DISASTER PREPAREDNESS IN ACADEMIC LIBRARIES IN KENYA: CASE OF JOMO KENYATTA MEMORIAL LIBRARY, UNIVERSITY OF NAIROBI

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DECLARATION

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

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DEDICATION

I dedicate this research work to my husband Solomon, our children Evans, Kevin and Sharon all who endured my absence from home as I completed my studies; to Solomon for being ever there for me, to Evans, Kevin and Sharon for their constant smile, encouragement and prayers even when things were very tough. It is also dedicated to my late mother Magdalena Mutio who taught me the value of education and made sacrifices for me so that I could have the opportunities she did not have but never lived long to share in the joy of this achievement. May she rest in eternal peace.

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ABSTRACT

The purpose of the study was to investigate disaster preparedness in academic libraries in Kenya using case study of Jomo Kenyatta Memorial Library University of Nairobi. The objectives of the study were to: find out the policies on disaster preparedness, establish strategies that can be used in mitigating disasters, find out the level of staff preparedness in the event of a disaster, establish the best methods available for recovering damaged information resources in print and non- print and establish the challenges faced by Jomo Kenyatta Memorial Library in the implementation of disaster management. The theoretical framework applied in this study was the social capital theory. The study adopted mixed methods design where both quantitative and qualitative methods were used. The target population for this study was 15,334 from the University of Nairobi academic staff, library staff and students. The sample size of the study was 343 respondents. The study employed both probability and non-probability sampling techniques where simple random sampling and purposive sampling were used. Data was collected using interview schedule guides and questionnaires. In qualitative analysis, the data was assigned categories and the categories were assigned numerical code which were entered into the computer. In quantitative analysis, the data was converted to numerical codes representing measurement variables. The statistical package for social sciences version 21 was used to analyze both quantitative and qualitative data. The findings of the study indicated that disaster management policies were not known by the respondents. In addition, there was no disaster preparedness carried out on the respondents. The study concluded that academic libraries face a number of disasters that need to be carefully managed by putting in place the best mitigation measures. The study recommended continuous training of personnel at all levels, keys for emergency doors to be kept in a central place,

top management should provide support in terms of funding and the library should purchase equipment for recovering information resources both in print and non-print. This study is useful to the top management of the academic institutions in policy formulation that concern disaster management of libraries of their institutions.

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LIST OF ABBREVIATION AND ACRONYMS

EA	East African
JKML	Jomo Kenyatta Memorial Library, University of Nairobi
MLIS	Master of Library and Information Science
SPSS	Statistical Package for Social Sciences
TPB	Theory of planned behavior
UON	University of Nairobi
USA	United States of America

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Chapter one contains background of the study, statement of the problem, aim and objectives of the study, research questions and significance of the study, assumption of the study, scope of the study and limitations of the study.

1.1 Background to the Study

Disasters cause serious disruption of library operations and libraries need to be prepared in the event of a disaster. Disaster prevention and awareness measures will help to prevent disasters that occur in libraries. Serious damages caused by disasters whenever they occur leave the affected libraries in a devastating state (Ugwuanyi, Ugwu & Ezema ,2015:2-3). With declining financing and the incapacity to attain demand, it is important that the available collection to patrons should be protected from any form of destruction (Ajegbomogum, 2004:386-390; Osei-Boadu & Ahenkorah-Marfo, 2013:15).

Global studies have shown that academic libraries are unprepared and ineffective in disaster management and its outcome (Trishanjit, 2009:175–187; Ngulube, Modisane & Mnkeni-Saurombe, 2011:239–250). For instance, Andy (2008:293-306) indicated how hurricane Katrina destroyed New Orleans's libraries like the Delgado Community College's, Dillard University and Southern University which resulted to high damages. Matthews (2005:63-74) pointed out how fire in the United Kingdom destroyed the Ramsgate public library and thousands of literary materials were lost. Studies carried out by Johnson (2005:209:27); Rayward and Jenkins (2006: 361:369) pointed out the 2003 Allied invasion of Iraq and the ensuing plundering of its libraries and museums that demonstrated the destructive nature of the disaster.

In Africa, Alegbeleye (1993:5-13) indicated that information centers have been destroyed by disasters. According to the author, there was destruction of records when students in Sierra Leone burnt down a record center. In Nigeria, an Institute of Policy and Strategic Studies Library, burnt down due to electric failure and this led to destruction of artifacts and books. In Kenya, in 1987 fire burnt down the office of the colonial secretary which had colonial records leading to loss of essential records. A study conducted by McMichael (2007) showed that a terrorist attack occurred in 1998 that bombed Kenya and Tanzania United States of America (USA) embassies, almost consecutively damaging a lot of resources which included library resources. All these disasters happing globally, the challenges faced by libraries in implementing disaster management and the fact that no library is free from disasters made it necessary to conduct this study.

Disaster management includes all management factors which are required to take care of occurrences that may affect human lives, library buildings, collections and services (Ugwuanyi, Ugwu & Ezema, 2015:2-3). Ahenkorah-Marfo and Borteye (2010:117-136) defined disaster as any occurrence that threatens the human lives, threatens to destroy library constructions, services, collections and contents. Disasters can be classified into two that is man-made and natural disasters (Alegbeleye, 1993:5-11). Natural disasters are those disasters which man has no control over.

Natural disasters that may occur in a library and cause sudden great damage are earthquakes (Kumagai, 2012:797-807); hurricanes or typhoons (Skinner, 2007:179-187); tsunami (Amarasiri, 2005:307-314) and volcanic eruption (Cassell, 2004:4-11). Man-made disasters that are likely to occur in a library include water from leaking roofs and poor plumbing (Chaudron, 2016: 398-411 & Uhlig, 2014: 12-14). Disaster preparedness is defined as the library readiness in disaster management

(Khalid & Dol, 2015:1-7). Disaster preparedness involves careful planning, preparing by putting in place the necessary measures to deal with sudden occurrences in libraries (Nwokedi, Panle & Samuel, 2017:5).

1.1.1 Context of the Study

University of Nairobi (UON) is an institution of higher learning. Jomo Kenyatta Memorial Library (JKML) is the largest library on the main campus of Nairobi University. JKML'S seating capacity is nearly 2,500 students at a time. JKML provides services to all users of the University of Nairobi including the College of Humanities and Social Sciences (CHSS) and the College of Architecture and Engineering (CAE). Digital libraries at the University of Nairobi play a significant role in disseminating information to and beyond the University community. Lending, inter library-loaning and access to electronic resources are some of the information services provided.

The library currently allows access to more than 750,000 volumes of print resources, more than 76,000 peer -reviewed full - text electronic journals across all subjects and more than 163,000 electronic books. The library system has unique and rich information resources in the form of special collection comprising East African (EA) collection which has collection on EA in general and Kenya in particular. The collection is enriched by the University of Nairobi's higher degrees such as theses and dissertations as well as relevant theses presented elsewhere.

The library has also established a digital repository at the University of Nairobi to capture, preserve and distribute the university's academic output. The repository manages the university community's academic and research materials. The University has also continuously promoted the Open Access (OA) initiative by placing its research results in the digital repository and the library is committed to improving the digital

repository as a tool for increasing the visibility and impact of the research output of the university (University of Nairobi library, 2019).

1.2 Statement of the Problem

Academic libraries are the unquestionable seat of knowledge and the source of continuity of culture and distribution of knowledge (Ugwuanyi, Ugwu & Ezema, 2015:2-3). An academic library is the one attached to an institution of higher learning which has two complementary roles that is to support the university's curriculum and research of students and the university faculty (Curzon & Quinonez-Skinner, 2009:1). Information resources in academic libraries can be destroyed by disasters such as floods (Kaur, 2009:175-187); earthquakes (Shaheen, 2008:449-456); tsunamis (Warnasuriya, 2005:21-22); fires, wars and civil disorders (Johnson, 2005:209-271). Libraries also encounter smaller disasters like rain penetration (Gerlach, 2005:95-102). The risks related to disasters thus makes it vital for academic libraries to make sure preparing for disaster and its management become part of their core functions (Khalid & Dol, 2015:1-7).

Disaster preparedness in a library is the way in which the library is organized to avoid any possible disaster from happening (Khalid & Dol, 2015:1-7). Preventing disaster is the greatest defense. In addition to prevention, the preparatory stage is essential to ensure that institutions minimize the effect or eliminate it. In order to protect library collections, measures for preservation and physical control should be put in place (Ndenje - Sichalwe, Ngulube & Stilwell, 2011: 264–279). McEntire and Myers (2004:140) added that library management should address the issue of preparedness among the staff so that they are trained and can easily notice and report any maintenance problem which may occur. In Malaysia, there is no study on disaster preparedness for man-made disasters (Khalid & Dol, 2015:1-7). Most of the studies carried out were on

preparedness for natural disasters compared to other countries such as Nigeria (Andy, 2008: 293-306), the United States (Ahenkorah-Marfo & Borteye, 2010:117-136) and India (Trishanjit, 2009:175-187).

A study by Ahenkorah-Marfo and Borteye (2016:117-136) on disaster preparedness in Kwara Nkumah University of Technology Kumasi, Ghana showed that the library was not ready to manage disasters. More studies carried out by Akussah and Fosu (2001:1) and Ahenkorah – Marfo and Borteye (2010:117-136) indicated that most governments have not been paying attention to allocation of money for disaster management in public libraries. A study conducted by Kostagiolas et al (2011) indicated that there was inadequate funding for disaster preparation in academic libraries in Greece by the Greek government due to budget cuts in public sector. Another study conducted by Khalid and Dol, (2015) showed that there were no fund allocation for disaster preparation for more than half of the academic libraries in Kuala Lumpur and Selangor.

Another study conducted by Muir and Shenton (2002:115) indicated that failure of disaster management implementation is due to lack of sufficient emergency resources, lack of reliable contact lists, lack of guidance on health and safety and the scale of the emergency. Studies conducted by Owolabi, (2014:355-361); Morgan and Smith, (2014:62-71) and Sawant, (2014:153-159) showed that some of the issues affecting disaster management implementation include inadequate resources, untrained manpower and the personnel are not committed in disaster preparedness.

According Vnoucek (2005) there was burial of 10,000 volumes at the University of Sydney because of the storage cost in 2001. In addition, Matthews (2005) pointed out fire that damaged the library of Duchess Anna Amalia in Weimar in 2004. Another study conducted by Shaheen (2008) indicated an earthquake that damaged National

Library of Khurshid in Muzaffafabad, Kashmir central library and the information centre of the Azad Jammu and Kashmir University in Pakistan. A study conducted by Superio, Alayon and Oliveros (2017) showed how Typhoon Haiyan locally known as Yolanda made six landfalls on the island of Samar, Leyte, Cebu, Northern Iloilo and Palawan respectively in Philippines where many libraries were extremely affected.

Trishanjit (2009:175-187) notes that disasters have made most libraries unable to deliver services to users in the past and their effects have been very bad because of the unprepared nature of libraries. In African countries, several research articles have been done on disaster management such as preparedness of libraries from polytechnic librarians in Ghana (Ayoung, Boatbil & Baada, 2015) and from the Ilorin State Public Library, Kwara State, Nigeria (Issa, et al, 2012). The two studies are different from this study in that they were both research articles. The two studies were conducted from a state public library in Nigeria and from polytechnic librarians in Ghana while this study was conducted from an academic library in Kenya. After review of related literature, there was inadequate studies on disaster preparedness in academic libraries in Kenya. Therefore, this study investigated disaster preparedness in academic libraries in Kenya using JKML as the case study.

1.3 Purpose of the Study

The purpose of the study was to investigate disaster preparedness in academic libraries in Kenya using case study of Jomo Kenyatta Memorial Library University of Nairobi.

1.3.1 Objectives of the Study

The study was guided by the following Objectives:

1) To find out the policies on disaster preparedness at Jomo Kenyatta Memorial Library.

2) To establish strategies that can be used in mitigating disasters at Jomo Kenyatta Memorial Library.
3) To find out the level of staff preparedness in the event of a disaster at Jomo Kenyatta Memorial Library.
4) To establish the best methods available for recovering damaged information resources in print and non- print at Jomo Kenyatta Memorial Library.
5) To establish the challenges faced in the implementation of disaster management at Jomo Kenyatta Memorial Library.

1.4 Research Questions

The study was guided by the following research questions:

1) To what extent has disaster preparedness policies been implemented at Jomo Kenyatta Memorial Library.?
2) What strategies can be used in mitigating disasters at Jomo Kenyatta Memorial Library?
3) How are the Jomo Kenyatta Memorial Library staff and users prepared in the event of a disaster?
4) Which methods would library staff use to repair damaged print and non-print materials?
5) What challenges has Jomo Kenyatta Memorial Library faced in the implementation of disaster management?

1.5 Significance of the Study

This study will be helpful to the top managers of the academic institutions in policy formulation that concern disaster management of libraries of their institutions. The study will also be useful to the library administrators in planning and formulation of

written disaster plan for their libraries. It will help UON Director of library services in creating awareness on disaster management to the staff and users. Researchers hoping to perform more research on the same subject would have a reference point for their research as well as useful research data. The outcomes of this study are intended to enlighten the security teams at UON and other institutions in ways that are likely to effectively prevent or limit disasters. The findings of this study will be part of the essential collection of information centres and libraries where data users can access such information whenever appropriate. The research will be helpful to institutions in saving their resources which could have been used in case of any tragedy.

1.6 Assumption of the Study

1) That library staff handling disaster management equipment had the right skills to enable them to use the equipment.

2) That the top library management, library staff and users will willingly provide relevant information for the study.

1.7 Scope of the Study

This study investigated disaster preparedness in academic libraries. Jomo Kenyatta Memorial Library was used in this research as the case reference. This study covered issues related to staff and student disaster preparedness at JKML, availability of policies, plans and programmes on disaster preparedness at JKML, methods available for recovering damaged information resources in print and non- print at JKML, strategies that could be used in mitigating disasters at JKML and challenges faced in implementation of disaster management at JKML.

1.8 Limitation of the Study

The respondents were reluctant to give the correct information. Generally, the respondents differed in their opinion and sometimes the difference was very high.

1.9 Operational Terms and Concepts

Academic Libraries

In this study academic libraries refer to those libraries located in higher learning institutions. The information resources are arranged according to the classification scheme used in a particular library and are primarily intended to serve the students and the staff.

Disaster

In this study disaster is any event that damages human safety and harms or endangers the construction, collection or items, service and systems.

Disaster Management

Disaster management comprises preparation for disasters, prevention and covers other subjects such as risk evaluation, training and funding needed to implement it.

Disaster Plan

Is a plan containing descriptions of preventive and preparation steps aimed at reducing possible risks and identifying responsive and rescue processes that should be followed in the event of a tragedy so as to reduce it.

Disaster Preparedness

Disaster preparedness means a library's readiness to handle a disaster when it happens.

1.10 Organization of the Study

The study was organized in the following: chapter one contains background of the study, statement of the problem, aim and objectives of the study, research questions and significance of the study, assumption of the study, scope of the study and limitations of the study. Chapter two presents analysis of the study's literature that will help to provide background information on the subject under investigation. It covers staff preparedness level in academic libraries. In addition, it covers disaster plan, recovering damaged information resources, disaster mitigation strategies in academic libraries and challenges faced in implementation of disaster management.

Chapter three contains research methodology that was followed. It outlines the research design, target population, sample and sampling procedures, instruments for collecting data, data collection method, procedures for analyzing data and ethical considerations. Chapter four covers research methodology that was followed. It outlines the research design, target population, sample and sampling procedures, instruments for collecting data, data collection method, procedures for analyzing data and ethical considerations. Chapter five presents the summary of the research findings, conclusion and recommendations of the study.

1.11 Chapter Summary

The issues discussed in this chapter were on disaster preparedness in academic libraries. Disasters whether natural or man-made can happen anywhere in the world without any warning and cause destruction. Floods, fires and earthquake can cause destruction in libraries and libraries should embrace preparedness in order to prevent any tragedy.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter covers analysis of the study's literature which helped to provide background information on the subject under investigation. It covers staff preparedness level in academic libraries. In addition, it covers disaster plan, recovering damaged information resources, disaster mitigation strategies in academic libraries and challenges faced in implementation of disaster management.

2.1 Disaster Management

Academic libraries need a disaster management policy which consists of smaller plans designed with library staff, stakeholders and senior management support (Lyall, 2009). The author added that a disaster plan should be straight to the point containing directions and should be available to the staff particularly the disaster management team. Teygeler et al (2001:116) notes that "each institution should have their own plan". The disaster management plan should cover four components which include recovery, prevention, preparedness and response (Mathews & Eden, 1996:5-12).

According to Eden and Matthews (1996:5-12), the essential phase in disaster readiness is designing a transcribed disaster control strategy where the floor plans must be included with clearly marked details on evacuation paths, valuable documents and collection location, fire assembly areas and fire-risers. The authors pointed out that the persons vested with the role of the plan should have power, capability and confidence in making important decisions. The authors opines that the persons should be able to communicate well, be good organizers and should be able to build worthy informal associations with the persons either internally or externally.

The authors explained that all the employees should understand their roles and responsibilities in times of emergency, assembly point locations, routes for evacuation and the available emergency equipment (Eden & Matthews, 1996:5-12). According to Balon and Gardner (2006:21), a disaster plan should be prepared by a team but not an individual. The steps involved in preparation of a plan for disasters include carrying out risk analysis, identifying available preventive and preparedness measures (Balon & Gardner, 2006:21).

A study conducted by Morgan and Smith (2014) on disaster plan role in management of disasters in libraries indicated that majority of the libraries lacked disaster plans. Another study carried out by Ayoung, Boatbil and Baada (2015:4) on preparedness of disasters in Ghana1polytechnic libraries indicated lack of policies for security and library disaster plans. A research done by Ngulube, Modisane and Mnkeni-Saurombe (2011:239-250) on South Africa's archives showed that there was no written policy on disaster management. The authors stated that they were afraid that they may loss the country's national cultural heritage in case a disasters occurs.

2.2 Disaster Mitigation Strategies

According to Aziagba and Edet (2008: 265-268), developing a plan for disaster management will help to reduce losses and assist in the process of quick recovery. The authors noted that a disaster plan minimizes disaster effect on libraries and prevents interruption of customer services. Ogden (2004:3) found out that the best way to prevent fire damage to collections include reducing arson exposure, using fire detector and water-based fire protection systems. According to Ayoung, Boatbil and Baada, (2015:4), training library employees to foresee and recognize warning sign is an important phase in disaster mitigation.

The authors added that mock disaster drills and simulation can be used to train staff. Matthews (2007:6) clarified that simulations and experiments are one thing performed by fewer organizations in the United Kingdom. According to Ogden (2004:1), every library building schemes must enhance their design to protect information resources from flood, fire, earthquake and theft. To avoid disasters from occurring, libraries should test their design and execution of disaster policies (Ayoung et al, 2014:56-66).

According to Eden and Matthews (1996:5-12), risk assessment of buildings, facilities and services are very effective ways to avoid disasters. The authors added that most librarians have no knowledge of the condition of their building, operating systems and equipment that can destroy their libraries in the event of a disaster. The authors were of the idea that librarians need to be informed of what things they want to protect and how they want them protected and notify the person carrying out the risk assessment.

A study conducted by Eden and Matthews (1996:5-12) indicated that as part of risk management, steady structure inspections, facilities, systems and services are needed. Checkups must be registered and measures must be taken to warn of any adjustments required. The authors clarified that the best way is to maintain a "defects log" and set out procedures known to the workers. Lastly, the authors pointed out that valuable information resources should not be stored in the basement floors or lower shelves, canopies should be placed on top of the shelves and that offices can be used to store risk items.

Lyall (1995) pointed out that readiness for disasters involves collection insuring, preparing and reviewing contingency strategies, evaluating resources, allocating priorities for recovery, identifying essential parts of the inventory, identifying alternate storage locations, providing sufficient fire security and providing staff with

opportunities to learn what to do in case of a tragedy. Muir and Shenton (2002:115-123) pointed out that disaster management strategy should include preparation and operational testing, management commitment, understanding and staff involvement who take ownership of the process. Preparing libraries for disasters include determining probable threats and identification of reaction measures (Muir & Shenton, 2002:115-123).

A study conducted by Ahenkorah-Marfo and Borteye (2010:117-136) on the training of library staff at KNUST Kumasi, Ghana, suggested that insufficient training of library workers obstructed their disaster prevention capability. The authors recommended staff training, supplying them with instruction aids and sending them alerts explaining what to do and where to go in the event of a disaster. A study conducted by Akussah and Fosu (2001:1-16) on Ghana university libraries, found that only one had an operational disaster plan. The authors pointed out that the rest should establish a policy for disaster to safeguard sources of information. Matthews and Eden (1996:5-12) clarified that the management should ensure libraries have a written policy for disaster management.

2.3 Disaster Preparedness

Disaster preparedness requires serious planning ensuring that all mitigation measures are in place in the event of a sudden disaster. According to Eden and Matthews (1996:5-12) the librarians should keep catalogues of the library collections, inventories for equipment and furniture updated and the copies should be kept in safe location. The authors added that computer systems, files and software should be backed up and software copies and files stored off-site if possible. The authors further added that it is important to check and confirm what is covered in the insurance cover and for which occurrences. The authors were of the idea that training on disaster management prepares

all library staff and raises awareness of what to do in a disaster (Matthews & Eden, 1996:5-12).

Disaster preparedness also includes training on disaster management and maintenance of electrical infrastructure, use of carbon monoxide and smoke detectors (Ahenkorah-Marfo & Borteye, 2010:117-136).The training should cover the four stages of disaster management such as prevention, preparedness, reaction, recovery and should also include various forms of disasters (Kostagiolas et al, 2011:516-530). Training disaster preparedness teams is an effective method (Muir & Shenton, 2002:115-123). Donnelly (1993:11) and Thorburn (1993, 76-78) explained that the steps to be taken in recovery phase include contact with the disaster team leader and emergency services such as the fire brigade, materials should be handled carefully to avoid any damage caused by inexperienced helpers, material evacuation should take place in compliance with previously established priority lists and items that are damaged should be treated very quickly. The authors added that to reduce further damage such as mold settling in, quick recovery steps are very important.

A study carried out by Matthews and Eden (1996:5-12) found that reaction stage requires the person(s) responsible for the response to be able to remain calm, seek advice from internal and external experts included in the disaster control plan and keep records of what is happening on the scene for future reference. The authors added that the staff at the scene and those outside the scene should be kept informed about what is happening in order to maintain their morale and supervisors should be mindful of their physical and mental pressure. The library management should carry out target training where library personnel are assigned different tasks and responsibilities (Kaur, 2009:175-187). The purpose of the recovery phase is to return the library's normal operations and to resume providing services to users as soon as possible.

In addition, all staff should be informed during an emergency about their duties and roles, as well as the location of meeting points, escape routes and any available emergency equipment (Eden & Matthews, 1996:5-12). Matthews and Eden (1996:5-12) explained that recovery stage involves immediate implementation of temporary service, accommodation and storage plans. The authors argued that a decision on how to manage library services should be made if it is a major disaster. The authors pointed out that arrangements should be made to carry out any conservation work and after a disaster, staff counseling should be made available to all staff. The authors were of the idea that it is also important to make emergency arrangements for the establishment of temporary services, accommodation, storage and review of the disaster control plan as it can reveal and help to learn from the mistakes made during the response or recovery phase.

A study conducted by Oluwatola et al (2015:78-83) on disaster management practices in five public libraries in southwest Nigeria suggested that planning for a potential disaster is a mechanism that needs early preparation. People should be inspired and prepared on what to do in case of a disaster to mitigate its consequences. Another study conducted by Owolabi et al (2014:355-361) in Nigeria libraries on disaster knowledge and preparedness showed that the workers were not prepared in the event of a disaster.

2.4 Recovery of Damaged Information Resources

Several methods have been employed in the recovery of information materials destroyed in libraries. Such techniques include use of freeze drying and use of vacuum freezer drying. In freeze drying, records and books that are damp or mildly wet are successfully dried in self-defrosting. Immediately after water damage, the information materials should be stored in the freezer. The binding of the books should be tightly supported to prevent swelling. The freezer should be able to freeze so fast and must

have a temperature of 10 to 40 degrees Fahrenheit (F) to minimize disruption and promote drying (Betrand Library, 2005). If the number of affected documents is too high to be processed within 24 hours, the items should be frozen (Zaveri, 2014:6-10).

In vacuum freezer drying, the vacuum freezer should be pulled, a low heat source added and the materials are dried under 32 degrees Fahrenheit (F). The information resources that have been damaged should be frozen until they dry. The physical process known as sublimation will occur meaning that no further swelling occurred beyond that before placing the materials in the chamber (Betrand Library, 2005). Coated paper will dry well if frozen or put in the chamber in 6-8 hours.

A study conducted by Zaveri (2014:6-10) on damage to libraries caused by water-related disasters suggested that the recovery of water-damaged paper materials involves: immediate spraying of books with diluted Dettol solution and antifungal medicated powder to prevent fungi or mold. The author added that the room where the information materials are stored may be fogged or fumigated with antifungal property smoke of ajwain or caraway seeds. These steps speed up the drying process. The author further added that books such as art books, books with color photographs, maps have to be frozen immediately within six hours and all books have to be handled within 48 hours of the damage so that they do not lose their shape, get bloated and also prevent pages from bending.

Zaveri (2014:6-10) pointed out that photographs can be saved from exposure to water and smoke but not from fire damage as the layer of emulsion would melt from heat. The author added that photographs should be removed from water and isolated from their covers, in order to preserve them. The author further explained that photographs should not be allowed to dry as they are because they will stick to the covers and should

be rinsed without rubbing with clean water. Air drying is the most effective method of recovery for all the photographs.

On recovering optical disks- CDs, Zaveri (2014:6-10) expressed the following steps: removing them immediately from water, not rubbing or scratching or twisting them and washing any dirt or mud with clean water. The author added that the disks should be dried by holding them vertically in a tray, gently rubbing them with soft cloth by going up and down or right and left but not in a circular motion on the tracks. The author further added that hair dryer or blow dryer should not be used to dry CD / DVD.

Zaveri (2014:6-10) pointed out that, in order to recover Microfilm and Microfiche, remove its cover first and if it is stuck to its frame, dip it in cold water in a plastic container and give it to a photograph company for drying. The author added that on recovering microfilm, the microfilm rolls should be placed into water-tight containers and filled with clean cold water. The author further added that the microfilm should be send for washing and drying to a Processor Company within 72 hours while the microfiche should be hung out to dry.

2.5 Challenges of Disaster Management in Libraries

Safety policy formulation is a problem for all libraries and the shape of library facilities, collections, personnel, and library programs continue to be affected by security issues (Echezoma & Ugwu, 2010). Studies conducted by McEntire and Myers (2004:140) indicated that some of the reasons for failure to handle disasters are due to lack of employee knowledge. Eden and Mathews (1997:43) explained other challenges that affect the full implementation of disaster management as lack of sufficient exits in some libraries, firefighting equipment and lifts that are not functioning. Additionally, many institutions do not update their plans for disaster management, or most plans are not

tested and staff are not adequately prepared on emergency procedures (Eden & Mathews 1997:43).

In developing countries, additional copies of information materials cannot be given in the event of a tragedy due to lack of funds (Abifarin, 1997:11-19). A study carried out by Sung et al, (1990), indicated neglect and lack of building maintenance which have led to disasters in libraries. Libraries in African countries do not emphasize use of smoke detectors possibly due to the purchasing and repair costs (Alegbeleye, 1993). Across African countries, libraries are more dependent on human guards who might be unreliable to detect fire on time (Alegbeleye, 1993). In developing countries Africa included, only a small number of libraries have fire suppression systems (Ojo-Igbinoba, 1993) and as such each staff should be equipped to use fire extinguishers (Alegbeleye, 1993).

2.6 Theoretical Framework

Fisher et al, (2010:149) defined a theory as an idea of how phenomena relate to each other or are more specific ideas of how specific events or actions tend to lead to others or are brought about by others. The author added that theories are an attempt to draw from specific instances generalizable findings. Mugenda and Mugenda (2003: 15) described theory as a system which explains the phenomenon by indicating the concepts and the law that interrelate these concepts.

2.6.1 Theory of planned Behavior

The intended behavior theory, more readily recognized as the TPB, was suggested by Ajzen (1985:11-39) as an extension to the theory of reasoned action, focusing on overall behavioral attitudes and normative beliefs (DiClemente, Salazar, & Crosby, 2013:65-82). Reasoned Action Theory addressed aspects of behavioral intent, behavioral

attitude, and subjective standards but failed to address the perceived behavioral control aspect. This led Ajzen (1985:11-39) to introduce a third aspect of behavior that was perceived as control of behavior. The TPB suggests three independent aspects of behavioral intention which are subjective norm, perceived behavioral influence and behavioral attitude (Ajzen, 1985:11-39).

Behavioral Intention is an indirect measure of behavior. It represents a person's motivation to conduct certain behaviors in the sense of his or her conscious plan or decision (Conner & Armitage, 1998:1429-1464). Attitude towards behavior is the extent to which a person has favorable or unfavorable view or analysis of the behavior concerned. It is a summary assessment of a psychological entity described in attribute dimensions that are good or bad, pleasant or unpleasant and likable or dislikable (Ajzen, 2001:27-58). Subjective norm refers to the belief that other important people believe he or she is going to perform. Hee (2000:162-175) argued that a person should consider whether he / she should act based on the views of people that are important to him / her.

Perceived behavioral control refers to perceiving the ease or difficulty of an individual in performing a particular behavior (Ajzen, 1991:179-211). It grows when people feel they have more resources and more confidence (Kozar, 2005). Studies conducted by Ajzen (2002:107-122) and Oh and Hsu (2001:618-637) found that past actions could be used successfully as a predictor of purpose and future behavior. The planned theory of behavior involves examining external factors that affect one's perception of a particular behavior (DiClemente, Salazar & Crosby, 2013:65-82). University management, library management and disaster preparedness team can use the planned behavior theory to develop and implement programs that support the adoption of preparedness behaviors. The theory of planned behavior, together with attitudes,

beliefs and perceptions will help university management, library management and disaster preparedness team to examine social and environmental factors related to behavior change (Ajzen, 1991:179-211).

Planned behavior theory should help the university administration, library management, and disaster preparedness team understand the challenges that may occur when implementing a disaster preparedness plan in order to change the behavior of the target population through training. In order to understand why a behavior is or is not accepted, it is necessary to examine beliefs, perceptions and attitudes (DiClemente, Salazar & Crosby 2013:255-285). Using the planned behavior theory will help to determine people's attitudes to disaster preparedness and gain a general understanding of why these beliefs are there. The planned behavior theory will be used to assess how employees and students perceive their control over natural disasters, terrorist attacks and other forms of disasters.

2.6.2 Social Capital Theory

Social capital theory is based on the idea of norms, social networks, and trust. Karl Marx (1818-1883), Emile Durkheim (1858-1917), George Simmel (1858-1918), John Dewey (1859-1952) and Max Weber (1864-1920) began the idea of social capital theory (Bhandari & Yasunobu, 2009:9). These authors expressed the importance of culture in economic development while Yasunobu (2009:488) pointed out that social capital resides in the framework of actor relations (social structures) and is not embedded in the actors themselves or in the physical characteristics of production. Lin (2001:24-25) described social capital as the assets embedded in social networks that actors have accessed and used for actions. Poder (2011:348) explained that social communication create social networks, foster trust, form values, promote culture and generate social capital that is a major part of economic and social life.

Cloete (2014:1-6) explained that social life, network, norms, and confidence can make people work together efficiently to achieve the shared goals. Mathbor (2007:357-369) proposed the same notion where the elements of the theory of social capital included networking, communication, social cohesion and community interaction. The author added that the effective qualities of coordination and leadership lead to bonding. In support of this, Koh and Cadigan (2008:273-285) argued that social capital affects emergency preparedness outcomes at all levels, whether individual, community or country, allowing individuals or groups to achieve desirable outcomes through collective action.

Aref, Ma'rof and Sarjit (2010:172-180) argued that participation of staff and students makes the group accountable to each other, ready to communicate and connect with each other in the event of any occurrence. Preparedness programs seek to enhance disaster management capabilities and develop disaster response activities, while gaining social capital through mutual assistance and working together to strengthen network relations (Sadeka et al. 2015:38-48). The authors explained that preparedness activities focus on enhancing the capacity of top management and staff to cope with and respond to any disaster by working together as a team. A study carried out by Mathbor (2007: 357-369) on Katrina hurricane revealed that the greatest weakness was lack of organized preparedness such as connecting, bonding and bridging between the emergency response team.

2.6.3 Application of Social Capital Theory in the Study

This study is supported by the theory of social capital. The aspects of social capital theory support disaster preparedness. The aspect of participation in the theory helps library management in training library staff and students on disaster preparedness. The aspect of networking in the theory will help the disaster preparedness team to create

interaction process for exchanging information on disaster preparedness and develop social contacts with staff and students. It also enables the staff members to work together in preparing for disasters. The communication element in theory assists library management to impart information on disaster preparedness to the students and staff through training. The aspect of coordination in theory enables the staff, students and the disaster preparedness team to work together in an organized way towards disaster preparedness and ensure all activities are shared. The element of trust in theory ensures the top management support disaster preparedness programmes by providing resources.

2.7 Conceptual Framework

Conceptual framework is a structure which the study assumes can better provide an explanation on the natural process of the situation being examined (Camp, 2002:27-39). It explains either in a graphical or in a description form the key issues to be discussed (Johnson, & Morgan, 2016). Conceptual framework is composed of independent and dependent variables. Independent variables are disaster preparedness where the catalogues, inventories and insurance should always be updated so that in case of a disaster the library will be able to account on what is lost. It is important to have disaster management plan which consist of prevention procedures, reaction procedures, recovery techniques and building description where lack of any is a threat to academic libraries. It is therefore important to have mitigation strategies such as regular inspection of the building and fire detection systems in order to ensure the safety of academic library collections. Dependent variables are risk assessment which involve awareness of threats and training which is needed to ensure disaster management program continual awareness.

The conceptual framework helped in coming up with the main concepts of the study. It shows the main concepts and the organization of the whole study. Independent variables and dependent variable were used to answer the research questions of the study.

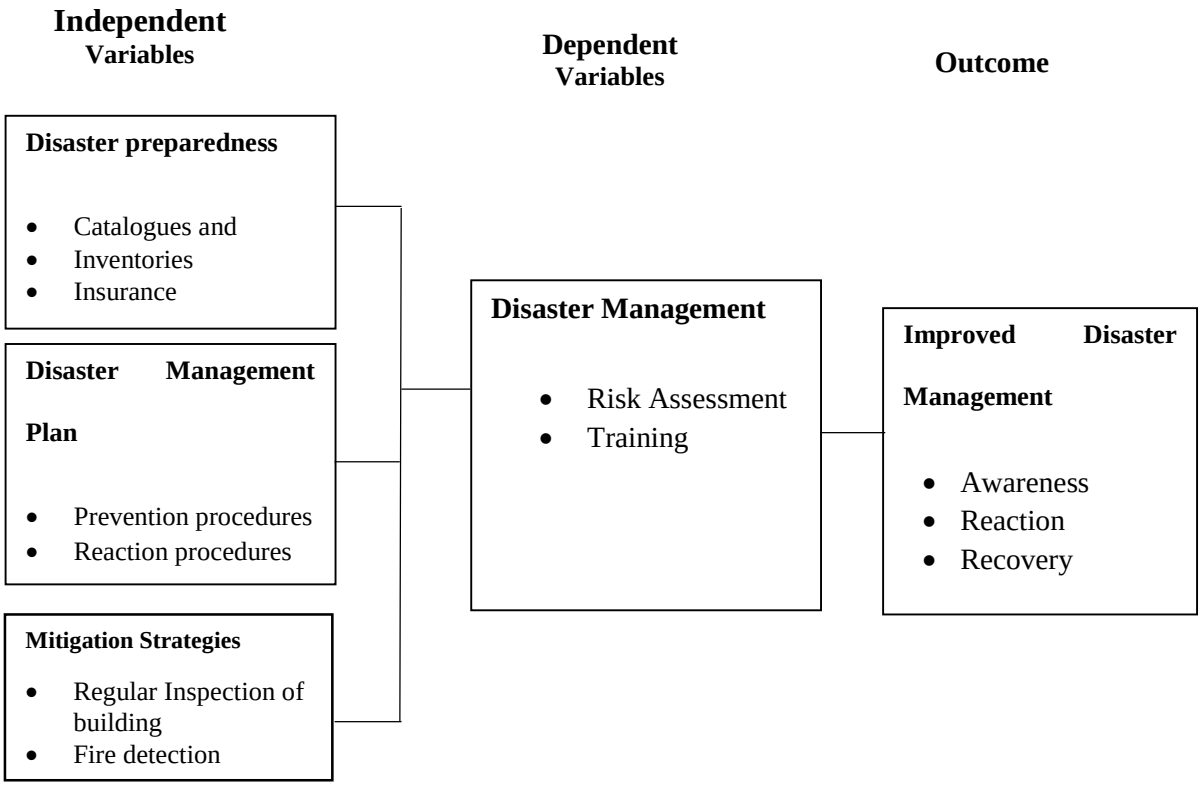

Figure 2.1: Conceptual Framework

Source: Author (2020)

2.8 Chapter Summary

Academic libraries need to take preventive measures seriously in order to minimize occurrence of disasters and should be prepared to act fast in case of a tragedy. Availability of a disaster strategy which indicates detailed explanation of buildings, collections, processes for disaster prevention, methods for recovery, a statement about availability of help from outside and structure for decision making in the event of a tragedy is important. The library staff should be assigned roles, responsibilities and be

given an opportunity to practice early enough before any disaster occurs. Training of the staff is very important as it will make them knowledgeable in case of a disaster. The disaster plan can only succeed if the library staff are aware of the possibility of a disaster and what to do if it occurs.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter covers research methodology that was followed. It outlines the research design, target population, sample and sampling procedures, instruments for collecting data, data collection method, procedures for analyzing data and ethical considerations.

3.1 Research Design

A research design is a methodological and operational plan that describes when and how various methods and procedures are used throughout research process (Kumar, 2014:122). The study adopted mixed methods design where both quantitative and qualitative methods were used. Research on mixed methods requires combining or incorporating quantitative and qualitative research processes, procedures, techniques or principles into a single study (Johnson & Onwuegbuzie, 2007:120 & Creswell, 2014:14).

In quantitative method, the study employed a survey research where questionnaires were used to obtain information from users and employees. According to Punch (2004:75), a survey is any study that gathers data qualitatively or quantitatively from a sample of people. The author added that a survey is a descriptive analysis that deals with multiple pieces of data that are analyzed one piece at a time. A survey research offers a quantitative or numerical overview of patterns, opinion of a population by analyzing a sample of that population (Creswell, 2009:145). Survey study was used because the needed information is simpler, quicker, less costly or more accurate to obtain (Alreck, 2004:3). According to Fink (2009:1), surveys are methods of gathering

information used to identify, compare or illustrate individual and social awareness, emotions, beliefs, desires and actions. Fink (2009:1) added that surveys allow the respondents to fill it anywhere, privately and the respondent can even return the completed survey by e-mail. The author further clarified that surveys are beneficial as they help in evaluating effectiveness of programs to improve the awareness of people's attitudes or wellbeing.

In qualitative method, the study used a case study design where the researcher used interview guide to gather information from head of sections and library management. A case study design attempts to describe a unit in depth, contextually and holistically (Kombo & Tromp, 2016:72). According to Zainal (2007:4), a case study was used because the comprehensive qualitative accounts frequently provided not only assist to illustrate actual life data, but frequently assist to clarify the difficulties of actual life circumstances that survey study does not capture. The author added that differences in instrumental and collaborative methods to case studies allow both quantitative and qualitative analysis of data. The researcher can gain a deeper understanding of the topic under study by combining both quantitative and qualitative methods while offsetting the limitations present in each method.

3.2 Area of Study

The study was carried out at Jomo Kenyatta Memorial Library University of Nairobi Kenya.

3.3 Target Population

According to Becks (2004:289) population is the whole group of circumstances in which a researcher is concerned and the group of individuals that meets the sample criteria for inclusion. The target population for this study was 15334 and comprised of

32 library staff, 12106 students from the College of Humanities and Social Sciences, 448 Academic Staff from the College of Humanities and Social Sciences, 2628 students from the College of Engineering and 120 academic staff from the College of Engineering. The study only targeted students and academic staff from the college of Engineering who are users of JKML and not students and academic staff from College of Architecture who have their own library. The students were included in this study because they are users of JKML and they should be prepared so that incase of any a tragedy, they know what to do.

3.4 Sample and Sampling Techniques

A sample can be described as a group of relatively smaller numbers of individuals selected for investigation purposes from a population (Creswell, 2014:158-159).

3.4.1 Sample Size

The **s**ample size for this study was 343 respondents and comprised of 24 Library staff, 95 Students from the College of Humanities and Social Sciences, 79 Academic Staff from the College of Humanities and Social Sciences, 92 Students of College from the Engineering and 53 Academic Staff from the College of Engineering. A simplified formula for sample size calculation was given by Yamane (1967:886).The sample size is as outlined in Table 3.1.

$n_o = \frac{Z^2 pq}{e^2}$

Where

n_o= Desired sample size (if population is large)

Z= standard deviation at the required confidence level.

p=estimated proportion of an attribute that is present in the population.

q= 1-p

e= desired level of precision.

$n_o = \frac{(1.9^2)(0.5)(0.5)}{(0.1)^2}$

$n_o = 96$

The value for Z is found in statistical tables which contain the area under the normal curve.Then if the population is small, then the sample size n_o can be reduced slightly.This is because a given sample size provides proportionately additional data for a small population than a large population. The sample size n_o can adjusted using the equation below:

$n = \frac{no}{1+\left(\frac{n0-1}{N}\right)}$

n= sample size for a small population

n_o= sample size for a large population

N= estimated population size

Table 3.1: Sample Frame

RESPONDENTS	POPULATION SIZE	SAMPLE SIZE
Students of College of Humanities and Social Sciences	12,106	95
Academic Staff of College of Humanities and Social Sciences	448	79
Students of School of Engineering	2628	92
Academic Staff of School of Engineering	120	53
Library Staff	32	24
Total	**15,334**	**343**

Source: Author (2020)

3.4.2 Sampling Techniques

Sampling is the method used by a researcher to collect persons, places or things to study (Kombo & Tromp, 2016:77). In order to select a sample for the study, the study employed both probability and non-probability sampling. Probability sampling was used where simple random sampling was employed. Non-probability sampling was used where purposive sampling was employed.

3.4.3 Sampling of Students

The students sample size was 187 respondents and was selected from the college of humanities and social sciences and School of engineering. The student sample size from the college of humanities and social sciences was 95 students and the students sample size from the School of engineering was 92 students. In order to get a sample from each school, the students sample size was divided as a ratio of the total number of students in a school to the total number of students in the entire college.

The sample size of each school was representative of the population of the school. Simple random sampling was used to select 13 students from the School of Economics, 12 students from School of Business, 8 students from School of Journalism and Mass Communication, 6 students from Institute of Diplomacy and International Studies (IDIS), 52 students from Faculty of Arts and Social Sciences, 26 students from Electrical and Information Engineering, 27 students from Civil and Construction Engineering, 21 students from Mechanical and Manufacturing Engineering, 10 students from Geospatial and Space Technology and 8 students from Environment and Biosystems Engineering. Purposive sampling was used to select 1 student (class representative) from Institute for Development Studies (IDS), 1 student (class representative) from Population Studies and Research Institute (PSRI), 1 student (class representative) from Institute of Anthropology, Gender and African Studies (IAGAS) and 1 student (class representative) from the Centre for Translation and Interpretation. Purposive sampling was used because it ensures that the key informants for this study are included (Alvi, 2016:30). Simple random sampling was used because there is no likelihood of sampling bias and the sample is a good representation of the population (Alvi, 2016:17).

3.4.4 Sampling of Staff

The staff sample size was 156 respondents and was selected from the college of humanities and social sciences, School of engineering and the library. The sample size for library staff was 24 staff. The academic staff sample size from the college of humanities and social sciences was 79 staff, and the academic staff sample size from the School of engineering was 53 staff. In order to get a sample from each school, the academic staff sample size was divided as a ratio of the total number of academic staff in a school to the total number of academic staff in the entire

college. The sample size of each school was representative of the population of the school. Simple random sampling was used to select 6 academic staff from the School of Economics, 16 academic staff from School of Business, 4 academic staff from School of Journalism and Mass Communication, 4 academic staff from Institute for Development Studies (IDS), 6 academic staff from Institute of Diplomacy and International Studies (IDIS), 40 academic staff from Faculty of Arts and Social Sciences, 11 academic staff from Electrical and information Engineering, 14 academic staff from Civil and Construction Engineering, 13 academic staff from Mechanical and Manufacturing Engineering, 9 academic staff from Geospatial and Space Technology, 6 academic staff from Environment and Biosystems Engineering and 14 library staff. Purposive sampling was used to select 1 academic staff (head of the institute) from Population Studies and Research Institute (PSRI), 1 academic staff (head of the institute) from Institute of Anthropology, Gender and African Studies (IAGAS), 1 academic staff (head of the institute) from Centre for Translation and Interpretation, 4 library management members and 4 heads of library sections (Circulation Desk/MBA collection, Africana/UN collection, Acquisitions/Cataloguing, Digital content and Archives/Rare collection). Purposive sampling was used because it ensures that the key informants for this study are included (Alvi, 2016:30). Simple random sampling was used because there is no likelihood of sampling bias and the sample is a good representation of the population (Alvi, 2016:17).

Table 3.2: Distribution of Students and Staff Sample Size According to Schools

Colleges	Respondents	Population size	Distribution of Sample Size According to Schools
College of Humanities and Social Science			
School of Economics	Academic Staff	33	6
	Students	1708	13
School of Business	Academic Staff	90	16
	Students	1558	12
School of Journalism and Mass Communication	Academic Staff	21	4
	Students	1123	8
Institute for Development Studies (IDS)	Academic Staff	22	4
	Students	32	1
Institute of Diplomacy and International Studies (IDIS)	Academic Staff	32	6
	Students	880	6
Population Studies and Research Institute (PSRI)	Academic Staff	10	1
	Students	27	1
Institute of Anthropology, Gender and African Studies (IAGAS)	Academic Staff	6	1
	Students	73	1
Centre for Translation and Interpretation	Academic Staff	4	1
	Students	11	1
Faculty of Arts and Social Sciences	Academic Staff	230	40
	Students	6694	52
College of Architecture and Engineering			
Electrical and Information Engineering	Academic Staff	25	11
	Students	726	26
Civil and Construction Engineering	Academic Staff	32	14
	Students	783	27
Mechanical and Manufacturing Engineering	Academic Staff	29	13
	Students	604	21
Geospatial and Space Technology	Academic Staff	20	9
	Students	276	10
Environment and Biosystems Engineering	Academic Staff	14	6
	Students	239	8
Library	Library staff	32	24
Total		**15,334**	**343**

Source: Author (2020)

3.5 Data Collection Methods

Data collection entails selecting and collecting information from participants (Brink, 2006:153; Burns & Grove, 2009:393). This study employed mainly questionnaires and interview guides to collect data from various participants. In this study, questionnaires were prepared and administered to the various library users from the colleges and the library by the researcher and research assistants. The researcher conducted in-depth interview to the library management and head of sections .The response was recorded by use of field notes and a tape. The researcher collected the filled in questionnaires and later compiled the report from the interview sessions within the specified time as agreed upon with the respondents.

3.5.1 Questionnaire

Questionnaires were used to obtain data for this study. The questionnaires were close-ended. The questionnaires comprised of structured questions which covered all the research objectives. Each questionnaire had four sections. These sections contained questions of the background information of the respondents; questions on disaster management; questions on disaster mitigation strategies; questions on disaster preparedness and questions on recovery of damaged information resources. Questionnaires were used in this study because they are the best in accessing a bigger sample of library users while at the same time being less costly compared to interview guides. The questionnaires were used because they are able to obtain sincere answers from respondents without interference of the researcher. They were used because they save time, human and economic resources, there is no face-to-face interaction and they provide greater anonymity (Kumar, 2014:178-181).

3.5.2 Interview Schedule Guide

Interview guides are common methods of collecting data. Unstructured (open-ended) interview was used to obtain in-depth information relating to research questions of this study. Unstructured interviews offer freedom to the interviewer in terms of form, content, wording of questions and order (Kumar, 2014:177).The interview guides were used to obtain information from the respondents. This is because unstructured interviews are extremely useful in investigating a situation or phenomenon intensively and thoroughly when digging deeper into it (Kumar, 2014:177).The interview guides were used because they are helpful in obtaining data in detail and it is possible to clarify questions (Kumar, 2014:182). The questions looked into details on disaster management plan, mitigation strategies, disaster preparedness, recovery of damaged information resources and challenges faced in implementation of disaster preparedness.

3.6 Research Instruments

Data for this study was collected using two types of instruments: questionnaires and interview guides. These consisted of two types of questionnaires for UON staff and students. The questionnaires were designed by the researcher for obtaining quantitative information from academic staff, library personnel and students. The interview guide was used to obtain qualitative data by interviewing library management and head of sections.

3.6.1 Pilot Study

Before actual data collection, a pilot survey was carried out to assess whether the research was to be successful given the prevailing circumstances and the environment of the sample. Pre-testing of research tools requires a critical review of the respondent's comprehension of each question (Kumar, 2014:191). Pre-testing of research instruments was conducted at Cooperative University of Kenya library to establish the

study's feasibility. Permission was sought from Cooperative University of Kenya library. All participants were approached and made to understand the reasons for undertaking the pilot study. Simple random sampling was used to select students, academic staff and library staff so as to test questions that had been set for these groups. Purposive sampling was used to choose university librarian.

The sample size for the pilot study was 10 respondents. Kombo (2006:38) explained that in pilot studies, a small percentage of the sample population can be used. The data for the pilot study was analyzed using statistical package for social sciences software version 21. Out of the 9 questionnaires which were administered to this group, 8 were returned fully filled giving a response rate of 88.8%. The university librarian permitted the questionnaires to be administered randomly to 3 students, 3 academic staff and 3 librarians. The respondents were asked to return the filled questionnaires to the university librarian. The questions in the questionnaire were found to be clear but suitable for librarians only and not any other group. The results of the pilot study helped in resetting the questions for real data collection. Corrective action was taken in accordance with the pilot study outcome and each target group had its own suitable questionnaire. The researcher made sure this was done in the real study.

3.6.2 Validity

According to Kumar (2014:218), validity is described as the capability of a study tool to show that it is finding out what it was intended for. Validity means the extent in which an instrument tests exact measurements (Punch, 2005:97). In the context of this study, validity was concerned with whether the objectives of the study were covered and presented by the objects in the instruments. This was addressed during pilot study. The outcomes of pilot study indicated the interpretations and concepts in the research instrument tools had mutual meaning between the participants and the researcher. The

results also indicated that all the objectives of the study were covered in the research instruments.

3.6.3 Reliability

Thanasegaran, (2009:35-40) described reliability as the extent in which procedures are error-free and thus deliver reliable outcomes. Kumar, (2014:218) explained that reliability is research tool's consistency in its findings when repeatedly used. The reliability of the questionnaires was tested during pilot study and proved that it was consistent in the study. This helped in determining that the questionnaires were capable of giving similar results even when administered to the same people but in different occasion.

3.7 Ethical Considerations

Smyth and Penney (2012:14) described ethics as a set of moral principles. Permission was sought from the University of Nairobi. All participants were approached and were made to understand the reasons for undertaking the study. The respondents were guaranteed that the data collected was to be preserved with outmost privacy and was not be disclosed without their consent. The participants were notified that their participation in the study was voluntary. The researcher presented a letter of consent to each participant in the study. In the letter, the researcher explained the respondents about the intention of the study so that they understand the nature of the study and any possible effect it may have on them (Creswell, 2014:97-101).The researcher ensured this study was not plagiarized by checking it from a turn tin and gave a report.

3.8 Data Analysis

Qualitative data analysis analyzes words but not numbers (Babbie & Mouton, 2001:359; Brink, 2006:184; Pilot & Beck, 2008:508). The qualitative data collected was categorized, put into themes and reported by way of narrations. In order to allow qualitative analysis, the data was assigned categories. The categories were assigned numbers or numerical code which were entered into the computer. On the quantitative data collected through questionnaires, the researcher verified the responses, confirmed they were collected and were filled in the right way. The researcher edited them by eliminating unusable data and interpreting ambiguous answers.

In order to allow quantitative analysis, the data was converted to numerical codes representing measurement variables. The values representing the subject's responses from all questionnaires were then picked and entered into the computer straight from the questionnaires. When entering data straight from the questionnaire, the open-ended responses were extracted from the questionnaire, assigned categories and given numerical codes. The numerical codes representing various categories were then entered into the computer. Quantitative statistical results were tabulated and analyzed in frequency tables and percentages with the help of the statistical package for social sciences software version 21. The received data was presented in form of tables, graphs and charts with accompanying descriptive details.

3.9 Chapter Summary

This chapter contains research methods which were used in this study. The research employed mixed methods which included quantitative and qualitative method, the area of the study, target population, sample and sampling techniques and sample size. The research instruments which were used in this study were questionnaires and interview

guides. The validity and reliability was checked during pilot study. It also contains ethical consideration, data analysis and presentation according to the objectives.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents data presentation, analysis and interpretation. The process of sorting out the primary data was undertaken and then coded to allow the in-depth analysis. The presentation, analysis and the interpretation of the findings were mainly done for the purpose of answering the questions asked as per the objectives of the study. The data collected was analyzed using frequencies and percentages. The information was interpreted and then presented using tables, pie charts and bar graphs.

4.1 Distribution of Respondents

Questionnaires and interview guides were used to collect data for this study. The sample size was 343 respondents. Respondents for this study were librarians (24), students (187) and academic staff (132) of University of Nairobi. A total of 335 questionnaires were administered to the respondents and 8 interviews were conducted. At the end of the field work, 276 questionnaires were filled and returned out of 335 questionnaires administered to the respondents representing a response rate of 82%. Four (4) head of sections and three (3) library management members availed themselves for the interview representing a response rate of 88% for this segment. Reasons for inability to collect all the 335 questionnaires include: some (59) respondents took the questionnaires and proceeded for their annual leave and also there was misplacement of the questionnaires by the respondents. One (1) of the interviewees was not interviewed because he/she was on annual leave.

4.1.1 Gender of the Respondents

In order to establish the demographic characteristics of the respondents, the respondents were asked to indicate by way of ticking the correct answer from the choices provided. Out of the 276 responses from the respondent's questionnaires, 35.5% were from females and 64.5% were from males. The response indicated that female respondents were less than male.

Table 4.1: Gender of the Respondents

Respondents	**Frequency**	**Percent %**
Male	178	64.5
Female	98	35.5
Total	**276**	**100**

4.1.2 Age Distribution

On the question of age category of the respondents, the respondents were asked to indicate their age category. About 2.2% of the respondents indicated they were less than 20 years while 57.9% of the respondents indicated they were aged between 20-29 years. Other 13.8% of the respondents indicated they were aged between 30-39 years while 16.7% of the respondents indicated they were aged between 40-49 years. 9.4% of the respondents indicated they were aged 50+ years. From the study majority 57.9% of the respondents for this study were lying between 20 – 29 (57.9%) years of age.

Table 4.2: Age Distribution

Respondents	Frequency	Percentage
Less than 20	6	2.2
20-29	160	57.9
30-39	38	13.8
40-49	46	16.7
50+	26	9.4
Total	**276**	**100**

4.1.3 Response Rate from Department

A question regarding which department the respondents belonged to was posed to the respondents and the respondents indicated that 5.8% were from Economics, 8% were from Business, 3.3% were from Journalism and mass Communication, 1.8% were from Development Studies, 3.6% were from Diplomacy and International Studies, 0.7% were from Population Studies and Research, 0.7% were from Anthropology, Gender and African Studies, 0.7% were from Center for Translation and Interpretation, 10.9% were from Electrical and Information Engineering, 10.9% were from Civil Engineering, 11.6% were from Mechanical and Manufacturing Engineering, 3.6% were from Geospatial and Space Technology, 3.3% were from Environment and Biosystems Engineering, 29.3% were from Arts and Social Sciences and 5.8% were from the Library. The response showed that majority 29.3% of the respondents were from arts and Social Sciences (29.3%).

Table 4.3: Response Rate from Departments

Departments	Frequency	Percent %
Economics	16	5.8
Journalism and Mass Communication	9	3.3
Development Studies	5	1.8
Diplomacy and International Studies	10	3.6
Population Studies and Research	2	0.7
Anthropology	2	0.7
Centre for Translation and Interpretation	2	0.7
Arts and Social Sciences	81	29.3
Electrical and Information Engineering	30	10.9
Civil and Construction Engineering	30	10.9
Mechanical and Manufacturing Engineering	32	11.6
Geospatial and Space Technology	10	3.6
Environment and Biosystems Engineering	9	3.3
Business	22	8
Library	16	5.8
Total	**276**	**100**

4.1.4 Educational Level of the Respondents

On the question of education level, the study revealed that 0.4% of the respondents had a certificate while 2.9% of the respondents had a Diploma. Another 60.5% of the respondents were bachelor's holders while 12% of the respondents were master's holders. In addition, 24.3% of the respondents had PhD. It was clear that most 60.5% of the respondents were bachelor's holders.

Table 4.4: Educational Level of the Respondents

Respondents	Frequency	Percentage %
Certificate	1	0.4
Diploma	8	2.9
Bachelor's Degree	167	60.5
Master's Degree	33	12
PhD	67	24.3
Total	**276**	**100**

4.1.5 Work Experience of the Respondents

On the question of how long each staff had worked at University of Nairobi, the study revealed that 0.9% of the respondents had worked for less than 1 year while 19.7% of the respondents had worked between 1-5 years. About 28% of the respondents had worked between 6-10 years while 25.2% of the respondents had worked between 11-15 years. Another 26.2% of the respondents had worked more than 50 years. The study showed that majority (28%) of the respondents had worked at University of Nairobi for many years.

Table 4.5: Work Experience of the Respondents

Respondents	Frequency	Percent %
Less than 1 year	1	0.9
1-5 years	21	19.7
6-10 years	30	28
11-15 years	27	25.2
More than 15 years	28	26.2
Total	**107**	**100**

4.2 Disaster Management

In an attempt to establish whether the respondents were aware about JKML disaster management policy, the respondents were asked to indicate by way of ticking the correct answer from the choices provided.

4.2.1Awareness of Disaster Management Policy

About 4.7% of the respondents indicated they were aware about JKML disaster management policy while 95.3% of the respondent indicated they were not aware about JKML disaster management policy. The study shows that majority (95.3%) of the respondents were not aware of the availability of disaster management policy at KML. The study disagrees with previous studies as Eden and Matthews, (1996:5-12) argued that the person(s) responsiblefor drawing up the plan should liaise and negotiate with fellow employees in their divisions of the organization.

An interview was carried on the same question and the interviewees had different views on whether JKML had a written disaster plan however one of interviewee indicated that:

"We had worked on something but am sure it was in a draft form but we have something on disaster planning"

From the interview it was clear that some interviewees were not aware whether JKML had a disaster plan.

4.3 Disaster Mitigation Strategies

The study sought to establish whether JKML minimizes exposure to arson.

4.3.1 JKML Minimal Exposure to Arson

Majority 36.6% of the respondents agreed that JKML minimizes exposure to arson. In addition, 30% of the respondents disagreed that JKML minimizes exposure to arson while 12% of the respondents strongly disagreed that JKML minimizes exposure to arson. Another 5.8% of the respondents strongly agreed that JKML minimizes exposure to arson while 15.6% were not aware whether JKML minimizes exposure to arson. The response revealed that JKML minimizes exposure to arson. The response is in agreement with the previous studies as Ogden (2004:3) pointed out that the safest way to avoid collection damage from fire is to limit exposure to arson.

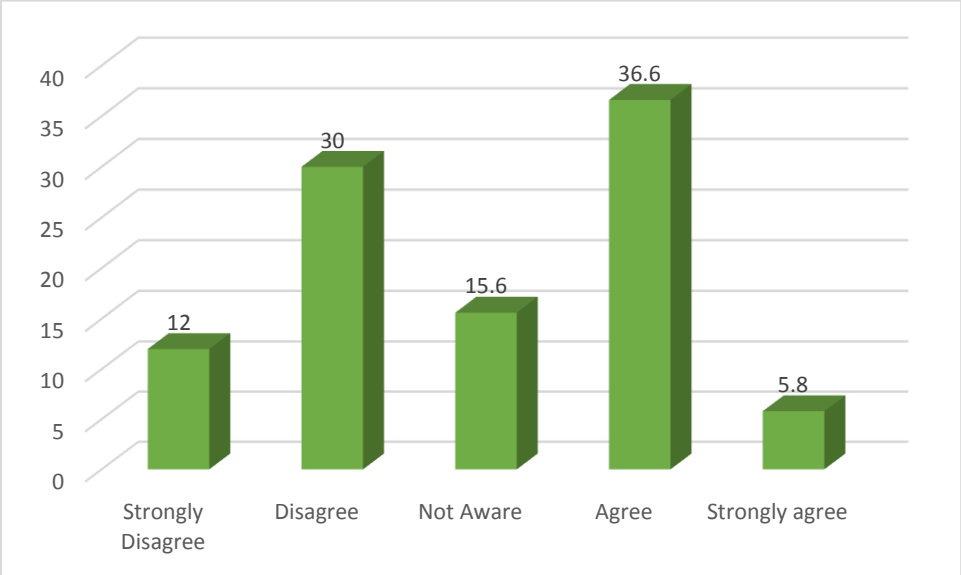

Figure 4.1: JKML Minimal Exposure to Arson

An interview was carried out on whether JKML minimizes exposure to arson and the response from the interviewees showed that JKML minimizes exposure to arson as some of the interviewees asserted that:

"…the exits are well manned by security guards…"

"Director of Security Department sends an alert to the library for terrorism"

The response from the interview revealed that JKML minimizes exposure to arson.

4.3.2 JKML Fire Detection and Fire Suppression System

The question on whether JKML has enough fire detection and fire suppression systems was posed to the respondents. Majority 40% of the respondents disagreed that JKML has enough fire detection and fire suppression systems. In addition, 17.4% of the respondents strongly disagreed that JKML has enough fire detection and fire suppression system while other 1% of the respondents strongly agreed that JKML has enough fire detection and fire suppression systems. Another 15.2% of the respondents agreed that JKML has enough fire detection and fire suppression system while 26.4% of the respondents were not aware that JKML has enough fire detection and fire suppression systems. The study revealed that JKML does not have enough fire detection and fire suppression systems. Lack of enough equipment and facilities is a threat to collection as well as to the lives of users and staff as Ogden (2004:3) asserted that it is better to install water-fighting equipment because it is easier to restore water-damaged information resources than those destroyed by fire.

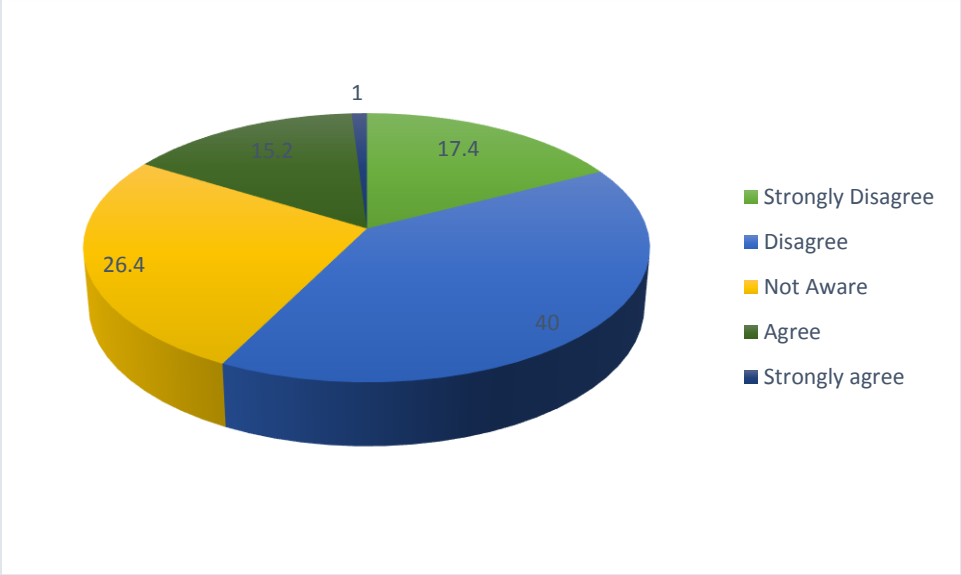

Figure 4.2: JKML Fire Detection and Fire Suppression System

4.3.3 Regular Inspection of the Building, Equipment and Facilities at JKML

The study sought to establish whether JKML carries out regular inspection of the building, equipment and facilities. Majority of the respondents 36.5% were not aware that JKML carries out regular inspection of the building, equipment and facilities. 2.5% of the respondents strongly agreed that JKML carries out regular inspection of the building, equipment and facilities while 17% of the respondents strongly disagreed that JKML carries out regular inspection of the building, equipment and facilities. In addition, 33% of the respondents disagreed that JKML carries out regular inspection of the building, equipment and facilities while 11% of the respondents agreed that JKML carries out regular inspection of the building, equipment and facilities. From the study, it was clear that JKML does not carry out regular inspection of the building, equipment and facilities. Lack of inspection is a threat to the staff and the users as Bansal (2015:12) explained that periodic inspection of the building and collection of the library should be properly maintained and frequent inspection should be carried out.

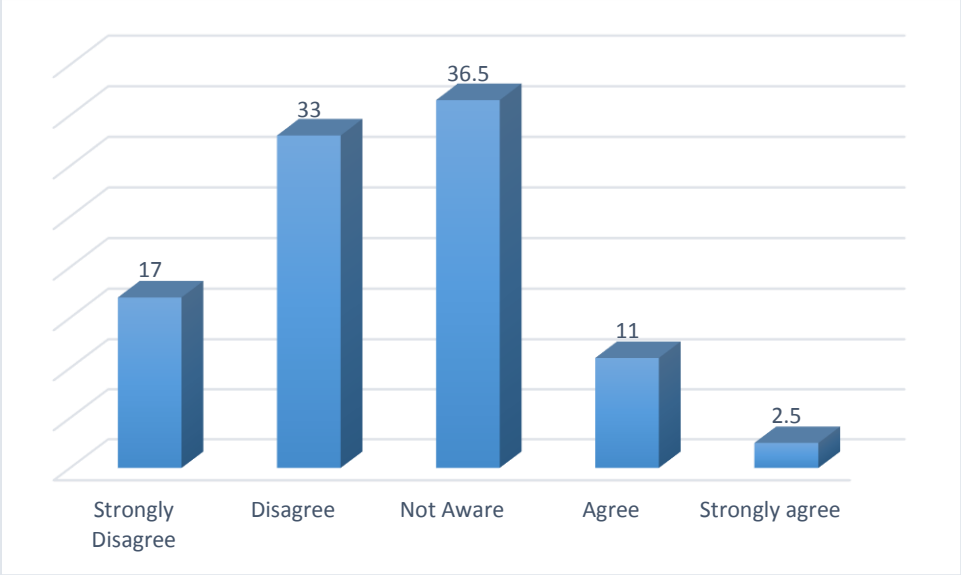

Figure 4.3: Regular Inspection of the Building, Equipment and Facilities at JKML

An interview was carried out on whether JKML carries out regular inspection of the building, equipment and facilities and one of the interviewees remarked that:

"...I have never heard unless maintenance do it without our knowledge"

The response showed that JKML does not carry out regular inspection of the building, equipment and facilities.

4.4 Disaster Preparedness

The study sought to establish whether disaster preparedness training was carried out at JKML.

4.4.1 Training on Disaster Preparedness at JKML

Majority 93.1% of the respondents indicated they were not trained on disaster preparedness at JKML while 6.9% of the respondents indicated they were trained on disaster preparedness at JKML. The response revealed that majority (93.1%) of the respondent's were not trained on disaster preparedness at JKML. Lack of training on

disaster preparedness is worrying in academic libraries because in case of a disaster uncoordinated actions will be taken to mitigate the disaster. Training enables staff and students to be prepared for the worst in the event of a disaster. It is through training of staff and students that libraries are likely to survive all disasters. The study is not in agreement with previous studies as Ahenkorah-Marfo and Borteye (2010:117-136) pointed out that one of the steps which should be put in place for successful disaster preparedness is the training of the staff members.

An interview was conducted on the same question and some of the interviewees pointed out that staff were trained on disaster preparedness outside the university by people contracted by the university. However one of the interviewees explained that:

"No drills have been carried out …"

The response from the interviewee shows that JKML has not carried out disaster preparedness training.

4.4.2 Available Equipment/Facilities

In an effort to establish which equipment and facilities were available for handling disasters at JKML, the respondents were asked to indicate the available equipment and facilities. About 1.1% of the respondents indicated flood extractors were available for handling disasters at JKML while 3.6% of the respondents indicated automatic fire suppression systems were available for handling disasters at JKML. 0.9% of respondents indicated that emergency exits were available for handling disasters at JKML while 5.1% of the respondents indicated that heat detectors were available for handling disasters at JKML. 1.5% of the respondents indicated that hose reel were available for handling disasters at JKML while 38.7% of the respondents indicated fire alarms systems were available for handling disasters at JKML. The respondents who

indicated fire extinguishers formed the highest percentage of 49.1%. From the study, it was clear that majority (49.1%) of the respondents were aware of the equipment and facilities available for handling disasters at JKML. Availability of equipment and facilities is very important because in case of a disaster the staff and users will be able to use them to prevent further destruction. The study is in agreement with previous literature as Nwokedi, Panle and Samuel (2017:5) pointed out that disaster preparedness steps to be enforced include equipment and facilities as shown in Table 4.6.

Table 4.6: Available Equipment/Facilities

Equipment/Facilities	Frequency	Percent %
Fire extinguishers	269	49.1
Automatic fire suppression systems	20	3.6
Fire alarms systems	212	38.7
Heat detectors	28	5.1
Flood extractors	6	1.1
Hose Reel	8	1.5
Emergency Exits	5	0.9
Total	**548**	**100**

An interview was carried out on the equipment and facilities available for handling disasters at JKML and there was a common view that fire extinguishers were available for handling disasters at JKML. However one of the interviewee added that:

"We have hose reel, exits at the corners, smoke detectors which send signal to Nairobi fire fighters and are always inspected"

The response from the interview showed that there were equipment and facilities necessary in disaster preparedness at JKML.

4.4.3 JKML Collection Is Insured

In an effort to investigate whether JKML collection was insured, the respondents were asked to indicate whether they agreed or disagreed with the statement provided.52.9% of the respondents disagreed that JKML collection was insured while 11.6% of the respondents strongly disagreed JKML collections was insured. Those respondents who strongly agreed that JKML collection was insured were 3.3% while 13 % of the respondents agreed that JKML collection was insured. About 19.2% of the respondents were not aware whether JKML collection was insured. The response revealed that majority (52.9%) of the respondents disagreed JKML collection was insured. The study is not in agreement with previous studies as Bansal (2015:12) pointed out that there should be full insurance for library stock, facilities, computers and building.

4.4.4 Level of Disaster Preparedness

In an effort to find out whether respondents were trained on measures to take in case of a disaster at JKML, the respondents were asked to indicate way of ticking the correct answer from the choices provided. Majority 47.6% of the respondents disagreed that the respondents were trained on measures to take in case of a disaster at JKML while 30.8% of the respondents strongly disagreed that they were trained on measures to take in case of a disaster at JKML. Some 2.2% of the respondents strongly agreed that they were trained on measures to take in case of a disaster at JKML while 5.4% of the respondents agreed that they were trained on the measures to take in case of a disaster at JKML. 14% of the respondents were not aware whether the respondents were trained on measures to take in case of a disaster at JKML. The study revealed that the

respondents were not trained on measures to take in case of a disaster. Training is a very important aspect of disaster preparedness as it equips the staff and students with the right skills on what to do in case of a disaster. If the respondents have not been trained it means they are not ready for any disaster. The study disagrees with previous studies as Matthews and Eden (1996:5-12) argued that training in disaster management trains all library personnel and increases awareness of what to do in the event of a disaster.

An interview was conducted on whether library staff were trained on measures to take in case of a disaster at JKML and one of the interviewees said that some of library staff are trained:

"…I can say all the staff are sensitized and a few are trained…"

The response from the interview revealed that not all library staff are trained on measures to take in case of a disaster.

4.4.5 Emergency Doors Are Always Open at JKML

In an effort to find out whether emergency doors are always open in case of a disaster at JKML, the respondents were asked to indicate whether they agreed or disagreed with the statement provided. Majority 63.4% of the respondents strongly disagreed that emergency doors are always open in case of a disaster at JKML while 17% of the respondents disagreed that emergency doors are always open in case of a disaster at JKML. 4.7% of the respondents strongly agreed that emergency doors are always open in case of a disaster at JKML while 6.2% of the respondents agreed that emergency doors are always open in case of a disaster at JKML. In addition, 8.7% of the respondents were not aware that emergency doors are always open in case of a disaster at JKML. From the study, it was clear that emergency doors are always closed at JKML.

Closing of emergency exits is not a good sign because in the event of a tragedy, the personnel and the patrons may not be able to get out easily. Some may even be confused on where to run to and the staff may not even remember to pick the key and open the emergency exits. The study does not agree with previous literature as Eden and Matthews (1996:5-12) explained that all employees should be notified of the escape routes.

An interview was carried out on whether emergency doors are always open in case of a disaster at JKML and one the interviewee asserted that:

"They are closed but the key is kept somewhere accessible to all staff…"

The response shows that emergency doors are always closed at JKML.

4.4.6 Awareness of Assembly Points at JKML

In order to establish whether the respondents were aware of the assembly points in case of a disaster at JKML, the respondents were asked to indicate whether they agreed or disagreed with the statement provided. Majority 36.2% of the respondents agreed that they were aware of the assembly points in case of a disaster at JKML while 7.6% of the respondents strongly agreed that they were aware of the assembly points in case of a tragedy at JKML. Some 20.3% of the respondents strongly disagreed that they were aware of assembly points in case of a disaster at JKML while 20.7% of the respondents disagreed that they were aware of the assembly points in case of a disaster at JKML. Other 15.2% of the respondents were not aware of the assembly points in case of a disaster at JKML. From the study it was clear that the respondents were aware of assembly points in case of a disaster at JKML. The study agrees with previous literature as Eden and Matthews (1996:5-12) asserted that the positions of the meeting points should be notified to all staff.

4.4.7 Training on Handling Fighting Equipment and Facilities

In an attempt to find out whether the respondents were trained on how to handle disaster fighting equipment and facilities at JKML, the respondents were asked to indicate way of ticking the correct answer from the choices provided. From the study, majority of the respondents 66.3% strongly disagreed that the respondents were trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML. 0.7% of the respondents strongly agreed that the respondents were trained on how to handle disaster fighting equipment and facilities at JKML while 24.3% of the respondents disagreed that the respondents were trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML. In addition, 2.2% of the respondents agreed that the respondents were trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML while 6.5% of the respondents were not aware whether the respondents were trained on how to handle disaster fighting equipment and facilities at JKML. The response showed that the respondents 66.3% were not trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML. The response does not agree with the previous studies as Kaur (2009:175-187) pointed out that shortly after a disaster, preparation should consist of establishing knowledge, tasks, duties for handling and recovering materials.

An interview was carried out on the same question and one of the interviewee pointed out that:

> *"Theoretically we know because we have been told how to do it but we have not done drills so we don't know how shoddy it can be…"*

The response from the interviewee indicated that library staff are not trained on how to handle disaster fighting equipment and facilities.

Table 4.7: Level of Disaster Preparedness

Disaster Preparedness	**Strongly Disagree**		**Disagree**		**Not Aware**		**Agree**		**Strongly Agree**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
JKML collection is insured	32	11.6	146	52.9	53	19.2	36	13	9	3.3
Staff and students are trained on measures to take in case of a disaster	57	30.8	88	47.6	26	14	10	5.4	4	2.2
Emergency doors are always open in case of a disaster	175	63.4	47	17	24	8.7	17	6.2	13	4.7
Staff and students are aware of assembly points in case of a disaster	56	20.3	57	20.7	42	15.2	100	36.2	21	7.6
Staff and students are trained on how to handle disaster fighting equipment and facilities in case of a disaster	183	66.3	67	24.3	18	6.5	6	2.2	2	0.7

4.5 Disaster Recovery of Information Resources

In an effort to find out whether JKML uses freezer drying to recover damaged information resources, the respondents were asked to indicate whether they agreed or disagreed with the statement provided.

4.5.1 Use of Freezer on Books

Majority 41.1% of the respondents disagreed that JKML uses freeze drying to recover damaged information resources while 1.8% of the respondents agreed that JKML uses freezer drying to recover damaged information resources. 30% of the respondents strongly disagreed that JKML uses freeze drying to recover damaged information resources while 27.1% of the respondents indicated that they were not aware that JKML uses freeze drying to recover damaged information resources. The study revealed that JKML does not have freeze drying equipment for recovering damaged information resources. In order to prepare for disasters the library should purchase freeze drying equipment. Lack of freeze drying disagrees with previous studies as Zaveri (2014:7) suggested that water-damaged paper products should be frozen.

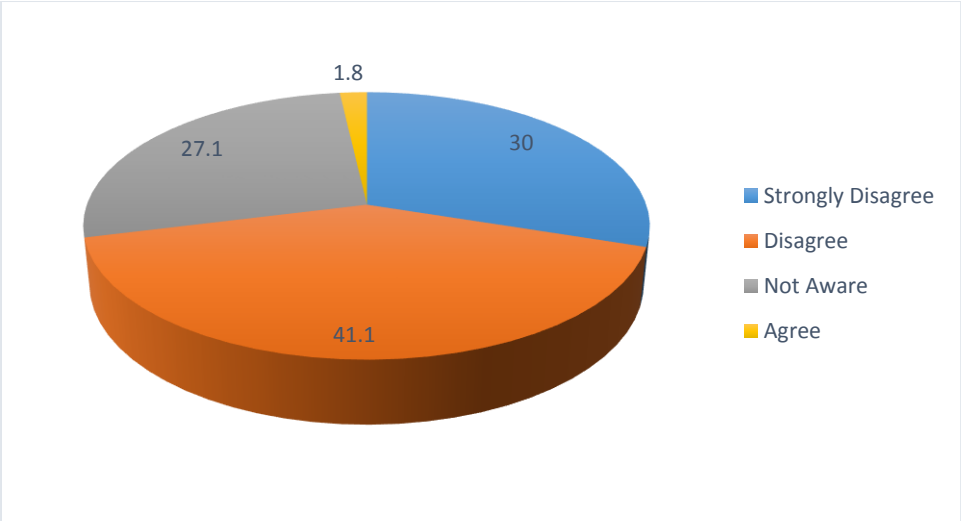

Figure 4.4: Use of Freezer on Books

An interview was conducted on the same question and one of the interviewee pointed out that:

> *"We do not have the equipment but we have a budget. Our mitigation strategy is in the budget…"*

The response from the interview indicated that JKML does not use freezer drying equipment to recover damaged information resources.

4.5.2 Use of Vacuum Freezer on Books

The study sought to establish whether JKML uses vacuum freezer drying to recover damaged information resources. About 27.1% of the respondents strongly disagreed that JKML uses vacuum freezer drying to recover damaged information resources while 37.4% of the respondents were not aware that JKML uses freezer drying to recover damaged information resources. Another 0.9% of the respondents agreed that JKML uses freezer drying to recover damaged information resources while 34.6% of the respondents disagreed that JKML uses vacuum freezer drying to recover damaged information resources. From the study, it was clear that majority 37.4% of the respondents were not aware whether JKML uses vacuum freezer drying to recover damaged information resources. In order to prepare for disasters the library should purchase vacuum freezer drying as Zaveri (2014:7) expressed that water-damaged paper products should be frozen.

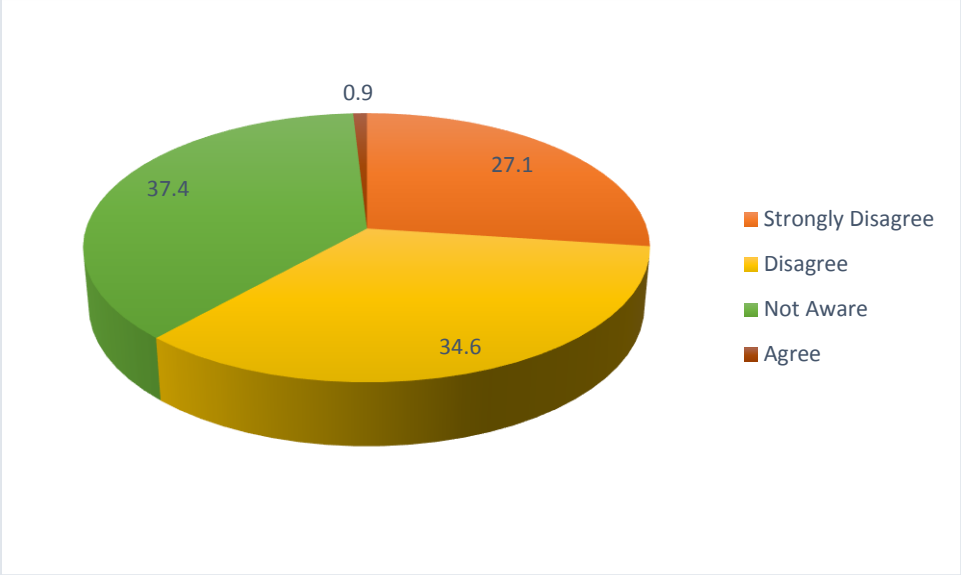

Figure 4.5: Use of Vacuum Freezer on Books

An interview was conducted on the same question and one of the interviewee pointed out that:

"We do not have the equipment and facilities but we have a budget…"

The response from interviewees indicated that JKML does not use vacuum freezer drying to recover damaged information resources.

4.5.3 Use of Diluted Dettol Solution on Books

The study sought to establish whether JKML immediately sprays books with diluted Dettol solution when they get wet. From the study, it was established that some of the respondents agreed that JKML immediately sprays books with diluted Dettol solution when they get wet 1.9%. Other respondents strongly disagreed that JKML immediately sprays books with diluted Dettol solution when they get wet 25.2%. In addition, some other respondents were not aware that JKML immediately sprays books with diluted Dettol solution when they get wet 18.7%. Majority 54.2% of the respondents disagreed that JKML immediately sprays books with diluted Dettol

solution when they get wet. The study revealed that JKML does not immediately spray books with diluted Dettol solution when they get wet. Lack of diluted Dettol solution disagrees with previous studies as Zaveri (2014:6) suggested that water-damaged paper products should be immediately sprayed with diluted Dettol solution.

Table 4.8: Use of Diluted Dettol Solution on Books

Respondents	**Frequency**	**Percentage %**
Strongly Disagree	27	25.2
Disagree	58	54.2
Not Aware	20	18.7
Agree	2	1.9
Total	**107**	**100**

4.5.4 JKML Use of Antifungal Medicated Powder on Books

In order to establish whether JKML immediately sprays books with antifungal medicated powder when they get wet, the respondents were asked to indicate way of ticking the correct answer from the choices provided. About 1.9% of the respondents agreed that JKML immediately sprays books with antifungal medicated powder when they get wet while 21.5% of the respondents strongly disagreed that JKML immediately sprays books with antifungal medicated powder when they get wet. Other respondents 33.6% of the respondents disagreed that JKML immediately sprays books with antifungal medicated powder when they get wet. Majority 43% of the respondents were not aware whether JKML immediately sprays books with antifungal medicated powder when they get wet. The study indicated that majority 43% of the respondents were not aware whether JKML immediately sprays books with antifungal medicated powder

when they get wet. Lack of awareness means the library should conduct disaster awareness training as Zaveri (2014:6) argued that water-damaged paper product should be immediately sprayed with medicated antifungal powder.

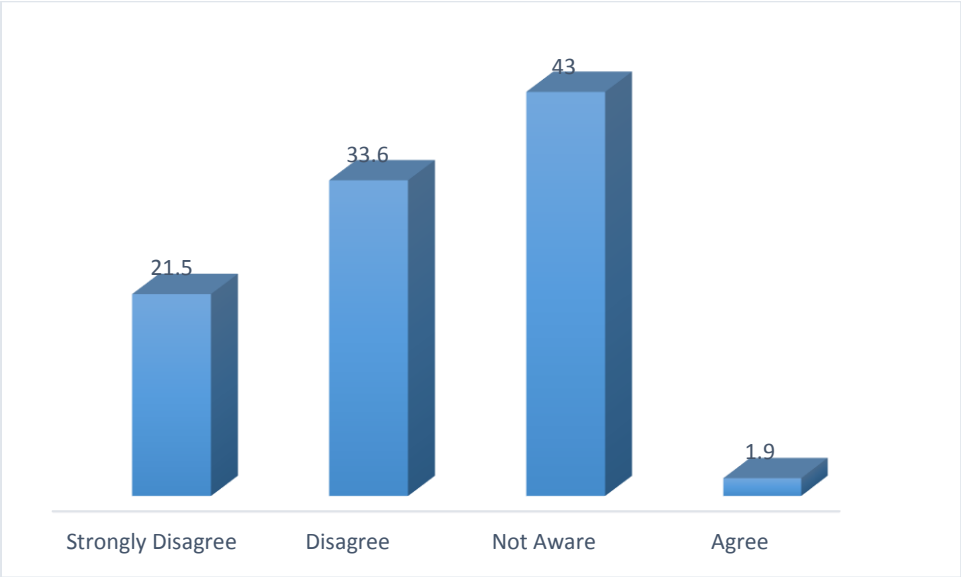

Figure 4.6: Use of Antifungal Medicated Powder on Books

4.6 Challenges Experienced in Disaster Management

An interview was carried out on whether JKML face challenges in the implementation of disaster preparedness and the response was that JKML faces several challenges in the implementation of disaster preparedness.

4.6.1 Awareness of Disaster Management Policy

An interview was carried out on whether JKML has a written disaster plan and interviewees had different views as some interviewees said that:

"...there is no policy on disaster management..."

"...I am not aware whether we have a disaster management plan..."

"...we had worked on something but it was in a draft form..."

The response from the interview shows that some interviewees were not aware whether JKML has disaster management plan.

4.6.2 Training on Disaster Preparedness

An interview was conducted on whether disaster preparedness training was carried out at JKML and the interviewees had a common view that no training had been carried out at JKML as the interviewees explained that:

> *"…training is not hundred percent…"*
>
> *"…a few staff are trained…"*
>
> *"…we have not been trained on what to do in case of a disaster…"*
>
> *"…we have not been trained on how to handle disaster fighting equipment…we just see the equipment there but we do not know what to do with them"*
>
> *"…no drills have been carried out…"*

The response from the interviewees shows that no disaster preparedness training had been carried out at JKML**.**

4.6.3 Available Budget

An interview was conducted on whether JKML has enough budget to cater for disaster preparedness and the interviewees had a common view that the budget is limited as the interviewees argued that:

> *"…the budget is there but I would say it is limited…"*
>
> *"…the budget is limited…"*
>
> *"…there is limited finances…"*
>
> *"…there has been a challenge of procurement and funding…"*

"…there is no specific budget for disaster management…"

The response from the interviewees shows that the budget is limited.

4.6.4 Emergency Doors

An interview was conducted on whether exit doors are always open at JKML and the interviewees had a common view that emergency doors are always closed as the *interviewees remarked that:*

"…we cannot leave our fire exits open because of the security of the materials in the library…"

"…emergency doors are always closed…"

"…exit doors are always closed…"

"…emergency doors are always closed but the key is placed in a central place which is known by the staff…"

The response from the interviewees shows that emergency doors are always closed at JKML.

4.6.5 Available Equipment and Facilities

An interview was conducted on available equipment/facilities and there was a common view that there were no enough equipment/facilities as the interviewees asserted that:

"… We do not have machines for recovering books which are damaged by water… "

"…the security system for the books sometimes fails …"

"…fire extinguishers are not enough…"

"…fire extinguishers are not well maintained…"

"...sometimes lifts are not working..."

"...the CCTV is not working..."

The response from the interviewees shows that there are no enough equipment and facilities at JKML.

4.7 Chapter Summary

In this chapter, data collected using questionnaires and interview guides was analyzed and the views of the respondents on disaster preparedness was provided. The data collected was organized using different headings and literature was provided to support the response where possible.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the research findings, conclusion and recommendations of the study. The aim of the study was to investigate disaster preparedness at Jomo Kenyatta Memorial Library University of Nairobi, Kenya. The objectives of the study were to find out the policies on disaster preparedness, to establish strategies that can be used in mitigating disasters, to find out the level of staff preparedness in the event of a disaster, to establish the best methods available for recovering damaged information resources in print and non- print and to establish the challenges faced in the implementation of disaster management at Jomo Kenyatta Memorial Library.

5.1 Summary of the Findings

This chapter summarizes the key findings on the basis of the study's objectives. The study objectives influenced the formulation of the research questions, themes and subthemes. The finding of the study addressed different issues as discussed below. The outcome of the study established the following:

5.1.1 Awareness of Disaster Management Policy

The first objective was to find out the policies on disaster preparedness. From the findings, majority (95.3%) of the respondents were not aware whether JKML had a disaster management policy. The research showed that disaster management policies, plans and programmes were not known at JKML.

5.1.2 Disaster Mitigation Strategies

The second objective was to establish mitigation strategies that can be used in mitigating disasters at JKML. The information is as shown in Figure 4.3. From the findings, majority 36.5% of the respondents were not aware that JKML carries out regular inspection of the building, equipment and facilities. The research showed that mitigation strategies had not been implemented at JKML.

5.1.3 Level of Disaster Preparedness

The third objective of the study was to find out the level of staff preparedness in the event of a disaster at JKML. From the findings, majority 93.1% of the respondents indicated that they were not trained on disaster preparedness at JKML while 66.3% of the respondents strongly disagreed that they were trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML. The research implied that there was no disaster preparedness carried out at JKML.

5.1.4 Disaster Recovery of Information Resources

The fourth objective was to establish the best methods available for recovering damaged information resources in print and non- print at JKML. From the findings, majority 41.1% of the respondents disagreed that JKML uses freezer drying to recover damaged information resources while 54.2% of the respondents disagreed that JKML immediately sprays books with diluted Dettol solution when they get wet as indicated in Table 4.8 and Figure 4.5.The research indicated that there were no equipment for recovering damaged information resources in print and non- print at JKML.

5.1.5 Challenges Experienced in Disaster Management

The fifth objective was to establish the challenges faced in the implementation of disaster management at JKML. From the findings of the interviews, the interviewees explained the challenges they experienced when implementing disaster management.

There was a common view from the interviewees that no disaster preparedness has been carried out at JKML, the budget is limited, emergency doors are always closed and there were no enough equipment and facilities at JKML as shown in Interview 4.11.2, Interview 4.11.3, Interview 4.11.4 and Interview 4.11.5. The research shows that there were challenges faced in the implementation of disaster management at JKML.

5.2 Conclusion

The research draws the following conclusion on the basis of the results and discussions mentioned in the previous sections:

It could be reiterated that Academic libraries face a number of disasters that need to be carefully managed by putting in place the best mitigation measures. From the results obtained from the analysis, it could be concluded that staff and users are not aware of the availability of disaster management policy and there is no enough fire detection and fire suppression systems.

From the analysis of the study, it could also be inferred that the staff are not trained on disaster preparedness and how to handle disaster fighting equipment and facilities in case of a disaster.

It could be concluded that staff are not aware of what to do and are not prepared to recover partially destroyed library materials in print and non-print.

Moreover the study concluded that academic libraries face a variety of challenges in the implementation of disaster preparedness such as lack of enough equipment and facilities, lack of disaster awareness training, emergency doors are always closed and limited budget making it difficult to implement disaster management in academic libraries.

5.3 Recommendations

It is clear that successful management of disasters must be assisted by the library top management. It should be incorporated into the overall management of the library.

The study recommends the following:

5.3.1 Policies

The library should put in place effective disaster management plans and procedures.

5.3.2 Staff Training

Continuous training of disaster management personnel at all levels should be carried out. The library should carry out regular training programmes for both staff and users.

5.3.3 Emergency Doors

Keys for emergency doors should be kept in a central place which is known by the library staff.

5.3.4 Equipment and Facilities

The library should purchase equipment and facilities for recovering damaged information resources and the library should also purchase sprays for recovering damaged information resources

5.4 Suggested Areas for Further Study

The following areas were suggested for further investigation:

5.4.1 Disaster Preparedness in Special Libraries

Special libraries support specific user body within a given subject area. Typically special libraries are attached to a parent agency which may be government departments, organizations or associations of government. Most of the users of special libraries are

researchers. However, there is no library which is free from disasters and as such a study need to be conducted to establish disaster preparedness in special libraries.

5.4.2 Disaster Preparedness in Public Libraries

Public libraries offer access to creative awareness, ideas and works across a variety of tools and programs and are equally open to all community members regardless of ethnicity, nationality, age, gender or religion. Public libraries serve all types of users including children, youth, adult and even the retired. All these type of users go to public libraries for different services. Disasters occur without any warning signs and as such a study need to be conducted to find out how public libraries are prepared for any disaster.

5.5 Chapter Summary

This chapter provides summary of the findings of the study. The chapter also covers conclusion of the study based on the outcome of the study. In this chapter, recommendations of the study were provided. The chapter also contains suggested areas for further research.

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APPENDICES

APPENDIX I

INTRODUCTION LETTER

Rosa Mbithe Ngewa

University of Nairobi,

P.O. Box 30197-00100, Nairobi-Kenya.

Dear Respondent,

I am a student at the University of Nairobi pursuing a Master of Library and Information Science. My study topic is on *disaster preparedness in academic libraries: a case study of Jomo Kenyatta Memorial Library Nairobi, Kenya*. The aim of the study was to investigate disaster preparedness at Jomo Kenyatta Memorial Library (JKML). The objectives of the study were to find out the policies on disaster preparedness at Jomo Kenyatta Memorial Library, to establish strategies that can be used in mitigating disasters at Jomo Kenyatta Memorial Library, to find out the level of staff preparedness in the event of a disaster at Jomo Kenyatta Memorial Library, to establish the best methods available for recovering damaged information resources in print and non- print at Jomo Kenyatta Memorial Library and to establish the challenges faced in the implementation of disaster management at Jomo Kenyatta Memorial Library. I kindly request you to respond to the attached research instrument. Please do not write your name for the purpose of upholding your obscurity. The data gathered will be for research purposes only and will be preserved with utmost privacy.

Thank you for your cooperation.

Rosa M Ngewa,

APPENDIX II

QUESTIONNAIRE FOR RESPONDENTS

INSTRUCTIONS

Please respond by ticking (√) against your preferred response for questions with options. For questions that require suggestions or comments, please use the provided space.

BACKGROUND INFORMATION

Gender: Male ☐ Female ☐

1. Age category ☐ Less than 20 years ☐ 20 – 29 years ☐

   30 – 39 years ☐ 40 – 49 years ☐ 50 + ☐

2. Department: ----------

3. Highest level of education

Certificate ☐ Diploma ☐ Bachelor's degree ☐ Master's degree ☐

PhD ☐

4. How long have you been employed at University of Nairobi?

Less than 1 year ☐ 1 – 5years ☐ 6 – 10 years ☐ 11 – 15 years ☐

More than 15 years ☐

DISASTER MANAGEMENT

5. Are you aware of Jomo Kenyatta Memorial Library disaster management policy?

   Yes ☐

   No ☐

DISASTER MITIGATION STRATEGIES

6. Please indicate by way of ticking your response to the following statements on the best strategies which are used in mitigating disasters at JKML. Where 1- Strongly Disagree

   2- Disagree 3-Not Aware 4- Agree 5- Strongly Agree

Disaster Mitigation Strategies	**1**	**2**	**3**	**4**	**5**
JKML minimizes exposure to arson					
JKML has enough fire detection and fire suppression systems					
JKML carries out regular inspection of the building, equipment and facilities					

Others (please specify)----------

DISASTER PREPAREDNESS

7. Have you ever been trained on disaster preparedness at Jomo Kenyatta Memorial Library?

   Yes ☐

   No ☐

8. Which of the following equipment and facilities are available for handling disasters at Jomo Kenyatta Memorial Library (JKML). Please tick as many as apply.

Items
Fire extinguishers
Fire alarms systems
Automatic fire suppression systems
Heat detectors
Flood extractors

Others (please specify)----------

9. Please indicate by way of ticking whether you agree or disagree to each of the following statements on whether JKML is prepared for any disaster.

   Where 1-Strongly Disagree 2- Disagree 3-Not Aware 4- Agree 5- Strongly Agree

Disaster Preparedness	**1**	**2**	**3**	**4**	**5**
JKML collection is insured					
Staff are trained on measures to take in case of a disaster at JKML					
Emergency doors are always open in the event of a tragedy at JKML					
Employees are aware of assembly points in the event of a disaster at JKML					
Employees are trained on how to handle disaster fighting equipment and facilities in case of a disaster at JKML					

Others (please specify)----------

RECOVERY OF DAMAGED INFORMATION RESOURCES

10. Please indicate your response to the following statements on the methods used in recovering damaged library resources at JKML. Where 1-Strongly Disagree 2-Disagree 3-Not Aware 4- Agree 5- Strongly Agree

Methods for Recovering Damaged Information Resources	**1**	**2**	**3**	**4**	**5**
JKML uses freezer drying to recover damaged information resources					
JKML uses vacuum freezer drying to recover damaged information resources					
JKML sprays books with diluted Dettol solution when they get wet					
JKML sprays books with antifungal medicated powder when they get wet					

Others (please specify)----------

THANK YOU FOR TAKING TIME TO ANSWER THE QUESTIONNAIRE

APPENDIX III

INTERVIEW SHEDULE GUIDE FOR RESPONDENTS

Please answer these questions as honestly as possible.

1. Which equipment and facilities are available for handling disasters at JKML?
2. Are the staff and students trained on disaster preparedness at JKML?
3. Are the library staff trained on how to handle disaster fighting equipment and facilities at JKML?
4. Are the library users aware of the measures to take in case of a disaster at JKML?
5. Are emergency doors open in case of disaster at JKML?
6. Are the staff and users aware of assembly points in case of a disaster at JKML?
7. Does JKML have a written disaster management plan?
8. Which strategies does JKML use to mitigate disasters?
9. Which methods does JKML use to recover damaged information resources?
10. Does JKML face any challenge in the implementation of disaster preparedness?

THANK YOU FOR TAKING TIME FOR THE INTERVIEW