronic reports over the WWW (Gorry, 2008).

The new advancement of the web empowered staff to seek out information and make usage of the purposes of intrigue offered through the medium (Dess, Lumpkin and Eisher, 2014). It was inside this setting alleviation organizations got themselves while masterminding and working in the help intervention. From the examination of the picked crises, IT application gathering and coordination appears to have been performed formatively and using a cross breed approach of essential masterminding and practical learning. Development applications which have been facilitated into central office limits, for instance; the Internet, have step by step separated down to help handle operations (Lindenberg and Bryant, 2011).

2.5 Effectiveness of Information Technology on Relief Logistics

According to Harrison and Hoek (2008) relief logistics involves a wide range of activities taking place in a relief organization. Information technology improves stream of data with different units, in a commonly useful way, enhancing the viability of the help coordination in store network, transport and different units amid catastrophe operations. Data innovation improve needs appraisal by guaranteeing that the field staff realizes what supplies are accessible in stock, share arrangements of provisions including costs and lead times to empower program staff to arrange their obtainment exercises better, keep staff educated of acquisition exercises consequently build up a superior comprehension of the techniques and making trust and in addition give more exact data to the budget holders hence preventing under or overspending of budgets. Further, the systems provide warehouse inventory reports to program supplies to ensure that the supplies are utilized effectively and enable division of logistics overheads more accurately between the various programs as well as aiding in accurately dividing logistics over head costs into program budgets (De Toni and Tonchia, 2008).

According to Sople (2007) information technology solutions enable better logistics decision making, provide information on costs, lead to more control over the physical distribution and relief supply of goods and services, make accounting more accurate, help link data and systems with the systems of supplier and assist in accessing the performance of key logistics functions like the number of on time deliveries from suppliers, the number of outstanding

payments, the cost of running warehouses or the total inventory value of distribution centres (Blecken and Hellingrath, 2008).

According to Thomas and Kopczak (2014), creating adaptable innovation arrangements enhances responsiveness by making detectable quality of the materials pipeline and extending the amplex of people and techniques. Furthermore, pushed information advancement appointment makes the structure for data organization, execution estimation and learning. According to the Fritz Institute, who pioneered the development of Helios Software, the software can provide a number of benefits (Howden, 2009). It maximizes the impact of relief efforts by providing tactical relief supply visibility, from mobilization to warehouse. It also improves efficiency of relief supply operations by providing perspectives to a typical wellspring of information consequently enhancing coordination over every single working unit of the organization.

Resodihardjo (2010) asserts that adoption of information technology mechanizes coordinations forms at both the home office and field levels and gives strategic perceivability from each of these points of view. The IT additionally improves the relationship between help organization and givers by giving clients the capacity to follow gifts as they travel through the whole production network. Organizations acquire exact data about the greater part of their gifts, from trade to out kind products and ventures. It empowers help supply perceivability from the giver point of view, empowering organizations to screen and write about gifts, enhance contributor correspondences, and draw in givers all the more profoundly in the work of the organization (Oso and Onen, 2009).

2.6 Summary

In view of the developed theories and past studies it can be deduced that for information technology to be effective and successful within an organization there is need to consider the factors behind the adoption. The kind of technology, users of technology, context of technology adoption, expected outcome of using technology are some of this key considerations as reviewed by Blecken and Hellingrath (2008); Kreidler (2013), Ibarra and Andrews (2013), Kovács and Spens (2011). It is from this basis that the variables under investigation in this study namely the effectiveness of information technology and challenges on the implementation of effective information technology on relief logistics are picked as key determinants in disaster relief operations.

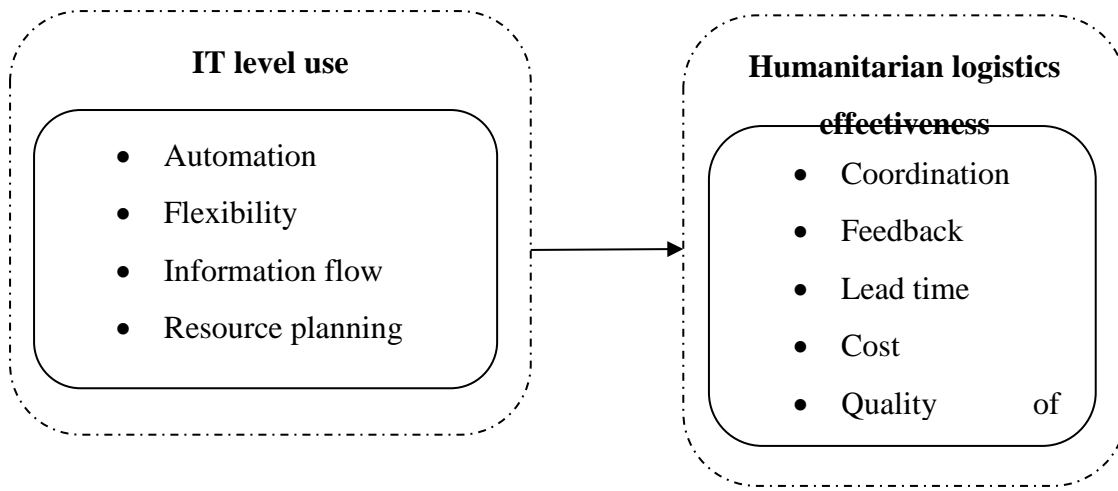
2.7 Literature Gaps

The gap identified in research that this study aimed at filling is that apart from previous studies on information technology used indicated above being in other areas not in relief functions there is none that has looked at all these factors under a single study. Secondly, although some of the studies have been carried out in developing countries such as Malaysia it will be suicidal to imagine that it applies in totality in another country such as Kenya. Thirdly, as much as some of the studies are confined within the public sector none has considered relief organisations in Kenya which are the focus area of this study.

Finally, in the theory adopted for this study that is the social network theory it highlights the variables that influence the behaviour to either intent to use technology or utilization of innovation in particular execution hope, exertion anticipation, social impact and encouraging conditions. However, it does not discuss the constructs under each of these variables. In trying to improve this theory this study proposed to investigate further the possible facilitating conditions that influence the use of information technology. In particular, the study questions the challenges faced by the relief actors thus affecting their operations in relief.

2.8 Conceptual Framework

This framework attempted to examine and explain factors that affected and hence influenced information technology usage and relief logistics of relief organisations in Kenya. These factors included effectiveness in the implementation of effective information technology by the relief organisations. This influenced the relief organisations on either to offer or not to offer effective relief services. In this case, manipulation of any independent variable was expected to affect relief logistics either in a positive or negative way. The study as a result determined the effects of the independent variable on the dependent variable in an effort to assess the information technology usage and logistics of relief organisations in Kenya.



Independent Variables
Figure 2.1: Conceptual framework

Dependent Variable

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter looks at the methods that were used in the assessment of the information technology usage and logistics of relief organisations in Kenya. This chapter is also structured into research design, and population of study, sample, data collection and data analysis.

3.2 Research Design

According to Cooper and Schindler (2008), research design can be considered as the structure of research. The "paste" that holds the majority of the components in a research together. This study took a cross-sectional survey research design. The study was cross-sectional survey as it aimed to describe data and characteristics about the population or phenomenon being studied (Mugenda and Mugenda, 2008).

3.3 Population and Sampling

The population of interest of this study was the relief organizations operating in Kenya. According to EHRP (2015) fifty three such organizations operating in Kenya participated in 2015 response plan (Appendices III). Since the population was small there was no need for sampling rather the whole population of 53 was the study sample using census method. The study targeted head of logistics and head of IT in the relief organisations.

3.4 Data Collection

The researcher used a semi structured questionnaire as the primary data collection tool. The questionnaire was structured to include both closed, open-ended and matrix questions to allow variety. The questionnaire was divided in section with the first section presenting information on respondent's demographics; the second section contained questions on usage level of information technology relief. The third and fourth section presented questions on effectiveness on the implementation of information technology respectively.

3.5 Data Analysis

This implied that both descriptive statistics and content analysis were utilized. The information from the field was initially coded according to the themes researched on the research. This empowered the use of computer in the summarizing of data in tables. Frequency tables were produced using the statistical package for social sciences (SPSS) package. This was to give the distribution of responses in the questionnaire in percentage form. The output was presented in terms of pie charts and graphs. The strength of the resultant relationships, between the variables whether positive or negative, was tested using both parametric and non parametric statistical methods such as the Pearson's Product moment correlation coefficient and multiple regression analysis. The regression equation was

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Whereby; Y =Relief logistics effectiveness

 X₁ = IT usage

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This section presents analysis of data collected and the study results. The results are presented on information technology usage and of relief organisations in Kenya.

4.1.1 Response Rate

Out of the 53 targeted respondents, 41 responded contributing to 78% as showed in the table below.

Table 4.1: Distribution of Response Rate

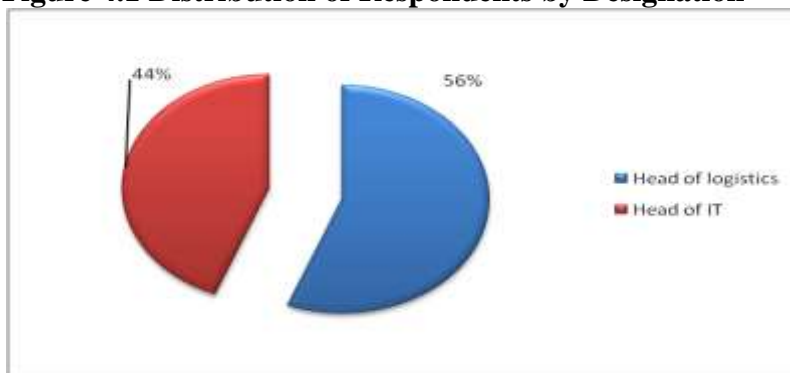
Response	Frequency	Percentage
Responded	41	78
Not responded	12	22
Total	53	100

Source: Survey Data (2016)

4.2 Background Information

4.2.1 Respondents Designation

Figure 4.1 Distribution of Respondents by Designation



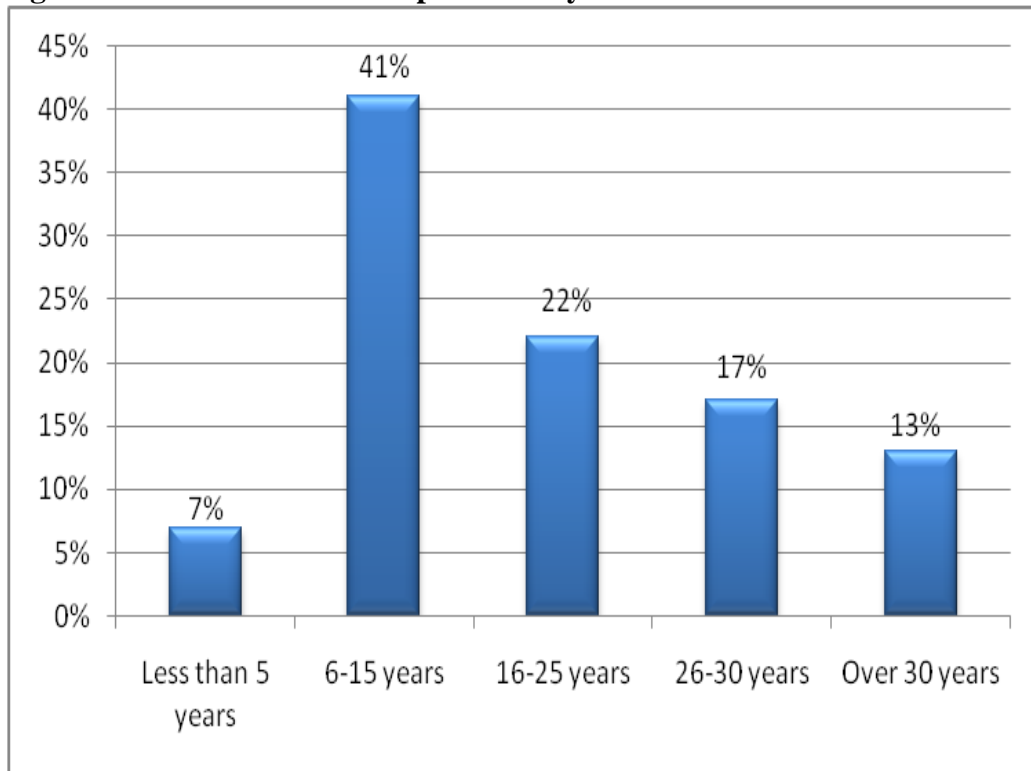
Source: Survey Data (2016)

Figure 4.1 shows that, 56% of the respondents who were the majority, were heads of logistics while 44% were heads of IT. This shows that the heads of logistics were the majority as they are part of the organisation supply chain management adoption plan, implementation in

ensuring effectiveness of the services and goods provided in ensuring consumers requirements are met.

4.2.2 Number of working years

Figure 4.2 Distribution of Respondents by Years of Service



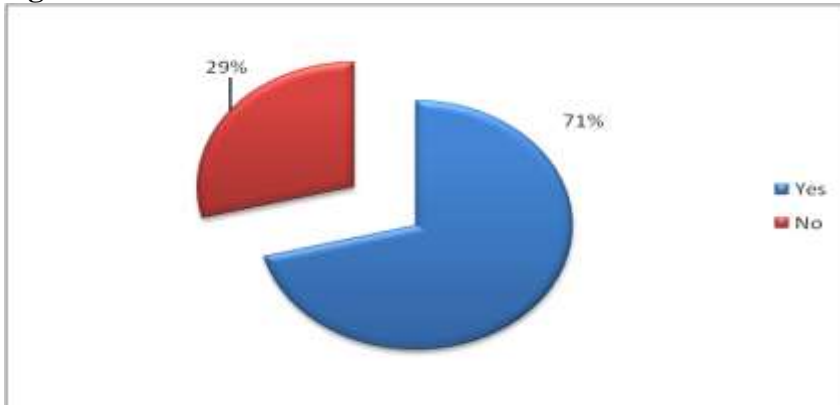
Source: Survey Data (2016)

On evaluating the respondents number of years they have spent working in the organization, majority (41%) had worked for 6 to 15 years, 16 to 25 years were presented by 22%, 17% had worked for 26 to 30 years, 13% had worked for over 30 years while 7% had worked for less than 5 years as showed in Figure 4.2 above.

4.3 Level of Information Technology Applications

4.3.1 IT Use in Disaster Stricken Areas

Figure 4.3 IT Use in Disaster Stricken Areas

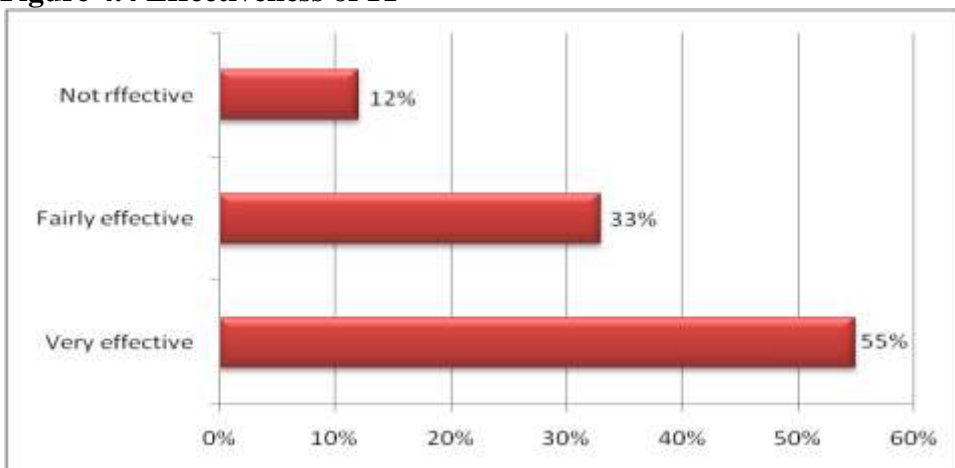


Source: Survey Data (2016)

The study set out to determine whether respondents used IT in offering relief in disaster stricken areas. As shown in Figure 4.3, 71% who were the majority used IT in offering relief in disaster stricken areas while 29% did not use IT in offering relief in disaster stricken areas.

4.3.1.1 Effectiveness of IT in Disaster Stricken Areas

Figure 4.4 Effectiveness of IT



Source: Survey Data (2016)

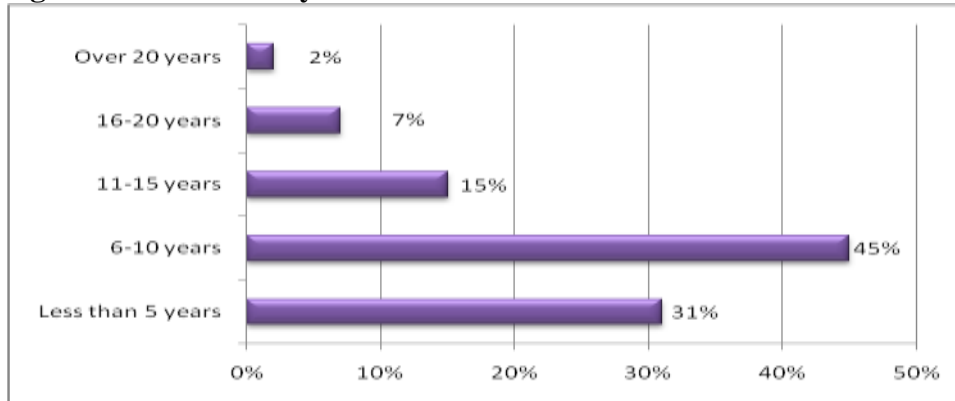
As per Figure 4.4, 55% who were majority of the respondents, indicated that the use of IT in offering relief in disaster stricken areas was very effective, 33% indicated that the use of IT in offering relief in disaster stricken areas was fairly effective whereas 12% indicated that the use of IT in offering relief in disaster stricken areas was not effective.

4.3.2 Logistics Information Software

The heads of logistics and heads of IT identified that they used executive information systems, management information systems, transaction processing systems and decisions support systems, as logistics information software in the organization.

4.3.3 Period of System Use

Figure 4.5 Period of System Use



Source: Survey Data (2016)

Figure 4.5 shows that 45% of the respondents who were the majority indicated that the IT system had been used in the organization for 6 to 10 years, 31% indicated that the IT system had been used in the organization for less than 5 years, 15% indicated that the IT system had been used in the organization for 11 to 15 years, 7% indicated that the IT system had been used in the organization for 16 to 20 years while 2% indicated that the IT system had been used in the organization for over 20 years.

4.3.4 Information Technology Usage in Relief Logistics Operations

The study found that the extent to which information technology ensured relief logistics operations was to a great extent as rated by an average score of 3.67 in that; IT ensured automation during relief logistics operationsto a great extent (mean score is 3.81), IT ensured information flow during relief logistics operationsto a great extent (mean score is 3.76), IT ensured flexibility during relief logistics operationsto a great extent (mean score is 3.69), IT ensured response relationship during relief logistics operationsto a great extent (mean score is 3.59) and IT ensured resource planning during relief logistics operationsto a great extent (mean score is 3.53) as shown in Table 4.2 below.

Table 4.2 IT on relief Logistics Operations

	Mean	Std.dev
Automation	3.81	.940
Flexibility	3.69	.943
Information flow	3.76	1.079
Resource planning	3.53	1.078
Response relationship	3.59	1.065
Total	18.38	5.10
Average	3.67	1.02

Source: Survey Data (2016)

4.4 Relief Logistics Effectiveness

Table 4.3 shows that, respondents agreed with statements related to the effectiveness of logistics as indicated by an average score of 3.56. From the same it as to a great extent that respondents agreed there was coordination in the organization as shown by a mean score of 3.81, they agreed on quality services in the organization as shown by a mean score of 3.62 and they further agreed on feedback in the organization as shown by a mean score of 3.57. IT was to a moderate extent that costs was reduced in the organization as shown by a mean score of 3.49 and quality services were at the top notch in the organization as shown by a mean score of 3.33.

Table 4.3 Relief Logistics Effectiveness

	Mean	Std.dev
Coordination	3.81	.952
Feedback	3.57	.288
Lead time	3.33	1.137
Cost	3.49	.049
Quality of services	3.62	1.251
Total	17.82	3.67
Average	3.56	0.73

Source: Survey Data (2016)

4.5 Relationship between relief logistics effectiveness and IT usage

The relationship between IT usage and relief logistics effectiveness was assessed using the Pearson correlation. According to Table 4.4 tabulation, the findings portrays a significant relationship between IT usage and relief logistics effectiveness, with $r^2 = 0.866$ which is the correlation coefficient. This depicts a shared liaison between IT usage and relief logistics effectiveness at $r^2 = 0.866$ (correlation coefficient) and a p value of 0.01. This shows a positive relation of increasing IT usage as a result of higher relief logistics effectiveness.

Table 4.4 Correlations between relief logistics effectiveness and IT usage

		Relief logistics effectiveness	IT usage
Relief logistics effectiveness	Pearson Correlation	1	0.866**
	Sig. (2-tailed)		0.000
	N	53	53
IT usage	Pearson Correlation	0.866**	1
	Sig. (2-tailed)	0.000	
	N	53	53

Source: Survey Data (2016)

4.6 Regression Analysis of IT Usage and effectiveness of Humanitarian Logistics

A regression analysis was then conducted to establish whether there exists a connection between the factors affecting relief logistics effectiveness and IT usage herein the independent factor.

The model used was as below;

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Whereby Y =Relief logistics effectiveness

X_1 = IT usage

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.843	0.7421	0.724	0.4216

- a) Predictors: (Constant), IT usage
 b) Dependent variable: Relief logistics effectiveness

The R square used shows how relief logistics effectiveness varied with IT usage. The independent variable which in this case is IT usage explain 74.2% which was studied and shows the variance in relief logistics effectiveness as represented by coefficient of determinant which is the R^2 . The results show that other factors that were not studied contribute to 25.8% of influence of relief logistics effectiveness.

Table 4.6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.72	2	5.86	57.80	.000(a)
	Residual	3.432	39	0.088		
	Total	15.152	41			

- a) Predictors: (Constant), IT usage
 b) Dependent Variable: Relief logistics effectiveness

ANOVA was used to establish the significance of the regression model, f-significance value of p less than 0.05 was found. This shows that the model used was statistically significant in establishing how IT usage affects relief logistics effectiveness. As per these results the regression model has a probability of .05 likelihood of giving wrong prediction. Thus a confidence level of above 95% has been established a high reliability of the results.

Table 4.7 Coefficients Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.116	.186		0.623	.044
IT usage	0.577	.068	.559	8.478	.000

a) Predictor: (Constant), IT usage

b) Dependent Variable: Relief logistics effectiveness

The established regression equation was

$$Y = 0.577X_1 + \varepsilon$$

The regression equation has established that holding the factor (IT usage) constant, factors affecting relief logistics effectiveness will be 0.116. Taking all the independent variable at zero, IT usage will lead to relief logistics effectiveness increase with a score of 0.577. A statistical significance relationship was also established between relief logistics effectiveness and IT usage ($p=0.00<0.05$) which is the independent variable.

4.7 Discussion

According to the findings as per the demographic data, there were more heads of logistics than heads of IT as they are part of supply chain management that plans, effective forward, storage of goods and services, reverse flow, controls the efficient and related feedback action from the production stage to consumers where satisfaction is expected. From the study, majority of the respondents 41% who were the majority, had worked in the organization for a period between 6 to 15 years, thus they had vast experience and knowledge on the organization and could thus respond well on information technology usage and relief logistics.

According to the current study findings, coordination as a result of IT usage was to a great extent. This conforms to Kreidler (2013) who argues that IT application usage in relief support of IDPs and refugees between 1998 and 1999 was effective as compared to those that did not use the IT applications in relief theatres such as Rwanda (1994), Bosnia (1994-95) and Somalia (1992-93).

The regression shows that at constant zero of the impudent variable that is IT usage there will be an increase in relief logistics effectiveness scores. The study also established a significant

relationship between relief logistics effectiveness and the independent variable IT usage. The findings were in line with studies by Dess, Lumpkin and Eisher (2014) and Sople (2007) who confirmed that information technology solutions enable better logistics decision making, provide information on costs, lead to more control over the physical distribution and relief supply of goods and services, make accounting more accurate, help link data and systems with the systems of supplier and assist in accessing the performance of key logistics functions like the number of on time deliveries from suppliers, the number of outstanding payments, the cost of running warehouses or the total inventory value of distribution centres.

The findings show that there is a relationship between IT usage and relief logistics effectiveness. This supports a mutual relationship between IT usage and relief logistics effectiveness. The relation is positive, meaning an increase in IT usage resulting in higher relief logistics effectiveness. The findings were similar to Davis and Fugate (2012) as well as Lindenberg and Bryant (2011) findings in that IT adoption and usage enhances relief operations by supporting the field personnel in coordination and planning interventions. This has transformed previous relief activities termed as traditional. The personnel is empowered with access to information and dissemination of the same for quick and efficient response where needed.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This section provides the study summary, conclusion and recommendation. It is arranged as per the study objectives which are; to evaluate the usage level of information technology relief in organisations in Kenya and to evaluate the effectiveness of information technology on logistics of relief organisations in Kenya. All tests were statically analyzed using SPSS.

5.2 Summary of the Findings

The study found that (71%) of the respondents who were the majority, used IT in offering relief in disaster stricken areas and it was very effective (55%). The heads of logistics and heads of IT identified that they used executive information systems and decisions support systems as logistics information software in the organization for 6 to 10 years (45%) and IT ensured automation (mean score is 3.81), information flow (mean score is 3.76), flexibility (mean score is 3.69), response (mean score is 3.59) and resource planning during relief logistics operations in the organization to a great extent.

The study further found that there was coordination reflected to a great extent as shown by a mean score of 3.81, it was also to a great extent that IT usage resulted to quality services (mean score of 3.62), as well as feedback from users (mean score of 3.57). Costs was reduced to a moderate extent shown by a mean score of 3.49 as well as quality services in the organization presented by a mean of 3.33.

The regression equation has established that holding the factor (IT usage) constant, factors affecting relief logistics effectiveness will be 0.116. Taking all the independent variable at zero, IT usage will lead to relief logistics effectiveness increase with a score of 0.577. A statistical significance relationship was also established between relief logistics effectiveness and IT usage ($p=0.00<0.05$) which is the independent variable.

The findings portrays a significant relationship between IT usage and relief logistics effectiveness, with $r^2= 0.866$ which is the correlation coefficient. This depicts a shared liaison between IT usage and relief logistics effectiveness at $r^2= 0.866$ (correlation coefficient) and a

p value of 0.01. This shows a positive relation of increasing IT usage as a result of higher relief logistics effectiveness.

5.3 Conclusions

The study concludes that, IT usage ensured effective coordination between the relief organisations, the affected people as well as the stakeholders involved. The coordination is as a result of increased automation, flexibility, information flow, and resource planning and response relationship.

The study concludes that if all independent variables are held at zero, there will be an increase in relief logistics effectiveness. On the same relief logistics had a statistical significant relationship with IT usage.

The study further concludes that there is a relationship between IT usage and relief logistics effectiveness. This supports a mutual relationship between IT usage and relief logistics effectiveness. This portrays a positive relationship thus IT usage increase reflects an increase in relief logistics effectiveness.

5.4 Recommendations

To successfully and effectively raise the organizations' profile, to stay up to date with current advancements and legislation in the field, to oversee and sort out data all the more effortlessly, to accurately monitor their funds, to safely keep up their clients' contact points of interest, to comprehend who is utilizing their administrations and how they can enlarge their range, to empower benefit clients to bolster each other through online groups and to spare expenses and work all the more adequately permitting staff to work remotely and adapt-ably the management of relief organisations in Kenya should upgrade and input more IT services.

5.5 Limitations of the Study

The respondents being busy heads of logistics and heads of IT, it was very hard to convince them to take part in the study since they felt confidentiality issues may infringe to them and actually some declined taking part in the study. To counter this, the researcher used a cover letter from The University of Nairobi to mitigate this outcome. Moreover other employees refused to take the questionnaire citing that it was not in their policy to be filling any. Others took in the questionnaire but did not respond.

5.6 Suggestions for Further Research

It will be important to replicate this study after duration of five years and establish the position as at that time. Another study on the same topic should be conducted using a sample that is larger with more time allocation in order to compare the findings.

A further study concerning the same topical issues addressed in this study should be carried out on another population such as other public organizations for a comparison of results. It could also be important to involve other employees other than the heads of IT and heads of logistics to conduct more comprehensive results.

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APPENDICES

Appendix I: Introduction Letter

Dear Respondent,

My name is James Ojwang, a Masters student of The University of Nairobi. I am carrying out a research on “INFORMATION TECHNOLOGY USAGE AND HUMANITARIAN LOGISTICS OF RELIEF ORGANISATIONS IN KENYA”. This questionnaire is designed to gather information to be used in the study being carried out for a project management project paper as fulfillment of Degree of Masters of the degree of Master of Business Administration.

The information you shall avail will be treated with confidentiality and no instances will your name be mentioned in this research. Also, the information will not be used for any other purpose other than for this academic exercise. Your assistance in facilitating the same will be highly appreciated.

Thank you in advance

Yours sincerely

.....

James Ojwang

Appendix II: Questionnaire

Section A: GENERAL INFORMATION

1. Name of Organization.....
2. What is your designation / title?
3. How long have you worked in the organization been in operation (Tick as applicable?)

Less than 5 years	[]	6-15 years	[]	16- 25 years	[]
26- 30 years	[]	Over 30 years	[]		

Section B: Level of Information Technology Applications

4. Does your organisation use IT in offering relief in disaster stricken areas?

Yes	[]	No	[]
-----	-----	----	-----

b) How effective is it

- | | |
|----------------|-----|
| Very effective | [] |
| Fair | [] |
| Not effective | [] |

5. Which Logistics Information Software does your organization use?

.....

.....

.....

6. How long has the system been in use by the organization?

- | | | | | | |
|-------------------|-----|---------------|-----|--------------|-----|
| Less than 5 years | [] | 6 – 10 years | [] | 11- 15 years | [] |
| 16- 20 years | [] | Over 20 years | [] | | |

7. To what extent has information technology ensured the following in its usage during relief logistics operations? Uses a scale of 1 to 5 where; 1- No extent, 2 - Little extent, 3- Moderate extent, 4- Great extent and 5- Very great extent

	1	2	3	4	5
Automation					

Flexibility					
Information flow					
Resource planning					
Response relationship					

Section C: RELIEF LOGISTICS EFFECTIVENESS

10. On a Scale of 1-5 where 5= Strongly Agree, 4 = Agree, 3 = Not Sure, 2 = Disagree and 1 = Strongly Disagree, please indicate your level of agreement with the following statements relating to the effectiveness of logistics in your organization

	1	2	3	4	5
Coordination					
Feedback					
Lead time					
Cost					
Quality of services					

THANK FOR YOUR TIME AND PARTICIPATION

Appendix III: Participants in 2015 Emergency Relief Response Plan

1. Action Against Hunger
2. Agency for Technical Cooperation and Development
3. Caritas Switzerland
4. Centre for Human Rights and Governance
5. Centre for the Poor International
6. Christian Aid
7. Concern Worldwide
8. Cooperazione Internazionale COOPI
9. Danchurchaid
10. Deutsche Welthungerhilfe e.V. (German Agro Action)
11. Development Initiatives Access Link
12. Finnchurchaid
13. Food and Agriculture Organization of the United Nations
14. Food for the Hungry
15. GOAL
16. HelpAge International
17. International Labour Organization
18. International Medical Corps
19. International Organization for Migration
20. International Rescue Committee
21. International Strategy for Disaster Reduction, Africa
22. Islamic Relief Worldwide
23. Kenyan Red Cross Society
24. Lay Volunteers International Aorganization
25. Medical Emergency Relief International
26. Mercy USA for Aid and Development,
27. Mubarak for Relief and Development Organization
28. Northern Kenya Caucus
29. Norwegian Refugee Council
30. Office for the Coordination of Humanitarian Affairs
31. Okoa Mtoto Initiative Kenya
32. Pastoralists Against Hunger

33. Plan International
34. RedR UK
35. Refugee Consortium of Kenya
36. Samaritan's Purse
37. Save the Children
38. Southern Aid
39. Terre Des Hommes
40. United Nations Children's Fund
41. United Nations Dept of Safety and Security
42. United Nations Development Fund for Women
43. United Nations Development Programme
44. United Nations Educational, Scientific and Cultural Organization
45. United Nations High Commissioner for Refugees
46. United Nations Population Fund
47. Vétérinaires sans Frontières (Germany)
48. World Cares Aorganization
49. World Concern Development Organisation
50. World Food Programme
51. World Health Organization
52. World Vision International
53. World Vision Kenya

Appendix IV: Work Plan

The table below shows the schedule of all the events, it indicates the month each particular activity will take place.

ACTIVITY	PERIOD							
	2016							
	Mar	April	May	Jun- Jul		Aug- Sep		
Concept paper development	■							
Preliminary literature review		■	■					
Thesis proposal writing		■	■	■	■	■		
Developing instruments						■		
Thesis proposal defense							■	
Data collection							■	
Data analysis							■	
Presentation of findings								■

Appendix V: Budget

The table below provides the budget for all the expenses that the researcher will incur.

Activity	Amount in Ksh.
Transport	18,000
Writing Materials	4,000
Typing, Photocopying and Binding ₃	16,500
Internet	5,000
Laptop	51,000
Miscellaneous	5,000
Total	99,500

Notes;

1. Travelling expenses
2. Payment for the purchase of writing materials such as foolscaps and pens
3. Printing and binding the 3 final copies of the thesis proposal
4. Payment of internet service since much of the secondary data will be gathered from the internet.
5. Amount set aside for any uncertainties that are unforeseen at the point of planning.