

**DISASTER MANAGEMENT PRACTICES IN RESEARCH  
LIBRARIES IN KENYA WITH REFERENCE TO THE KENYA  
AGRICULTURAL AND LIVESTOCK RESEARCH ORGANIZATION**

**MARY KANINI ABURUKI**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF MASTER OF LIBRARY AND INFORMATION  
SCIENCE, DEPARTMENT OF LIBRARY AND INFORMATION  
SCIENCE, UNIVERSITY OF NAIROBI**

**2016**

## DECLARATION

This research project is my original work and has not been submitted for examination to any other university.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Mary Kanini Aburuki**

**Registration Number: C54/77927/2015**

This research project has been submitted for examination with our approval as the university supervisors.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Dr. George Mwangi King'ori**

**Department of Library and Information Science**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Dr. Elisha Ondieki Makori**

**Department of Library and Information Science**

## **ACKNOWLEDGEMENTS**

It is not my effort alone that I have successfully completed this project. For this reason I thank the almighty God for his never-ending protection. Mostly, my heartfelt gratitude goes to my mother Ruth and my daughter Sharleen for their encouraging and inspiring words. My special appreciation goes to the management of Kenya Agricultural and Livestock Organization for granting me study leave to pursue the course. I also thank the University of Nairobi for providing academic support to enable me study and in particular the library department. Special gratitude is due to my supervisors Dr. George Mwangi King'ori and Dr. Elisha Ondieki Makori for their patience and persistence, in guiding me through writing and finalizing of the project. My appreciation also goes to Dr. Dorothy Njiraine, the Chair Department of Library and Information science for introducing me to the course. To the Master of LIS class 2015, you were a great inspiration to me. Last but not least, I wish to thank all those in one way or another contributed to successful completion of this study. May the Almighty God Bless you.

## **DEDICATION**

This project is dedicated to my Daughter Sharleen Karimi for her encouraging words.

## **ABSTRACT**

Reducing disaster vulnerability is through mitigation. The purpose of the study was to assess disaster management approaches applied by the organization and suggest possible solutions on how to minimize disaster damage. The study specific objectives were to: establish the appropriateness of facilities available to manage and handle disaster incidents in research libraries, find out strategies and practices put in place to deal with disaster incidents, examine mitigation methods used to manage and support disaster risks, and determine the role of management in support of disaster preparedness in research libraries. The study used integrated disaster management model in relation to mitigation, preparedness, response and recovery against natural or man-made disasters. The study comprised a total representative sample population of 140 respondents from nine centres of Kenya Agricultural and Livestock Research Organization. The study adopted descriptive research design and data and information was collected using questionnaires and interview schedules. Quantitative data was analyzed using Microsoft Excel application and presented in form of charts, tables of frequencies and percentages while qualitative ones were coded through Statistical Package for Social Sciences. The study findings revealed that there is lack of institutional capacity to in terms of adequate financial resources. In addition the findings found out that Majority of personnel involved in disaster management were not adequately trained. The study also indicated that there were no strategies put in place nor adequate tools to implement planning and prevention to manage disasters. The study recommends that the institution needs create awareness for both the staff and clients in matters of disaster prevention, funding by the organization, staff training, policy formulation and implementation and routine risk assessment. The study is useful to professionals and policy makers involved in disaster management at all levels in the organization for disaster reduction to be achieved. This is significant in enhancing awareness and to a greater extent improve disaster management facilities.

# TABLE OF CONTENTS

TITLE PAGE .....	i
DECLARATION.....	ii
ACKNOWLEDGEMENTS .....	iii
DEDICATION .....	iv
ABSTRACT .....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
LIST OF ABBREVIATIONS AND ACRONYMS .....	xi
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.0 Introduction .....	1
1.1 Background to the Study.....	1
1.1.1 Context of the Study .....	4
1.2 Statement of the Problem.....	5
1.3 Aim of the Study.....	6
1.3.1 Objectives of the Study .....	7
1.4 Research Questions.....	7
1.5 Significance of the Study .....	7
1.6 Assumptions of the Study .....	8
1.7 Scope of the Study .....	8
1.8 Limitations of the Study.....	8
1.9 Definition of Terms.....	9
1.10 Chapter Summary .....	10
CHAPTER TWO.....	11
LITERATURE REVIEW .....	11
2.0 Introduction .....	11
2.1 Disaster Management in Organizations .....	11
2.1.1 Disaster Management in Research Libraries .....	13
2.2 Nature of Disasters.....	14
2.3 Effects of disasters in libraries.....	15
2.4.1 Prevention Stage .....	20
2.4.2 Preparedness Stage.....	21
2.4.3 Response Stage .....	21
2.4.4 Recovery Stage .....	22
2.4.5 Post Emergency Re-evaluation.....	23
2.5 Disaster and Risk Management Strategies in Libraries .....	23
2.5.1 Disaster Management Tools and Resources.....	24
2.6 Training in Disaster Management.....	26
2.7 Reduction of Disaster Risks and Damage .....	27
2.7.1 External Factors of the Building.....	28
2.7.2 Internal Hazards.....	29
2.7.3 Security Measures.....	29
2.8 Challenges Encountered in Disaster Management .....	29

2.9	Intellectual and Related Studies.....	31
2.10	Integrated Disaster Management Model .....	32
2.11	Conceptual Framework .....	34
2.12	Chapter Summary .....	38
	CHAPTER THREE .....	39
	RESEARCH METHODOLOGY .....	39
3.0	Introduction .....	39
3.1	Research Design .....	39
3.2	Study Area .....	40
3.3	Target Population.....	40
3.4	Sample and Sampling Techniques.....	41
3.4.1	Sample Size .....	41
3.4.2	Sampling Techniques.....	41
3.5	Data Collection Methods.....	42
3.5.1	Questionnaires .....	42
3.5.2	Interview Schedule.....	43
3.5.3	Observation Guide .....	43
3.6	Data Collection Instruments .....	44
3.6.1	Pilot Study .....	44
3.6.2	Validity.....	44
3.6.3	Reliability .....	45
3.8	Ethical Issues .....	46
3.9	Chapter Summary .....	46
	CHAPTER FOUR .....	47
	DATA PRESENTATION, ANALYSIS AND DISCUSSION.....	47
4.0	Introduction .....	47
4.1	Background Information of the Respondents.....	47
4.2	Appropriateness of the Tools Available to Manage and Handle Disaster Incidents .....	50
4.3	Mitigation Methods used to Manage and Support Disaster Risks.....	51
4.4	Strategies and practices put in place to deal with disaster incidents. ....	52
4.5	Management Support .....	53
4.6	Chapter Summary .....	55
	CHAPTER FIVE.....	56
	SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS.....	56
5.0	Introduction .....	56
5.1	Summary of Key Findings .....	56
5.1.1	Appropriateness of Tools Used to Manage Disaster Incidents .....	56
5.1.2	Disaster Management Strategies/Practices in Research Libraries.....	57
5.1.3	Mitigation Methods Use to Manage Disaster Risk in Research Libraries.....	57
5.1.4	Role of Management in Support of Disaster Preparedness.....	57
5.1.5	Challenges Experienced by Research Libraries in Disaster Management.....	58
5.2	Conclusion.....	58
5.3	Recommendations.....	59
5.3.1	Staff Training.....	59
5.3.2	Funding .....	60

5.3.3 Policies ..... 60  
5.5 Areas of Further Research..... 61  
5.5.1 Impending Disasters..... 61  
5.5.2 Need for Risk Assessment to Disaster Training Programme ..... 61  
REFERENCES..... 62  
APPENDIX I..... 67  
APPENDIX II..... 68  
QUESTIONNAIRE FOR STAFF ..... 68  
APPENDIX III ..... 70  
INTERVIEW SCHEDULE FOR STAFF..... 70



## **LIST OF TABLES**

Table 2.1: Possible Threats that Cause Interruption of Services .....	15
Table 3.1: Sample Frame .....	42
Table 4.1: Education Level .....	49
Table 4.2: Respondents' Position .....	49
Table 4.3: Appropriateness of Tools Available to Manage and Handle Disaster Incidents .....	51
Table 4.4: Mitigation methods used to Manage and Support Disaster Risks .....	52
Table 4.5: Strategies and practices put in place to deal with disaster incidents .....	53
Table 4.6: Management Support .....	55

## LIST OF FIGURES

Figure 2.1: Integrated Disaster Management Model (Kusumasari, et al 2010) .....	34
Figure 2.2: Conceptual Framework ó Disaster Preparedness as a Factor of Disaster Mitigation.....	37
Figure 4.1: Response Rate .....	49
Figure 4.2: Working Experience .....	50
Figure 4.3: Respondent's Age.....	50

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>RF</b>	Coffee Research Foundation
<b>IMC</b>	Interim Management Committee
<b>KARI</b>	Kenya Agricultural Research Organization
<b>KALRO</b>	Kenya Agricultural and Livestock Research Organization
<b>KEFRI</b>	Kenya Forestry Research Institute
<b>KETRI</b>	Kenya Trypanosomiasis Research Institute
<b>KESREF</b>	Kenya Sugar Research Foundation
<b>NARS</b>	National Agricultural Research System
<b>TRFK</b>	Tea Research Foundation of Kenya
<b>MoA</b>	Ministry of Agriculture
<b>SEMP</b>	Strategic Emergency Management Plant
<b>SPSS</b>	Statistical Package for Social Sciences
<b>STD</b>	Standard deviation
<b>USA</b>	United States of America

# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

This chapter presents the overview of the background information, place, problem statement, aim and objectives, research questions, assumptions, scope, limitation, significance and the operational terms used in the study.

### 1.1 Background to the Study

The National Disaster Response Plan (2010) indicates that, disaster Kenya is caused by factors beyond human control. These factors often in turn destroy livelihoods and largely affect the country's growth. Increased population and its distribution globally, urbanization that create mass concentrations of humans and economic activities, inequity and vulnerability, conflict, security and environmental factors such as degradation and human settlements have constrained emergency management in responding to emergencies of escalating scale and complexity. Unfortunately disasters cannot be avoided whether from acts of nature or man-made causes and this has remained a recurring subject in libraries and organizations that makes it prudent for disaster management and emergency planning function considerably important (Moustafa, 2015 p. 4). Disasters both natural and man-made are leading to escalating terms costs terms of human lives, lost livelihoods and destruction of assets and businesses. Disasters challenge institutions and governments causing chaos and disruptions due to limited institutional capacity. Disasters often cause severe and on-going destruction in form of water to cultural property, the most vulnerable being books, documents and other paper based materials. Issues of disaster prevention have been largely discussed in previous literature and have been embraced in day to day activities of the library globally, however most of the libraries in the developing world have not developed clear measures. To overcome this, disaster management, dictates

be devised strategies that are geared towards disaster planning and preparing organizations on how to address the substantial risk reduction in workplace.

Libraries across the world are receiving unpremeditated changes in the services offered with information personnel bringing about the most needed change in information security due to uncertainties (Rehman, 2014). This is because the world is undergoing through the crisis of information revolution in which the critical recipes are knowledge and technology. To remain at the cutting edge of competitiveness, countries are investing a great deal of resources in their research and development. African countries such as Kenya are lagging behind in the on-going revolution due to poor infrastructure that is created by limited generation of knowledge and lack of institutional capacity in terms of skill and number (Mathews, Smith & Knowles, 2009). This is to say that in the area of disasters management, there is inadequate information available as indicated in previous studies.

There is need to consider different forms of disasters that their effects to organizations and people's livelihoods worldwide (Red Cross, 2016). Disasters mainly happen due to common factors such as fires or an electrical fault, earthquake, flooding, water from leaking roof, poor storage facilities/equipment and environmental causes, unsecured buildings and vandalism, (Michael & Edward, 2010). Disaster management creates modern tools that enable organizations deal with the risks of disaster in work related places (Collins, 2010). The author continues to state that disaster management in libraries involves the development of a disaster policies, which is described as a set of predetermined actions, which will reduce the possibility of a disaster happening and further also reduce the extent of the damage likely to occur should a disaster strike. It

is therefore evident that, libraries, archive and museums have for many years been concerned about the issues of risk and disaster that destroy library collection due to a wide number of factors affecting libraries around the world through man-made and natural causes (Petros *et al*, 2011). The main goal for disaster risk policy is to reduce disaster risk and prevent them by proper infrastructure and systems detection of possible threats. Further it is argued that to manage disasters and the danger thereof, makes it imperative for the library to prepare adequately as an important area of planning for overall library activities (Paul, 2016).

Disaster in the context of library and information services implies any incident that threatens to damage the building, collections, equipment and systems (Rehman, 2014). The author continues to say that libraries safe guarded documentary evidence of since time in memorial. Collection development, storage, retrieval, repackaging and distribution of information globally has brought a new way towards information provision in libraries. The security of library's collection begin from the acquisition, processing, storage and it available to the users.

Disasters or emergencies happen unexpectedly, causing tremor and panic to unsuspecting victims of sudden disruption and increased uncertainty and the likelihood of more challenges of creating resilience for victims. Disaster is the event whose timing is unexpected and whose consequences are seriously destructive (Moustafa, 2015). Disasters rarely occur in libraries making them reluctant to formulate disaster plans. This notwithstanding, no library across world that can withstand the effect of disaster whether man-made or natural. Olanrewaiu (2012) argues that, many institutions may not realize the risk of their materials through dangers posed by human activities and

natural factors. The disasters which happen in libraries affect the institution as a whole (Petros, 2011, p.3). This is to say that libraries are not a standalone but an integral part of the organization that draws its support from the parent organization.

### **1.1.1 Context of the Study**

The Kenya Agricultural and livestock Research Organization (KALRO) was established under the Kenya Agriculture and Livestock Research Organization Act 2003. This brought together the following institutions namely: Kenya Agricultural Research Institute (KARI), Tea Research foundation of Kenya (TRFK), Kenya Sugar Research Foundation (KESREF) and Coffee Research Foundation (CRF) to Kenya Agricultural and livestock Research Organization. The act was a culmination of the Kenya agriculture research reform as stipulated in the National Agricultural Research System (NARS) policy whose objective was to create an enabling environment for a vibrant agricultural research system that contributes efficiently to national development.

The objectives of KALRO are to expedite equitable access to research information, resources and technology and promote the application of research findings and technology in the field of agriculture and also promote, streamline, co-ordinate and regulate research in crops, livestock, genetic resources and biotechnology in Kenya. KALRO operates as an interactive and interdependent network of semi-autonomous institutions committed to a common goal, vision and mission. KALRO has an establishment of approximately 2700 staff deployed within the research institutes and centers country wide.

The vision of the organization is to be a globally competitive Agricultural and livestock Organization while the mission is to generate and disseminate agricultural and livestock knowledge, innovative technologies and services that respond to clientele demands, for sustainable livelihoods. KALRO's mandate is to establish suitable legal and institutional framework for coordination of agricultural research in Kenya while the collection in agricultural research libraries aims at supporting the creation of an efficient production and marketing system informed by contemporary knowledge, technologies and best practices in agriculture.

## **1.2 Statement of the Problem**

Agricultural research organizations are created by governments with the aim of generating and validating knowledge necessary to solve constraints faced by farmers. Loss of scientific documents with this knowledge due to disasters would result in repeating the whole research process. Disasters have been described as inappropriately managed risk and research organizations like Kenya Agricultural and Livestock Research Organization ought to put in place disaster management plans in order to reduce or mitigate loss in the event of a disaster affecting its research libraries. Disaster management has become a common problem to handle in most organizations of the world in the current business world (Lerbinger, 2012). The practice involves preparing, supporting, and rebuilding society when natural or man-made disasters occur. This area has received enormous support from governments and non-governmental agencies, however, disasters continue to cause destruction to library collections, property and loss of life and little has been done to secure the collection. Studies carried out reveal that the most common risk to collections from all types of disaster is water damage (Moustafa, 2015). Disasters take many forms, ranging from natural disasters such as



tornadoes, earthquakes, floods to man-made disasters such as terrorist attacks and workplace violence which put library collections at risk.

Research institutions generate huge number of technologies and knowledge which rely heavily on printed word. KALRO's libraries house print and e-documents and similarly support the activities of the organization by providing a reference point for literature on Kenya and international agriculture by collecting and describing both current and back collection in view of the objectives of the organization, both long and short term, and the priorities attached to different activities. Researchers use collections held in the library to identify gaps and develop research proposals to fill in and allow policy makers determine priority areas. Loss of such literature held due to whatever reason, leads to either repeated or duplicated research, wrong priorities or disruption of critical activities in agriculture. A proper disaster management recovery and management plan is crucial for majority of the documents are unique and not found in many other outlets like bookshops, publishing company warehouses or as reprints. Therefore, disruption of research activities and gains therefrom, is irreversible with unique material lost forever. Notwithstanding the numerous attempts to curb disasters, they still remain the greatest threat to collections (Kahn, 2012) and if this issue is not addressed with the seriousness it deserves, invaluable information stored in different storage media could be lost.

### **1.3 Aim of the Study**

The aim of the study was to assess disaster management practices in research libraries in Kenya with reference to the Kenya Agricultural and Livestock Research Organization library.

### **1.3.1 Objectives of the Study**

The objectives of the study were to:

- i. Establish the appropriateness of the tools used to manage and handle disaster incidents in research libraries.
- ii. Find out disaster management practices in research libraries.
- iii. Examine mitigation methods used to manage disaster risks in research libraries.
- iv. Determine the role of management in support of disaster preparedness in research libraries.
- v. Find out challenges experienced by research libraries in disaster management.

### **1.4 Research Questions**

- i. How appropriate are the tools available to manage disaster?
- ii. What disaster management plans are available in research libraries?
- iii. Which mitigation methods are used to reduce disaster risks in research libraries?
- iv. What is the role of management in support of disaster preparedness in research libraries?
- v. What are challenges experienced by research libraries in disaster management?

### **1.5 Significance of the Study**

The study serves as a blue print for research libraries and librarians to undertake and enhance a successful implementation of a disaster management programme in a library environment and identify other disaster response network teams in case a disaster occurs. It gives insights on issues pertaining to disaster management and enlighten the administrative managers, researchers and the library staff on matters relating to disaster planning for libraries and its impact on library collection.

The study is of great significance to the organization's economy which is majorly affected when disasters strike. In essence, part of the measures expected to be encountered as part of disaster management strategy in the study is security enhancement. The results of this study are expected to be an eye-opener to government and other security agencies in ways likely to curb disasters effectively.

Finally, the study will be a tool of general disaster management awareness to both the public and individual managers of organizations and institutions on how to effectively manage disasters. Researchers intending to conduct further research on the same topic

will have a place of reference to their study and also valuable data for their research. Also, the results of this study will be part of vital collection to libraries and the other information centers where retrieval of such information can be obtained whenever needed by information users.

### **1.6 Assumptions of the Study**

The following are the assumptions of this study.

- 1 Disaster or emergency may occur with little or no warning and may cause a large number of casualties with widespread damage and disruption.
- 2 All personnel handling disaster management tools have the necessary skills to use the equipment.
- 3 The budget allocation in research libraries is adequate to conduct training programmes.

### **1.7 Scope of the Study**

This study was limited to Kenya Agricultural and Livestock Research Organization library which was a case study of the research with an aim of assessing the approaches applied in managing disasters in research libraries. KALRO is the largest agricultural based organization with a wide network of libraries distributed across the country.

### **1.8 Limitations of the Study**

This study was limited only to the case study of the research due to time and financial constraints.

## **1.9 Definition of Terms**

### **Disaster**

Disaster can be defined as any sudden occurrence that significantly affects, or threatens to affect, the physical condition of the collection or any part of the collection in case of a library.

### **Disaster Plan**

Disaster plan is a written, approved, implemented, and periodically tested program to identify, protect, reconstruct or salvage an organization's vital assets, and establishes procedures for the immediate resumption of business operations in the event of a disaster.

### **Emergency**

Emergency is a situation or occurrence of serious nature, developing suddenly and unexpectedly, and demanding immediate action. This is generally of short duration, like a power failure or minor flooding caused by broken pipes.

### **Hazard**

Natural or human-caused phenomenon that may occur in or near the institution may threaten human life and well-being or cause physical damage and economic loss.

### **Risk**

The possible injury or loss of life, or damage to property from the identified hazard or hazards.

### **Risk Management**

The identification, assessment, prioritization and mitigation of risks.

### **Stabilization**

This is the emergency treatment of an item or situation required to halt damage and prevent conditions from deteriorating further.

## **1.10 Chapter Summary**

The issues addressed pertain to disaster management in research libraries in Kenya and insights of activities elsewhere in the world. Disasters small or large scale can happen without warning anywhere with adverse consequences whether man-made or natural. These largely affect approaches/practices applied in disaster management around the world. Disasters like earthquake, floods and fires may cause massive destruction of great magnitude that could affect libraries and other cultural centers and create a key point in modern times in focusing attention to disaster management besides other institutional issues. The end goal seek to reduce vulnerability and if that is widely accepted and acted upon, then disasters and emergencies will have been prevented to a greater extent.

## **CHAPTER TWO LITERATURE REVIEW**

### **2.0 Introduction**

This chapter is a review of previous literature on disaster management and highlights the themes and sub-themes related to the study. A literature review provides information found in the past literature related to the study being undertaken, written by authors trying to come up with solutions. Disaster management includes much more than a written plan. It encompasses broader issues such as finance, risk assessment and training.

### **2.1 Disaster Management in Organizations**

Research indicates that disaster management is a common incident to organizations across the board (Comfort, et. al 2010). The authors confirm that, disaster management is global issue such that all organizations have to develop an effective disaster management mechanisms which suits the organization operations for staff and clients. The authors continue to say that, to keep pace with the growing number of disaster incidents, organizations must need a special team to strategize on issues pertaining safety of the building and staff as well.

It is the disaster management department in organizations that assess the impending possibilities of disasters and make proposals to the management on the way forward towards curbing disasters (Haddow, et. al 2013).The three authors added that organizations that do not have such departments are known to have had serious abrupt catastrophes which, no one had a clue of such occurrence. However, in organizations where such departments are well established, rare cases of such occurrences are reported. Yates and Paquette (2011) also noted that the disaster management department in organizations has a responsibility of communicating by whatever means to the management, members of staff within the organization and other organizations

offering services related to the organization. The means of communication also matters depending of the kind of communication being conveyed. In situations where an urgent response by external agencies and related organizations, then the department have severally used the media to make such communications since such reaches a huge number of stake holders at the same time. Good example of such is the Haiti earthquake which took place in 2010, where the US government was able to contact external agencies for help and the response was great within a very short time.

Disaster management departments in organizations are usually responsible for making the disaster management policies and discussing them with the management to be approved for implementation (Comfort, et. al 2010). Disaster management policies are implemented by organizations in order to reduce risks and vulnerability. The authors further note that, disaster management policies could differ depending on the organization to be served though the basic information is similar which makes them anniversary acceptable. Sylves, (2014) also notes that, a disaster management policy enables the organization to be on standby in addressing issues of preparedness towards disasters. The author notes that the policy proves an organizations commitment in readiness to handle disasters of whenever they threatens regardless of the nature. This implies that a disaster policy should apply to the entire organization.

### **2.1.1 Disaster Management in Research Libraries**

Research libraries are at risk of any disaster threatening to happen and need strict measures to mitigate such incidents (Jaguszewski & Williams, 2013). The authors added that libraries store information relating to research findings which need to be safe guarded for future development. In order for research libraries to maintain relevant therefore, it is suggested that they should keep abreast with new technologies used in managing disaster in the current world. Most libraries however have not yet taken the subject with seriousness which has continually made the research institutions the most prevalent to disasters (Dovers, & Handmer, 2012). The authors note also that very few libraries, if any, have a disaster management department specifically assigned the duty of disaster management. Although they relate this to the fact that most libraries are internally funded by the institution and may be limited in their finances to maintain such a department, this still does not keep the libraries away from the risk of catastrophes and makes it even worse.

Libraries, mostly, though not limited to developed countries have begun to break this monotony of ignorance on this subject and are now coming up with serious departmental organized way of managing disasters so that they have a team employed for disaster management (Olshansky, Hopkins & Johnson, 2012). This has encouraged several other libraries in other developing countries to begin to think on having their facilities within their libraries though not as a department but as part of the disaster management within the mega institution. Although this covers possible disasters, the three authors note that the treasure in the library is worth having a department of its own to manage possible disasters.



## 2.2 Nature of Disasters

Disaster is defined as any sudden event or occurrence that interferes with or paralyses the normal operations of an organization, company, institution or an individual (Tierney, 2012). Campbell and Jones (2011) noted that disasters are categorized into two broad classes. These include natural disasters and man-made disasters. Disaster is said to be any event that destabilizes the normal operations of an organization and individuals involved (Tierney, 2012). Campbell & Jones (2011) categorizes disasters according to their causes and states that regardless of the cause, disasters bring untold suffering to victims and institutions. There is absolute need for a program to prevent such happenings.

Natural disasters are those that result from disruptions of natural creations of nature (Eshghi & Larson, 2008). According to Eshghi and Larson (2008), human activities may not cause natural disasters which are supernatural in nature. These are acts of nature such as earthquakes, floods, hurricanes and volcanic eruptions. Others include biological disasters under which communicable disease and epidemics appear (Campbell, & Jones, 2011). Human caused disasters result from destructive activities that create havoc and terror in organizations (Cavallo, et al, 2013). Examples of such include civil war, terrorist attacks and air pollution caused by chemical spills through human negligence.

Terrorism has become a menace that has hit the world over causing countries great loss. (Neumayer & Barthel, 2011). Tsunami's and earthquakes are known to be the natural disasters that occur mostly frequently in prone areas such as Japan (Weisenfeld, 2012), Others include the 2013 Westgate and Garissa university terrorist attack in Kenya

which brought down building and loss of lives bringing business to a standstill. (Howden, 2013).

### 2.3 Effects of disasters in libraries

Several threats can be attributed to the interruptions of normal operations of organizations, most of which can be managed with little effort. These are disaster occurrences that are experienced which interrupt operations and services that regardless of the place or nature of the disaster, these threats are potential occurrences. (Halsted, 2014). Table 2.1 pg. 15 below outlines some of the threats and interruptions of services.

**Table 2.1: Threats that Cause Interruption of Services (Halsted, 2014).**

<b>Environmental</b>	<b>Human</b>	<b>Loss of utilities or services</b>	<b>Equipment failure</b>	<b>Other</b>
Blizzard	Active shooter	Electricity	Cybercrimes	Health
Earthquake	Labor dispute	Fuel	Internal electric	Epidemic
Floods	Terrorism	Internet services	Infrastructure	Public transport
Hurricane	Theft	Natural gas	IT network	
Landslide	War	Telephone services	Loss of records	
Landslide	Workplace violence	Water	Loss of data	
Mold				
Pest Infestation				
Tornado				
Tsunami				
Wildfire				

Among other Information centers, libraries and cultural centers have experienced great losses through damage caused by disaster incidents (Kahn, 2012). Such include loss of vital documents and records which have not been easy to obtain. The author also noted that libraries suffer greater loss than most organizations since they deal with conventional and non-conventional documents and rare materials such as manuscripts. Data collected during research work, complete research reports, related works to

various researches and information saved in computers account for these works. In addition to loss of library's collections, the staff in the library suffer lack of jobs and loss of lives particularly when the disaster incident takes place during working hours (Ahenkorah-Marfo & Borteye, 2010). The two authors also added that, the time during which disaster occurs, it becomes difficult for the society to obtain the needed information for their day to day use. This creates a double tragedy since heritage institutions whose staff are likely to have been caught in the disaster and have been affected by it, may have to endure alone for some time. Regardless of the type of disaster, the effects are numerous though there are those that are common during such incidences. Effects caused by particular disasters include fire which could start from either external or internal sources. External include risks from bush fire and lightning strikes. Internal sources are ever present with the wide spread reliance on the use of electrical appliances such as generators, heaters, desk lamps, computers power boards and equipment within the library building.

During floods water may leak through the building causing unexpected disasters, Depending on the age of material, papers absorb water at different rates, considering the condition and composition of the material. According to (Michael & Edward, 2010) say that water hazards can originate either from external or internal sources. External sources could emanate from storms that could cause structural damage to the building that could provide an entry point. The author further add that internal sources of water includes leakage from the roof, accidental discharge from plumbing, burst water pipes and overflowing sinks. Preventive measures against water can be undertaken to prevent floods. Eden and Mathews (2013) indicate that building flood embankments, improving drainage systems could reduce disasters likely to be caused by water. Other methods could include room repairing to prevent possible water damage to the collection, daily

water checks of kitchen taps and toilets. Leather and parchment warp or wrinkle or shrink. Books damaged by water may never be recovered nor repaired. After floods, mold rapidly begins to form in damp conditions. Audio-visual materials, photographs, microforms, magnetic media and other disks, are also vulnerable to water, and the damage depends on the type of the material, the length of exposure to water its temperature, Earthquakes disasters, destroy buildings and shelves collapse and the contents may be thrown on to the floor, IFLA (2011). Few books can withstand such impact that necessitate shelves to be mounted not very high from the ground to reduce its center of gravity and hence reduce the effects. Invasion by biological agents is another disaster that can bring the library into a stand still. Materials may be eaten, soiled, stained and shredded creating great loss to the library and the institution at large.

#### **2.4 Risk Assessment**

Risk assessment is a systematic way of evaluating the possible risks which may occur in a projected undertaking. The purpose of the risk analysis is to identify those occurrences that pose the greatest threat to the organization and its collections (UNESCO, 2014). Risks are determined and categorized according to the frequency and severity of their occurrence (Petros, 2011). The risk assessment process include mitigation or ways to avoid certain risks and ways to lessen the impact of a disaster (Halsted, Clifton & Wilson, 2014). Lyall (2009) also highlighted the steps in risk assessment and mentioned the basics followed in risk assessment that include identifying possible hazards: conducting a vulnerability analysis, analyzing current strengths and weaknesses, assessing inventory assets and estimating possible losses, conducting an insurance assessment, considering mitigation options and finally conducting reviews and updates.

Risk assessment team in disaster management is a group of experts who are consulted to assess the possibility of an occurrence of a disaster and the best way possible to handle the situation in case it occurs (Nieto-Morote & Ruz-Vila, 2011). According to Fox (2005), the team usually acts as consultants of an organization and advises the management on the preparation strategies, response strategies after the event has occurred as well as the recovery strategy. This therefore implies, that every organization that is effective in disaster management must have an effective assessment planning team if they will attain to the international standards of disaster management. Authors point out that vulnerability assessment is as crucial as the response to the disaster occurrence (Fuchs, Birkmann & Glade, 2012). The vulnerability assessment requires the team conducting the analysis to possess the ability to both identify and understand the susceptibility of elements at risk and to be general, of the society at large to these hazards (Fuchs, Birkmann & Glade, 2012).

The current strengths and weaknesses of an organization in risk management refer to the present ability or disability of an organization to handle a disaster situation before or after its occurrence (Sadgrove, 2015). Sadgrove adds that, the measure of preparedness by an organization to handle a disaster situation is what determines its strengths or weakness. In regard to this, Fox (2005) noted that regardless of the business venture or area of specialty an organization has ventured in, disaster preparedness is a factor that all organizations cannot be ignorant about and hence calls for a purposive consciousness of every organization's strength and weakness.

The knowledge of the strengths and weaknesses of an organization makes the organization alert of areas they can handle or source for assistance from other agencies in case a disaster occurs (Bisong & Rahman, 2011). Risk assessment has two major components that form the basis of the assessment which includes the magnitude of the potential loss and the possibility of the loss occurrence (Pellino, & Rainaldi, 2011). Inventory assets include the assets that have been bought or is stocked by an organization but has not yet been sold or disposed. Pellino and Rainaldi, (2011) also noted that the knowledge of the present assets makes it easy for an organization to estimate the possible losses that may be incurred in case a disaster occurred and is therefore a major disaster preparedness strategy.

Insurance assessment has to do with the extent to which the organization is insured against disasters and how much compensation the organization is sure to receive in case of a loss due to a disaster (Hsu, Huang, Chang, Chen, Hung, & Chiang, 2011). A number of writers also add on the same issue that insurance assessment is an eye opener to an organization since it presents the possibility or impossibility of its operational progress in case a disaster occurred and either partial or full loss is incurred (Kostagiolas, Araka, Theodorou, & Bocos, 2011). Mitigation options are strategies laid down by an organization in an effort to eliminate the impacts of hazards through proactive measures which it takes before an emergency has taken place (Nateghi-A, 2013).

Nateghi-A (2013) argues that, disaster mitigation options are key to the assurance of effective disaster management. Organizations that do not evaluate their mitigation options severally are caught unaware and suffer more loss than they would have if they

had considered this fact (Pellino, & Rainaldi, 2011). Mitigations options, includes but not limited to installation of disaster management equipment, training on the use and adherence to required disaster management policies both nationally and internationally among others (Fox, 2005).

#### **2.4.1 Prevention Stage**

Prevention involves identification of potential hazards and taking steps to minimize the chances of such hazards happening. Many prevention measures have become standardized practice in organizations and are set out in the routine building maintenance arrangement. Rubin, (2012). The prevention stage which is also known as mitigation stage is the place to begin in disaster management process since all other stages cannot be implemented before these vital stage According to the author, this stage includes preparation to ensure that disasters do not occur and all possible causes of disasters are avoided. Libraries are not an exception and have had to consider this stage right from construction point, to installation of the right equipment for disaster management. Library construction site should not be built in a flood potential site and should have a strong foundation to accommodate earthquakes (Kostagiolas, *et al* 2011). In addition water tanks should not be located close to books shelves and open fires should not be used near the book shelves. Prevention also involve ongoing awareness among staff about any signs of deviation in standards of prevention measures in place, and consciousness about any new methods that could be taken to reduce further risks.

### **2.4.2 Preparedness Stage**

Preparedness is the plan of action drawn from key persons with relevant knowledge pertaining to disaster preparedness. It involves identification of disaster response team, training of emergency response action team, identification of recovery work areas and ensuring supply of equipment and materials is adequate and timely.

Galindo and Batta, (2013) note that the second stage of disaster is the preparedness, where all equipment that concerns disaster occurrence event are installed and the library staff are trained on their use. The authors continue to point out that this stage is usually very important since it assumes the occurrence of the disaster and deals with the consequences in advance. Such preparedness plans include the installation of smoke sensors, fire exits, fire extinguishers, posting relevant instructions on what to do in case of a disaster, setting meeting point around the compound of the building, and having rescue teams ready with ambulances and other rescue equipment in case a disaster occurred (Rubin, 2012). This to say that supply of materials for use during emergency should be kept within reach at all times with external commercial service providers and other assisting agencies alerted.

### **2.4.3 Response Stage**

Reaction is the initial response to an emergency situation. If fire is involved, reaction consists of evacuating the building in response to the fire alarm, if fire is not involved, reaction will mean identifying the emergency, assessing the situation and reporting it to the relevant people. This leads to actions being taken to protect staff if safe to do so, actions to stabilize the situation to minimize damage to the collection and planning of the recovery process.



In this stage, actions to deal with the disaster event take place (Coombs & Holladay, 2011). The activities in this stage according to Coombs and Holladay (2011), are usually determined by the time the disaster has happened, the extent of the damage, the cause of the disaster, and the type of a disaster. Neumayer & Barthel, (2011) also noted that some disasters are too risky to have an opportunity to rescue anyone while others are manageable and rescue teams are able to assist the victims. Disasters like tornadoes and earthquakes are difficult to estimate the extent and how soon or possible they can be managed (Neumayer & Barthel, 2011). Different countries have different response systems depending on their economic abilities to fund disaster management programs (Nagatani, *et al.* 2013).

#### **2.4.4 Recovery Stage**

Disaster recovery involves the initial clean-up of the area affected, the salvaging of materials which includes sorting into categories according to treatment needs and stabilizing of those materials that need short term treatment. Regardless of the type of emergency safety of the people comes first. Dealing with the damaged collection should proceed after injuries have been attended to and the building has been declared safe.

This stage which is the most tedious and longest in disaster management and at this point a floor plan is necessary (Brown, Milke, & Seville, 2011). The author continues to say that depending on the extent of the disaster, some recovery processes can take a short time while others may take eternity to have it recovered. Kahn, (2012) also notes on the same that institutions like libraries may have to buy new library stock either partly or in full depending on the extent of damage. Sometimes, he added that there may have to be a new library building to be planned for construction where the whole library is blown up or destroyed. IFLA disaster recovery report, (2011) points out that when Northeastern Japan was hit by the earthquake and tsunami, many library buildings

were destroyed while in others shelves fell down and materials were scattered on the floor. This implies that recovery should commence as soon as possible after the emergency situation has been stabilized but permission should be sought to enter the premises.

#### **2.4.5 Post Emergency Re-evaluation**

Post emergency report is important to assess the success or failure of the operation. Brown, Milke and Seville (2011) stated that detailed post-emergency assessment should be carried out to determine the extent of loss and damage. The report should be produced to establish the following: Cause of the disaster; number of injuries, number of items damaged, replaced, discarded or repaired; on-going treatment costs; staff time extended during the operation; cost of rehabilitating the affected areas; cost of equipment and supplies and notable success or failure at each stage of the recovery process. The affected area should be monitored at least one year after the event has occurred. The three authors noted that recommendations made for any improvement should be tabled to the management and propose changes where necessary. This can also be used by other organizations as a reference point from the lessons learnt.

#### **2.5 Disaster and Risk Management Strategies in Libraries**

Risk management is developing a plan or reviewing the storage equipment for which contain elements of risk associated with library collection. This entails assessing the current situation to determine what risks threaten the collection so that new strategies could be devised to address these risk. Risk management is a formal method of for collecting information about incidences in the case of collections and identifying the current or potential risks, prioritizing these risks according to their predicted occurrence and severity and then using the information to decide what measures will best contribute to the longevity of the collection (Picazo-Vela, Gutierrez-Martinez & Luna-Reyes,

2012). The three authors points out that review and update of risk management strategies of an organization is what sustains the organization's confidence on their ability to manage disasters any time it occurs or occurred Njoroge, (2014) noted that, all strategies laid down by an organization to manage disasters are only practical at the time it has been evaluated and updated. Review and update allows an organization to remain up-to-date with the current international standards with the right equipment and expertise to handle any occurrence of a disaster. Previous research indicate that libraries have for a long time been known to face the greatest loss when disasters happen since they store very vital information that once destroyed, may or may never be obtained again (Kostagiolas, Araka, Theodorou, & Bokos, 2011).

### **2.5.1 Disaster Management Tools and Resources**

Disaster management is a global phenomenon that has remained an area of research since time in memorial. Lindell (2013) states that, disaster management begins with cost-effective early warning systems that better predict and react to threats. This includes those that monitor the natural hazards like temperatures, chemistry, radiation, ground shaking, and electromagnetic radiation. Lindell (2013) articulates that, disaster management is a broad subject that requires an individual organization, company or institution to plan its management strategy to suit their working environment and plan their resources to cover the required expenses. This implies that an organization that deals with electronic equipment may have different disaster management equipment from one that deals with library collection.

Regardless of the kind of equipment being sourced by an organization, Galindo & Batta, (2013) says that the resources are the key to the success of their acquisition and implementation. Most disaster management equipment are the same although they deal

with the same kinds of disasters (Caunhye, Nie, & Pokharel, 2012). Example, according to (Caunhye, Nie, & Pokharel, 2012) include the fire extinguishing equipment, smoke sensors, fire exits, and CCTV cameras which are helpful in managing disasters in most organizations and institutions. Many organizations, according to Eshghi & Larson, (2008) are using optimization models to tackle disasters and slowly this has become a very common disaster management method.

Caunhye, Nie, Pokharel (2012) also added that disaster management can be categorized in two levels which are: before the disaster has occurred, and after it has occurred. Activities that take place before the disaster has occurred include short notice evacuation, stock positioning and facility location while those after the disaster has occurred are casualty transportation and relief distribution (Veenema, 2012). According to Veenema, (2012), during these periods of disaster occurrences so much happen so that if the particular institution or organization had not been trained on how to handle the situation or behave, a lot of damage is likely to happen. Disaster management therefore demands that the staff and the management of an organization should be prepared for disasters. This includes disaster management training and installation of vital disaster management equipment (Lindell, 2013).

## **2.6 Training in Disaster Management**

Training is essential for effective disaster management; it brings to life the written disaster control plan, (Mathews, Smith & Knowles, 2009 p.82). The three authors continue to say that training can play a key role in team building, effective teamwork and communication which is important in dealing with incidents. According to (Palttala, Boano, Lund, & Vos, 2012) disaster management circumstances require a high level trained personnel to effectively handle the phenomena. Lindell (2013) also argued that, it is completely impossible to manage disasters without first training the personnel in charge to ensure they have the necessary skills to both handle the situation and train others on how to handle disasters.

Disaster management training does not ever come to an end as time continues, new disasters require new methods of handling (Palttala, Boano, Lund & Vos, 2012). Lyall (2009) noted that, all institutions must have a program of training their personnel in charge of disaster management who continually train other staff on disaster management systems in place. Service institutions like libraries and public services sectors, with high level of regular clients are the most affected when disasters take place (Drabek, 2012). According to Drabek (2012), public institutions are the most vulnerable since they have unlimited number of clients and therefore the organizations' investment both in time and resources should highly go to the management of disasters to ensure that the necessary skills are given to the right people as well as the right equipment. While it is possible to control every outcome, education and planning is essential in having the needed skills to cope (Palttala, Boano, Lund & Vos, 2012).

## **2.7 Reduction of Disaster Risks and Damage**

Frequent orientation of the new staff and clients or users on the available disaster management systems is a key in institutions (Eden, & Matthews, 2013). The authors argue that when users are trained on the available disaster management systems and equipment, they become very useful and even to some extent, more skilled than the staff and become very useful in cases of disaster occurrences. There are various ways which libraries in many parts of the world have been able to reduce risks and damages (Kahn, 2012).

These include among others, installation of the relevant equipment, training of staff and users on the use of the available disaster management systems, installation of instruction signs and symbols in case a disaster strikes and taking into consideration potential disasters during the construction of the library. During the construction stage of a library, some measures to manage disasters which can be taken care of are: the fire exits doors, the installation of smoke sensors, communication speakers in every floor, fire resistant doors and windows, raised shelves to manage floods, the ramp, the escalators, the lifts, the glass walls and strong foundation of the building (Eden, & Matthews, 2013). The authors add that building flood embankments, improving drainage systems, or building hazard-resistant building may greatly reduce damage that a disaster can cause. This is to say that pre-assessment is necessary before putting up a library building.

Kahn (2012) also points out that, many libraries have failed in their disaster management activities because they rarely experience disasters which make them

ignorant and assume issues of disasters occurring. Owing to the fact that disasters rarely happen in libraries, this makes the issues of disaster management to be taken lightly. However, Drabek, (2012) says, in regions prone to disasters like floods, earthquakes, tornadoes, tsunamis, and frequent fires due to lightning, the agenda of disaster management is considered a great factor when setting up and running a library.

Frequent seminars and conferences sponsored by various library organizations and consortiums are another very common way of sensitizing the librarians on various available disaster management systems and methods (Kostagiolas, *et al.* 2011). In such forums and meetings, those who are not aware are able to learn of other librarians and the methods used to manage disasters. Academic libraries have been in the forefront of organizing these forums and sponsoring them so that those who are not able to meet the cost are offered an opportunity to participate and acquire knowledge and skills (Kostagiolas, *et al.* 2011).

### **2.7.1 External Factors of the Building**

The external factors of the building are associated with the location of the building, the risk of water affecting the building, condition of the roof, gutters and flashings. Kahn (2012) explains that adequate drainage and sewage systems, the position of trees near the building, conditions of skylights, windows and doors, building materials and the foundation should be of utmost consideration. The author also asserts that the debris should be cleaned up, disposed properly and book drops utilized as a way to collect donations from well-wishers in instances where the library has to build its collection once again.

### **2.7.2 Internal Hazards**

Internal those hazards that are inside or are part of the building. Eden and Matthews (2013) proposes that assessment of the entire building should be done. The windows, the pipes and plumbing system, examine the heating and ventilating system and the electrical wiring. The two authors continue to say that protection measures should be undertaken to secure the building against fire, floods and also verification of the existence of construction and floor plans for the building and its services.

### **2.7.3 Security Measures**

This is the most sensitive area in the protection of library collection because most of the crimes are break-ins and vandalism (Michael & Edward, 2010). Security personnel to guard the entrance to the library should be maintained and only authorized persons should enter the library. According to (Caunhye, Nie & Pokharel, 2012) CCTV surveillance cameras should be mounted within and outside the library building to monitor unauthorized entry which will ensure security measures not only apply to users and visitors but also to staff.

## **2.8 Challenges Encountered in Disaster Management**

Disaster management has become a worldwide challenge that has made most organizations and institutions shift from the attitude of it being a one person issue into being a national and international issue that can only be handled in collaboration with other organizations globally (Sandwell, 2011). Most of these challenges as Sandwell (2011) points out are caused by natural factors like not being able to predict an earthquake or a flood and the intensity of the forthcoming calamity. This is different from situations of disasters like fire where smoke sensors, fire extinguishers, fire exits



among others can be installed since it's easy to predict the fires and how they may probably happen (Cavallo, Galiani, Noy, & Pantano, 2013).

Disaster management is another possible challenge for organizations and institutions managing large number of users and clients, libraries being one of them (Wilkinson, Brunsdon, Seville, & Potangaroa, 2011). The environment in which the libraries operate makes it prone to disaster (Latonero, & Shklovski, (2011). In instances where a library has never been hit by an earthquake, or experiencing a flooding or tornadoes, the staff and the management automatically tend to be ignorant about such disasters and will mostly do nothing about it. Latonero and Shklovski (2011) also added that staff resists training particularly if it concerns issues that do not seem to happen any time soon which waters down the efforts of the management to enhance the disaster management programs and systems within the institution. Severally, such staff view such programs and training as a waste of time and will not support them. This a great challenge to the whole process of disaster management.

Christopher and Tatham, (2014) note that lack of adequate funds to purchase the disaster management equipment and also for installing them is another possible challenge to small organizations and institutions. The authors add that another possible great challenge facing disaster management is lack of consciousness that a disaster could be impending. This is usually due to lack of knowledge and information on the importance of disaster management and the implications of not having the management systems in place (Rattan, 2013). According to Rattan, (2013), lack of planning at all levels, lack of mitigation, lack of coordination and networking, delayed response and

lack of trained manpower, makes it imperative for a library to have a proper disaster action plan.

## **2.9 Intellectual and Related Studies**

Globally, organizations and institutions are currently at the verge of establishing disaster management strategies, many of whom have not achieved the international standards in regard to policies (May, & Williams, 2012). The two authors also added that developed countries such as USA has approximately 60% of its organizations who are not disaster management international policy compliant. This is a poor representation by the developed countries which makes the compliancy issue even worse to the developing world like African nations. In fact some of the organizations and institutions in developing countries do not even have information on how to manage disasters (Drabek, 2012). The author also adds that this makes them fully reliant on international aids in case of such incidents which are not usually prompt in response hence increasing the damage during the disaster incidents.

Past research indicates that there is very inadequate information available on disaster management and what is available is rarely made publicly accessible (Sylves, 2014). The author noted that research reports on disaster management are mostly available in academic libraries and rarely accessible to agencies who need to make decisions quickly and assess situations effectively and efficiently. Pelling & Wisner (2012) noted that, African continent has the least number of organizations, governments and institutions who are concerned with disaster management issue. The two authors points out that, most of disaster incidents are handled at their occurrence which makes the impact worse than it would have been if some management plan had been laid down. Underwood, (2010) also noted that the African organizations and institutions have less

personnel or experts to manage disasters. The author argued that disaster management is taken lightly and as a result it is difficult for organizations to set aside adequate funds for such investments.

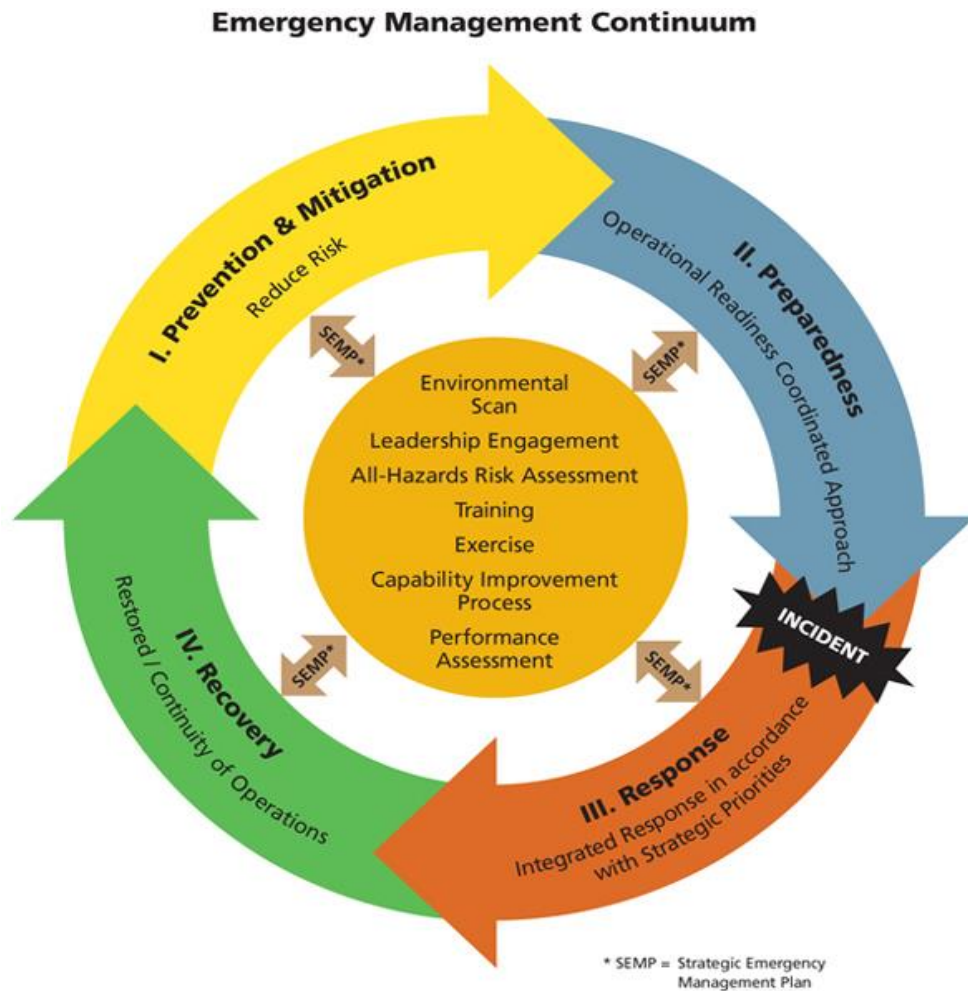
In recent past, Kenya has found itself in a precarious state owing to incidents of disasters. The US Embassy bomb blast and the Westgate attack among others could be cited as worst disasters experienced in the country that caused adverse destruction of property and loss of lives (Mutugi & Maingi, 2011). The author added that governments lack organized departments needed for management of complex or simple emergencies that could turn disastrous. This brings into perspective the internationalization of emergency management practice to deal with inadequate local institutional support considering problems created by extremely large and complex unexpected events. This is to say little has been done on the ground in relation to efforts to build local capacity which is needed most for routine emergencies. However, there could be limits of internationalization assistance after repeated calls though, these limits could be used to realize the much needed large-scale local capacity development address inequities and insecurity that exists in many parts of the world owing to unpreparedness (De Perez, Monasso, van Aalst, & Suarez, 2014).

## **2.10 Integrated Disaster Management Model**

A model is a three dimensional representation of a thing which is usually on a smaller scale than the original (D'Acierno, Gallo, Montella, & Placido, 2013). Further, the authors argued that an integrated disaster management model seeks to organize related activities to ensure their effective implementation. The integrated disaster management model has four main components. The first one is the prevention which involves identifying threats and vulnerabilities to establish the best strategies to lay down for

future disaster management. The second one is preparedness which involves determining the implications and treatment options while the third one is the response which involves reducing the threats as possible and appropriately. The fourth and the last stage is the recovery stage where recovery actions are developed and made ready.

The elements are interdependent and have boundaries, and usually work towards supporting each other. The integrated library disaster management framework promotes adoption of natural system approach, roles and responsibilities that reflect those that happen under normal circumstances. This model provides a balance between flexibility and preparedness and acknowledges that disasters are events that involve a high degree of uncertainty. Therefore, this model is able to respond fluidly to specific demands (Van Bommel, 2011). This model is therefore the best for this study since disaster mitigation and preparedness are very important to reaction and recovery stage of a disaster. In addition to this, the measures and controls employed involve all the stake holders where institutional and library management is included to ensure effective running of the programme. There are policies and programs to guide disaster mitigation and preparedness so as to ensure that the measures and controls have been put in place. The following figure 2.1 pg. 34 is a representation of the integrated disaster management model showing how the four main components are related to each other.



**Figure 2.1: Integrated Disaster Management Model (Kusumasari, et al 2010)**

### 2.11 Conceptual Framework

A conceptual framework in a research work is an analytical tool that contains several variations and contexts, used to organize ideas in a research and make conceptual distinctions (Tingsanchali, 2012). It is used to describe objectives of the research and acts as a basis in which the research is formulated. Conceptual framework differentiates variables and how they are related to each other. The conceptual framework of this study shows how the independent, dependent, variables, intervening and the outcome variables are related to each other.

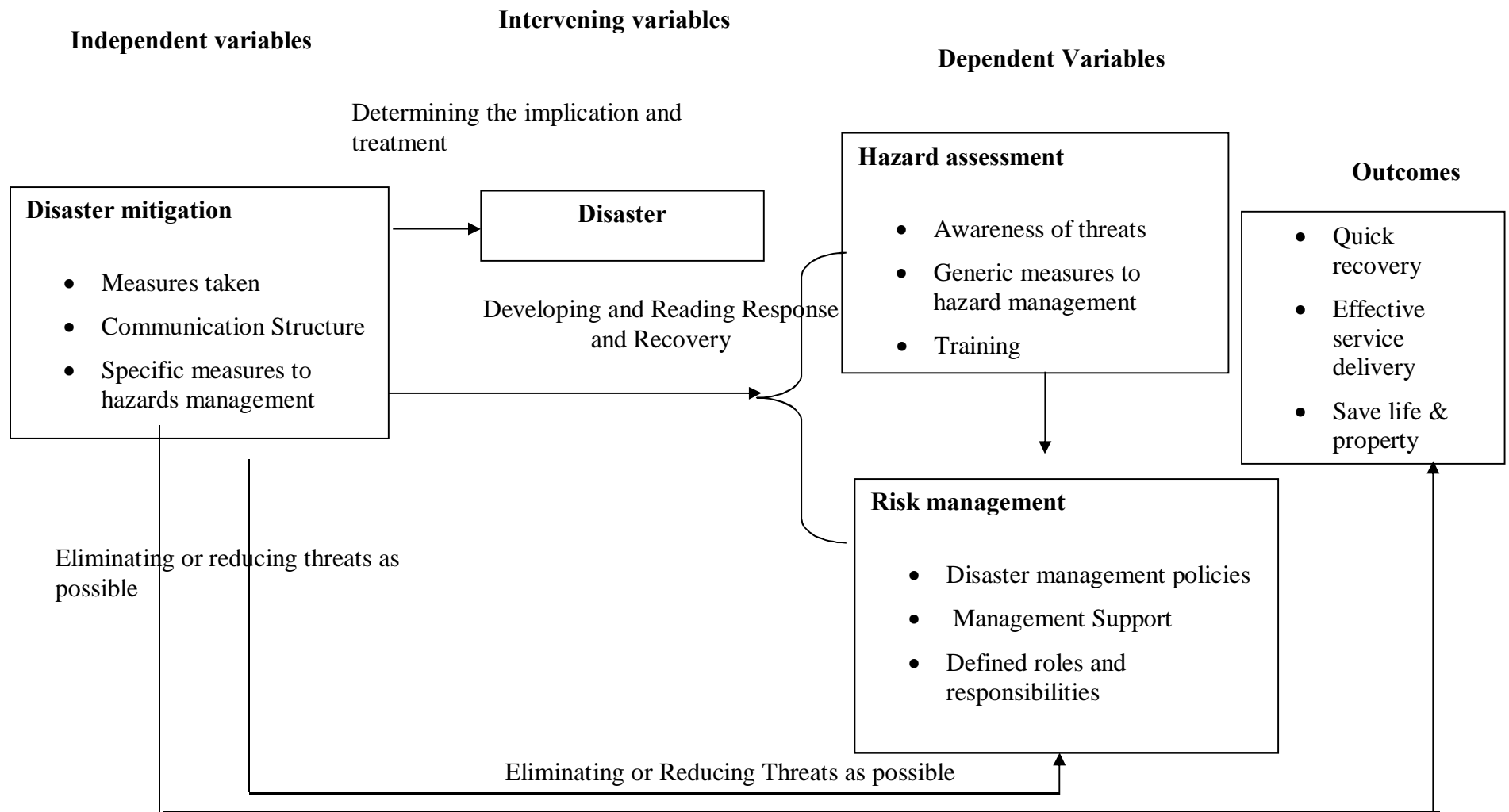
Disaster mitigation, which is the independent variable of this study, covers the measure taken to mitigate disasters. These may include planning to recruit experts, communication to relevant stakeholders to acquire vital information, advertisements of tenders to supply relevant equipment for disaster management among others. Specific measures taken in disaster management are usually designed towards mitigating a particular hazard with no other intended purpose. Proper measures by an institution obviously lead to success in disaster management (Parkash, 2012).

Training by the relevant experts to the personnel in charge of disaster management or to the staff in an institution is important to success in disaster mitigation since poor skills will lead to poor management. This is where the right skills are required by the both the trainers and the trainees. The three main elements in disaster mitigation which are the measures, training and the right skill is all geared towards reducing or eliminating disaster threats as much as possible. Disaster mitigation is independent from all other variables even though all other variables rely on it to succeed.

Intervening variables in this study includes hazard assessment and risk management. Hazard assessment includes Training, creating awareness of threats, use of generic measures that provide the infrastructure support needed for implementing certain strategies. It also includes awareness of disaster management policies, the extent of support by management including defined roles and responsibilities for staff involved. This information is vital to determine how the relevant personnel should handle a disaster occurrence. Intervention at whatever level cannot be possible without the right skills and information. When the roles of each stakeholder are well known, cases of

confusion will be eliminated during a disaster occurrence and hence the impact will be easily reduced or alleviated.

The outcome is the results of the whole process of proper disaster management that includes the quick recovery of the victims. Victims refer to organizations affected by the calamity, the individuals and the property destroyed. Effective service delivery is also another outcome that is very vital. Proper planning makes it easy to coordinate events during a disaster occurrence which culminates in successful handling of the situation hence saving lives and property which is the utmost objective of disaster management. Though disasters may not be preventable, their impact can be avoided by setting a proper plan by the responsible management team. Figure 2.2 pg. 37 below is a representation of the above in form of a diagram.



**Figure 2.2: Conceptual Framework – Disaster Preparedness as a Factor of Disaster Mitigation**



## **2.12 Chapter Summary**

This chapter presents detailed information on related subjects to the subject of this study. It covers risk assessment, which includes risk management and planning, vulnerability analysis, analysis of current strengths and weaknesses, inventory assets, insurance assessment, mitigation options, and review and update of risk management strategies. The chapter also covers types of disasters which include natural and man-made disasters, threats and interruptions of services, stages of disaster management in relation to libraries, disaster management facilities and resources, training in disaster management, reduction of disaster risks and damage, challenges encountered in disaster management and finally the integrated disaster management model as used in the study.

## **CHAPTER THREE RESEARCH METHODOLOGY**

### **3.0 Introduction**

This chapter gives a description of the research methodology of the study. The chapter focuses on the research design and methods that will be applied in order to obtain the correct data for the study. The specific area of focus will be on research design, target population, sampling design and size, data collection instruments, data collection methods and procedure, data analysis procedure, pre-test, validity, reliability and finally the ethical issues.

### **3.1 Research Design**

The data for this study was collected using descriptive research design from the respondents. Bryman, (2012: p. 50-72), defines a research design as the process of proper arrangement of all the required conditions and data analysis in an economical manner but relevant to the study. A descriptive study is carefully designed to ensure complete description of the situation, while at the same time making sure that there is minimum bias in the collection of data and also to reduce errors in interpreting the data collected. This design was convenient for this research study since not all information could be captured by the questionnaires.

### **3.2 Study Area**

The research was carried out at the Kenya Agricultural and Livestock Research Organization and some of its affiliated centers. KALRO is located along Waiyaki Way approximately seven Kilometers West of Nairobi City Center. Data and information was collected from total of nine centers, in Kiambu which has four, centres, Eastern three and Nairobi County which is the headquarters of the organization has two centres. These areas have the largest volume of collection which makes them best for the required information.

### **3.3 Target Population**

Population is the totality of all elements, members and subjects that possess a specific set of one or more common characters that define it (Zikmund, & Griffin, 2012). The target population of this study comprised of the KALROsø library staff and others from related departments that are divided into three categories namely: top Managers, middle-level managers, and junior library staff. The users of the information resources in the centre libraries were considered. KALRO library headquarter and other centers has 105 staffs, 15 of them being top managers, 25 middle managers and 65 junior staffs. The users, who comprise staff in other departments and the frequent visitors in the libraries make up-to approximately 710 active users. This made the whole target population to be 815. This population was deemed the best for this research study because they are the direct stakeholders in disaster management of the institution and hence the best source of any information regarding the same.

### **3.4 Sample and Sampling Techniques**

#### **3.4.1 Sample Size**

A sample is a group of respondents in a research study of a targeted population derived purposefully and selectively while ensuring that all individuals are comprehensively represented ( Thomas & Magilvy 2011). The study comprised a sample of 45 staff members among them being five top managers, twelve middle managers and twenty eight junior staff working in different branches of KALRO, plus ninety five randomly selected users making the total representative sample population for the study to be one hundred and forty. This was 17.2% of the total target population which is a qualified percentage for research sample population (Snyder & Dillow, 2012). In the research, careful considerations were made to ensure that the three categories of staff and the users are well represented. The following table shows the % sample size of the study compared to the total target population.

#### **3.4.2 Sampling Techniques**

Sampling Techniques refers to the procedures used to select a representative sample from the target population (Zikmund et al., 2012: p. 384). The study applied Simple random sampling technique which was appropriate for this study because the population is heterogeneous and only staff working in various branches of the KALRO and the users in the same branches were the focus of the study. The study sought to explain disaster management in research libraries and targets all the employees. Table 3.1 pg. 42 shows the sample size, which represents 17.2% of the target population. To enable generalization of the research findings and to increase the validity of the gathered data, the sample size selected could not have been less than 10% of the accessible population for descriptive research (Fowler, 2013).

**Table 3.1: Sample Frame**

<b>Category/Department</b>	<b>Target Population</b>	<b>Sample size</b>	<b>% Sample size</b>
Top Management	15	5	33.3%
Middle level Management Staff	25	12	48%
Junior Staff	65	28	43%
Library Users	710	95	13.4%
<b>Total</b>	<b>815</b>	<b>140</b>	<b>17.2%</b>

### **3.5 Data Collection Methods**

The study used questionnaires to collect primary data from respondents. Since some respondents were in far distance to be reached by the researcher, they were contacted via email and when they consented to provide the data required, a copy of the questionnaires was sent to them and the response collected using the same method. Secondary data was collected through documentary evidence that was relevant to the study conducted from the relevant publication and online information resources. Data which was not captured through the above methods was obtained through observation.

#### **3.5.1 Questionnaires**

Questionnaires are a set of questions written or printed with answers to choose by the respondent of a research survey (Sahlqvist, *et al.* 2011). Questionnaires are a communicating tool to the respondent on behalf of the researcher and are able to derive the best answers from respondents without the influence of the researcher who, is he/she was physically available, may not have received sincere answers as is possible with the questionnaires. In addition to this, respondents were able give their responses at their own

convenient time hence saving the researcher the challenge of lack of time by the respondents. When using questionnaires, the respondents were able to assist the researcher reach other respondents and even choose who would be appropriate for particular responses required by the researcher hence making the whole process of data collection comprehensive.

### **3.5.2 Interview Schedule**

An interview is a face-to-face organized meeting between a researcher and a respondent (Kadushin, 2012). An interview schedule is a systematically arranged questionnaire used as a guide by the researcher on the questions to ask the respondent during their face-to-face meeting. Interview schedules also save the time of both the interviewee and the researcher and facilitate quick interviews while at the same time avoiding irrelevancy during the interview.

### **3.5.3 Observation Guide**

Observation is simply a direct acquisition of knowledge by use of the eyes from a primary source of information (Hancock & Algozzine, 2015). Hancock and Algozzine (2015) discussed that observation schedule is an organized list of items intended to be observed by the researcher while noting down in summary form the report of what can be seen. Observation schedule is a better way of a researcher disciplining him/herself to remain within their area of research hence avoiding a tendency of deviating away from their main research agenda.

### **3.6 Data Collection Instruments**

Research instruments are tools used for measurement which are designed to be used in obtaining data on a topic of interest being undertaken by a researcher. The research adopted unstructured questionnaires, interview schedule, observation forms and rating scales which were deemed necessary for the study.

#### **3.6.1 Pilot Study**

It was necessary to conduct a pre-test before embarking on the main research. This was to enable the researcher to carry a pilot survey at the Kenya Forestry Research Institute (KEFRI) headquarters in Muguga. The purpose of the pre-test was to identify the gaps in the questionnaire and give directions for fine tuning the data collection instruments (Zikmund et al., 2012: pp. 352-360). The pilot study was beneficial to the study in unveiling some challenges which were possible to occur during the research process and was handled in advance before the main research commenced. The researcher was also able to test her tools and instruments and improved on the areas that needed some improvements. Finally, the pilot study was a shadow of what would be expected in the data collection process which prepared the researcher for data analysis.

#### **3.6.2 Validity**

Validity of a research is the soundness of the research which is measured by how effective the design and the methods used in the research is (Fowler, 2013). Careful selection of the sample size, distribution and collection of questionnaires within the stated time frame was done together with the use of the indicated data collection instruments. This was a sure way of ensuring that the research was validity was tested.

### **3.6.3 Reliability**

Reliability of a research refers to the degree to which the assessment tool produces consistent results (Bunakov, *et al.* 2014). KALROØ staff are all offer the same services to their users regardless of the branch where they operate from and use the same management systems, information resources and information dissemination procedures, the questionnaires showed a consistency hence its reliability. The same was applied to the users who access the same services from the same platform in which the staff operate in. This was sure to prove the reliability of the research study.

### **3.7 Data Analysis and Presentation**

Data collected was entered, coded, cleaned, compiled and analyzed using Statistical Package for Social Sciences (SPSS) Version 21 computer program to address the research objectives. Quantitative data was summarized using descriptive statistics which include: mean, median, mode, standard deviation, frequencies and percentages.

The study used pie charts, tables as well as bar graphs to present the findings. Each research question was analyzed carefully to enable the researcher arrive at the conclusion and recommendation of this research. Even though not all questionnaires were completed in expected details, all well answered and completed questionnaires were taken into consideration and all responses considered for data analysis.



### **3.8 Ethical Issues**

This refers to the integrity involved in conducting a research to ensure that law and order is maintained (Hair, 2010). Issues frequently realized in ethics include among others: plagiarism, consents by relevant authorities before engaging in a research, use of faulty methods and procedures of data collection, and misleading authorship. The researcher was keen to ensure that all legal issues were adhered to during the whole process of research. To make this successful, the researcher had to consult some available authorities, and fellow researchers to know what needs to be done to ensure that everything was done legally.

### **3.9 Chapter Summary**

This chapter provides the research methodology which was used in the study. It outlines the research design, the target population, the sampling technique, the sample size, data collection procedures, data analysis procedures and measurements of variables. The contents of this chapter has been gathered from various sources included being past written books by different authors on related subjects to this study, online journals, reliable internet sources including the personal experience of the researcher in the library professional.

## **CHAPTER FOUR DATA PRESENTATION, ANALYSIS AND DISCUSSION**

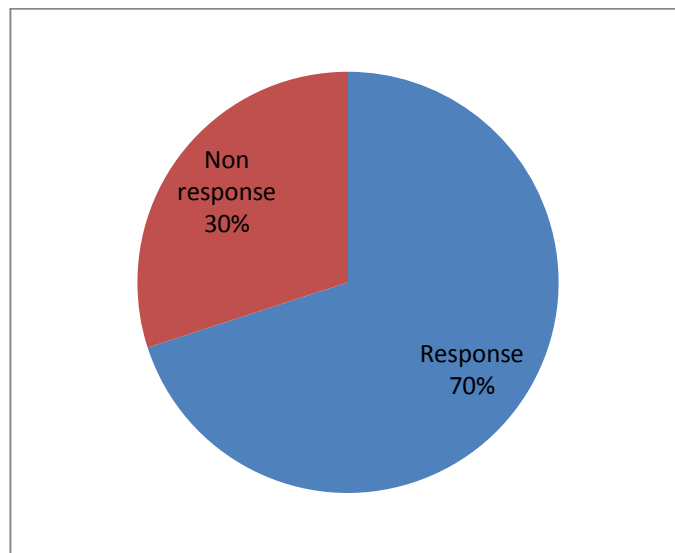
### **4.0 Introduction**

This chapter covers data presentation, analysis and discussion of the results. The study sought to assess the disaster management practices in research libraries in Kenya. The data was collected through questionnaires and interview schedules distributed to the sample population to obtain data and information. The results were analyzed and presented in form of charts and tables. Quantitative data were analyzed using Microsoft Excel application while qualitative ones were processed through coding using Statistical Package for Social Sciences.

### **4.1 Background Information of the Respondents**

The study sought to establish the respondent's background information based on their position, age, work experience and professional expertise. The respondents were drawn from Kenya Agricultural and Livestock Research Organization three main branches regardless of their location including the staff and users. The purpose of these demographic profile questions were to determine the general characteristics of the respondents (KALRO staff). The sampled respondents for the study were 140 KALRO staff, however, only 98 (70%) responded as shown in Figure 4.1 pg. 48. The response rate was considered adequate for reporting as it exceeded the general accepted threshold of 50% (Mugenda & Mugenda, 2003). According to Babbie (2010) a response rate of 50% is believed to be adequate for analysis and reporting, whereas 60% is considered good while above 70% is deemed as very good. It is also stated in chapter three that enable generalization of the research findings and to increase the validity of the gathered data, the sample size selected could not have been less than 10% of the accessible population for descriptive research (Fowler,

2013) pg. 42. Consideration in terms of education level the results indicated that 30.7% (30) of the respondents were bachelor's degree holders while 23.0 % (23) had diploma qualifications. 18.3% (18) had master's degree, 7.7% (8) and 20.3 % (20) had Phd's and certificates respectively. This indicated that the largest number of respondents hold bachelor's degree as shown on Table 4.1 Pg. 49. In regard to staff position, the information the results indicated that majority of respondents were library users 67.8% (67) followed by junior staff 20% (20) middle management 8.6% (8) and top management 3.6% (4) as shown in Table 4.2 pg. 49. In the aspect of work experience, majority of KALRO staff 97% worked for over ten years, 2% between five and ten and 1% less than five as shown in the figure 4.2 pg. 50. The results show that majority of staff who attend to disaster management issues had worked for more than ten years. The study sought information the respondent's age. Figure 4.3 pg. 50 indicate that majority of KALRO staff /users 88% were over 41 years of age) while 12 % were between 31 and 40 years. This implies that those involved in activities of disaster management are above 40 years.



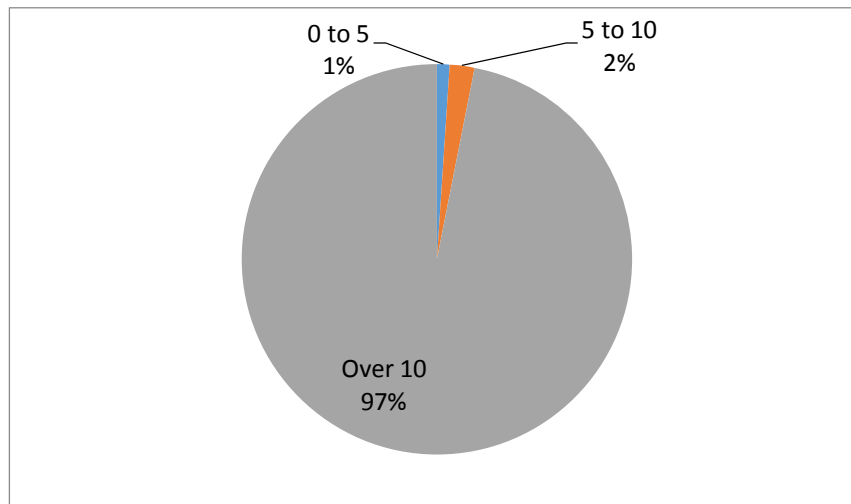
**Figure 4:1: Response Rate**

**Table 4.1: Education Level**

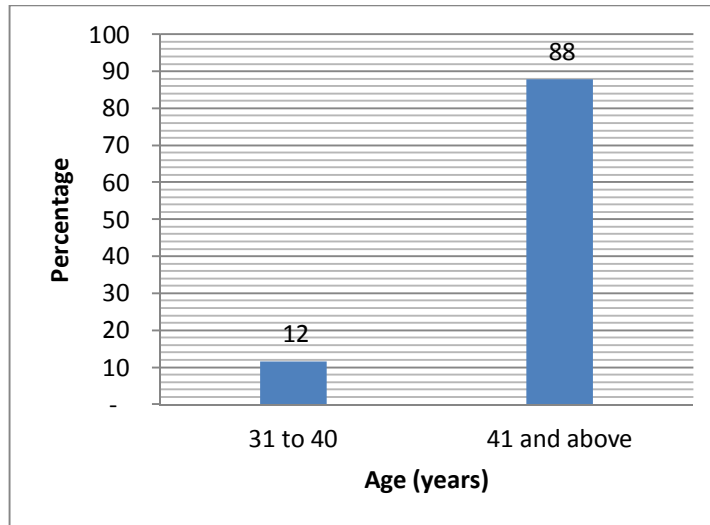
Education Level	Frequency	Percentage
Bsc	30	30.7
Certificate	20	20.3
Diploma	23	23.0
Msc	18	18.3
Phd	8	7.7
<b>Total</b>	<b>98</b>	<b>100</b>

**Table 4.2: Respondents' Position**

Position	Frequency	Percentage
Top Management	4	3.6
Middle Management	8	8.6
Junior Staff	20	20
Users	67	67.8
<b>Total</b>	<b>98</b>	<b>100</b>



**Figure 4.2: Working Experience**



**Figure 4.3: Respondent's Age**

#### **4.2 Appropriateness of the Tools Available to Manage and Handle Disaster Incidents**

The study sought to establish the appropriateness of the facilities available to manage and handle disaster incidents. This was very important because if the condition and adequacy of the available facilities is not well known, it would be difficult to describe the present situation of the library in terms of being able to manage and handle disasters. Respondents were asked to rank the appropriateness (condition and adequacy) of the facilities in KALRO libraries. The respondents were required to rank on a five point Likert scale. The results of the responses are shown in Table 4.3 pg. 51. According to the literature review, the study has established that disaster management is a global phenomenon which need cost effective early warning systems that could detect and react to threats. Lindell (2013) pg. 24. Therefore, for research libraries to maintain their relevance, they should be up to date with disaster management tools and equipment which must be made part of their management priorities.

**Table 4.3: Appropriateness of Tools Available to Manage and Handle Disaster Incidents**

<b>Appropriateness of library facilities</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Total n=98</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>					
The available facilities to manage disasters in library are up-to-date	13	59.5	11.5	12.5	3.5	100	2.52	2.00	2	1.122
There are adequate equipment/facilities to manage disasters	14.1	60.2	17.1	7.0	1.6	100	2.27	2.00	2	.883

A question regarding the equipment/tools used to manage disaster in the library was posed to the respondents and majority (60.2%) disagreed with the fact that there are adequate equipment/facilities to manage disasters. In addition, about 59.2% disagreed that the available facilities were up to date while 12.5 % agreed and only 3.5% strongly agreed.

Majority of the respondents disagreed that the available facilities to manage disasters in library are up-to-date as well as having enough equipment/facilities to manage disasters in KALRO library.

**4.3 Mitigation Methods used to Manage and Support Disaster Risks**

Mitigation methods used to manage and support disaster risks were: the library has risk assessment team, the library has disaster management policy, and the library management uses policy to develop disaster management strategies and the library has disaster gadgets installed. Respondents were required to rank these mitigation methods using a five point Likert scale. The responses were as illustrated in Table 4.4 pg.52. According to the reviewed literature and observation the study established that mitigation options are key to the assurance of effective disaster management. Information available indicate that libraries should consider this stage right from construction to ensure installation of proper equipment.

**Table 4.4: Mitigation methods used to Manage and Support Disaster Risks**

Mitigation methods	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total n=98	Mean	Median	Mode	Std
	1	2	3	4	5					
The library has risk management team	31.2	50.2	15.1	2.6	1.0	100	2.04	2.00	2	.908
The library has disaster management policy	29.0	51.5	12.0	6.5	1.0	100	2.20	2.00	2	1.00
The library management uses policy to develop disaster management	29.0	57.5	4.0	8.5	1.0	100	2.12	2.00	2	1.01
The library has disaster gadgets installed	23.7	53.1	15.7	4.8	2.7	100	2.43	2.00	2	1.03

A question on whether the library has risk management team was asked, 50.2% disagreed while only 2.6% agreed. On the other hand, 53.1% also disagreed that the library has installed disaster gadgets and only 6.5% agreed that disaster management policy is in place. In summary, the median and mode for all the mitigation methods considered important in managing disasters in KALRO library. This implies that majority of the respondents agree that there are no mitigation methods used to manage and support disaster risks in KALRO Library. Sylves (2014) pg. 12 noted that a disaster management policy is a very important tool in checking the level of organization's preparedness towards disasters. This enables the organization to have a reference point to detailing the procedures to be followed in recovery in case a disaster occurred.

#### **4.4 Strategies and practices put in place to deal with disaster incidents.**

The strategies and practices put in place to deal with disaster incidents were considered to be that:- there are experts in the library who are majorly in charge of disaster management, personnel in charge of disaster management are well trained and library staff adequately trained on disaster management. Respondents were required to rank these strategies and practices. The results are illustrated in Table 4.5 Pg. 53.

**Table 4.5: Strategies and practices put in place to deal with disaster incidents**

Strategies and practices	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total n=98	Mean	Median	Mode	Std
	1	2	3	4	5					
There are experts in the library who are majorly in charge of disaster management	33.0	55.5	1.0	8.0	2.5	100	2.00	2.00	1	.957
The personnel in charge of disaster management are well trained	18.0	61.0	4.0	15.0	2.0	100	2.32	2.00	2	1.108
The library staff are adequately trained on disaster management	24.8	59.8	3.1	10.4	2.0	100	2.08	2.00	1	1.139

A question regarding personnel training in disaster management was posed to and the findings shows majority of the respondents disagreed (61.0%) that personnel in charge of disaster management are well trained, also 59.8% disagreed that the library staff are adequately trained on disaster management .On whether there are experts in the library who are majorly in charge of disaster management, only 8.0% agreed and 1.0% were neutral. Therefore, it implies that majority of the respondents disagree that there are strategies and practices put in place to deal with disaster incidents in KALRO Libraries. From the literature review it is evident that very few libraries have taken the subject of disaster management with seriousness which has made research libraries the most prevalent to disasters (Dovers & Handmer 2012) pg.13. Disaster management demands staff training and installation of vital disaster equipment. A lot must be done to ensure disaster management practices are well thought and properly implemented to avoid disaster incidents.

#### **4.5 Management Support**



Regarding the management support and how the library has progressed through support by the management, two aspects were considered which include; whether the library has adequate financial resources to manage disasters, the library receives adequate support from the institution to manage disaster. This was a very important question in this study since it was unveiling the details of how the management is of assistance in the efforts towards disaster management. The respondents gave their responses depending on individuals view points and facts that was supported by the available information within the library as perceived by the respondents. The results are illustrated in the table 4.6 pg. 55. Dovers, & Handmer, (2012) Pg. 13 noted that research libraries are funded internally by the parent organization making it difficult for the library to maintain a well-equipped disaster management department.

**Table 4.6: Management Support**

<b>Management support</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Total n=98</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>					
The library has adequate financial resources to manage disasters	25.5	63.0	4.5	3.0	4.0	100	1.80	2.00	1	1.041
The library receives adequate support from the institution to manage disaster	23.0	52.0	8.5	9.5	7.0	100	1.96	2.00	2	1.020

The question on financial status of the library regarding disaster management was posed to the respondents and majority (63.0%) disagreed that the library has adequate funds to manage disasters. In addition, 52% disagreed that the library receives adequate support from the institution to manage disaster with 9.5% agreeing while 8.5% were neutral. Overall management support in KALRO library is limited. This means that majority of the respondents disagreed that KALRO library has adequate financial resources as well as

institutional support to manage disasters. Christopher and Tatham, (2014) pg. 30 noted that lack of adequate funds to purchase the disaster management equipment and also for installation are challenges that face small organizations and institutions.

#### **4.6 Chapter Summary**

The chapter analyzed the KALRO questionnaire and provided an over view of disaster management practices as perceived by the respondents. The data gathered was presented and organized under specific headings and supported with documentary evidence where applicable.

## **CHAPTER FIVE SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS**

### **5.0 Introduction**

This chapter is organized into various sections that provide summary of the key findings, conclusion, and recommendations. It gives suggestions for further areas of research. The objectives of the study guided for data collection and analysis and finally bringing the research study into a conclusion. The aim of the study was to assess the disaster management practices in research libraries. The objectives of the study were to:

- Establish the appropriateness of the tools used to manage and handle disaster incidents in research libraries.
- Find out disaster management practices in research libraries.
- Examine mitigation methods used to manage disaster risks in research libraries.
- Determine the role of management in support of disaster preparedness in research libraries.
- Find out challenges experienced by research libraries in disaster management.

### **5.1 Summary of Key Findings**

This section provides the summary from the key findings based on the objectives of the study. The objectives of the study guided the formulation of themes and subthemes of the research questions. The study finding addressed the various issues as discussed below. The study established the following.

#### **5.1.1 Appropriateness of Tools Used to Manage Disaster Incidents**

The first objective of this study was to establish the appropriateness of the tools used to manage disaster incidents in research libraries. In establishing this, the study findings revealed the information as shown on Table 4.3 pg. 51. This indicates that majority of the respondents (60.2%) disagreed that there are enough equipment/tools to manage disasters.

Also 59.2% disagreed that the available facilities were up to date. Therefore this implies that the facilities used to manage and handle disaster incidents in most research libraries are not appropriate neither up to date.

### **5.1.2 Disaster Management Strategies/Practices in Research Libraries**

The second objective of the study was to find out disaster practices in research libraries. The data and information was presented on Table 4.5 pg. 53. From the finding the majority of respondents disagreed (61.0%) that personnel in charge of disaster management are well trained, while 59.8% did not agree that library staff are adequately trained on disaster management. Also 92% disagreed that there are experts in the library who are majorly in charge of disaster management. Therefore most research libraries have no strategies and practices put in place to deal with disaster incidents.

### **5.1.3 Mitigation Methods Use to Manage Disaster Risk in Research Libraries**

The third objective of the study was to examine mitigation methods used to manage disaster risks in research libraries. Findings reveal that majority of respondents 50.2% disagreed that there are risk management strategies while 57.5% disagreed that the library management has policy to manage disaster. Further 53.1% disagreed that the library has disaster gadgets installed and only 6.5% agreed that disaster management policy is in place as indicated in Table 4.4 pg. 52. This implies that most research libraries have inadequate mitigation methods used to manage and support disaster risks.

### **5.1.4 Role of Management in Support of Disaster Preparedness**

The fourth objective of the study was to determine the role of management in support of disaster management preparedness. The findings further show that 63.0% disagreed that

the library has adequate financial resources to manage disasters and 52.0% disagreed that the library receives adequate support from the institution to manage disaster. This was revealed from the study indicated on Table 4.6 pg. 55. This implies that in most research libraries, the management has played no major role in support of disaster preparedness.

### **5.1.5 Challenges Experienced by Research Libraries in Disaster Management**

The fifth objective of the study was to find out the challenges encountered in research libraries in disaster management. In determining this, the study findings revealed that the organizations had problems that faced them considering the key findings above. According to the study the highest number of respondents 92% indicated that there are no experts in the library to deal with disaster incidents. 63.0% revealed that the library does not have adequate funds to manage disaster. 53.1% indicated that no gadgets had been installed in the library to manage disaster. Further 50.2% revealed that there were no risk management strategies in place. Previous studies have provided information on various ways in which libraries in many parts of the world to have been able to reduce risks and damages. However, it seems from the literature review that as institutions struggle to manage disasters, many challenges emanate from natural factors such as inadequate knowledge to predict or the intensity of the impending calamities. According to Christopher & Tatham, (2014) pg. 30 indicated that libraries have inadequate fund to purchase disaster equipment. A well thought and properly implemented action plan is imperative to the library in order to alleviate certain challenges.

## **5.2 Conclusion**

Based on the finding and discussions presented in the preceding sections, the study drew the following conclusion:

- Disaster management is becoming an increasingly complex area in organizations though it's an essential part of library and research information work. Disaster management is not a one man's job and therefore lack of planning, coordination and involvement of personnel at all levels could exacerbate disaster impacts.
- Libraries being the custodians of very vital documents and information this therefore, makes them to be referred to as the backbone of the organization and require to be highly protected from disasters. Despite this fact however, they are the most vulnerable institutions due to lack of adequate management support. This means that the history of the past through research is in danger of destruction in case a disaster occurs. A Number of challenges are experienced in disaster management owing to lack of policies, skilled manpower, obsolete tools/equipment and inadequate financial resources which makes it difficult to adopt a systematic disaster management process in Kenya.
- Research libraries need to put in place effective management and disaster control plan considering global practices if disasters are to be avoided. All this is geared towards developing strategic policy, implementation and monitoring for disaster reduction that cover a number of activities at national and local; social, economic and environmental; focusing on preparedness, response and long-term recovery.

### **5.3 Recommendations**

It is evident that effective disaster management must have the support of senior management. It ought to be integrated in overall institutional management. Therefore, the study recommends that:

#### **5.3.1 Staff Training**

Staff training in disaster management should be addressed at all levels- Training is essential for effective disaster management. Training can play a key role in team building. Effective teamwork and communication will be important in dealing with incidents. A trained personnel is a resource to the organization. KALRO requires adequate personnel in number and skills. Training or hiring staff with in this area of disaster management is highly recommended.

### **5.3.2 Funding**

Management support is required in terms of funding- Libraries have for a long time suffered lack of finances in availing their services to their users and hence prioritizing other services and disaster management which is equally important has been neglected. KALRO libraries/ organization should budget and implement disaster management plan in conjunction with the organization's management.

### **5.3.3 Policies**

The organization should put in place proper strategies and practices to deal with disaster in case it occurs. Aspects of disaster management that need to be addressed in determining strategies include:

- **Integration**

It is not wise for libraries/organizations to move forward in isolation. It is important to work with others at all levels ranging from international to local and should be applied in the strategy. Effective emergency management relies on thorough integration of plans at all levels of government and non-government involvement.

- **Staff Awareness**

More ways should be devised to ensure staff are made aware of disaster occurrences. Seminars, conferences are ways that can be employed to sensitize staff on matters of planning, preparedness and anticipatory approaches. Waiting for disasters to occur is a discredited move but the alternatives are not as easy as well.

## **5.4 Risk Assessment**

Risk assessment is key in ensuring business continuity and contingency planning. This will entail surveying the nature of disasters, emergencies, risks and hazards, and trends in emergency management.

## **5.5 Areas of Further Research**

The following areas of study were identified as requiring further research:

### **5.5.1 Impending Disasters**

Among the range of threats discussed, libraries and other information centers must keep vigil of new threats. Climate change is a new area that has not received considerable mention and what can be done to address it with regard to disaster management in research libraries and its impact on library collection stored in different media forms.

### **5.5.2 Need for Risk Assessment to Disaster Training Programme**

Drastic change has been experienced in this area of emergency management in terms of growth but the educational level does not match the change. Therefore, there is need for a study to examine the possibility of institutions having a curriculum on risk assessment on disaster prevention, preparedness, response and recovery.



## REFERENCES

- Ahenkorah-Marfo, M., & Borteye, E. M. (2010). Disaster preparedness in academic libraries: The case of the Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana. *Library & Archival Security*, 23(2), 117-136.
- Anfara Jr, V. A., & Mertz, N. T. (2014). *Theoretical frameworks in qualitative research*. Sage Publications.
- Bryman, A. (2012). *Social Research Methods*. Oxford. O.U.P
- Caunhye, A. M., Nie, X., & Pokharel, S. (2012). Optimization models in emergency logistics: A literature review. *Socio-economic planning sciences*, 46(1), 4-13.
- Chang, Y., Wilkinson, S., Brunsdon, D., Seville, E., & Potangaroa, R. (2011). An integrated approach: *Managing resources for post-disaster reconstruction*. 35(4), 739-765.
- Christopher, M., & Tatham, P. (2014). *Humanitarian logistics: Meeting the challenge of preparing for and responding to disasters*. Kogan Page Publishers. Literature review. *Socio-economic planning sciences*, 46(1), 4-13.
- Collins Larry R. and Schneid Thomas, D. (2010). *Management-and-Preparedness: Occupational Safety & Health Guide Series* <https://www.crcpress.com/Disaster-Management-and-Preparedness/Collins/9781566705240> accessed 23 March, 2016
- Comfort, L. K., Boin, A., & Demchak, C. C. (2010). *Designing resilience: Preparing for extreme events*. University of Pittsburgh Pre.
- Covello, V. T., & Merkhoher, M. W. (2013). *Risk assessment methods: approaches for assessing health and environmental risks*. Springer Science & Business Media.
- Comfort, L. K., Boin, A., & Demchak, C. C., (2010). *Designing resilience: Preparing for extreme events*. University of Pittsburgh Pre.
- De Perez, E. C., Monasso, F., van Aalst, M., & Suarez, P. (2014). Science to prevent disasters. *Nature Geoscience*, 7(2), 78-79.
- Dovers, S., & Handmer, J. (2012). *The handbook of disaster and emergency policies and institutions*. Routledge.
- Drabek, T. E. (2012). *Human system responses to disaster: An inventory of sociological findings*. Springer Science & Business Media.
- Eden, P., & Matthews, G. (2013). *Disaster management in libraries Facilities*.

- Fowler, Jr, F. J. (2013). Survey research methods. Sage publications.
- Fox, L. L. (2005). Disaster preparedness workbook for US navy libraries and archives: excerpts. WAAC newsletter, 27(3), 17-18.
- Galindo, G., & Batta, R. (2013). Prepositioning of supplies in preparation for a hurricane under potential destruction of prepositioned supplies. *Socio-Economic Planning Sciences*, 47(1), 20-37.
- Garrard, J. (2013). Health sciences literature review made easy. Jones & Bartlett Publishers.
- Hair, J. F. (2010). Multivariate Data Analysis. Retrieved from [http://works.bepress.com/joe\\_hair/2](http://works.bepress.com/joe_hair/2)
- Halsted, D.D, Clifton, S.C and Wilson, D.T. (2014). Library as safe haven: Disaster Planning, Response and recovery; A how-To-Do-It Manual for Librarians. Chicago. American library Association
- Hancock, D. R., & Algozzine, B. (2015). Doing case study research: A practical guide for beginning researchers. Teachers College Press.
- Haddow, G., Bullock, J., & Coppola, D. P. (2013). Introduction to emergency management. Butterworth-Heinemann.
- Howden, D. (2013). Terror in Westgate mall: the full story of the attacks that devastated Kenya. The Guardian, 4.
- IFLA General Conference. (2011). Disaster Recovery, San Juan MIURA TARO
- Inglesby, T. V. (2011). Progress in disaster planning and preparedness since 2001. *JAMA*, 306(12), 1372-1373.
- Jaguszewski, J., & Williams, K. (2013). New roles for new times: Transforming liaison roles in research libraries.
- Kadushin, G. (2012). The social work interview: A guide for human service professionals. Columbia: University Press.
- Kahn, M. B. (2012). Disaster response and planning for libraries. American Library Association.
- Kostagiolas, P., Araka, I., Theodorou, R., & Bocos, G. (2011). Disaster management approaches for academic libraries: an issue not to be neglected in Greece. *Library management*, 32(8/9), 516-530.

- Kusumasari, B., Alam, Q., & Siddiqui, K. (2010). Resource capability for local government in managing disaster. *Disaster Prevention and Management: An International Journal*, 19(4), 438-451.
- Laila Hussein Moustafa. (2015). "Endangers culture heritage", *Library Management*, Vol. 36 Iss 6/7 pp. 476 ó 494. <<http://dx.doi.org/10.1108/LM-04-2015-0010>>
- Latonero, M. & Shklovski, I. (2011). Emergency management, Twitter, & Social Media Evangelism. *International Journal of Information Systems for Crisis Response and Management*, 3(4), 67-86.
- Lindell, M. K. (2013). Emergency management in *Encyclopedia of Natural Hazards* (pp. 263-271). Springer Netherlands.
- Lyall, J. (2009). Disaster planning for libraries and archives: understanding the essential issues. National Library of Australia Staff Papers.
- May, P. J., & Williams, W. (2012). Disaster policy implementation: Managing programs under shared governance. Springer Science & Business Media.
- Mathews, G., Smith, Y., & Knowles, G. (2009). *Disaster Management in Archives, Libraries and museums*, Ashgate: England.
- Mat Said, A., Ahmadun, F. L. R., Rodzi Mahmud, A., & Abas, F. (2011). Community preparedness for tsunami disaster: a case study. *Disaster Prevention and Management: An International Journal*, 20(3), 266-280.
- Michael Ahenkorah-Marfo & Edward Mensah Borteye (2010). Disaster Preparedness in Academic Libraries: The Case of the Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana, *Library & Archival Security*, 23:2, 117-136.
- Mutugi, M. W., & Maingi, S. G. (2011). Disasters in Kenya: A major public health concern. *Journal of Public Health and Epidemiology*, 3(1), 38-42.
- Nagatani, K., Kiribayashi, S., Okada, Y., Otake, K., Yoshida, K., Tadokoro, S., & Kawatsuma, S. (2013). Emergency response to the nuclear accident at the Fukushima Daiichi Nuclear Power Plants using mobile rescue robots. *Journal of Field Robotics*, 30(1), 44-63.
- National library of South Africa, (2015). Disaster planning. <<http://www.nlsa.ac.za/index.php/disaster-planning>>

- Njoroge, R. W. (2014). An investigation on disaster preparedness and mitigation for computer based information systems in selected University libraries in Kenya (Doctoral dissertation, Nairobi. Kenyatta University).
- Olanrewaiu, A., Alivu, M. Adedeji, F. and Rachel, B. (2012). Disaster Preparedness at the State Public Library, Ilorin, Kwara State, Nigeria: *Library Philosophy and Practice*. <<http://unllib.unl.edu/LPP/issa-aliyu.htm>> Retrieved: 31 March, 2016
- Olshansky, R. B., Hopkins, L. D., & Johnson, L. A. (2012). Disaster and recovery: Processes compressed in time. *Natural Hazards Review*, 13(3), 173-178.
- Parkash, S. (2012). Ethics in disaster management. *Annals of geophysics*, 55(3).
- Paul Chipangura, Dewald Van Niekerk and Gerrit Van Der Waldt (2016). "An exploration of objectivism and social constructivism within the context of disaster risk", *Disaster prevention and Management*, Vol. 25 Iss 2 pp. 261 ó 274. <<http://dx.doi.org/10.1108/DPM-09-2015-0210>>
- Palttala, P., Boano, C., Lund, R., & Vos, M. (2012). Communication gaps in disaster management: Perceptions by experts from governmental and non governmental organizations. *Journal of Contingencies and Crisis Management*, 20 (1), 2-12.
- Paton, D., & Johnston, D. (2001). Disasters and communities: vulnerability, resilience preparedness. *Disaster Prevention and Management: An International Journal*, 10(4), 270-277.
- Pelling, M., & Wisner, B. (2012). *Disaster risk reduction: Cases from urban Africa*. Routledge.
- Petros Kostagiolas, Iliana Araka, Roxana Theodorou, George Bokos, (2011). "Disaster management approaches for academic libraries: an issue not to be neglected in Greece", *Library Management*, Vol. 32Iss 8/9 pp. 516 ó530.
- Underwood, S. (2010). Improving disaster management. *Communications of the ACM*, 53(2), 18-20.
- Rattan, Pardeep, (2013). The Role of Library and Information Centres in Disaster Management: *Library Philosophy and Practice (e-journal)* paper 886. <<http://digitalcommons.unl.edu/libphilprac/886>>
- Rehman, Ata ur, (2014). Importance and Measures of Disaster Management in Libraries: *European Scientific Journal June 2014 /SPECIAL/ edition vol.1.*

- Republic of Kenya, Ministry of Agriculture, livestock and Fisheries, (2014). Merger Report for Kenya agricultural and Livestock Organization (KALRO).
- Richie, J., Lewis, J., Nicholls, C., and Ormston, R. (Eds.). 2013. *Qualitative Research Practice: A guide for Social Science Students*. Sage
- Sandwell, C. (2011). A qualitative study exploring the challenges of humanitarian organisations. *Journal of humanitarian logistics and supply chain management*, 1(2), 132-150.
- Snyder, T. D., & Dillow, S. A. (2012). *Digest of education statistics 2011*. National Center for Education Statistics.
- Sylves, R. (2014). *Disaster Policy and Politics: Emergency Management and Homeland Security: Emergency Management and Homeland Security*. CQ Press.
- Thomas, E., and Magilvy, J.K. (2011). Qualitative rigor or Research validity in Qualitative Research. *Journal for Specialists in pediatric Nursing*, 16 (2), 151-155.
- Tian, Y., Xiang, Q., & WANG, P. (2013). Regional coupled human-natural systems vulnerability and its evaluation indexes. *Geographical Research*, 32 (1), 55-63.
- Tingsanchali, T. (2012). Urban flood disaster management. *Procedia engineering*, 32, 25-37.
- Veenema, T. G. (2012). *Disaster nursing and emergency preparedness: for chemical, biological, and radiological terrorism and other hazards, for chemical, biological, and radiological terrorism and other hazards*. Springer Publishing Company.
- Weisenfeld, G. (2012). *Imaging Disaster: Tokyo and the Visual Culture of Japan's Great Earthquake of 1923 (Vol. 22)*. University of California Press.
- Yates, D., & Paquette, S. (2011). Emergency knowledge management and social media technologies: A case study of the 2010 Haitian earthquake. *International journal of information management*, 31(1), 6-13.
- Zikmund, W., Babin, B., Carr, J., & Griffin, M. (2012). *Business Research Methods*. Cengage Learning.

## APPENDIX I



# UNIVERSITY OF NAIROBI

## FACULTY OF ARTS

### DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

Telephone: +254 20318262, Ext. 28095  
Telegram: varsity  
Fax: +254 20 2245566

P.O. Box 30197-00100 GPO  
Nairobi, Kenya  
[dnjiraine@uonbi.ac.ke](mailto:dnjiraine@uonbi.ac.ke)

**Our Ref: UON/CHSS/DLIS/303**

**Date 30/08/2016**

Address

Dear Sir/Madam,

**RE: MARY ABURUKI**

**REG NO. C54/77927/2015**

The above named is bonafide student at the university of Nairobi undertaking a master of library and information science (MLIS). She is currently in the process of collecting data as part of the requirements for the course.

Her topic is **“Evaluating Disaster Management practices in research Libraries in Kenya with reference to the Kenya Agricultural and Livestock Research Organization”**

Any assistance accorded to her will highly be appreciated.

Regards,

Dr. Dorothy Njiraine  
**Ag.chairperson**  
**Department of Library & Information Science (DLIS)**

## APENDIX II

### QUESTIONNAIRE FOR STAFF

#### Instructions

Please indicate your response by ticking the provided boxes. For questions that require suggestions or comments, please use the provided space.

#### Background Information

1. Management level

Top management

a) Middle management

b) Junior staff

c) Any others (please

specify) í

2. Highest education level:

í ..

3. Work experience:

a) 0-5 years

b) 5-10 years

c) 10 years and above

4. Specific duties and responsibilities:

í í

í í

5. To what extent do you agree or disagree with the following statement. Use the following scale of Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1.

NO	STATEMENT	5	4	3	2	1
<b>FACILITIES AVAILABLE TO MANAGE AND HANDLE DISASTER INCIDENTS</b>						
1.	The available facilities for disasters management in the library are up-to-date					
2.	There are adequate equipment/facilities for disasters management					
<b>MITIGATION METHODS USED TO MANAGE AND SUPPORT DISASTER RISKS</b>						
3.	The library has a risk assessment team					
4.	The library has a disaster management policy					
5.	The library management uses the policy to develop disaster management strategies.					
6.	The library has installed disaster gadgets					
<b>STRATEGIES AND PRACTICES PUT IN PLACE TO DEAL WITH DISASTER INCIDENTS</b>						
7.	There are experts in the library who are in charge of disaster management					
8.	The personnel in charge of disaster management is well trained on the task					
9.	The library staff are adequately trained on disaster management					
<b>MANAGEMENT SUPPORT</b>						
10.	The library has adequate financial resources to manage disasters					
11.	The Library receives adequate support from the institution to manage disaster management.					

6. Suggest possible ways of acquiring financial support to enhance disaster management in the library. í ..





6. Are the staff sufficiently trained to handle this task of disaster management?

í í

7. Are you aware of any disaster management policy in your library?

í í

í í

8. Is the policy being adhered to?

í í

9. Are there ways being used to reduce disaster risks and damages in the library?

.....

.....

10. Are there challenges facing the efforts to curb disaster risks in your library?

í í

í í

í í